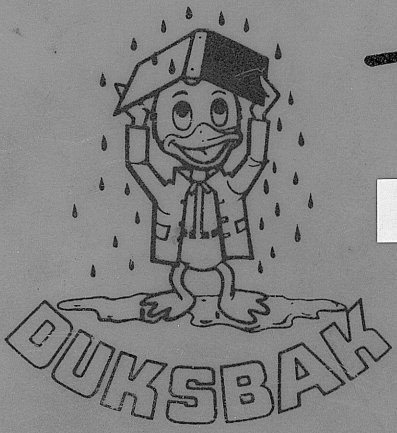
CARMACKS

FIELD NOTES

77



WATERPROOF

NO.30

R.D. PENHALL LTD

R. HILL

320 LX Pacific Rainproof

1

Tantalus Butte Exploration

CMS Drill Crew:

Malcolm McLean
Roy Mocns
Rm #11 Carmacks Hotel
Phone:

Cat Skinner:

Tom Wheeler
Phone 5261 (Home)
5391 (Lounge)

Tantalus Butte Exploration

CMS Drill Crew:

Malcolm McLean
Roy Mocns
Rm #11 Carmacks Hotel
Phone:

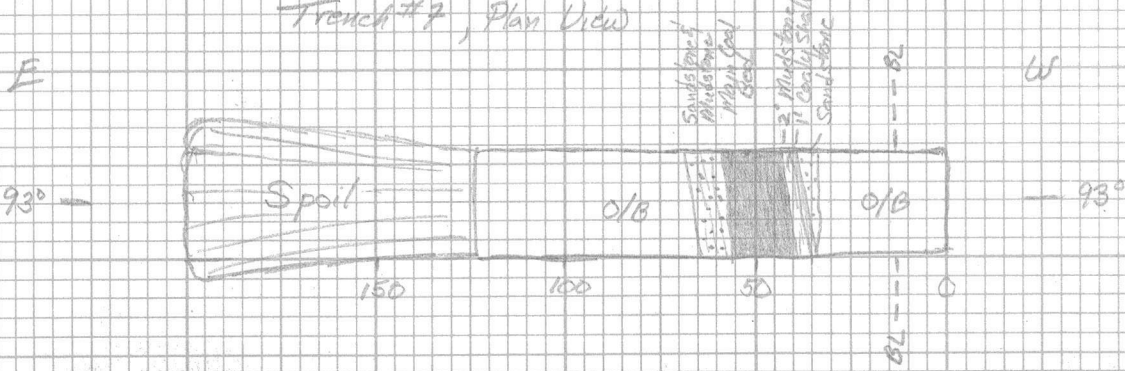
Cat Skinner:

Toni Wheeler
Phone 5261 (Home)
5391 (Lounge)

Trench # 7, X-Section

Till - 2-3'
Permafrost - 15'

Trench #7, Plan View



Tantalus Butte 20, Sept. 73

Trench 7

$162 \times 42 \times 15' = 64,260\ ft^3$

Approx 7100 yds³ moved

Trench hits main coal bed @ depth of 20'. Bed covered w/ 12-16' of perma-frost, which had to be ripped. ^beneath 4-8' of sand & gravel Total time on trench = 16 hrs @ $47.50/hr for total of $760

Data on main bed:

Thickness:

a) Apparent = 14'5"

b) True = 12'6"

