

Franciscan complex exposed in Grindstone Creek
Upstream area

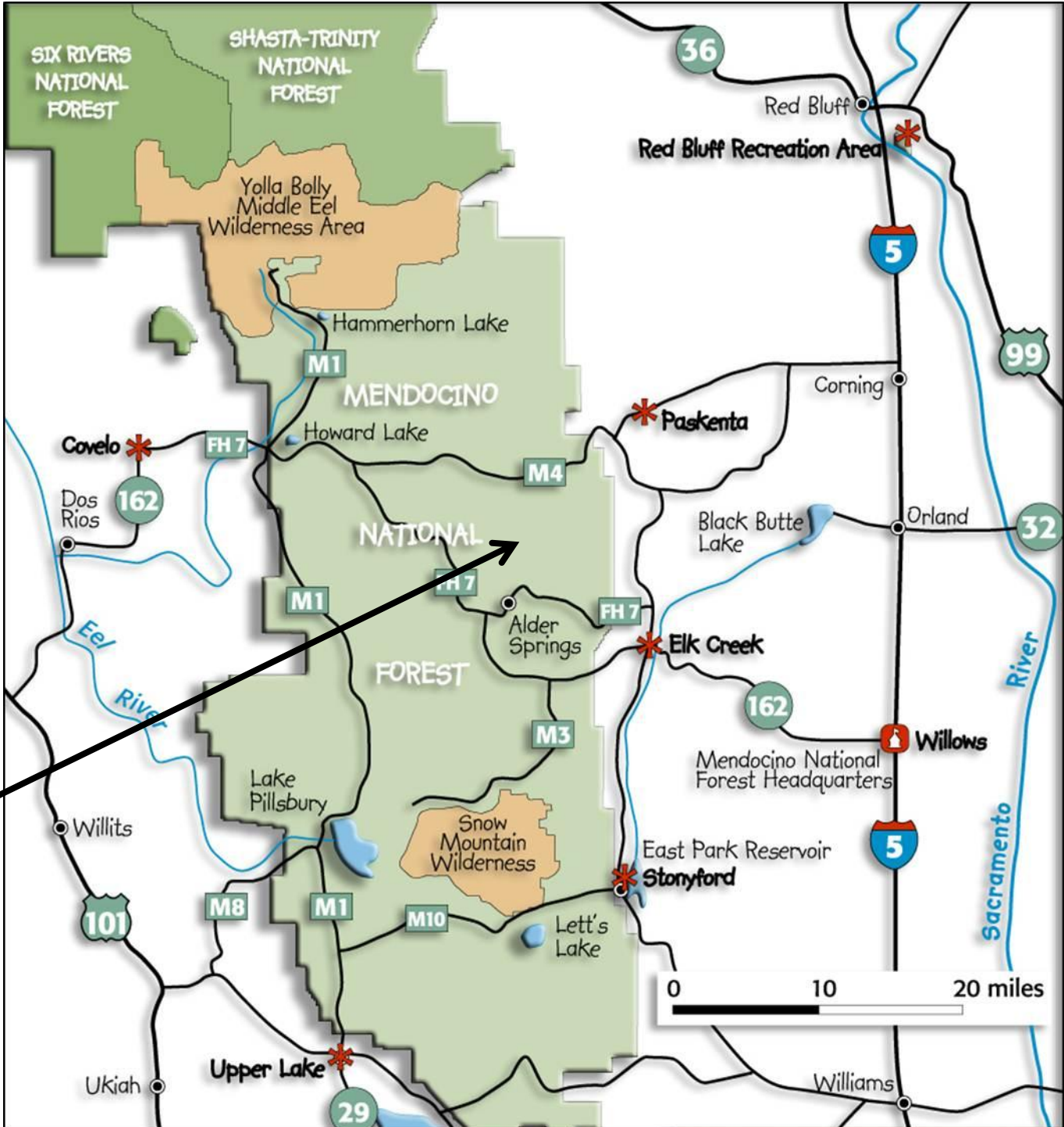
Work in Progress
Tom MacKinnon
tom.mackinnon@comcast.net



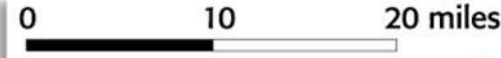
Grindstone Creek from Longpoint trail

MENDOCINO National Forest

-  Mendocino National Forest
-  Wilderness Area
-  Adjacent National Forest
-  Forest Service Office or Work Site Location



Grindstone Creek area



Willows
1:100,000
Geologic map

ppv2

Ybc?

