

Supplemental File A:  
Compilation of field based offset measurements

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[illegible]

**LIDAR #**

101

UTM in WGS84

N 38 27 460

E 05 65 185

**TEAM:**

Harvey Sousa  
Schauer Strel

**DATE (4/2014) / TIME:**

4-16-14 16:16

Strike/Dip of fault: N 135°E

**Note on local lithology:**

volcanic bedrock  
covered with big cobbles

**Note on local geomorphology:**

shallow channel mantled in  
cobbles

**Confident this is a real offset feature?**

YES / NO

channel is there

Confident that the **geometry** chosen in screenshot is  
ACCURATE? YES / NO

Confident that the **projections** chosen in screenshot are  
ACCURATE? YES / NO

**DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:**

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) 0.5 - 0.8 cm

Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)

Feature extents

Quality rating of previous LiDAR measurement : none, poor, fair, good, or very good (Explain why)

Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating)

176-290 cm

well defined

+

distinct features

see Schauer  
photo

3

**Photo IDs (If file names are similar, include photographer's initials:**

1205-1211 JMS

## LiDAR #

UTM in WGS84

TEAM:

DATE (4/2014) / TIME:

N 38

27 435

Harvey Scherer

4-16-14

16:02

E 05

65 204

Stack Soren

Strike/Dip of fault:

Note on local lithology:

soft white volcanic ash/  
andesite (platy weathering)

Note on local geomorphology:

thin fan in a  
broad bedrock channel  
alluvial fill

Confident this is a real offset feature?

YES / NO

Confident that the **geometry** chosen in screenshot is

ACCURATE? YES / NO

Confident that the **projections** chosen in screenshot are

ACCURATE? YES / NO

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) 1.5 m. 1.5 m.

Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)

Feature extents

Quality rating of previous LiDAR measurement : none, poor, fair, good, or very good (Explain why)

Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating)

1.5 m (eyeball)

tape measure ~~120~~ cm → 150 cm.  
110 cm -



LiDAR #

UTM in WGS84

TEAM:

DATE (4/2014) / TIME:

103

N 38 27 393

Sousa Schärer

4/16/14 3:17

E 05 65 233

Barney Stock

Strike/Dip of fault:

Note on local lithology:

volcanic rock - prob hb-bit dacite  
big crystals

Note on local geomorphology:

pediment contact w/ steep channel w/ (eroding bedrock flanks)

Confident this is a real offset feature?

YES / NO

Confident that the **geometry** chosen in screenshot is

ACCURATE? YES / NO

Confident that the **projections** chosen in screenshot are

ACCURATE? YES / NO

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

need to be closer to the fault + account for curvature of features

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) 1 meter (Mar Schärer 10m away)

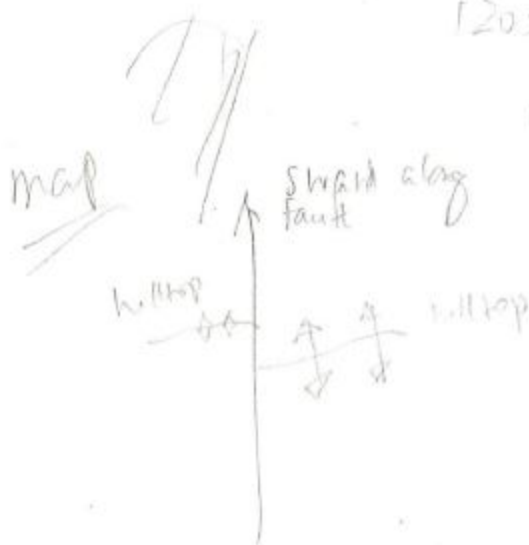
Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)

Feature extents

Quality rating of previous LiDAR measurement: none, poor, fair, good, or very good (Explain why)

because of overly simplified morphology  
Morphology of feature.

Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating)

none - not feasible. measured on top of hill  
horiz. (local slope)  
120 ± 50 offset measured with tape  
no vertical mag. but could have  
10 or 20 cm E side?

21 Dec. '12 cont'd



3 bad attempts  
at rubbing of  
east side root

$247 \text{ cm} \pm 1 \text{ cm}$

but one other possible  
matching root

$160 \pm 1 \text{ cm}$

alt. 1 & 2  
outline

LiDAR #

UTM in WGS84

TEAM:

DATE (4/2014) / TIME:

111

N 38 38 26 839

E 05 65 723

Sivan Janet Kate  
Nayan Frank  
Joann

4-15-14 18:00 hours

Strike/Dip of fault: N 40 E subvertical RW

Note on local lithology:

talus slope w/ volcanic blocks and boulders

Note on local geomorphology:

stream gully, 2 1/2 m deep channel, w/ 2 levels of inset terrace

Compass

Confident this is a real offset feature?

YES / NO

Confident that the **geometry** chosen in screenshot is

ACCURATE? YES / NO

Confident that the **projections** chosen in screenshot are

ACCURATE? YES / NO

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) 4 separate scarp

Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)

Feature extents

Quality rating of previous LiDAR measurement: none, poor, fair, good, or very good (Explain why)

Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating)

160 cm offset that may ± 0.5 m  
or 250 cm from Kate

LiDAR #  112	UTM in WGS84	TEAM:  w/ Ryan	DATE (4/2014) / TIME:
	N 3826798		4/14/14
	E 0565763		Strike/Dip of fault:

Note on local lithology: <i>This</i> Talus covering volcanic rocks (porphyric lava)	Note on local geomorphology: upstream has talus lobes with swales in between downstream has a prominent channel, but might be following shutter ridge, not go up the swales
Confident this is a real offset feature? YES / <u>NO</u>	Confident that the <b>geometry</b> chosen in screenshot is ACCURATE? YES / <u>NO</u> Confident that the <b>projections</b> chosen in screenshot are ACCURATE? YES / <u>NO</u> <i>dx</i>

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

Max offset  
 Min offset  
 Preferred offset, and explain what it is based on  
 Fault zone width (explain why)  
 Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)  
 Feature extents  
 Quality rating of previous LiDAR measurement: none, poor, fair, good, or very good (Explain why)

Quality rating of current field measurement: nothing to measure, poor, fair, good, or very good (include description to support your rating)

*Hard to see. Too zoomed out. No mappable offset feature. Fault zone is also not well located.*  
*Nothing to measure in the field.*  
*Location of blue swale is questionable. No downstream feature to match, despite what profile shows. If our field location of fault and blue profile is correct, it's in this shutter ridge parallel depression.*  
*It may be possible to find matching features if profiles are drawn closer to fault. It's too subtle to identify in the field, though.*



# LiDAR #

UTM in WGS84

N 38 26756

E 0565824

TEAM:

Ryan joined

DATE (4/2014) / TIME:

4/14/14

Strike/Dip of fault: same as before

Note on local lithology:

unknown (not too thick) ~ 5-10?? no rock talus

Note on local geomorphology:

not in deep channel within talus deposit

Confident this is a real offset feature?

YES / NO

great channel but the profile only uses S edge to make the actual measurement

Confident that the **geometry** chosen in screenshot is ACCURATE? YES / NO

Confident that the **projections** chosen in screenshot are ACCURATE? YES / NO

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) ~ 2 m.

Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?) see map

Feature extents

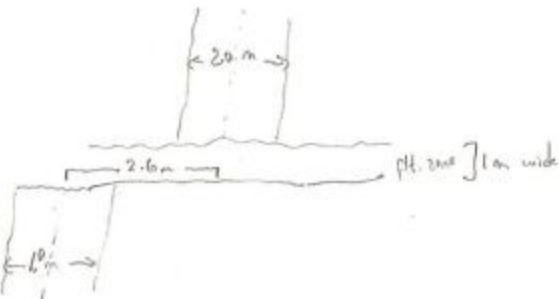
Quality rating of previous LiDAR measurement : none, poor, fair, good, or very good (Explain why)

profile doesn't capture channel geometry well. Only projects basin on S edge upstream yellow line can be better but hard to see from hillshade.

Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating)

dit 2nd narrow feature linear might be small curvature of channel right at fault zone.

Single trace of fault. Offset 26 ± 0.5



<b>LiDAR #</b> 116 = 115	<b>UTM in WGS84</b> N 38 26 743	<b>TEAM:</b> SKJFJ KJSF5 JFK5J	<b>DATE (4/2014) / TIME:</b> 3:30 PM 4/15
	E 05 65 847		<b>Strike/Dip of fault:</b> 130°/
	<b>Note on local lithology:</b> Talus (<10cm) thick, over volcanic breccia. Scarp exposed in volcanic bedrock.		
<b>Note on local geomorphology:</b> Offset <u>bedrock</u> incised channel. unknown substrate. But not very thick (can't be)			
<b>Confident this is a real offset feature?</b> YES / NO			<b>Confident that the <i>geometry</i> chosen in screenshot is ACCURATE?</b> YES / NO <i>profiles ok</i> <b>Confident that the <i>projections</i> chosen in screenshot are ACCURATE?</b> YES / NO <i>see note below on yellow line</i>
<b>DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:</b>			
Max offset Min offset Preferred offset, and explain what it is based on Fault zone width (explain why) Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?) 130° Feature extents Quality rating of previous LiDAR measurement : none, poor, <u>fair</u> , good, or very good (Explain why) <i>correct feature is picked Trend is not.</i> Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating) Similar to previous location. Oblique profile not capturing good channel morphology. Channel is offset. <del>8m</del> Yellow line can be drawn better, on the upstream, taking the entire linear trend of channel. Channel might take a bend in towards the fault that seems to influence upstream bend of the yellow line. Field measurement of thalweg offset is 1.50 - 3.5 m depending on how much deflection you assume prior to capturing.			

LiDAR #

UTM in WGS84

TEAM:

DATE (4/2014) / TIME:

N 38

26 676

A2C12 Shaver

4/15/14

14:41

E 05

65 931

Stark Sousa  
Harvey

Strike/Dip of fault:

Note on local lithology:

talus in bedrock

Note on local geomorphology:

channel in talus

Confident this is a real offset feature?

YES / NO

Confident that the **geometry** chosen in screenshot is  
ACCURATE? YES / NOConfident that the **projections** chosen in screenshot are  
ACCURATE? YES / NOThere are channels  
in 4 m wide fault zone

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) 40 m - &gt; 3 strands -

Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)

Feature extents

Quality rating of previous LiDAR measurement : none, poor, fair, good, or very good (Explain why)

for location.

Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating)

12 m - 25 m depending on continuity of downstream  
channel that way into FZ  
good for this stand,

LiDAR #

UTM in WGS84

TEAM:

DATE (4/2014) / TIME:

119

N 38 26 653

E 05 65 760

Arceiz Sousa  
Schauer Harvey  
Stack4/15/14 14:27  
Strike/Dip of fault: N75°W here

Note on local lithology:

alluvium

Note on local geomorphology:

smooth alluvial slopes  
cut by channels

Confident this is a real offset feature?

YES / NO

Confident that the **geometry** chosen in screenshot is  
ACCURATE? YES / NOConfident that the **projections** chosen in screenshot are  
ACCURATE? YES / NO

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) tens of meters, many fractures

Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)

Feature extents

Quality rating of previous LiDAR measurement : none, poor, fair, good, or very good (Explain why)

Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating)

Thalweg offset 1.2 m lowest Thalweg 0.5 m wide  
1.2 m  $\pm$  0.5 m

12

Photo IDs (If file names are similar, include photographer's initials:



LiDAR #  123	UTM in WGS84	TEAM:	DATE (4/2014) / TIME:
	N 38 26 216	Samsa, Witkosky	4/14/2014 17:40
	E 05 66 244	Stack	Strike/Dip of fault: <sup>max. w/ RMT boundary</sup> N146°E vertical
Note on local lithology: alluvial channel dominant into talus layers + blocky talus of red foliated flow banded <sup>to</sup> bearing lava		Note on local geomorphology: channel adjacent to shutter ridge formed by lava blocks.	
Confident this is a real offset feature? YES / NO		Confident that the <b>geometry</b> chosen in screenshot is ACCURATE? YES / NO Confident that the <b>projections</b> chosen in screenshot are ACCURATE? YES / NO	
DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:			
Max offset 4.0m ± 1.5m in the field measured from corner of channel 1 Min offset Preferred offset, and explain what it is based on Fault zone width (explain why) 1m / witkosky compass Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?) Feature extents Quality rating of previous LiDAR measurement : none, poor, fair, good, or very good (Explain why) Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating) 1.5 m of uncertainty due to width of channel			

Photo IDs (If file names are similar, include photographer's initials:  
1067, 1068 JMS DCIM

LIDAR #  128	UTM in WGS84	TEAM:	DATE (4/2014) / TIME:
	N 38 25816	Kate + J + J + R	14 2:04 PM
	E 56 6512	+ F + S	Strike/Dip of fault: 145°

Note on local lithology: Volcanic lavas Siltstone up stream ? channel sand clausure Proclastic flow	Note on local geomorphology: Downstream broad ridge upstream Siltstone shelf.
---	---

Confident this is a real offset feature? YES / NO	Confident that the geometry and projections chosen in screenshot is ACCURATE? YES / NO
--	--

DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:

Sinan way point 34

Max offset

Min offset

Preferred offset, and explain what it is based on

Fault zone width (explain why) — 1.5m

Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?)

Feature extents

Quality rating of previous LIDAR measurement : none, poor, good, or very good (Explain why)

Quality rating of current field measurement: poor, good, or very good (include description to support the rating given)

profiles drawn too close to fault to capture an offset to topography. (Joann)

Feature is not linear. Profile downstream is good. upstream profile would change a lot if moved from fault.

360 ± 300 cm

profile on upstream side changes dramatically if you move to/from fault.