Dip = 52° W-65°

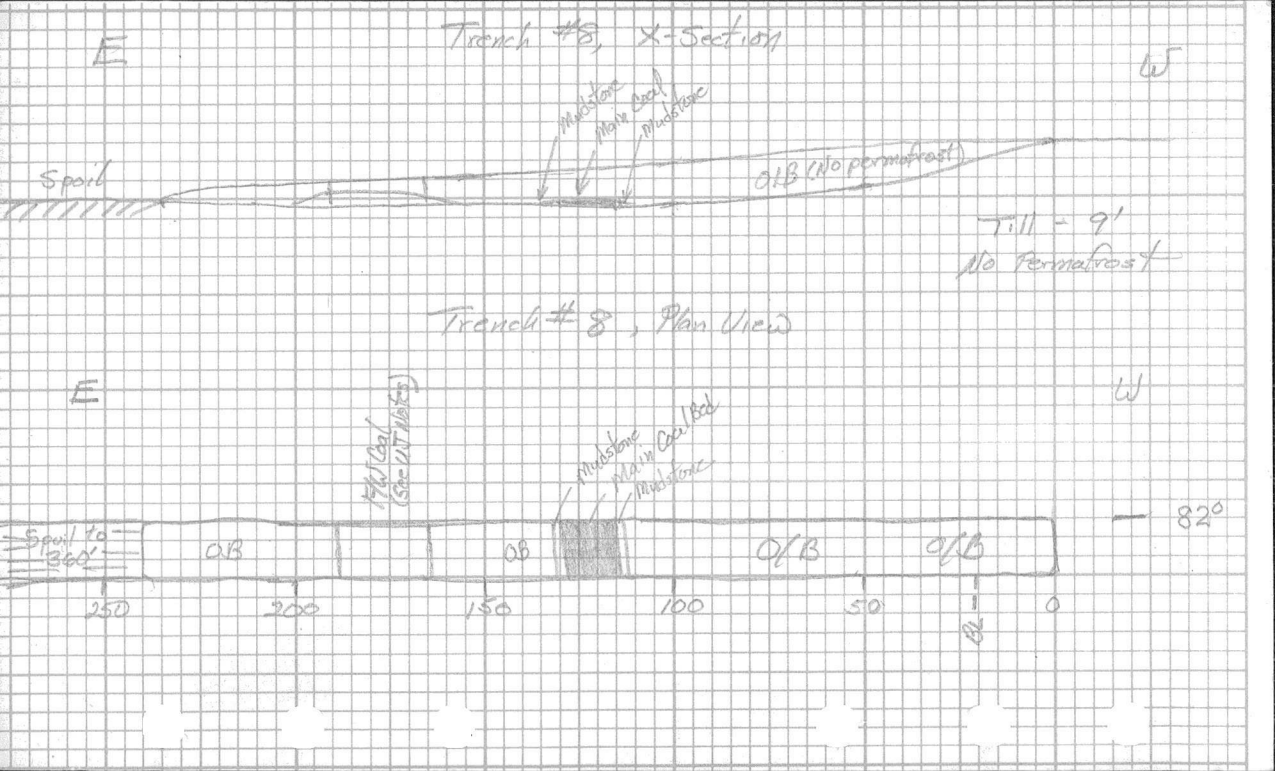
Strike = 165°

Description: Coal of commercial quality w/ no visible rk (waste) lenses

165
180
345

Calculation of true thickness:

Ave. dip = 59°

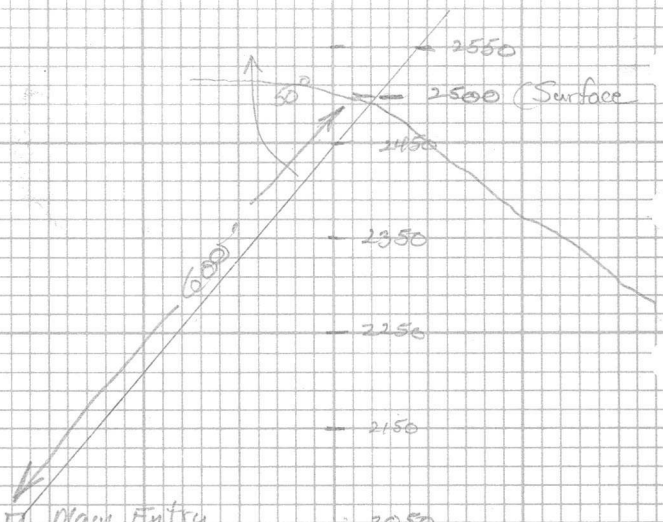

Trench #8, X-Section
E
W
Spoil
Mudstone
Main Coal
Mudstone
O/B (No permafrost)
Till - 9'
No Permafrost
Trench #8, Plan View
E
W
Mid Coal (Coal-like Mudstone)
Mudstone
Main Coal Bed
Mudstone
82°
Spoil to 360'
O/B
O/B
O/B
O/B
250
200
150
100
50
0
Bench