313

Hardin
Hole
Ridge

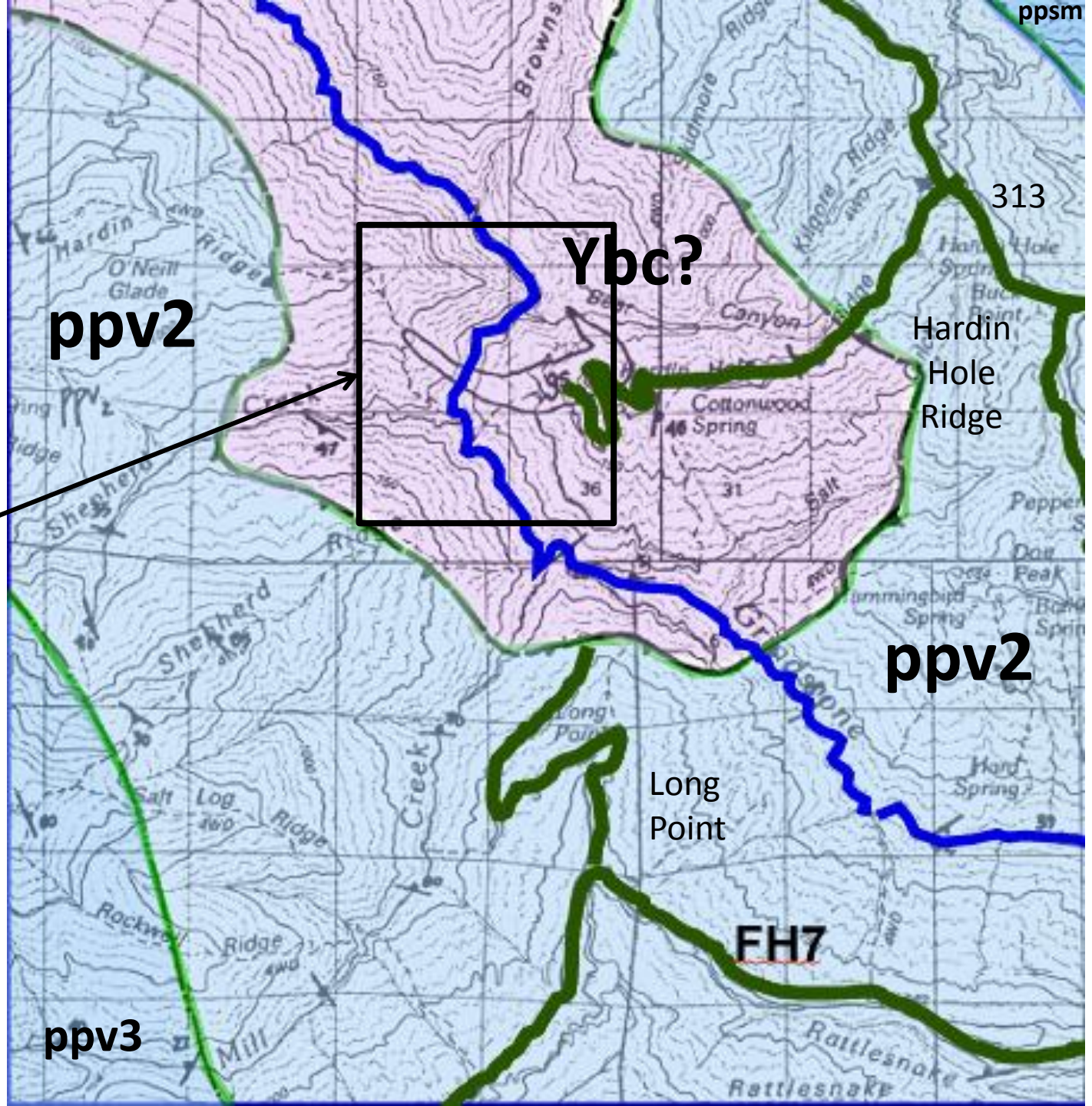
Upstream
area

ppv2

Long
Point

FH7

ppv3



Work in progress

Grindstone Creek

Ridge

JEEP