Photo IDs (If file names are similar, include photographer's initials:

20 Dec 2012 w/ Joann Stock  
w/ Frank Souza  
→ many D800 photos shot @ RCN11

RCN12 immed. NW of  
offset bomb crater site  
10:20 a.m.

offset channel  $7.50 \pm 2$  m


11 S 0566563 UTM  
3825743

Waypt #270, kutt mobile GPS



offset marked by  
: poles in photos  
feature is line @ intersect  
of channel margin and thalweg  
downstream channel broad-flat  
- shutter ridge w/ splay on NW  
channel is ~1 m deep and  
ridge on NW of it is ~1 m





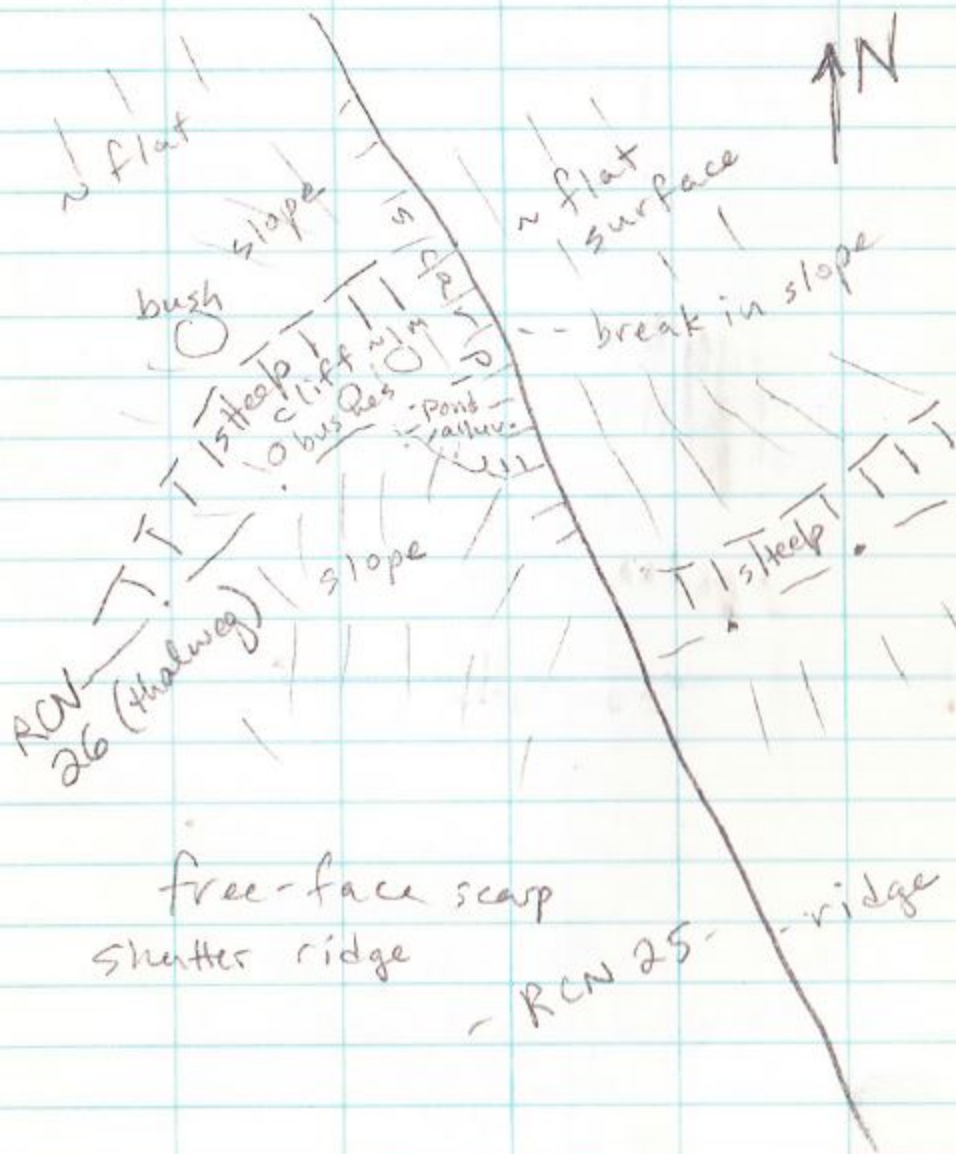
RCN 27  
2.9 m  $\pm$  0.5 m

10 m



22 Dec. 2012 - w/ Joann Stock  
& Frank Sousa

[RCN 9 = channel margin  
RCN 26 = thalweg (GeoXt)]







**south  
piercing point**

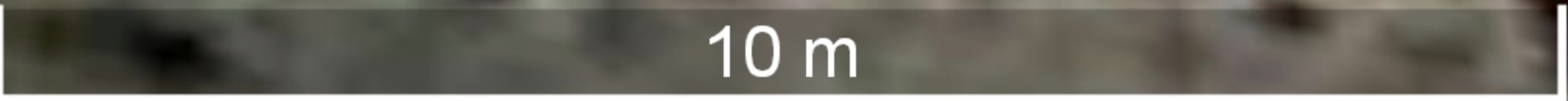
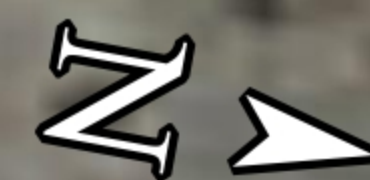
**north piercing point**

**RCN 25**

**3.7 m +/- 0.5 m**

10 m







11/26/12: RCN = Rainbow Cyn North

RCN8 - crest of broad ridge

SW side well-defined but  
gently sloping  $\pm 1$  m

NE side very broad - flat top  
can only locate ridge

Crest line within  $\pm 2$  m

" $4 \pm 3$  m" pulled tape to  
show 400 cm then took  
photos from all around site

---

at DZ/TC LiDAR interp.

sites N of RCN8

features are too broad  
and indistinct to measure

Shutter ridge but no distinct  
upstream channel

Ridge<sup>crest</sup> is several m's wide  
and<sup>n</sup> dissected by en-echelon  
fracture set ( $\sim$  N-S) - messy

---

RCN9 - thalweg of channel

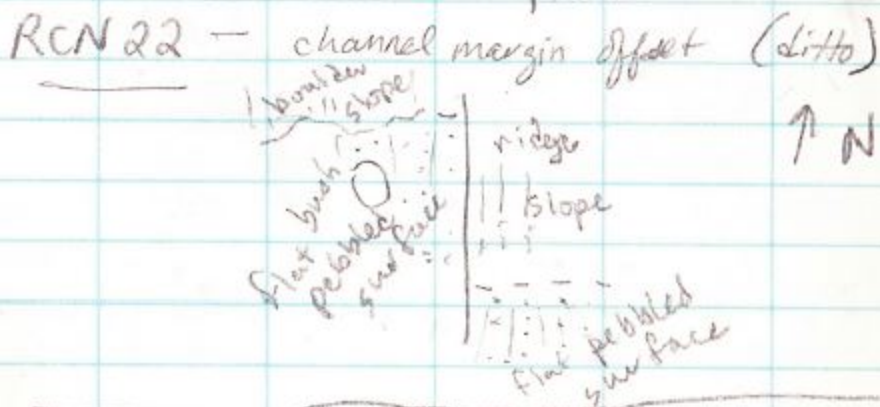
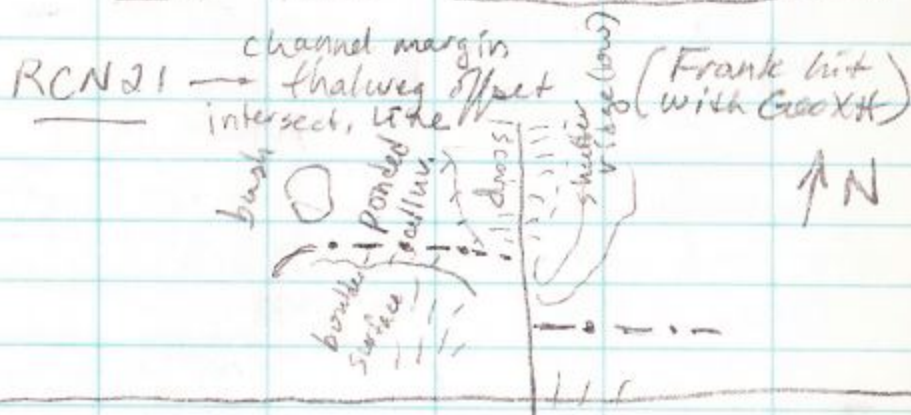
$280 \pm 100$  cm but this is  
a minimum; downstream NE  
edge of shutter ridge, but

SW upstream channel is <sup>very</sup>  
filled with caliche + gouge collapses



22 Dec. 2012 - MCAGCC w/ Joann  
now PG-1 Rainbow & Frank

@ Treiman et al. Canyon North (RCN)  
510 cm (N of "white plate" site)

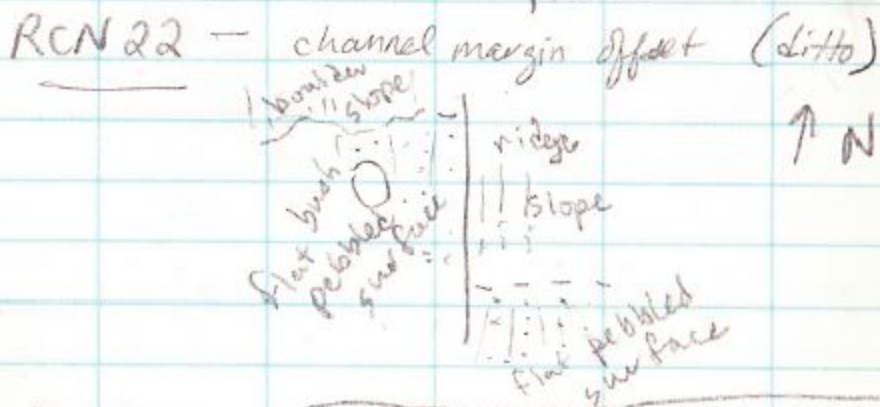
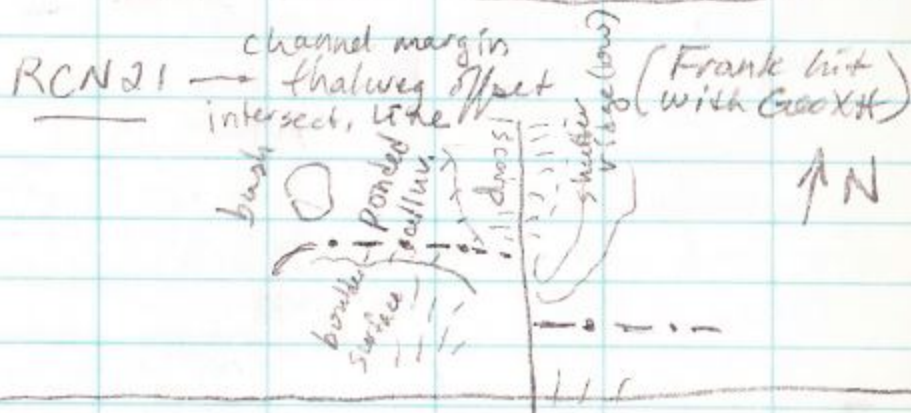


RCN23 - Bomb crater on NE side  
and matching (?) schrapnel  
spray on SW side - not a  
clean crater edge though.  
Not measurable, too broad  
approx.  $2\text{ m} \pm 2\text{ m}$  apparent  
offset, too diffuse schrapnel  
to be able to use it.

LiDAR #  135	UTM in WGS84	TEAM:  SA BS JMS	DATE (4/2014) / TIME:  4/17/14 17:09
	N 38 25 611 E 05 66 642		Strike/Dip of fault:
Note on local lithology:  volcanic bedrock w/ talus cover big E side uplift		Note on local geomorphology:  Channel in fan downstream: narrow fan with channel w/ boulder levels upstream: lobate deposits of alluvial silt on side slopes	
Confident this is a real offset feature? YES / NO		Confident that the <b>geometry</b> chosen in screenshot is ACCURATE? YES / NO Confident that the <b>projections</b> chosen in screenshot are ACCURATE? YES / (NO) W side proj. incorrect	
DESCRIBE the extent to which you can/cannot validate the measurement reported within the screenshot. Include a sketch with piercing points, if feature is identified:  Max offset Min offset Preferred offset, and explain what it is based on Fault zone width (explain why) 2m Fault zone trend, and what it is based on (compass? 12°E magnetic declination, GeoXH?) Feature extents Quality rating of previous LiDAR measurement: none, poor, fair, good, or very good (Explain why) projection error. Quality rating of current field measurement: poor, fair, good, or very good (include description to support your rating) <div style="text-align: center;">             no projection → 280 (halfway fresh)              = 370 ←           </div> <div style="display: flex; justify-content: space-between;"> <div>             That way comes very close to #2 ± 50cm           </div> <div>             did not use broader fan of channel           </div> </div>			

22 Dec. 2012 - MCAGCC w/ Joann  
now PG-1 Rainbow & Frank

@ Treiman et al. Canyon North (RCN)  
510 cm (N of "white plate" site)



RCN23 - Bomb crater on NE side  
and matching (?) schrapnel  
spray on SW side - not a  
clean crater edge though.  
Not measurable, too broad  
approx.  $2\text{ m} \pm 2\text{ m}$  apparent  
offset, too diffuse schrapnel  
to be able to use it.



RCN 33  
2.9 m  $\pm$  0.5 m



10 m



**RCN 32**  
**3.5 m +/- 0.5 m**



10 m



**RCN 31**  
**2.4 m +/- 0.5 m**



10 m





**RCN 30**  
**2.9 m +/- 0.5 m**



**10 m**



HM '99 "BSSA Site 4"

11-26-12 w/ Frank Sousa &

@ South end: Janet Harvey

along fault in-plane "RCN1"

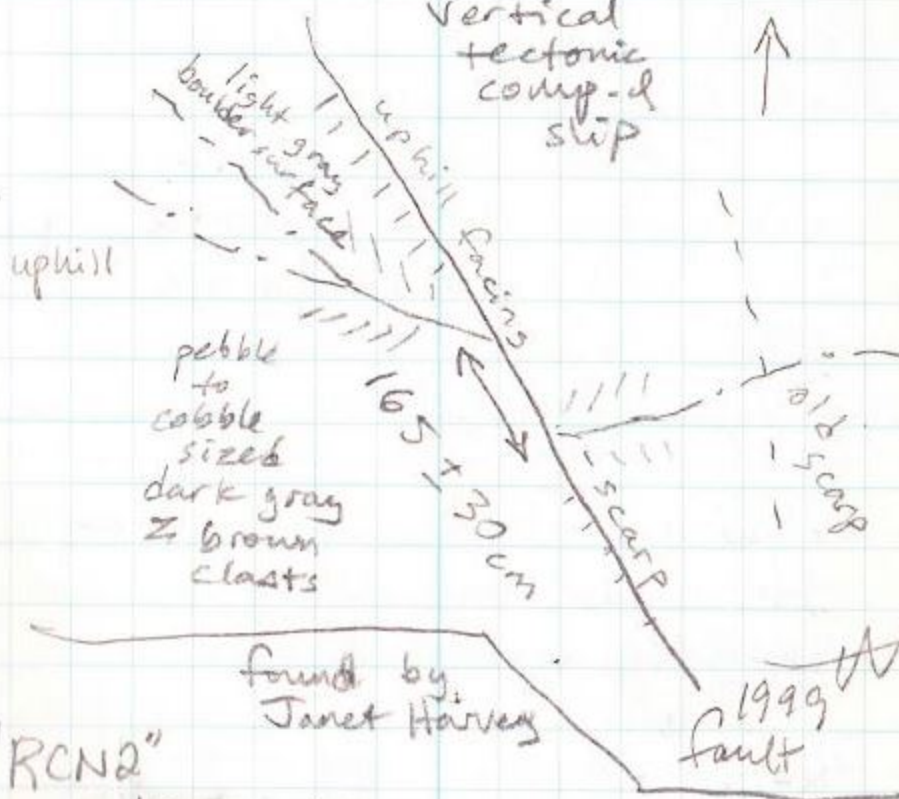
→  $165 \pm 30$  cm r.d.