Trench 8

Coal 100' E of BL
w/ Σ 170° Δ 65° W. True
thickness 12'6". No inter
bedded waste

170
180

27
4
162



23.5
550000
11750000
1175
12925300.6

.67
13
134
67
804

23.5
550000

.27
48) 13.00
96
340
336

Required Reserves:

$$\begin{array}{r} 15 \\ 25{,}000 \text{ t/yr} \\ \hline 75000 \\ 30 \\ \hline 375{,}000 \text{ tons} \end{array} = 300{,}000 \text{ tons over 15 yrs}$$

$$\begin{array}{r} 100 \text{ t/day} \\ 365 \\ \hline 36500 \text{ t/yr.} \\ 15 \\ \hline 182500 \\ 36500 \\ \hline 547{,}500 \text{ tons} \end{array} \text{ over 15 yrs}$$

Best estimate $= 5.5 \times 10^5$ tons

For bed 12' thick, recover 67% or 8' ∴ require

$(5.5 \times 10^5)(23.5) = 1.3 \times 10^7 \text{ ft}^3$

Then:

$8' \times 600' \times X = 1.3 \times 10^7$

$4800X = 1.3 \times 10^7$

$$X = \frac{1.3 \times 10^7}{4.8 \times 10^3}$$

$$= .27 \times 10^4$$

$$= 2700'$$

Add 10% $= 3000'$ strike length

∴ a slab of coal 8' × 600' × 3000' will yield 5.5×10^5 tons of coal. Since main beat ≈ 12' and recovery is ≈ 67%, we need to trench 3000' from ≈ 26 cross to indicate sufficient reserves

Trench #9
(Looking S)

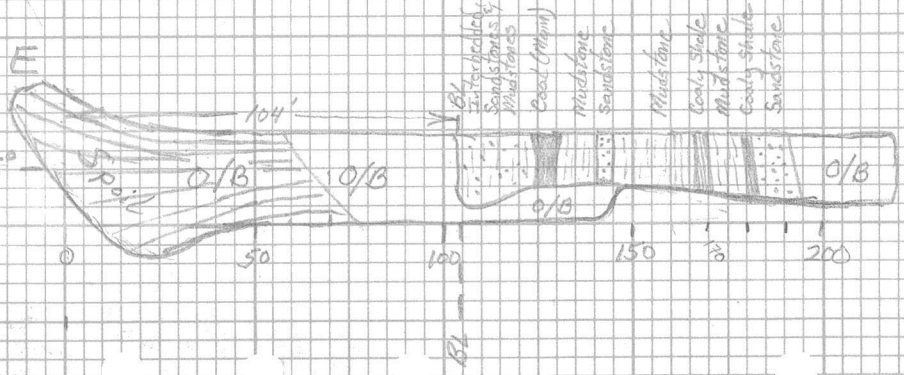
W

E

Till
Permafrost

Till = 4'
Permafrost = 6'
Total = 10'
Rock 4' max
max Depth 14'

Trench #9 Plan View



Trench #9

See sketch for log.
3' coaly shale ≤ 167° Δ 63°W. Main coal seam 21' W of BL in trench. Seam @ depth of 12'

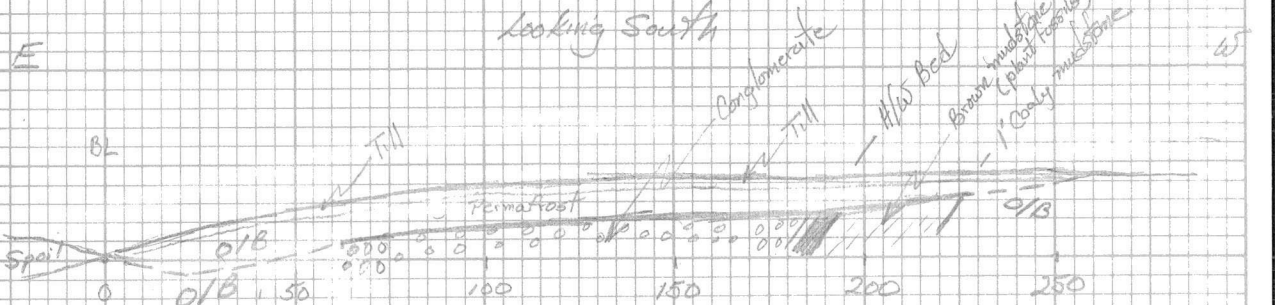
Data on main bed:

True thickness: 7' (max)
Dip: 70°W
Strike: 177°
Description: Bed of commercial quality, no interbedded waste material Bed seems to pinch & swell varying in thickness from 5-7'

177
180
357

Bed hit on a 165° ≤ projection from trench #8. First coaly shale 40' W of main bed, second coaly shale 50' W of main bed. 50' separation in accordance w/ UG observations of 50-75' separation of main bed & coaly shale