Creek

Grindstone Creek

Chert

Fiddlers Green

X Park car here

trail

Hardin

Cottonwood Spring

JEEP

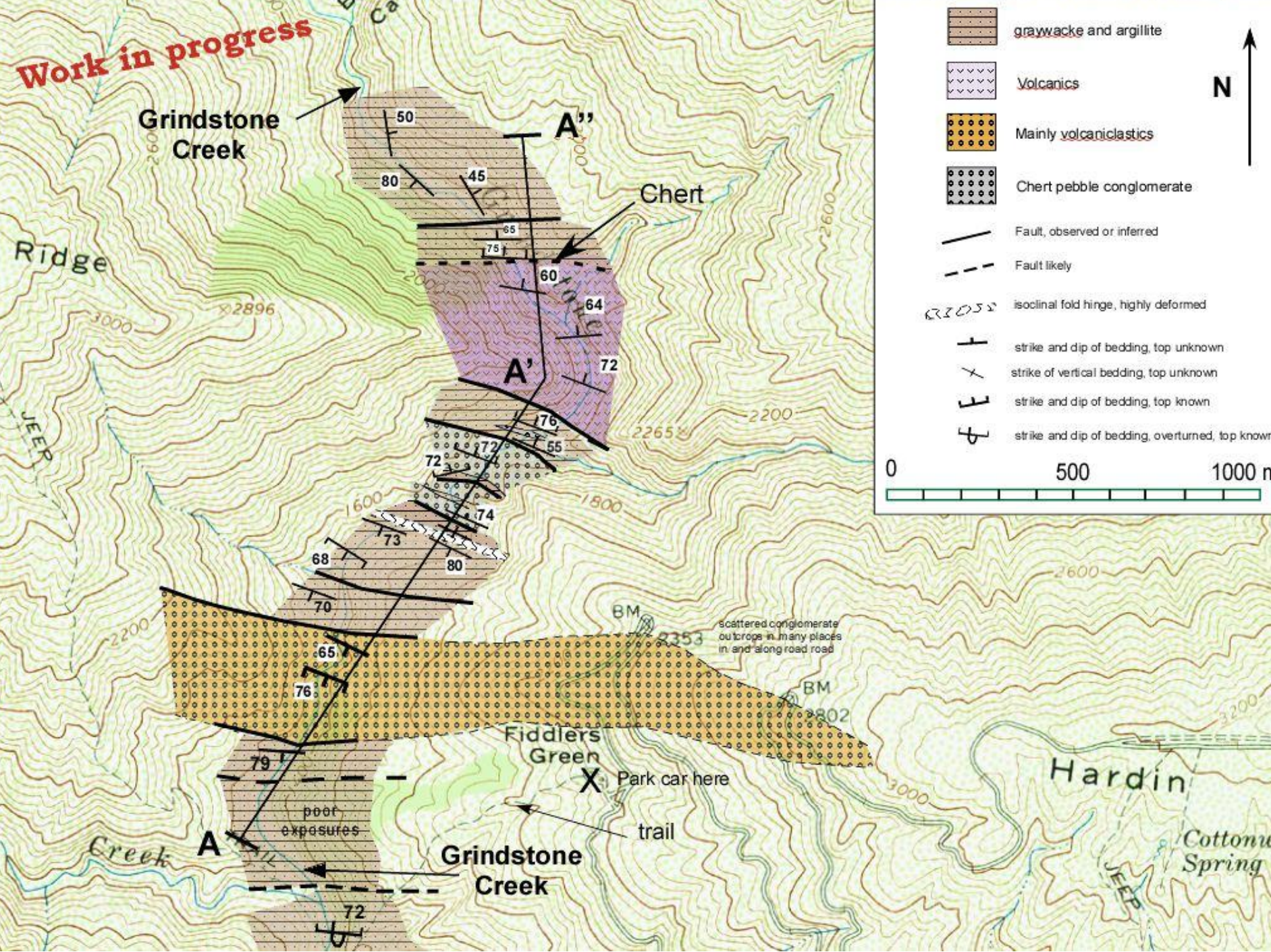


Legend:

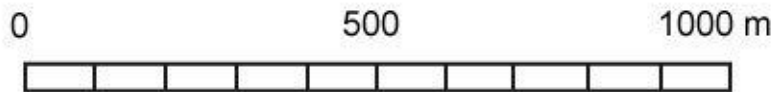
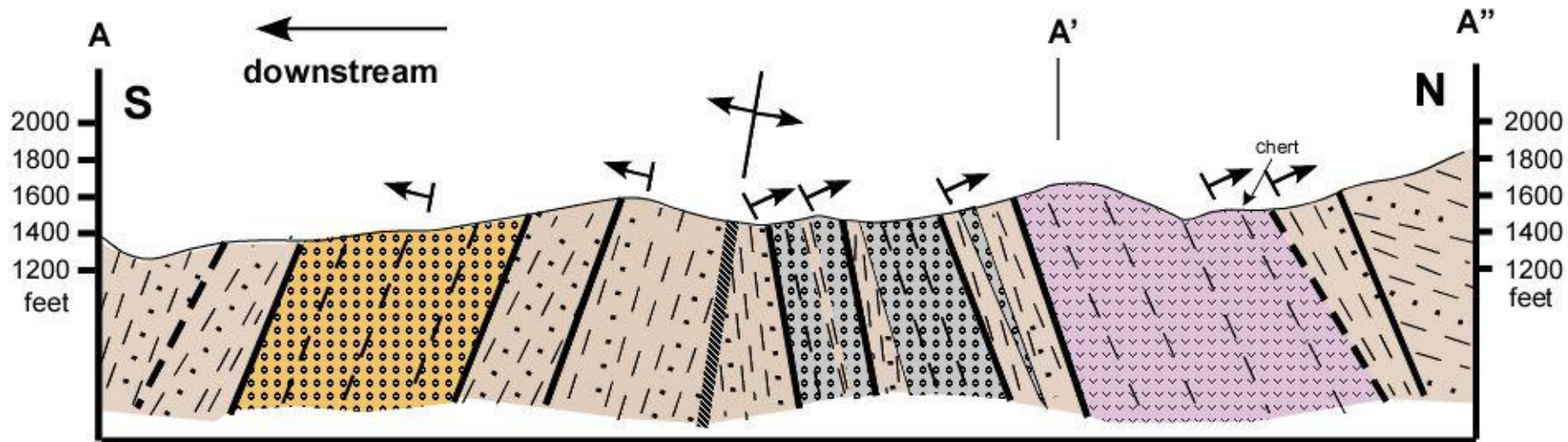
- graywacke and argillite
- Volcanics
- Mainly volcaniclastics
- Chert pebble conglomerate
- Fault, observed or inferred
- Fault likely
- isoclinal fold hinge, highly deformed
- strike and dip of bedding, top unknown
- strike of vertical bedding, top unknown
- strike and dip of bedding, top known
- strike and dip of bedding, overturned, top known


Scale: 0 500 1000 m

North Arrow: N





Work in progress




 Graywacke and Argillite

 Volcanics


 Mainly volcanoclastics

 Chert pebble conglomerate

 Fault

 Fault?

 Fault zone,
highly deformed

 up direction determined by
graded bedding or by infer-
ring that the chert bed in the
volcanic section is at the top