(S end 15 cm lower than N end of tape) { but channel drops elev'n. too

plunge →

than N end of tape

no obvious  
vertical  
tectonic  
comp-d  
slip



"RCN2"

130 - 165 cm (sort of  $145 \pm 20$ )

flat pebbled surface  
on north side of line

bouldered surface (higher)

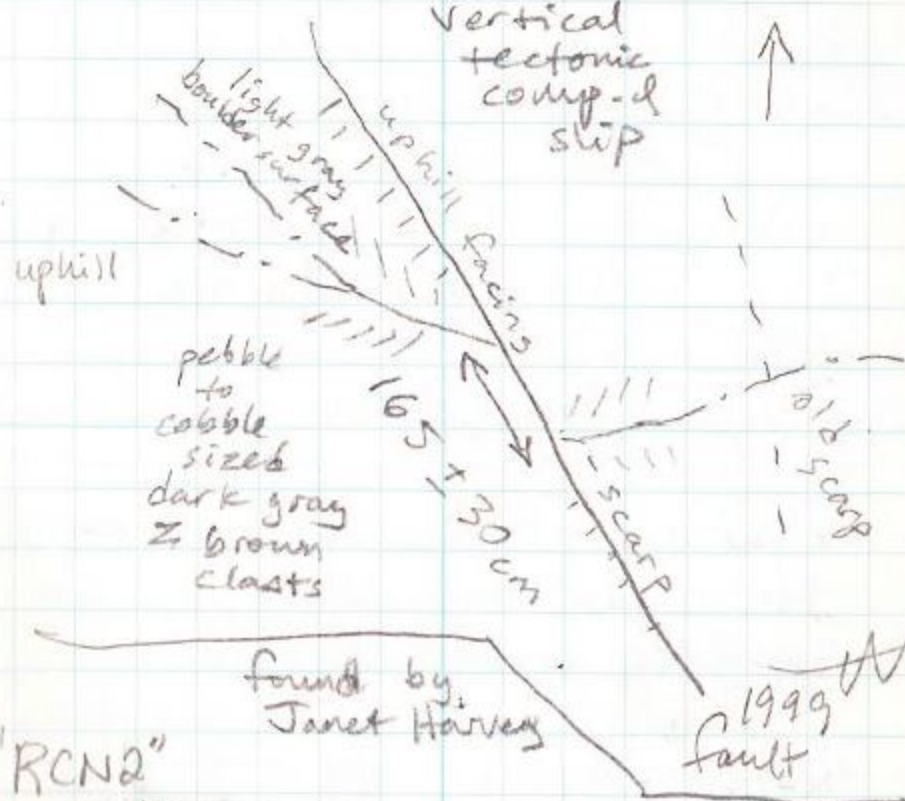


HM '99 "BSSA Site 4"  
11-26-12 w/ Frank Sousa &  
Janet Harvey

① South end: "RCN1"  
along fault in-plane

→  $165 \pm 30$  cm r.d.  
(S end 15 cm lower  
plunge → than N end of tape) <sup>but channel drops elev'n. too</sup>

no obvious  
vertical  
tectonic  
comp-d  
slip



"RCN2"

130 - 165 cm (sort of  $145 \pm 20$ )

flat pebbled surface  
on north side of line  
bouldered surface (higher)

11/27/12: @ ridges & gullies

~ noon

~ 50-150 m south

"RCC7"

of Treiman et al's  
'max. slip' site

We think this is Rymer's EDM  
site (he sent us photo  
and coord's - check it)

"RCC7A":

Least deep of 3 distinct  
channels was best-looking  
feature, so we measured it  
 $5.5 \pm 0.5$  m using tape  
but Kate noted small  
secondary uphill channel that'd  
make it only 3.7 m instead

Kate hit all 3 channels w/

GeoXH

NW —  $\frac{C}{A}$  —  $\frac{B}{A}$  — SE

All here is a min. due to a  
significant secondary trace  
up-slope (E) from here.

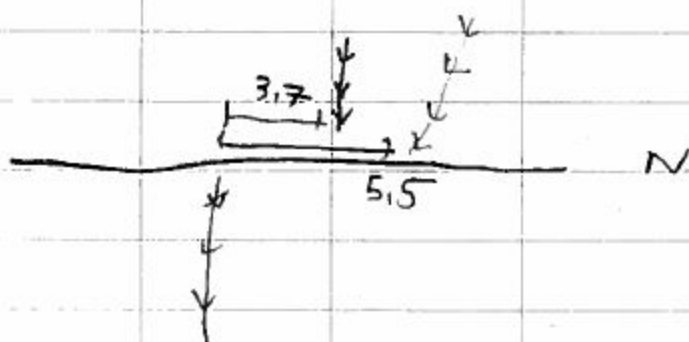
C tapes at ~2.5-4.0 m

lots of discussion w/ Kate

RCC 7 = WP194

Feature A = small ch on flat hill slope

Max / best est tape = 5.5 m  $unc = 0.5$



3.7 = measurement to small ch that could have been connected. But does not seem as good a match wrt shape (broader vs more V)

RCC7 - chB = narrow channel [S of ch A].

Unclear if / how it jogged before?

just ~~of~~ fault = 2 ft step

tape = 5.8 m, ch width  $< unc = 0.7m$   
0.3m un on 2nd measurement.



[illegible]

50235, end  
of uphill  
facing scarp

JK 414

LM 400

\*-widz, alluv covered

lobatz ~~apron~~ w/

post 99 in 2015

location of  $-3$  is  
gone,  $-4$  is small

divot in fault scarp?

note this is low that CT matched for  $< \pi/48$ , yet

I won

Tape

AB 430

CD 432

EF 440

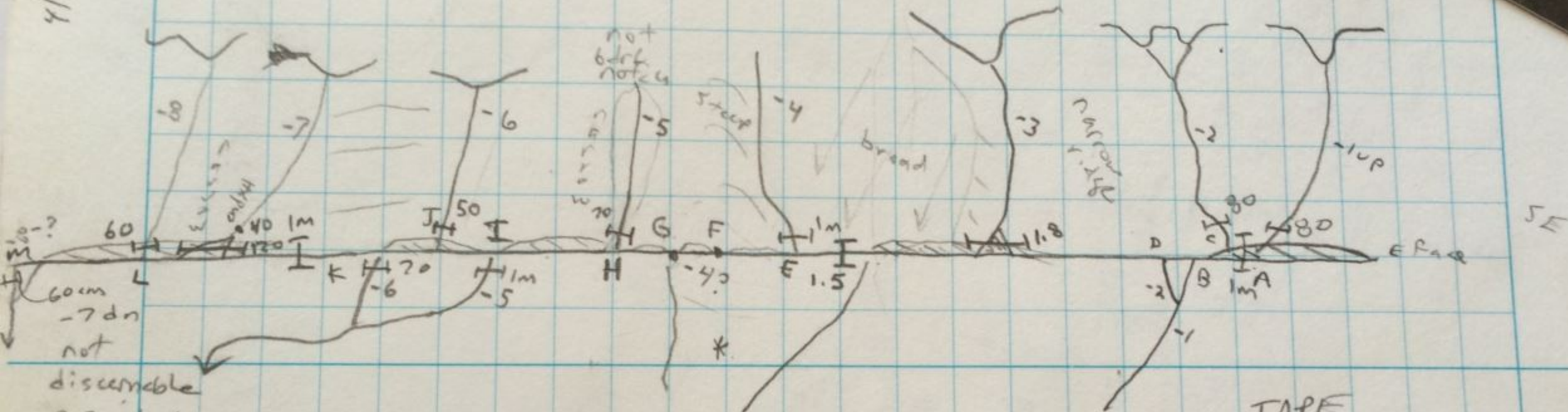
EG 7.6 m

-3 nodal stream thalweg

- 4 difficulty, no clear final way,  
do find nothing @ 440



4/17/14



60cm  
-7 dn  
not  
discernible  
-8? is a  
50235, end  
of uphill  
facing scarp

H I 426  
J K 414  
L M 400

\* wide, alluv covered  
lobate apron w/  
post 91 in 2130s  
location of -3 dn  
gone, -4 is small  
dip at in fault scarp?

note this is low that CT matched for < T148, yet  
I would

TAPE

AB 430  
CD 432  
EF 440  
EG 7.6m

-3 no dn stream thalweg  
-4 difficult, no clear thalweg,  
do find notch @ 440



A hand-drawn geological cross-section on grid paper. The profile is a horizontal line with various points labeled A through L. Above the profile, contour lines are drawn with elevations of -1, -2, -3, -4, -5, -6, -7, and -8. Below the profile, there are labels for '60cm - 7dm not discernible' on the left and 'TAPF' on the right. The profile itself has several vertical segments labeled with elevations: 60, 40, 1m, 50, 70, 1m, 5, 4, 1.5, 1.8, 80, 80, and 100. There are also labels for 'not bdrf. notes' and 'bread' near the center. The profile ends at a point labeled 'E' on the right. The entire drawing is on a blue grid background.

50235, end  
of uphill  
facing scarp

JK 414

LM 400

\*-widz, alluv covered

lobatz ~~apron~~ w/

post 99 in 2015

location of  $-3$  is  
gone,  $-4$  is small

divot in fault scarp?

note this is low that CT matched for  $< \pi/48$ , yet

I won

Tape

AB 430

CD 432

EF 440

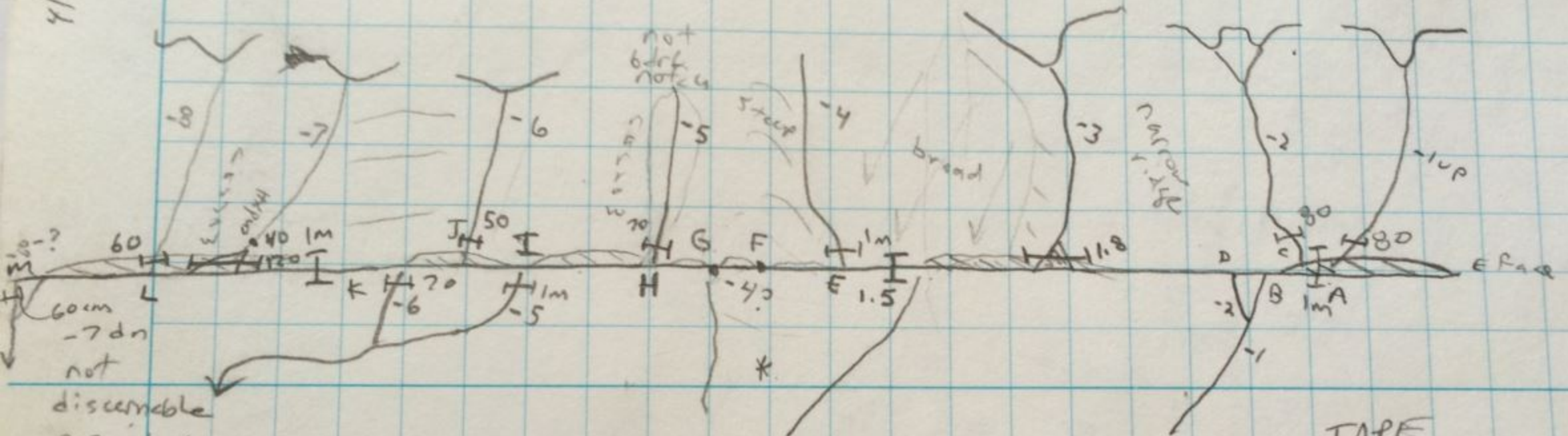
EG 7.6 m

-3 nodal stream thalweg

- 4 difficulty, no clear final way,  
do find nothing @ 440



4/17/14



60cm  
-7dn  
not  
discernible  
-8? is a  
50235, end  
of uphill  
facing scarp

H I 426  
J K 414  
L M 400

\* wide, alluv covered  
lobate apron w/  
post 91 in 2130s  
location of -3 dn  
gone, -4 is small  
dip at in fault scarp?

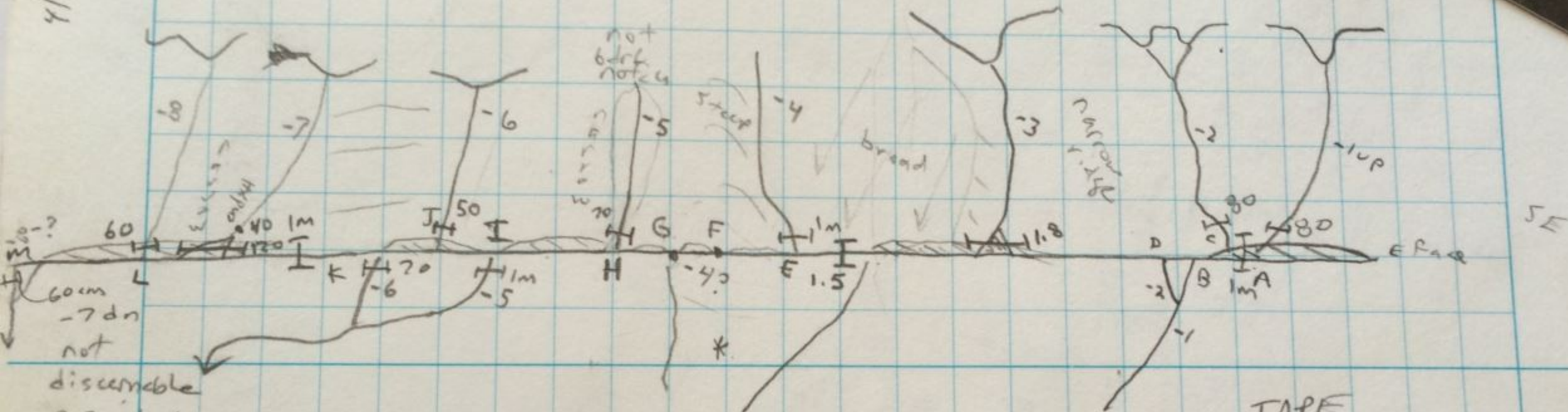
note this is low that CT matched for < T148, yet  
I would

TAPE  
AB 430  
CD 432  
EF 440  
EG 7.6m

-3 no dn stream thalweg  
-4 difficult, no clear thalweg,  
do find notch @ 440



4/17/14



60cm - 7 dm  
not discernible  
-8? is a  
50235, end  
of uphill  
facing scarp

H I 426  
J K 414  
L M 400

\* wide, alluv covered  
lobate apron w/  
post 91 in 2130s  
location of -3 dn  
gone, -4 is small  
dip at in fault scarp?