Trench #10



Frost Free O/B	2-3'
Permafrost	6-8'
Total O/B	8-11'

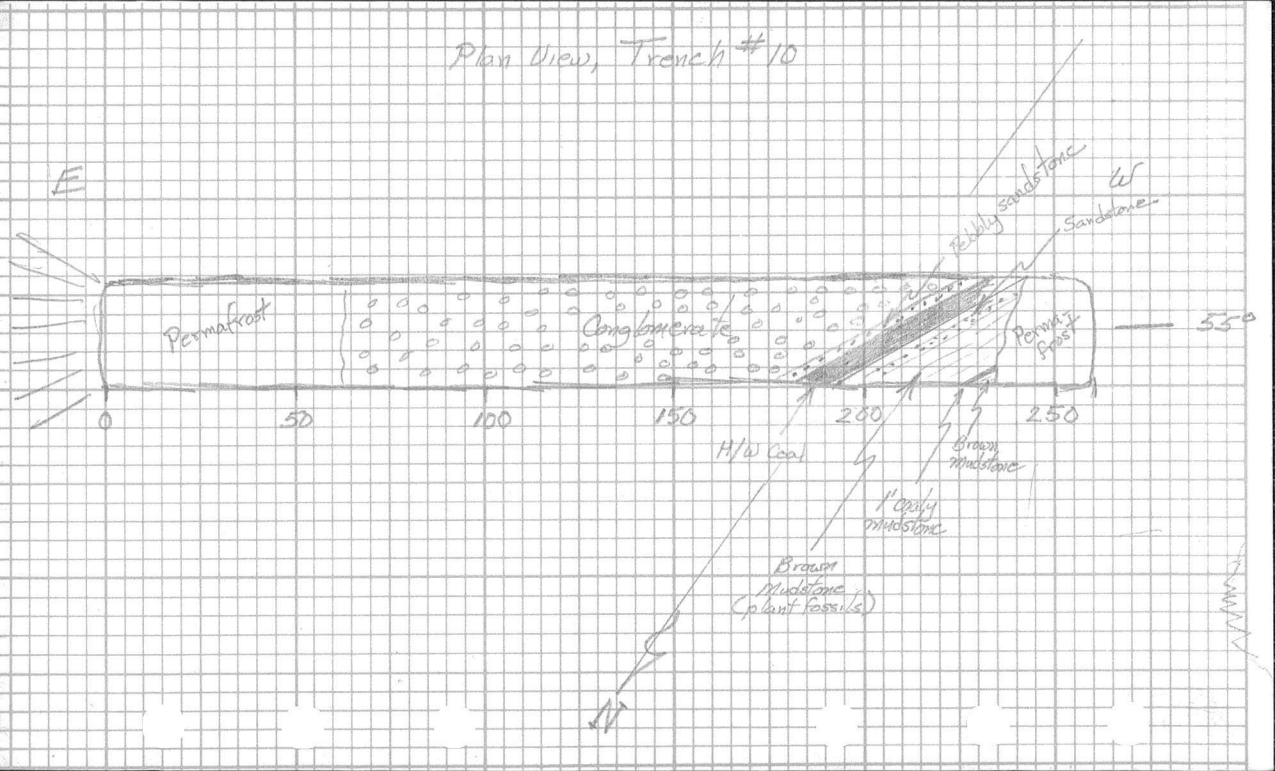
Trench #10 (Extension of UT's #6)

See X-section on facing page and plan of trench overleaf

Data on H/W Bed:

Trac thickness : 6.5' (7' apparent)
Strike : 25°, 25°, 19°
Dip : 65°SE, 62°SE, 70°SE
Description : Coal intimately interbedded w/ brown mudstone. Does not appear to be of commercial quality but should be checked. No large rock lenses exposed in trench. This coal bed thought to be H/W bed for following reasons
1) F/W & H/W lithologies c.f. to S x cut
2) Position of bed relative to projection of main bed
3) Quality of coal