Graywacke and Argillite



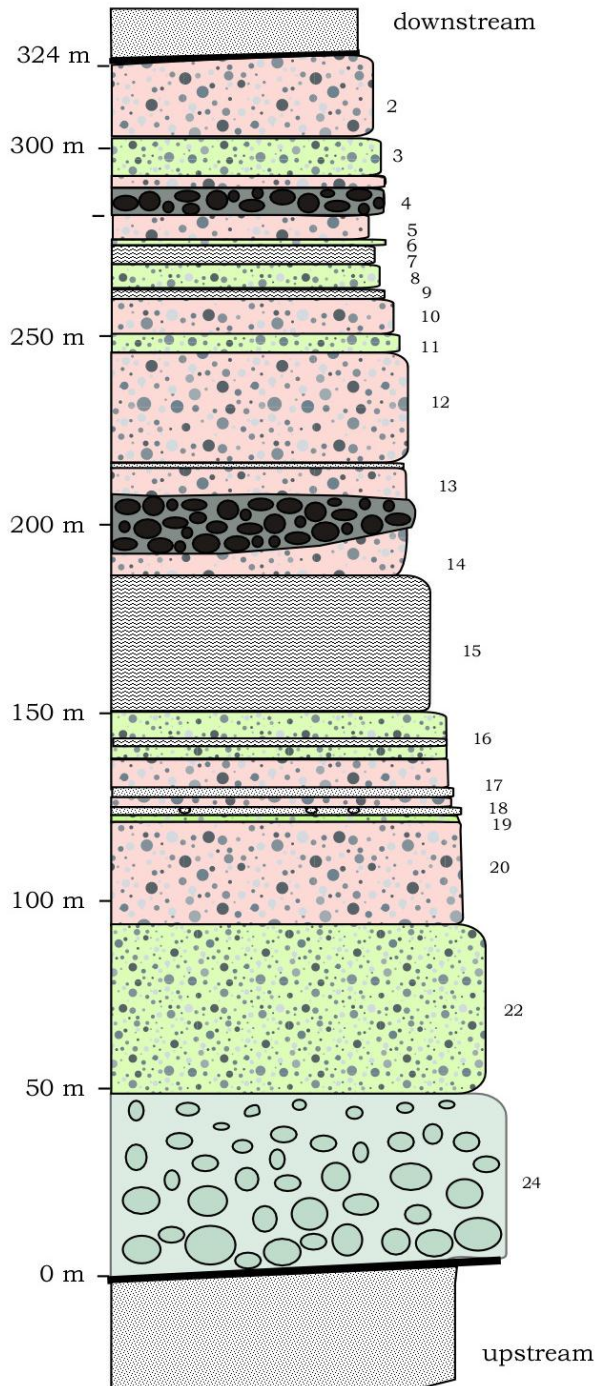
Most of the graywacke/argillite looks like this; thick bedded graywacke is a relatively minor component





Volcaniclastic section

- ~ 325 meters thick
- 100% exposure
- Deposited by sediment gravity flows
- Sediment is mainly of volcanic origin
- ~10-15% is graywacke/argillite



Volcanogenic "valley-fill"
Grindstone Creek



Greenish, reddish, or gray, poorly sorted, volcanogenic sandstone/mudstone with scattered pebbles and small cobbles. Most clasts are from 1-2 cm across; max typically to 15 cm. Most clasts are green or red, larger clasts are red. Elongate clasts are roughly aligned with bedding.



Poorly to moderately well-sorted, very well-indurated, volcanogenic conglomerate. Clast size typically up to 20 cm



Cobble and boulder volcanogenic conglomerate; clasts are light green to gray and up to 1 meter in diameter. fines upward, very well indurated; holds up narrowest canyon walls



Graywacke and argillite, rare conglomerate clasts



Sheared argillite with lenses of silt and occasional sandstone. Sandstone layers are typically sheared/boudin-shaped.

Work in progress

Near the base of
the volcanoclastic
section



06/18/2013

Lower part of
basal
conglomerate



Basal
conglomerate



Middle part of Basal conglomerate



06/19/2013



06/18/2013

Bulk of section consists poorly sorted, volcaniclastic pebbly sandstone and mudstone; may be red or green