note this is low that CT matched for < T148, yet  
I would

TAPE  
AB 430  
CD 432  
EF 440  
EG 7.6m

-3 no dn stream thalweg  
-4 difficult, no clear thalweg,  
do find notch @ 440



[illegible]

HI 426  
JK 414  
LM 400

\* - wide, alluv covered  
 lobate apron w/  
 post 91 in 230s  
 location of -3 down  
 gone, -4 is small  
 divot in fault scarp?

note this is low that CT matched fir  $< \pi/48$ , yet  
I won

AB 430

CD 432

EF 440

EG 7.6 m

- 3 no in stream thalweg
- 4 difficult, no clear thalweg, do find notch @ 440

11/27/12; @ gullies & ridges S of  
Trenam et al. 'max'

RCC7B we taped  $5.8 \pm 0.7$

RCC7D (SE of B)

$3.3 \pm 1.2$  at thalweg

r.l. No obvious vertical

4.95 "max. reasonable"

1.40 "min. reasonable"

$\left( \begin{array}{c} 5.0 \\ 1.4 \\ 3.6 / 1.8 \end{array} \right) \begin{array}{c} \text{"} 3.2 \pm 1.8 \text{"} \\ \uparrow \end{array}$

go  
back  
to SE

channel ~1.5 m wide both  
upstream & downstream

RCC6

this sub-basin

w/ several channels

RCC6A - thalweg  $4.7 (\pm 1.2 \text{ m})$

[ridge  $4.4 (\pm 1.2 \text{ m})$

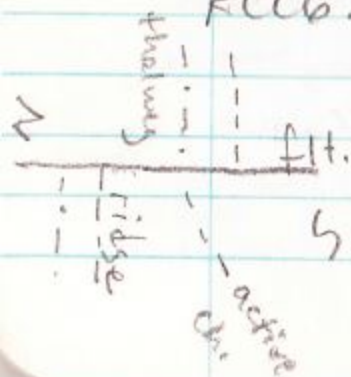
— min. reas. 3.4 m

— max. reas. 5.8 m

min. 3.5

max. 6.2

min/reas.  
reasonable  
on things

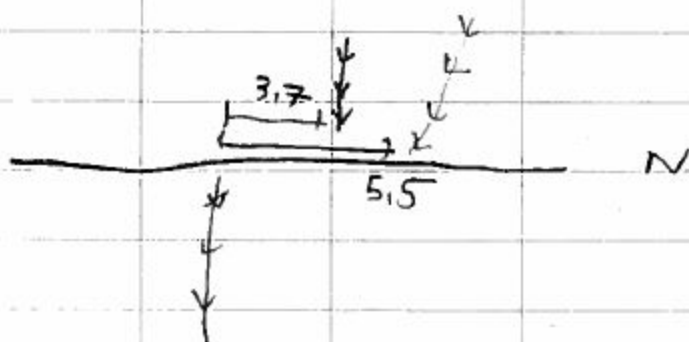




RCC 7 = WP194

Feature A = small ch on flat hill slope

Max / best est tape = 5.5 m  $unc = 0.5$



3.7 = measurement to small ch that could have been connected. But does not seem as good a match wrt shape (broader vs more V)

RCC7 - chB = narrow channel [S of ch A].

Unclear if / how it jogged before?

just ~~of~~ fault = 2 ft step

tape = 5.8 m, ch width  $< unc = 0.7m$   
0.3m un on 2nd measurement.

11/27/12; @ gullies & ridges S of  
Trenam et al. 'max'  
RCC7B we taped  $5.8 \pm 0.7$

RCC7D (SE of B)

$3.3 \pm 1.2$  at thalweg  
r.l. No obvious vertical

4.95 "max. reasonable"

1.40 "min. reasonable"

$\left( \begin{array}{c} 5.0 \\ 1.4 \\ 3.6 / 1.8 \end{array} \right) \begin{array}{c} \text{"3.2 \pm 1.8"} \\ \uparrow \end{array}$

go  
back  
to SE

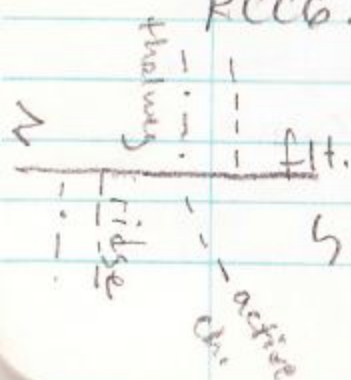
channel ~1.5 m wide both  
upstream & downstream

RCC6 this sub-basin  
w/ several channels

RCC6A - thalweg  $4.7 (\pm 1.2 \text{ m})$   
ridge  $4.4 (\pm 1.2 \text{ m})$   
— min. reas. 3.4 m  
— max. reas. 5.8 m

min. 3.5  
max. 6.2

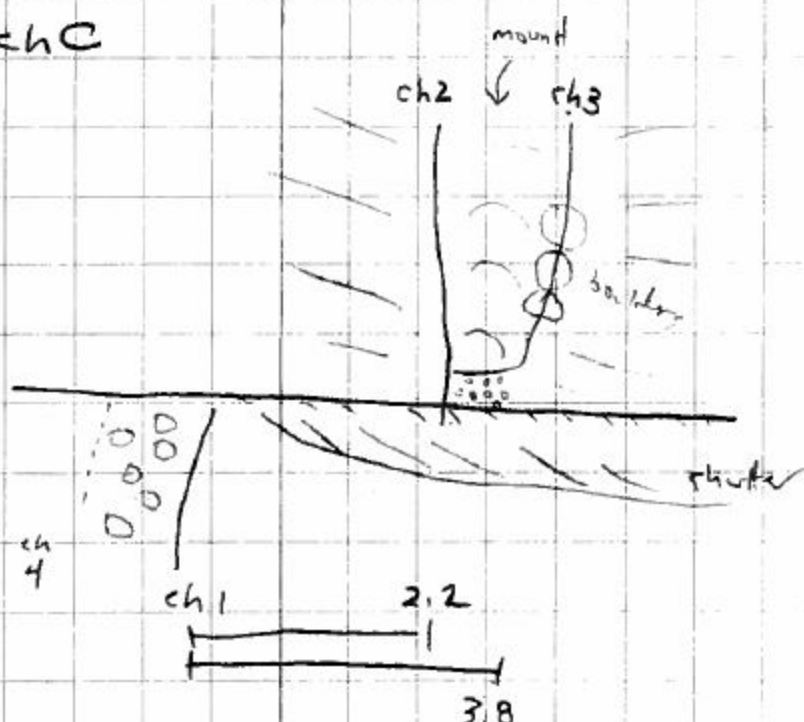
min/max  
reasonable  
on things



11/27/12

# Hector Mine

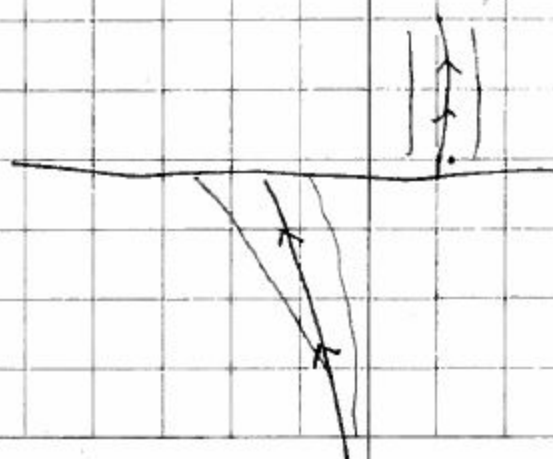
RCC7-chC



RCC7-chD WP=195

nice narrow ch on hill slope

tape 1st 3.3 +/- ~~1.5~~  
 4.9 +/- max  
 1.4 min





11/27/12; @ gullies & ridges S of  
Trenam et al. 'max'

RCC7B we taped  $5.8 \pm 0.7$

RCC7D (SE of B)

$3.3 \pm 1.2$  at thalweg

r.l. No obvious vertical

4.95 "max. reasonable"

1.40 "min. reasonable"

$$\left( \begin{array}{c} 5.0 \\ 1.4 \\ \hline 3.6 / 1.8 \end{array} \quad \begin{array}{c} \text{"} 3.2 \pm 1.8 \text{"} \\ \uparrow \end{array} \right)$$

go  
back  
to SE

channel ~1.5 m wide both  
upstream & downstream

RCC6

this sub-basin

w/ several channels

RCC6A - thalweg  $4.7 (\pm 1.2 \text{ m})$

[ridge  $4.4 (\pm 1.2 \text{ m})$

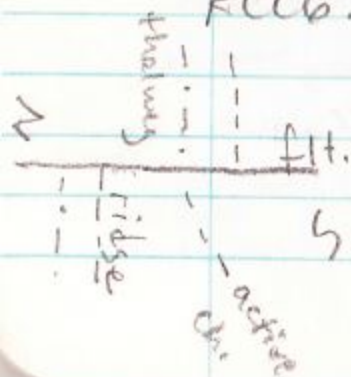
— min. reas. 3.4 m

— max. reas. 5.8 m

min. 3.5

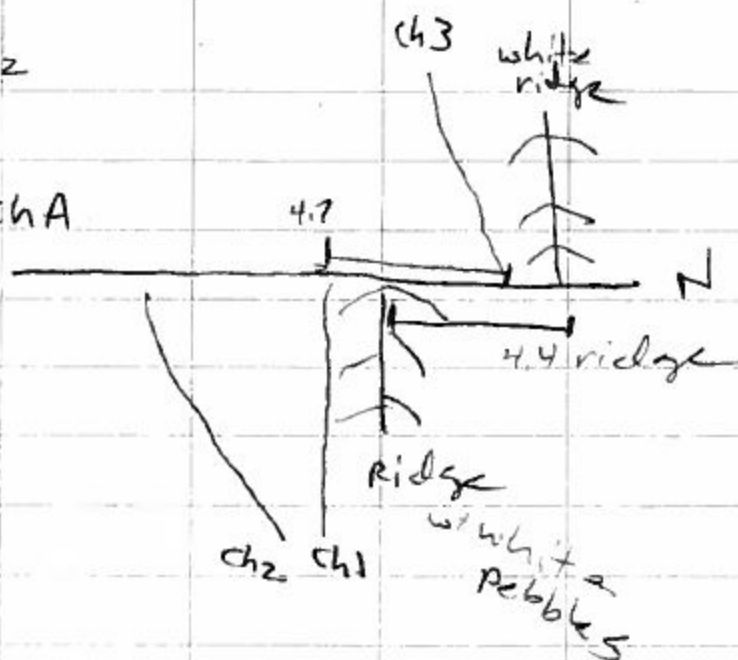
max. 6.2

min/max  
reasonable  
on things

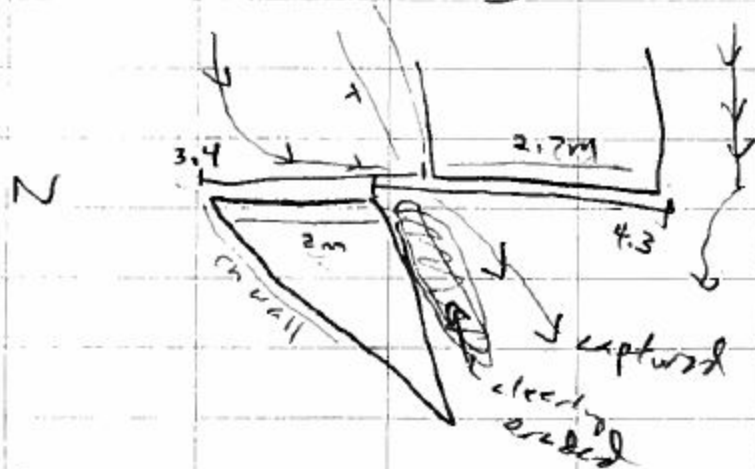


11/27/12

RCCB - chA



RCCB - coll surface - B



shows  
no vertical

3.4 = max b/c upstream side is eroded,  
of course downstream side too

$4.3 - 0.7$  (diff in surface width) = 3.6

3.4 = preferred, 3 max, 0.7 min vs cm =  
2.7 - 3.4

43



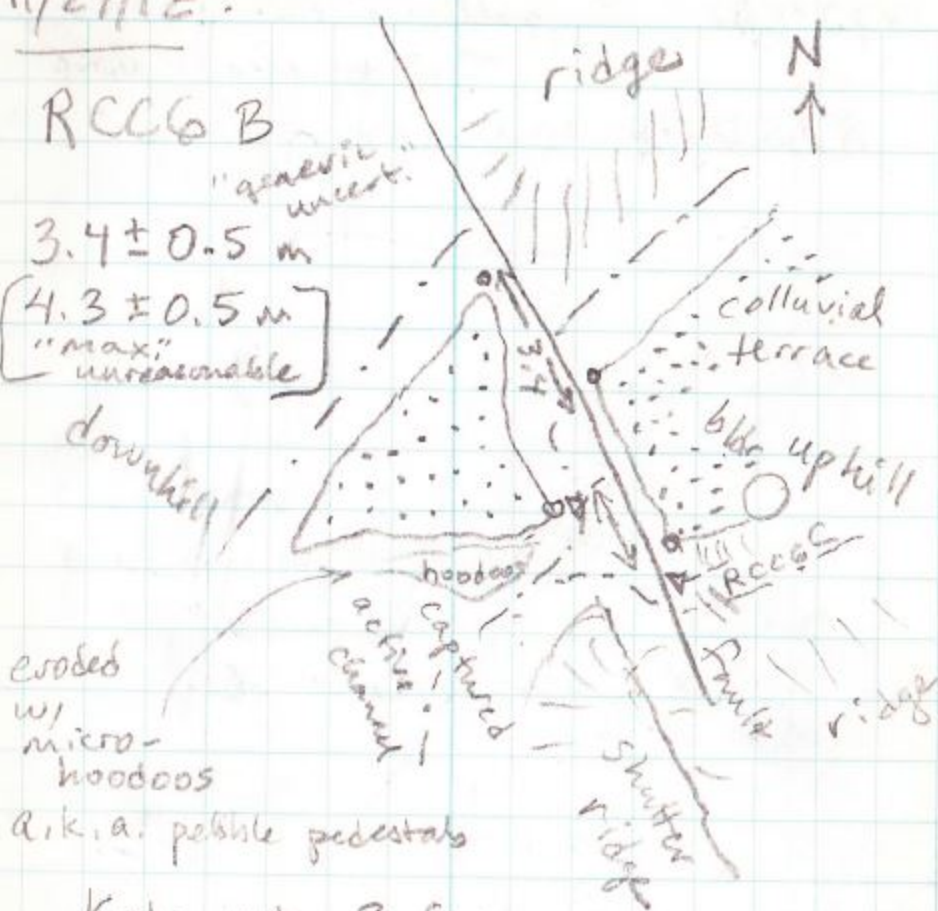
11/27/12:

RCC6 B

"genetic"  
uncert.