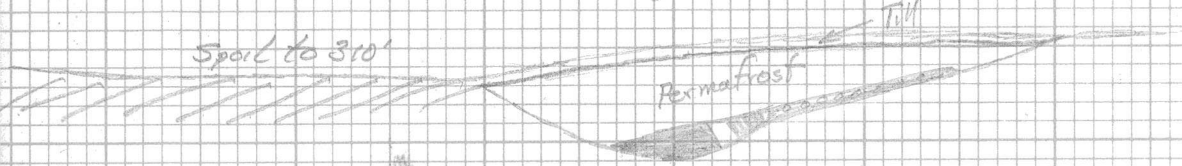
Note: Strike & SE dip puzzling but correct


Plan View, Trench #10
E
W
Permafrost
Conglomerate
Permafrost
Sandstone
Pebbly sandstone
55°
0
50
100
150
200
250
H/W Coal
Brown Mudstone
Pebbly Mudstone
Brown Mudstone (plant fossils)
N

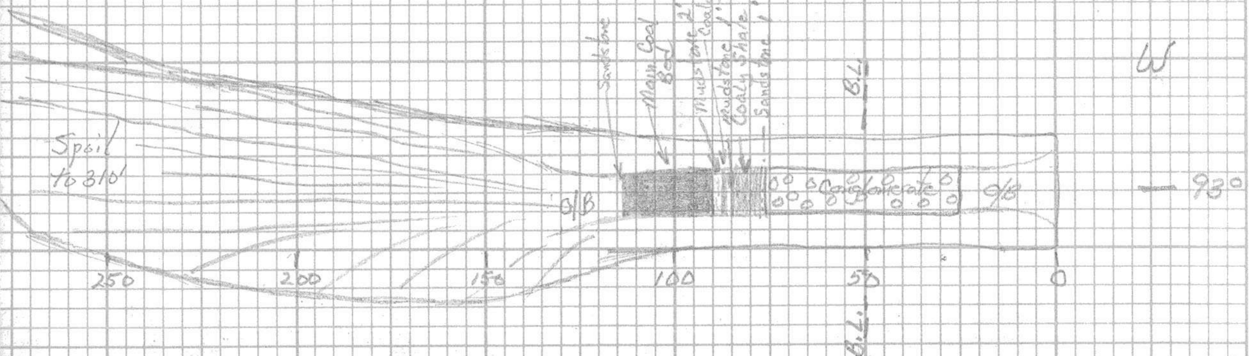
Trench #11

No bedrock encountered. Abandoned @ depth of 10' (max) because of position relative to small hill ridge to E. Permafrost encountered @ about 3'

Trench #12, X-Section



Trench #12, Plan



Trench #12

Data on coal beds:

~~Attitude measurements~~

1) 177°, ~~55°W~~ 63°W (main)

2) 174°, 41°W (new)

3) 15°, 55°W (top of main bed)

True thickness : 20'

Apparent " : 23'