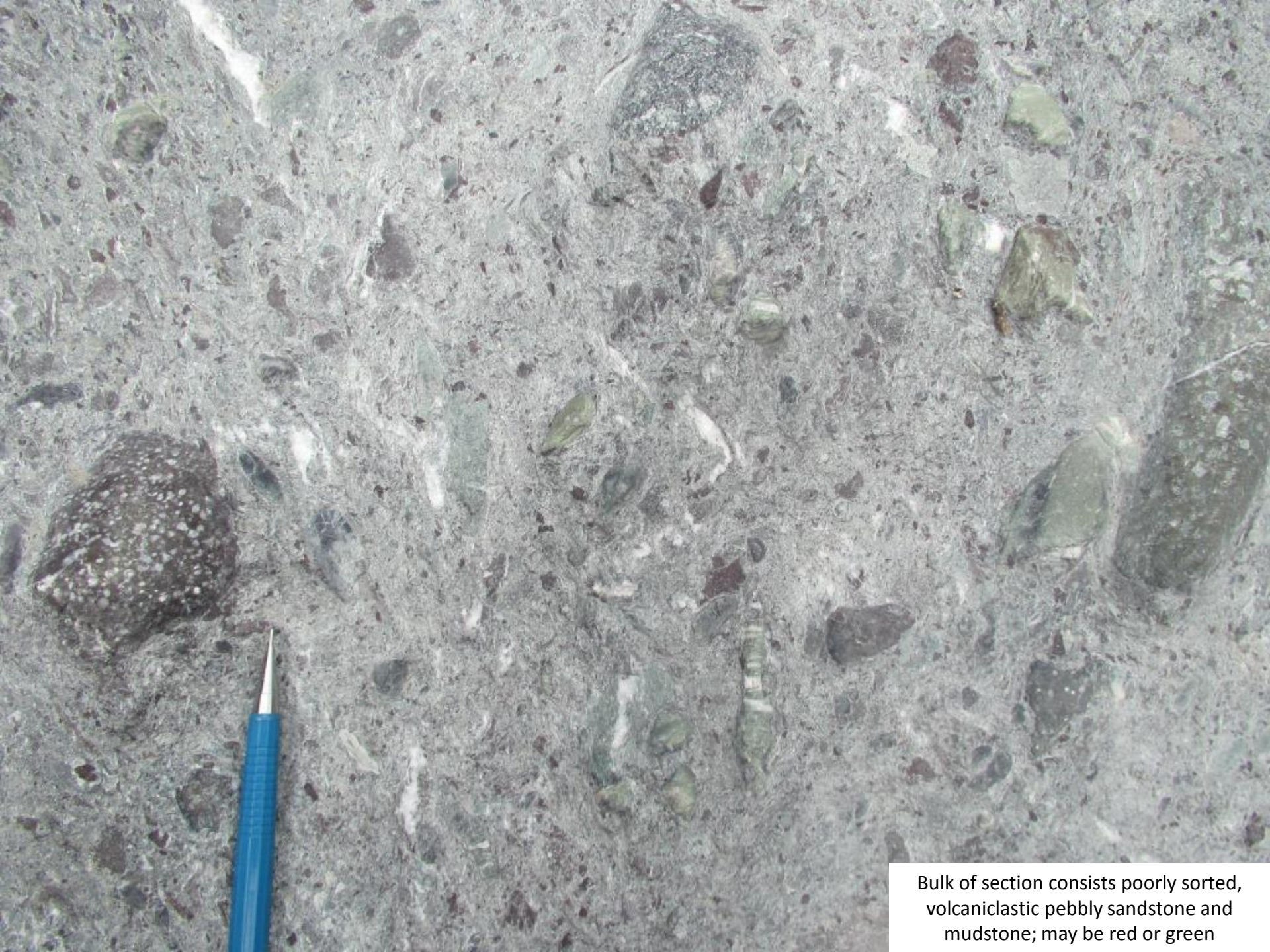


06/18/2013

Bulk of section consists poorly sorted, volcaniclastic pebbly sandstone and mudstone; may be red or green



Poorly sorted, volcaniclastic pebbly sandstone/mudstone with a few clasts to 10 cm



Bulk of section consists poorly sorted, volcaniclastic pebbly sandstone and mudstone; may be red or green



06/18/2013

Bulk of section consists poorly sorted, volcaniclastic pebbly sandstone and mudstone; may be red or green



Clast-supported conglomerate



Clast-supported conglomerate



Clast-supported conglomerate



Graywacke and argillite near middle of conglomeratic section

Top of
volcaniclastic
section

Graywacke-
argillite

Fault contact



Volcanic sequence

- ~ 400 meters thick
- 100% exposure
- Seamount origin?
- Chert at top



Entering the gorge
at the base of the
volcanic section



Volcanic section

Volcanic section



Pillow lava?



“Stretched” pillows?