$3.4 \pm 0.5$  m

$[4.3 \pm 0.5$  m  
"max."  
unreasonable]



Kate est. 3.6 m

taking into acct. erosion

"Preferred  
Offset"

$3.4 \pm 0.0$   
 $0.7$

[a.k.a.  
2.7-3.4]

RCC6 C

3.5 'best'

2.7 min. reas.

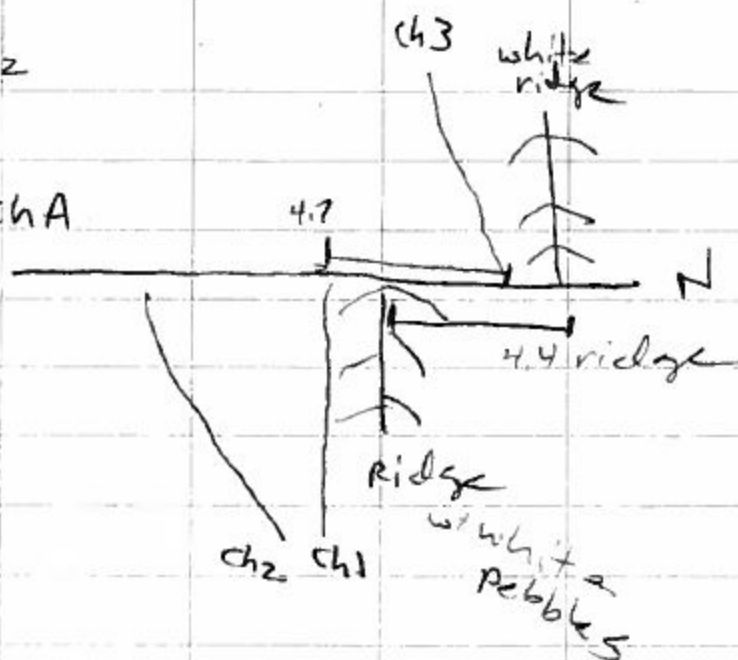
4.0 max. reas.

$3.5 \pm 0.5$   
 $-0.8$  m r.l.

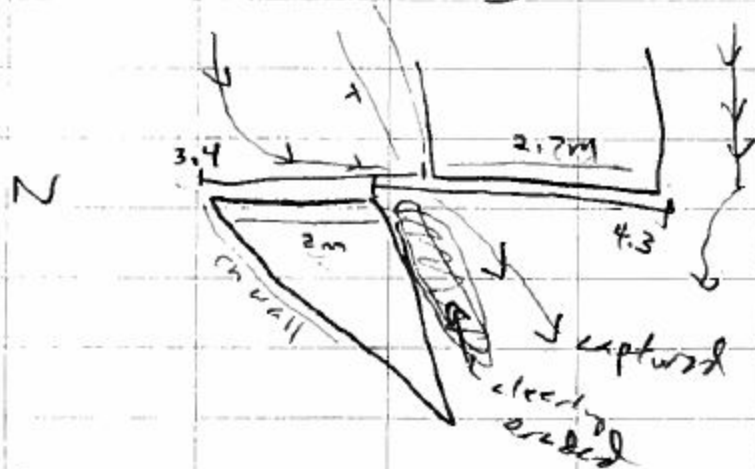
uphill secondary trace

11/27/12

RCCB - chA



RCCB - coll surface - B



shows  
no vertical

3.4 = max b/c upstream side is eroded,  
of course downstream side too

$4.3 - 0.7$  (diff in surface width) = 3.6

3.4 = preferred, 3 max, 0.7 min vs cm =

2.7 - 3.4



11/27/12:

RCC6 B

"general  
uncert."

$3.4 \pm 0.5$  m

$[4.3 \pm 0.5 \text{ m}]$   
"max."  
unreasonable



Kate est. 3.6 m

taking into acct. erosion

"Preferred  
Offset"

$3.4 \pm 0.0$   
 $0.7$

a.k.a.  
 $[2.7-3.4]$

RCC6 C

3.5 'best'

2.7 min. reas.

4.0 max. reas.

$3.5 \pm 0.5$   
 $-0.8$  m r.l.

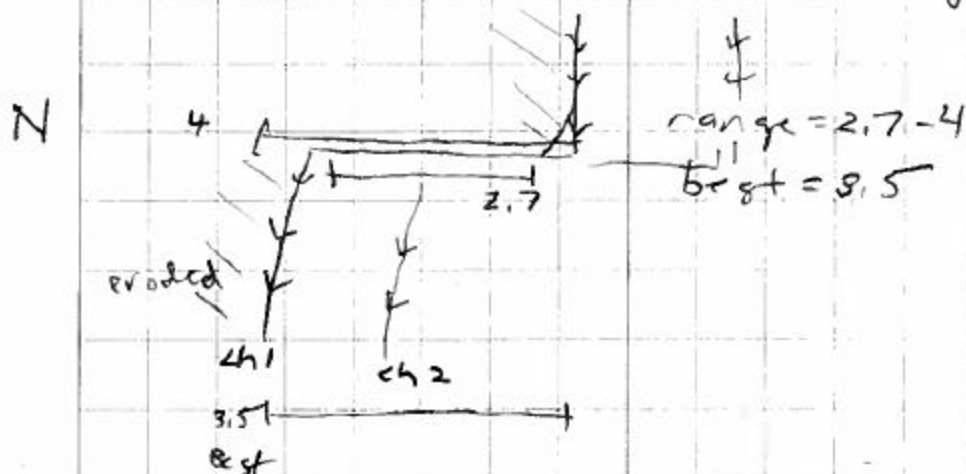
uphill secondary trace

# Hector Mine

11/27/12

RCCG - C

ch2 = deeply eroded



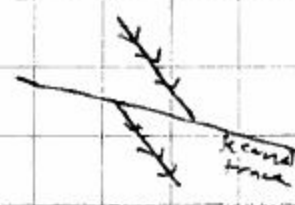
RCCGD

- on fault splay

~~RCCG~~

range 1.5-3.4  
best 2.5

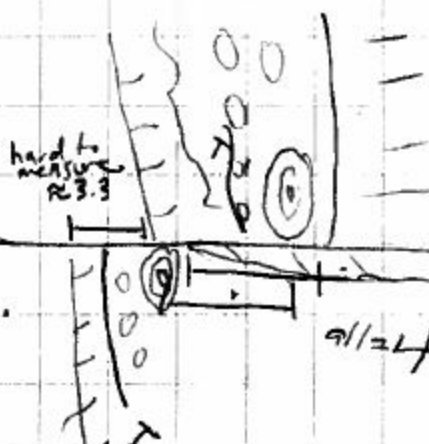
N



need minus 1m  
(revisited)

best 1.5  
range 0.5-2.4

RCCF

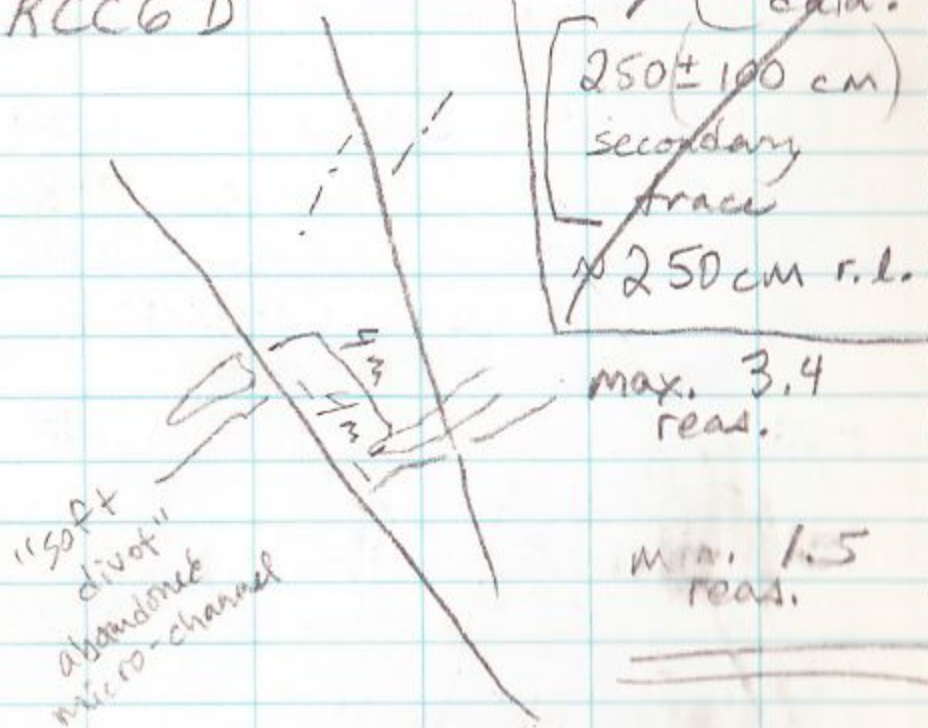


best = 4  
± 0.3



11/27/12:

RCC6 D



main  
trace

paired features crossing  
together:

- 1) "soft + divot" channel
- 2) micro tectonic  
terrace fragment  
(remnant)

both  
taped 400 cm's  
 $\pm 30$  cm

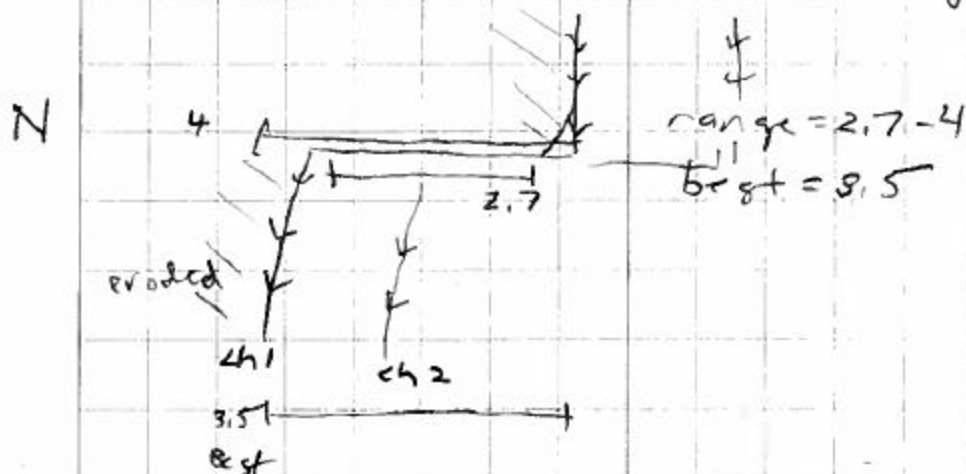
\*  $\rightarrow$  correct is 1.5 m  
secondary fault slip much less  
than 250 — we were  
by collapse on Cractive  
min./max.

# Hector Mine

11/27/12

RCCG - C

ch2 = deeply eroded



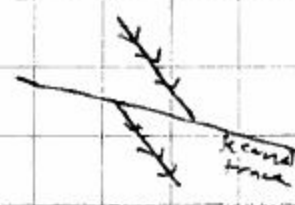
RCCGD

- on fault splay

~~RCCG~~

range 1.5-3.4  
best 2.5

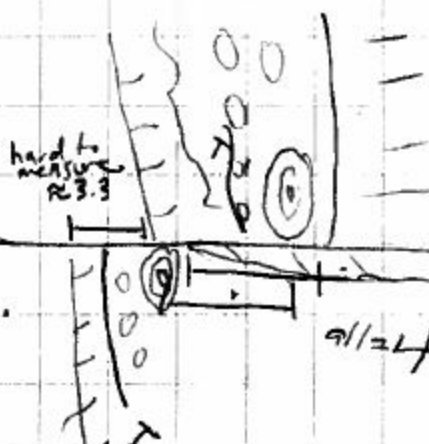
N



need minus 1m  
(revisited)

best 1.5  
range 0.5-2.4

RCCF



best = 4  
± 0.3

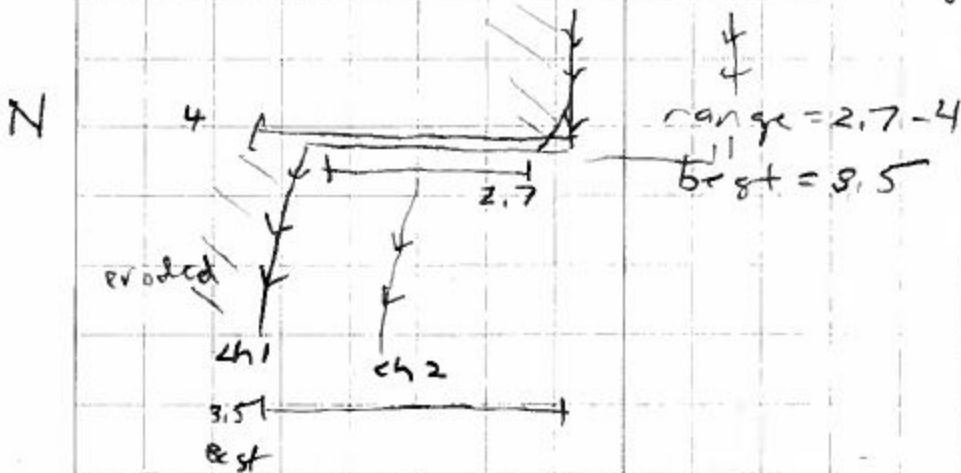


# Hector Mine

11/27/12

RCCG - C

ch2 = deeply eroded



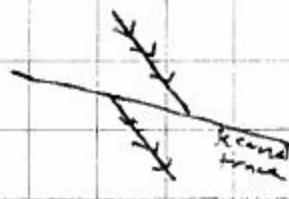
RCCGD

- on fault splay

~~RCCG~~

range 1.5-3.4  
best 2.5

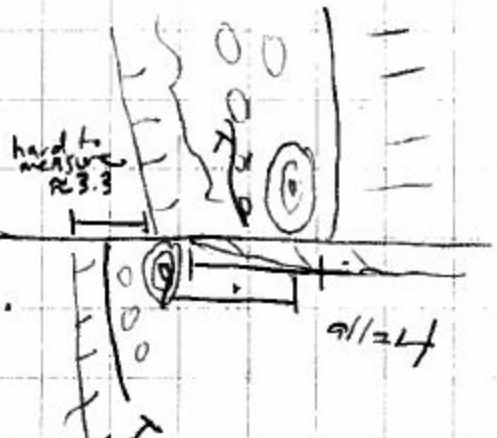
N



need minus 1m  
(revisited)

best 1.5  
range 0.5-2.4

RCCF



best = 4  
± 0.3

11/27/12 : HM'99 w/ Kate Scherer  
& Janet Harvey

Began @ "Armory" then measured  
offset gully  $2.1 \pm 1.0$  at  
RCC 1 and  $1.6 \pm 0.3$  m  
East side up