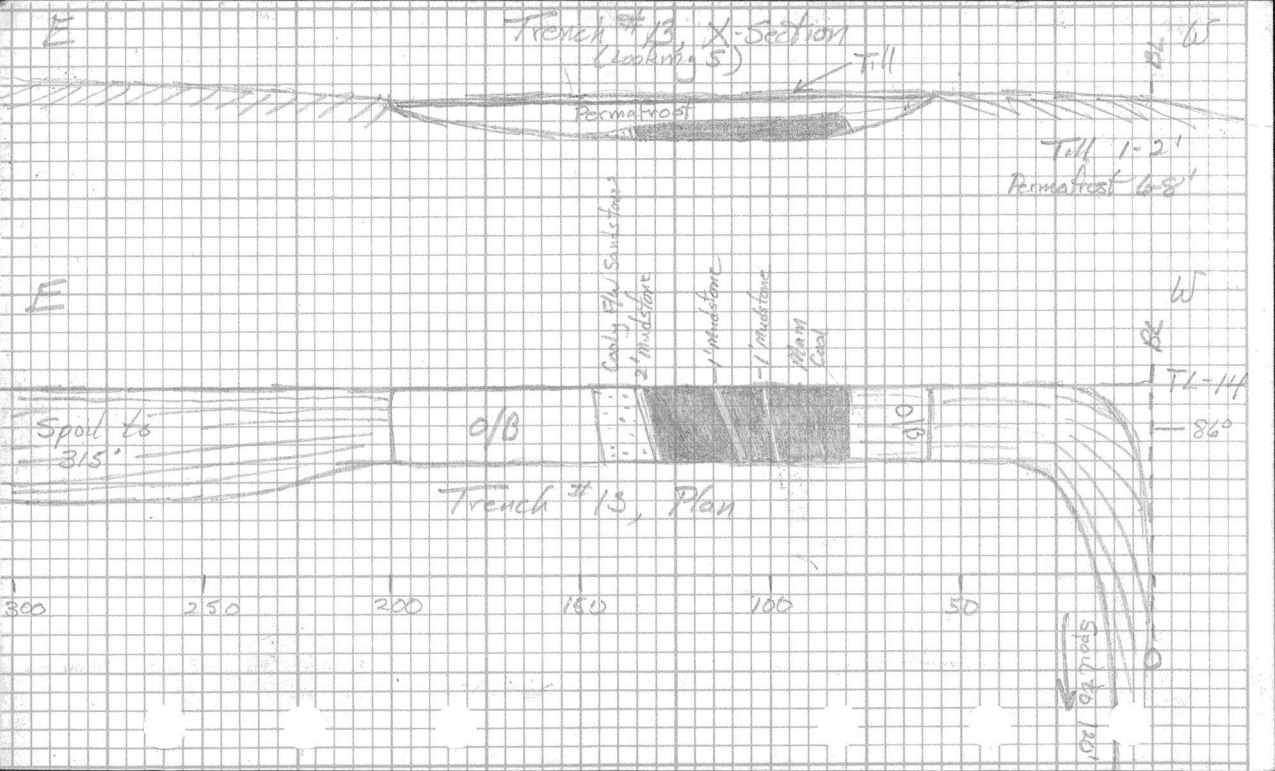
Average strike : 177°

Average dip : 60°W

Description: Main coal bed is thick, commercial quality coal w/ 1-2% mudstone lenses. Main bed capped by 4' mudstone in turn capped by new horizon (7') of coaly mudstone/shale. Coaly " over-lain by H/W clastic sequence

Beds hit on 177° strike projection

177
180
357


E
Trench #13 X-Section
(Looking S)
Till
Permafrost
W
Till 1-2'
Permafrost 6-8'
E
Early Fall Sandstone
2' Mudstone
1' Mudstone
1' Mudstone
Main Coal
W
TL-14
86°
Spoil to
315'
O/B
O/B
Trench #13, Plan
300
250
200
150
100
50
0
Spoil to
120'

Trench #13

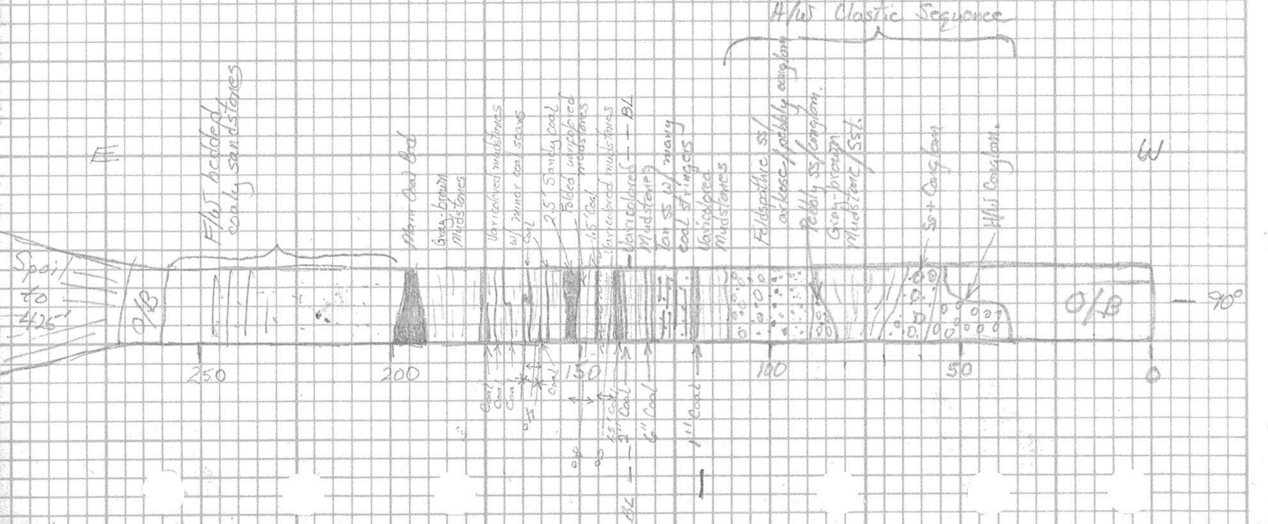
Data on attitudes

1) F/W contact ∠ 156
2) Waste lens ∠ 160
3) Bddg in coal ∠ 130, 285u
(coal slumped or has crept)
4) ∠ 165, 73°W in good bedded coal. (Best Rdg)