Volcanic section



Volcanic section



Volcanic section



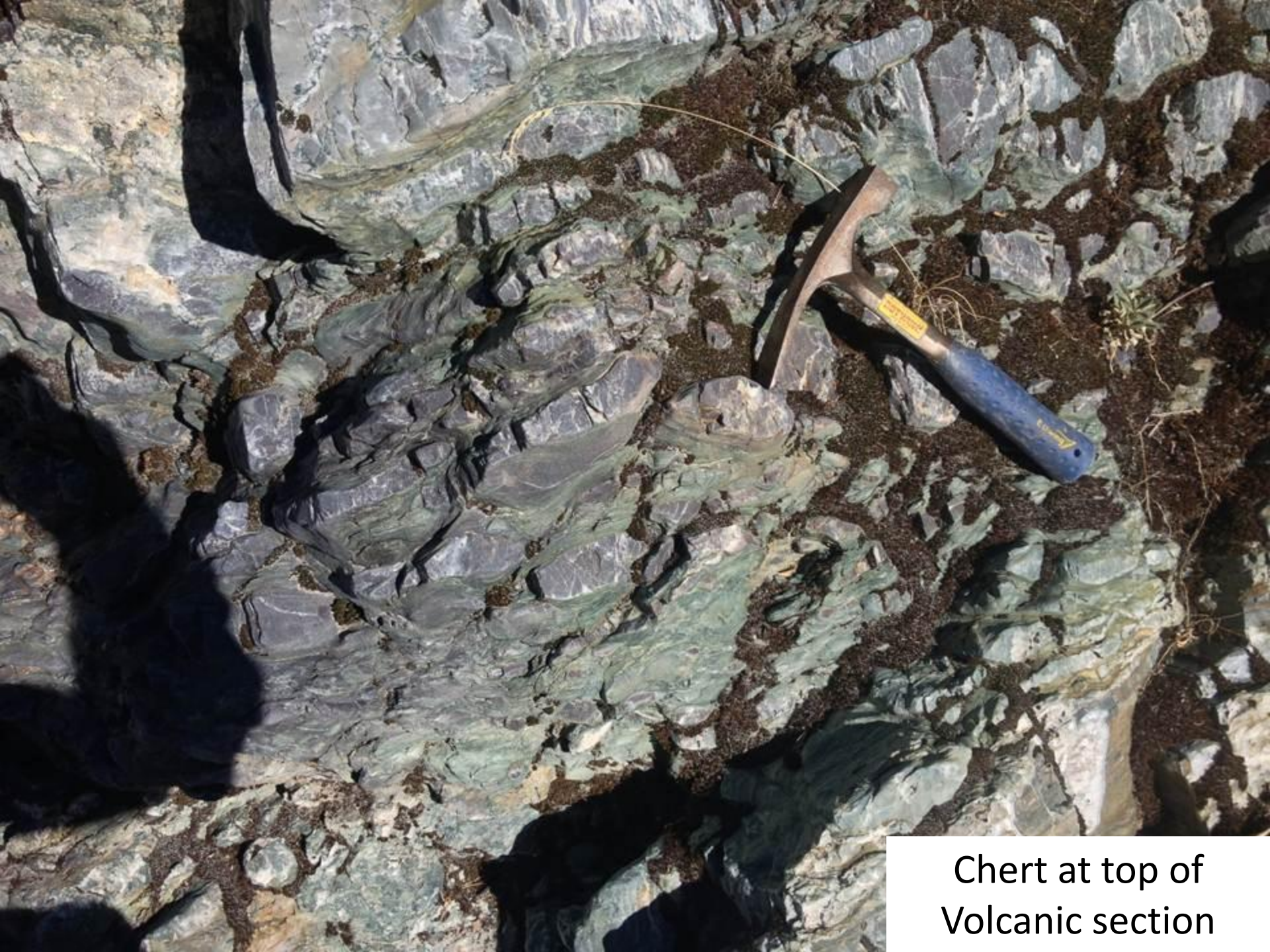
Volcanic section



Volcanic section



Volcanic section



Chert at top of
Volcanic section

Chert-Pebble Conglomerate

Pebble
Conglomerate



Chert Pebble Conglomerate





Chert-pebble Conglomerate

Chert-pebble Conglomerate



Chert-pebble Conglomerate



Chert-pebble Conglomerate



Hinge zone of Isoclinal fold

Isoclinal fold hinge zone