" " "  
"007" - name from orig. notes  
= RCC 2 same drainage

Ken w/ Janet [ (horiz. error  $\pm 0.5$  m r.l.) alt. represents  
 $1.1 \pm 0.3$  m vert; east side up

w/ OR "2.9" min. to "3.9" max. "2.8 is OK, 2.7 is too small"  
Kate what she got w/ GeoXH is 2.8 m  
max. 3.9 m "could be larger  
if downstream edge eroded back"

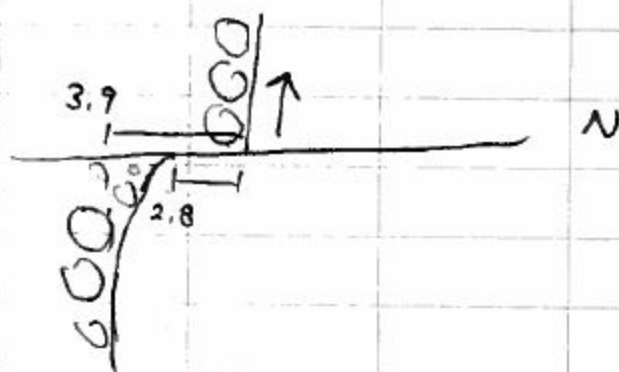
same site Frank  
RCC 3 and I taped  
Kate using GeoXH here

blew past a lot of stuff  
retroactively RCC 4-



RCC2 = WP191 = 007 originates

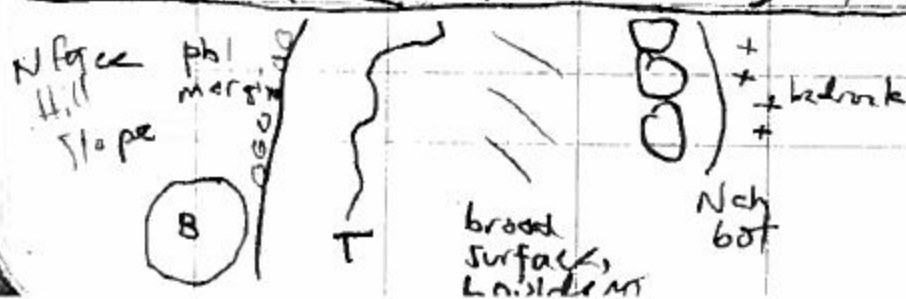
2.8 - 3.8 tape, given boulder size,  
could be 2.8 - 3.8 or larger if  
downstream edge eroded.



RCC3 - quick growth of narrow ch,  
S ch wall, and N edge of terrace  
that Kent Frank measured

scrap of pbl margin. eroded since eq?

RCC4 - multiple ~3.9 offset. any  
measurement has 1m box error



# Hector Mine

11/27/12

Headed back into Hector Mine,  
Janet Henning + Ken Hudnut.  
Working in Rainbow Canyon North.

→ drive is good, but slow up canyon.

Nice purples, JH says too dacitic to be rhyo.  
likely dacite w/ rhyo <sup>(potholes)</sup> chert <sup>eroded at</sup>.  
~9 left car

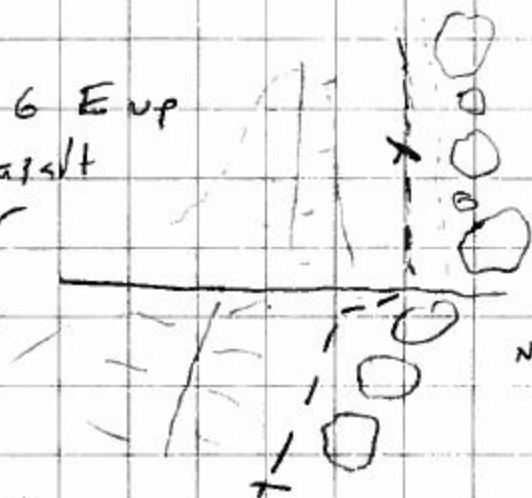
WB 190 REC-1

[TAPE] H 2.1  $\pm 1$   
 $\pm 0.5$

V ~ 1.6 E up  
of basalt  
boulder

FID 205?

4.9  $\pm 0.8$



Low qual, bla nose  
of feature S of thalweg

on E side is big hill, does not match well  
to low broad nose on W. Should examine  
in lidar. Thalweg upstream is infilled,  
somewhat oblique. downstream T is  
nice + linear, as is big boulder ridge  
best guess: 1.5-3

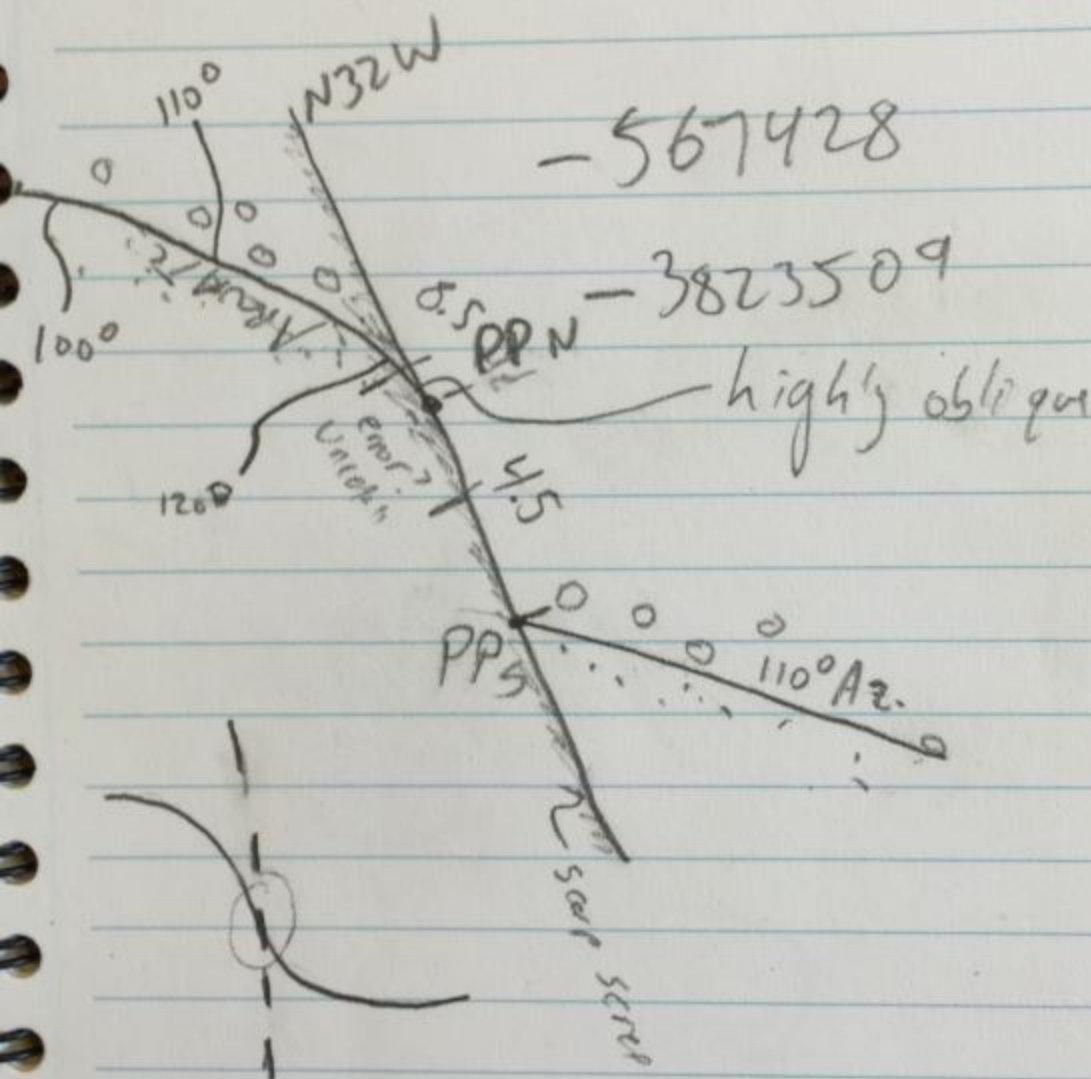


Southern

ARMORY WYS

006 Fran yult et al

Location of CT 6.6 m  
measurement.



Diffusing screw slope on fault reduces ability to precisely locate PPN which is ~~not~~ straight (it is bending)

Date \_\_\_\_\_ Time \_\_\_\_\_ Weather \_\_\_\_\_

Location \_\_\_\_\_

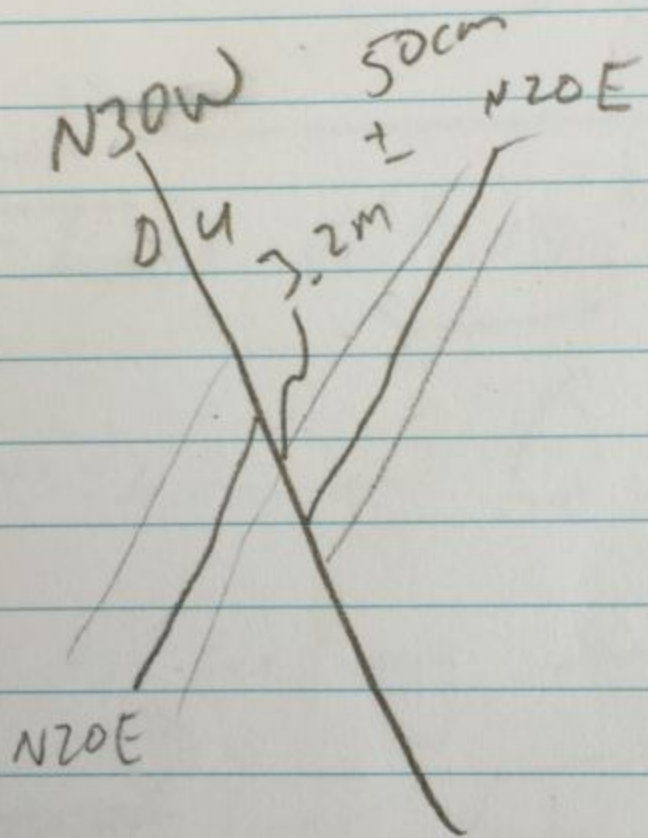
Notes \_\_\_\_\_

~~Yule site 3~~

#233 ~~A~~

567471

3823375



thalweg.

10/3

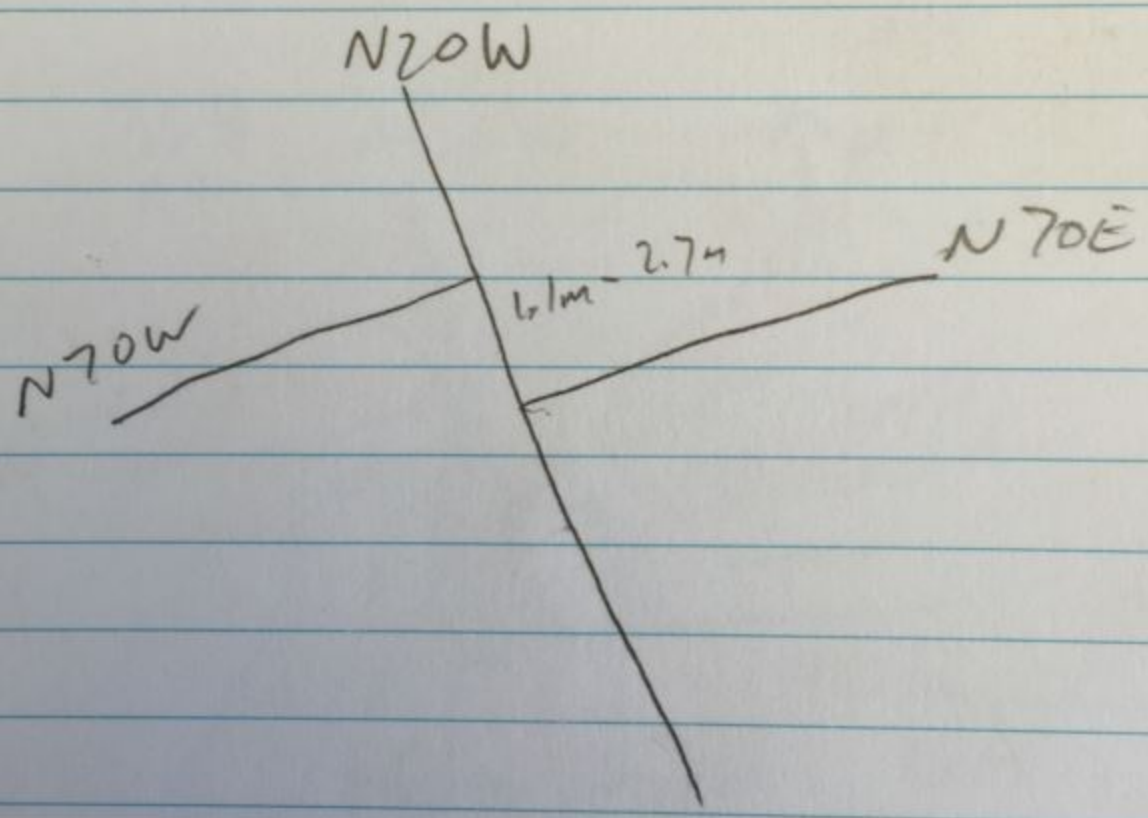



Date \_\_\_\_\_ Time \_\_\_\_\_ Weather \_\_\_\_\_

Location LM-4

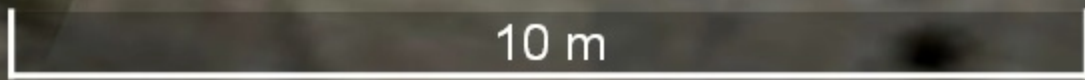
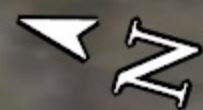
Notes 567637  
3822253

1.1 - 2.7m





LM-M  
5.7 m - 6.5 m





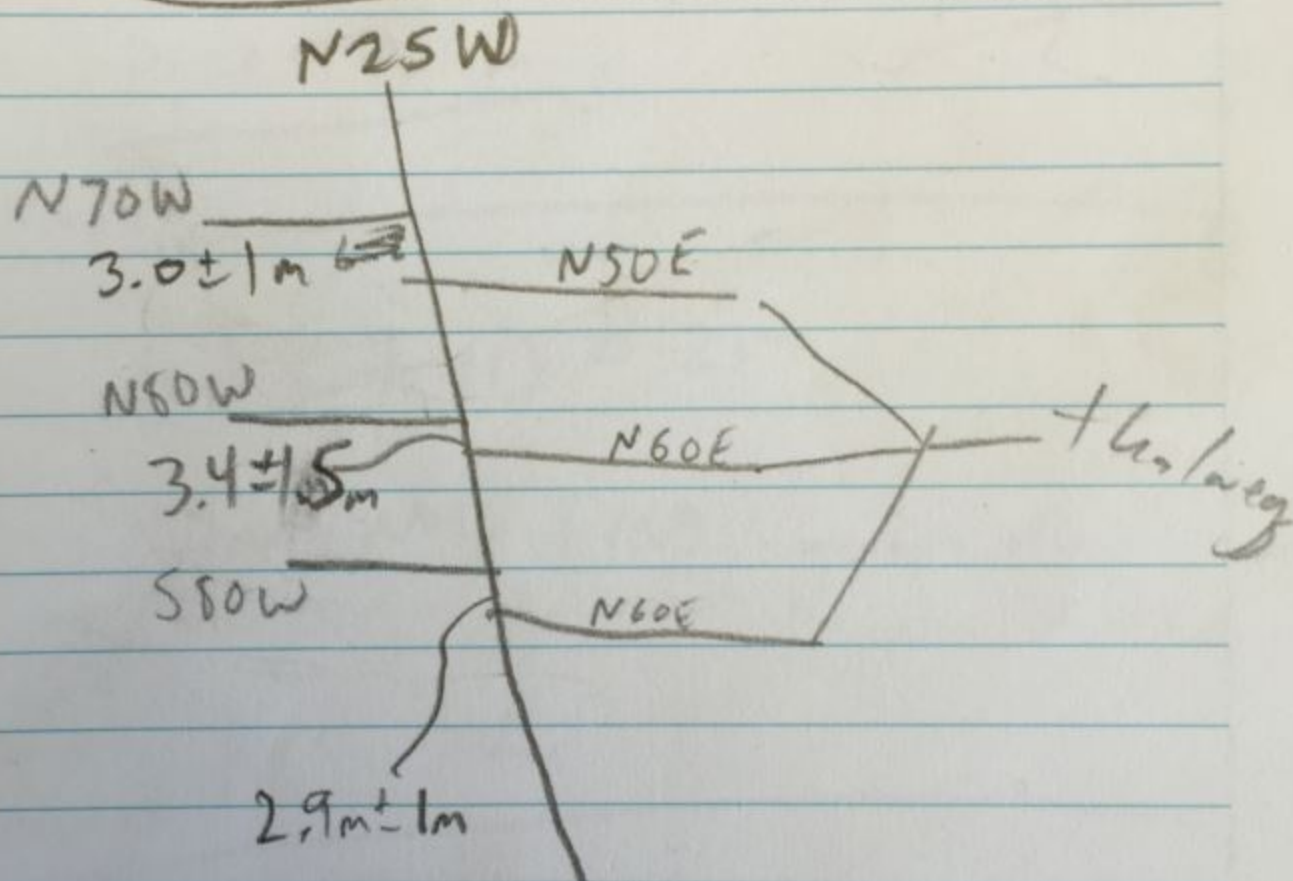
Location

10/5 LM3

Notes

3 offset streams 567696  
3821808

Minimum multiple channels



Avg.  $3.1m \pm 1.2m$

Date

Time

Weather

Location

Notes

10/5LM 1

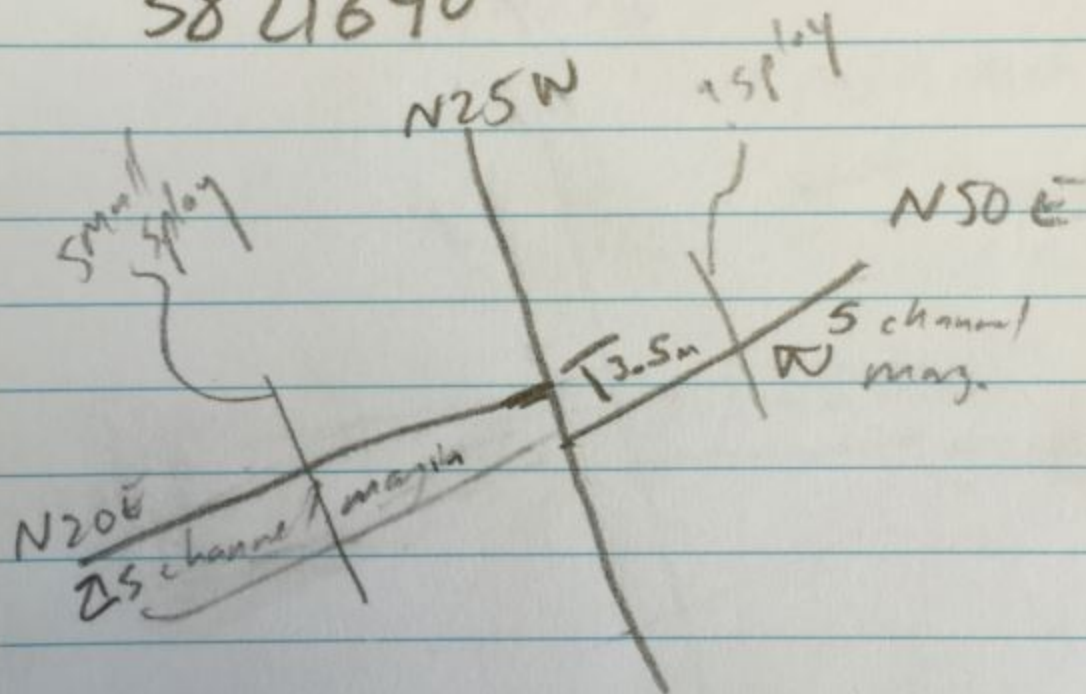
415 site

Minimum multiple  
offset splays

567748

 $350_m \pm 1m$ 

3821640



large offset in channel and  
smaller splay offsets, we do  
not know what was summed  
into 4.15 number



Date \_\_\_\_\_ Time \_\_\_\_\_ Weather \_\_\_\_\_

Location

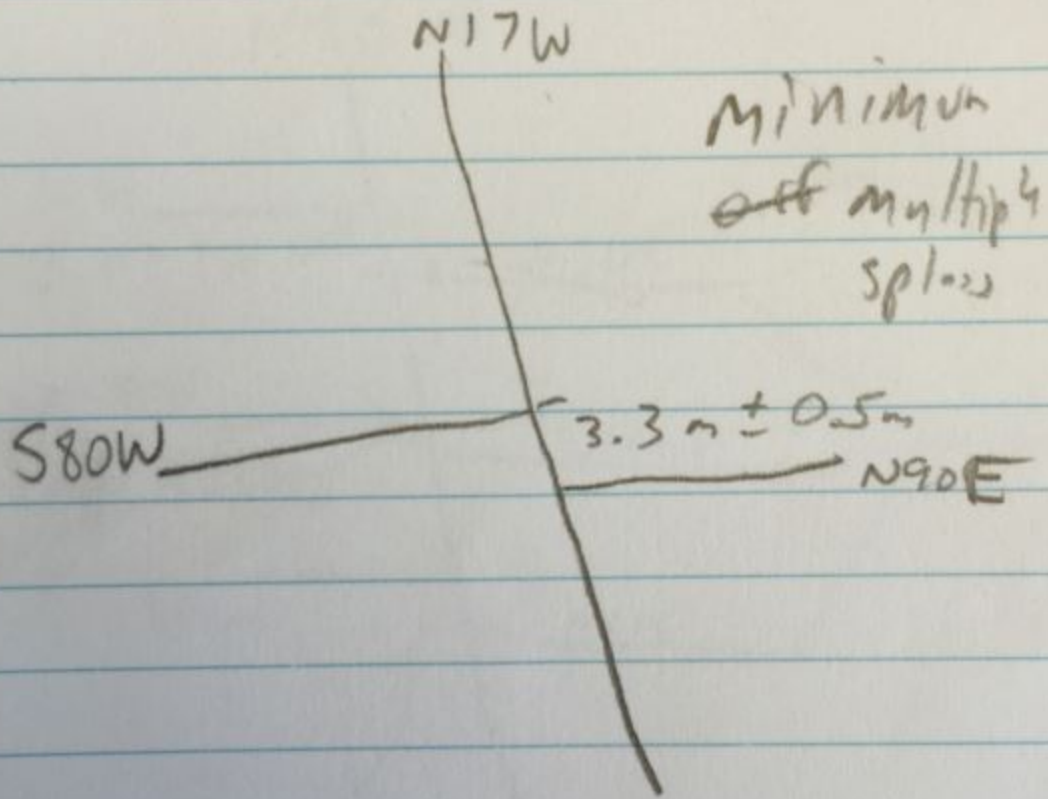
10/5

LM2

Notes

567 752

3821536



JCH tabs dip  $27^\circ$  W

Date \_\_\_\_\_ Time \_\_\_\_\_ Weather \_\_\_\_\_

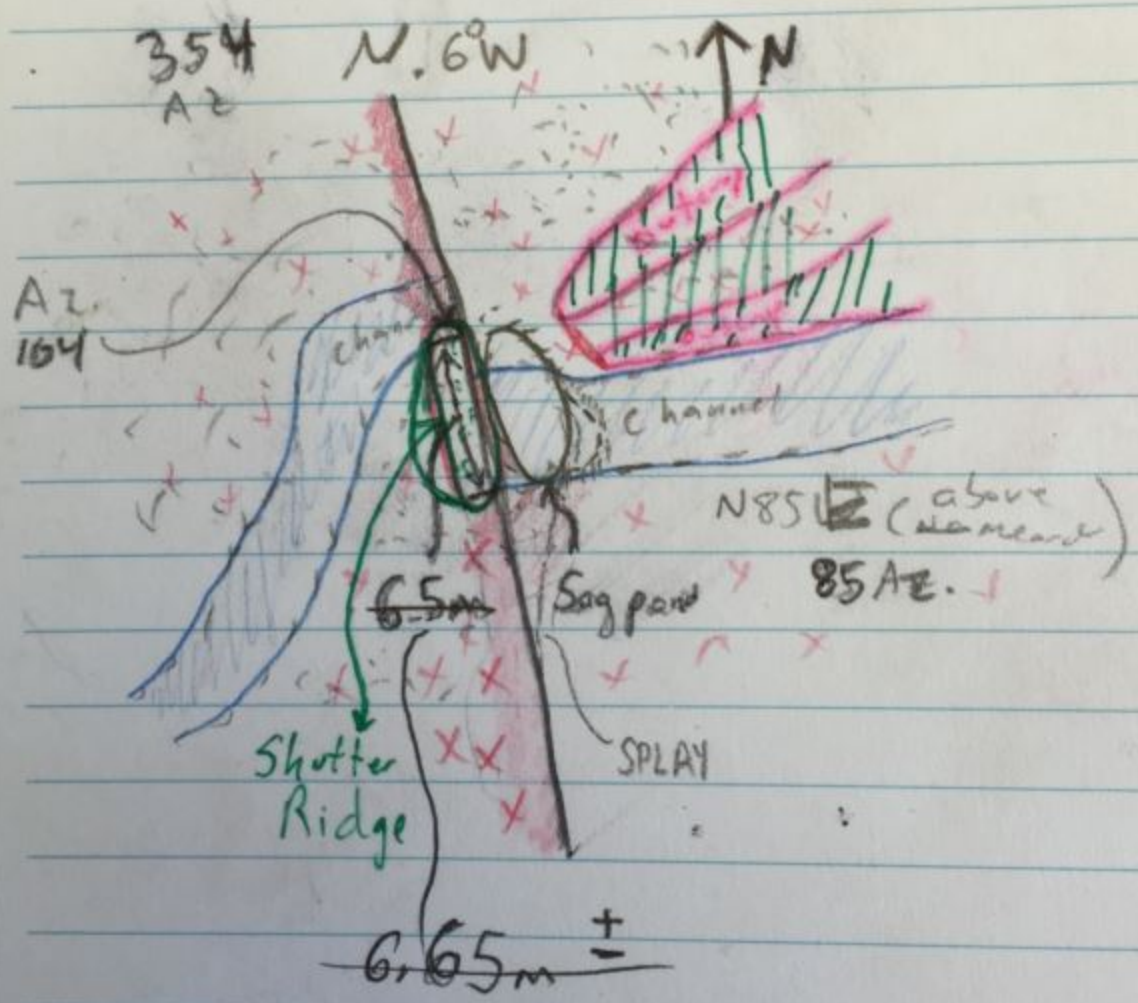
Location HSZ-6 10/5

Notes \_\_\_\_\_

CT 3.8 ID#38

567789

3821355 Strike & tape measure  
34.5°



6.7m ± 0.5m



Date \_\_\_\_\_ Time \_\_\_\_\_ Weather \_\_\_\_\_

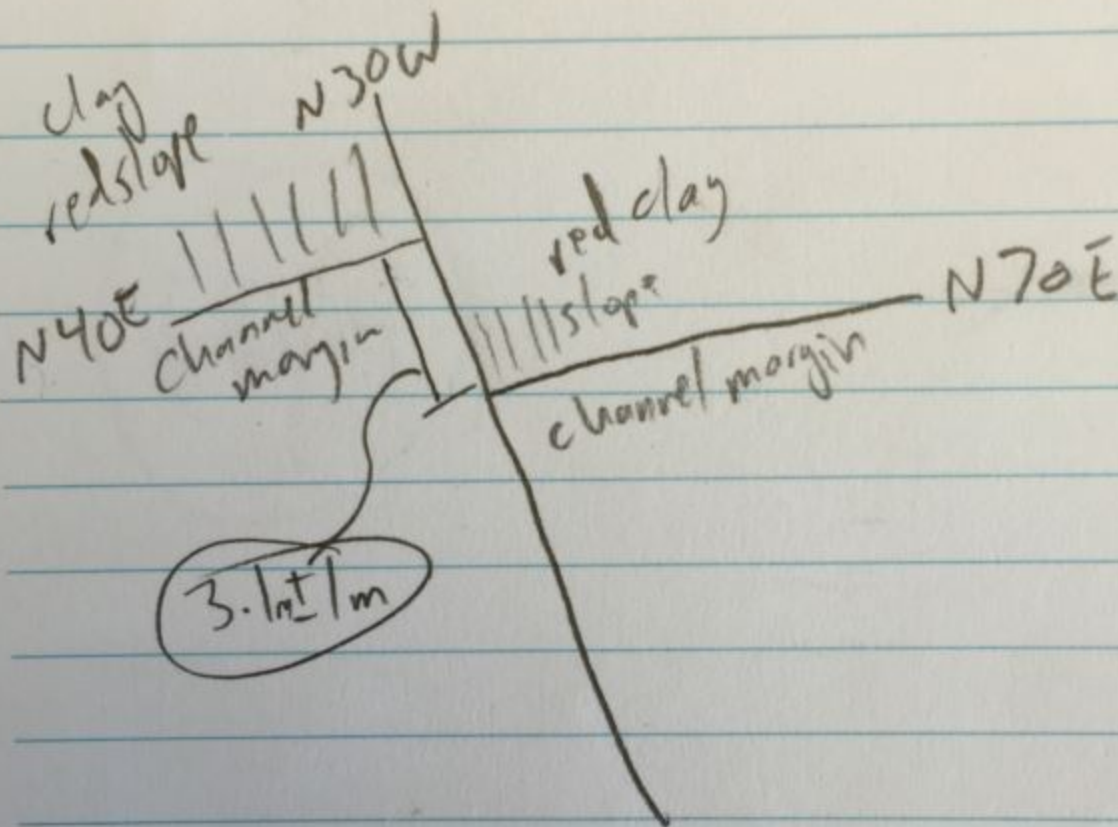
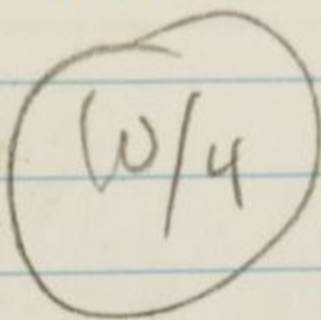
Location \_\_\_\_\_

Notes \_\_\_\_\_

HSE-3

568080

3820232



10/4/2012 - MCAGCC  
w/ Frank Sousa & Janet Harvey  
Ken Hudant

8:00 am stop @ Check Pt. X'Ray  
walk south to "400 cm"  
site of Treiman et al.

HSZ1

— N130°W

"WAB" 004?


higher

tape is oriented  
N  $17^{\circ}$  W

430 ± 35 cm r.l.

slight W. up.

N13°W

Use  $10^\circ$  to calculate vert. comp.  
 $10^\circ$    $4.3 \sin 10^\circ = 0.75$  (vert.)

10/4/12 pg. 2

Discussion:

I had not picked southern  
piercing point right. Franc  
projects green-purple contact  
to fault farther north by 80 cm

Re-taped at  $39.0 \text{ cm} \pm 2.20 \text{ cm}$

This is a bedrock relationship and might represent more than one slip event.

We cannot be sure west side talus slope did not collapse since 1999, so we need to consider piercing point on west may be incorrectly projected to fault. That would decrease offset by  $\sim 100$  cm

next site is ~50 m south  
of this @ small ridge

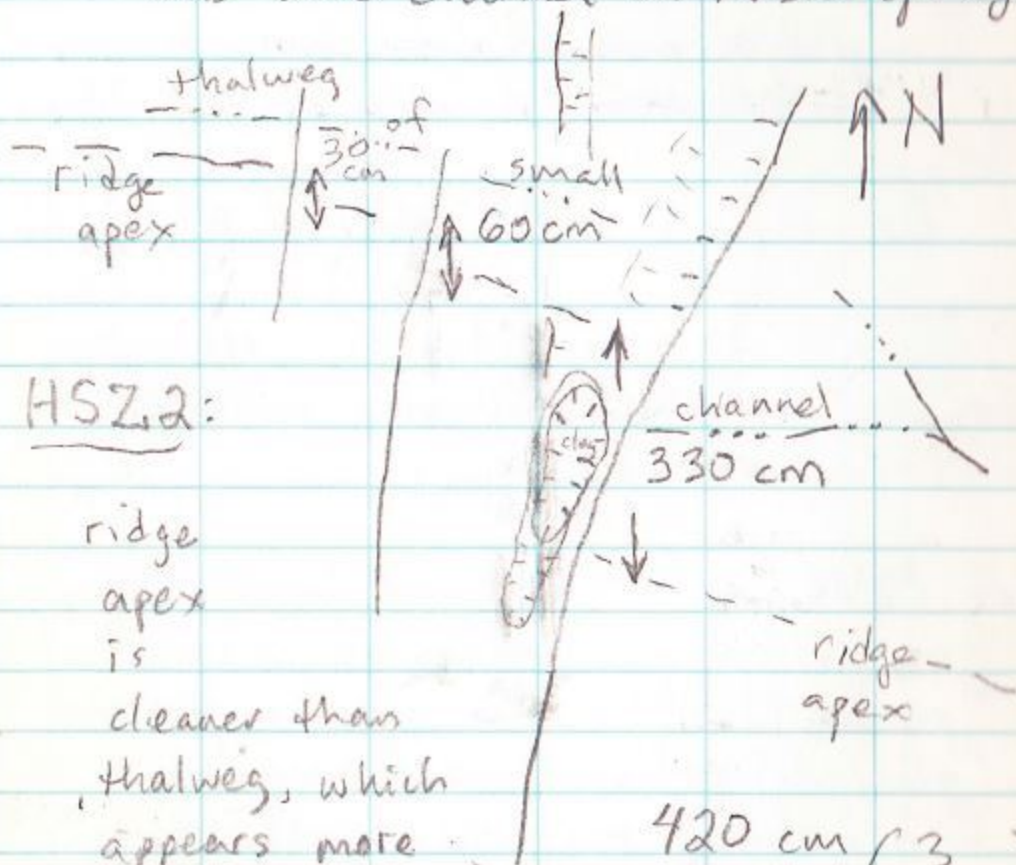


~250 m

10/4/12 pg. 3 - south of C.P. X'ray  
near Treiman et al. "400 cm" site

UTM @ 568125 3820082

small ridge line offset across 3 strands  
and suble channel on N side of ridge



HSZ.2:

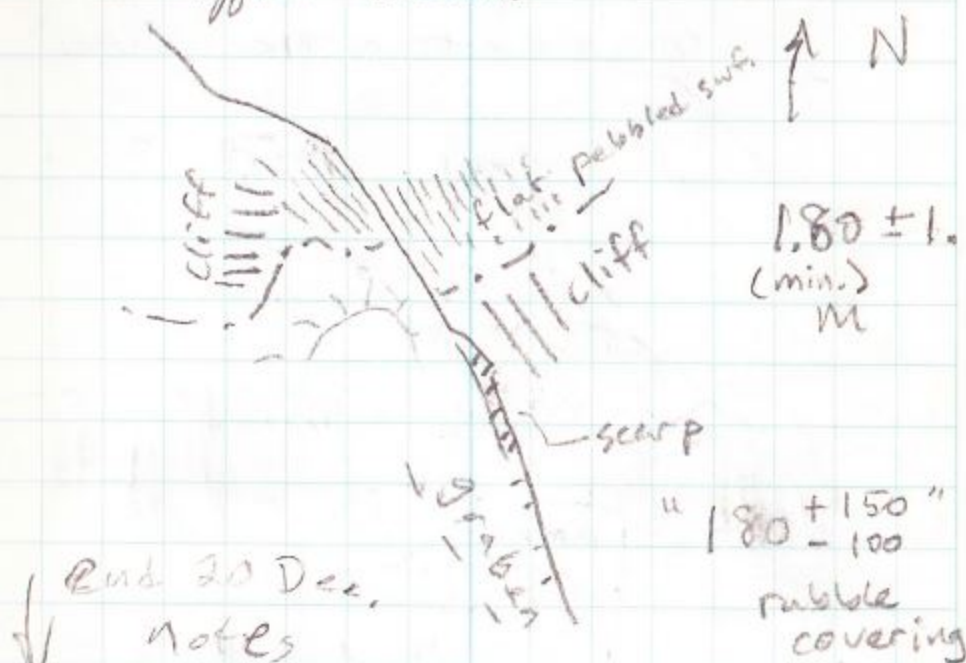
ridge  
apex  
is  
cleaner than  
thalweg, which  
appears more  
modified  
since 1999

420 cm (3  
total strands)  
 $\pm 100$  cm

possible small strand uphill here

# Hector Mine 1999

RCN13 - @ Trainman et al. point  
offset channel



21 Dec. 2012 Hector Mine 1999  
 , MCAGCC w/ Stock & Sousa  
 1 @ Rainbow Canyon North  
 dropped Jeep @ N pt. (RCN)  
 walked over to fault via  
 saddle - en route discovered  
 a partly toppled PBR at  
 11 S 0565525 UTM  
 3827529 WGS84  
 Waypoint 274 + 275 + 276  
 0563525  
 3827529 see phot



A hand-drawn geological cross-section on grid paper. The profile is a horizontal line with various points labeled A through L. Above the profile, contour lines are drawn with elevations of -1, -2, -3, -4, -5, -6, -7, and -8. Below the profile, there are labels for '60cm - 7dm not discernible' on the left and 'TAPF' on the right. The profile itself has several vertical segments labeled with elevations: 60, 40, 1m, 50, 70, 1m, 5, 4, 1.5, 1.8, 80, 80, and 100. There are also labels for 'not bdrf. notes' and 'bread' near the center. The profile ends at a point labeled 'E' on the right. The entire drawing is on a blue grid background.

50235, end  
of uphill  
facing scarp

JK 414

LM 400

\* - wide, alluv covered  
 lobate apron w/  
 post 91 in 230s  
 location of -3 down  
 gone, -4 is small  
 divot in fault scarp?

note this is low that CT matched fir  $< \pi/48$ , yet  
I won

Tape

AB 430

CD 432

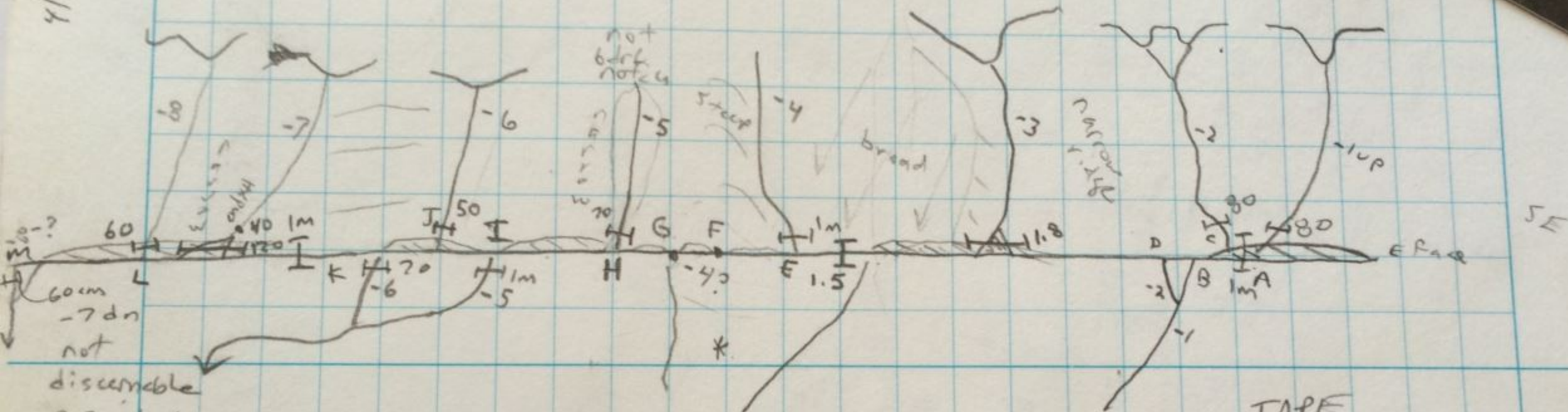
EF 440

EG 7.6 m

- 3 no down stream thalweg
- 4 difficult, no clear thalweg,  
do find notch @ 440



4/17/14



-8? is a  
50235, end  
of uphill  
facing scarp

H I 426  
J K 414  
L M 400

\* wide, alluv covered  
lobate apron w/  
post 91 in 2130s  
location of -3 dn  
gone, -4 is small  
dip at in fault scarp?

note this is low that CT matched for < 1148, yet  
I would

TAPE

AB 430

CD 432

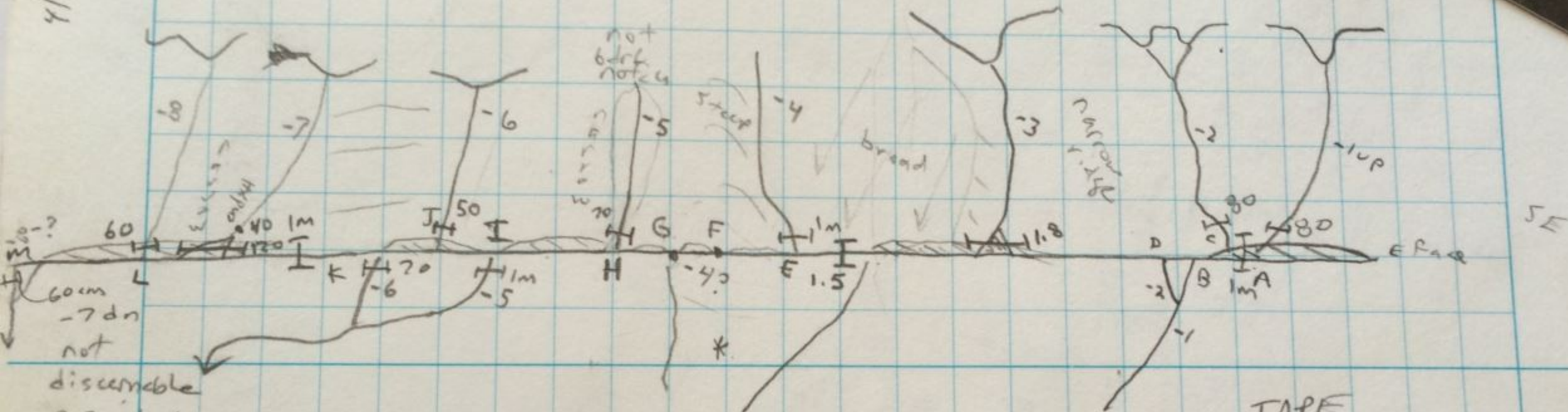
EF 440

EG 7.6m

-3 no dn stream thalweg  
-4 difficult, no clear thalweg,  
do find notch @ 440



4/17/14



60cm - 7dn not discernible  
 8? is a  
 50235, end  
 of uphill  
 facing scarp

HI 426  
 JK 414  
 LM 400

\* wide, alluv covered  
 lobate apron w/  
 post 91 in 2130s  
 location of -3 dn  
 gone, -4 is small  
 divot in fault scarp?

note this is low that CT matched for < T148, yet  
 I would

TAPE  
 AB 430  
 CD 432  
 EF 440  
 EG 7.6m

-3 no dn stream thalweg  
 -4 difficult, no clear thalweg,  
 do find notch @ 440