Apparent thickness : 51' (mm)
True thickness : ≈47'
Average strike : N65°
Average dip : 65°S
Description : Main coal bed is thickening to S. It is clean, commercial quality coal w/ two mudstone lenses as shown & <1% mudstone & sandstone lenses <1' in length. Upper portion of coal where frost heaved contains X-ular rk. frags.

Note: Coal cut on 177° projection. Top of coal may not be exposed

Till - 3 to 5'
No permafrost



Trench #14

Data on main coal bed

True thickness : 2-7'

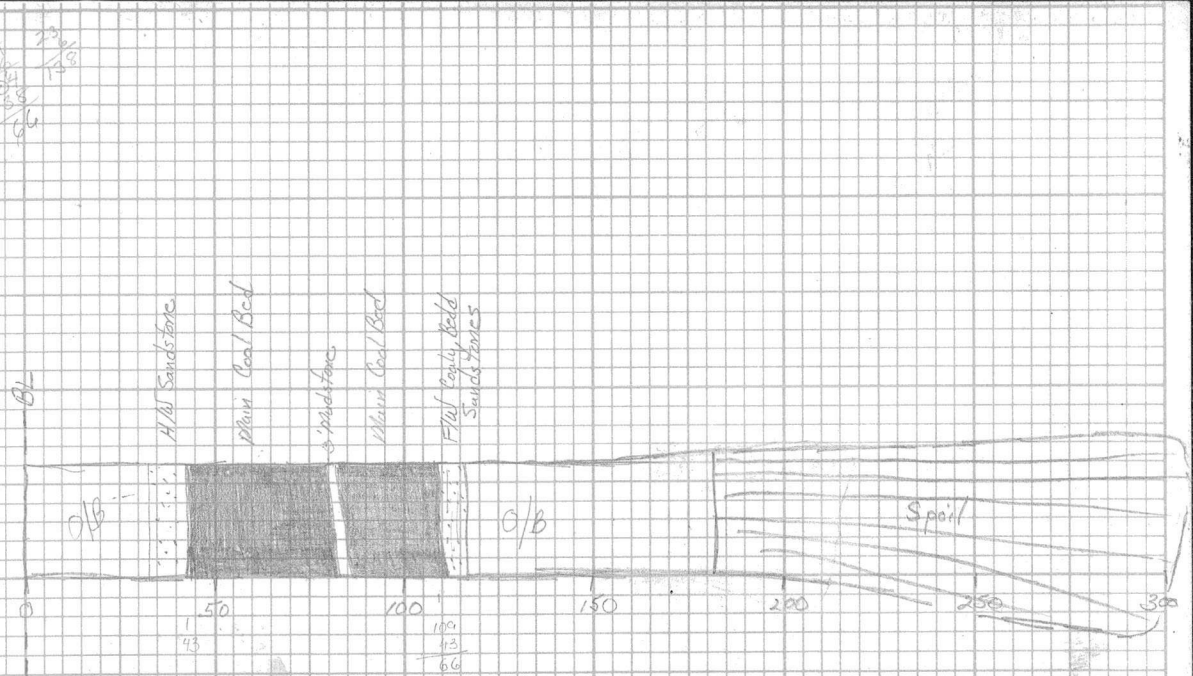
Average strike :

Average dip :

Description : Main coal has thinned drastically if simple structural model obtains but coal is of clean commercial quality. Coal thickness in trenches #13 & #15 may be due to internal folding

Note: Folding observed in this trench ~~thought to be~~ internal drag folding (?) parasitic (?) to Tantalus anticline. No replication of H/W & F/W sequences observed

228


Hard Sandstone
Main Coal Bed
Mudstone
Main Coal Bed
Flaky Sandy Shale Sandstones
O/B
O/B
O/B
Spoil
0
50
100
150
200
250
300

Trench #15

Data on main coal:

Attitudes

FW Σ 167° Δ 44°W

Mudstone Σ 165° Δ 50°W

HW Σ 6° Δ NFG (frost)

True thickness: 52-53'

Apparent " : 66'

Average strike: 173°

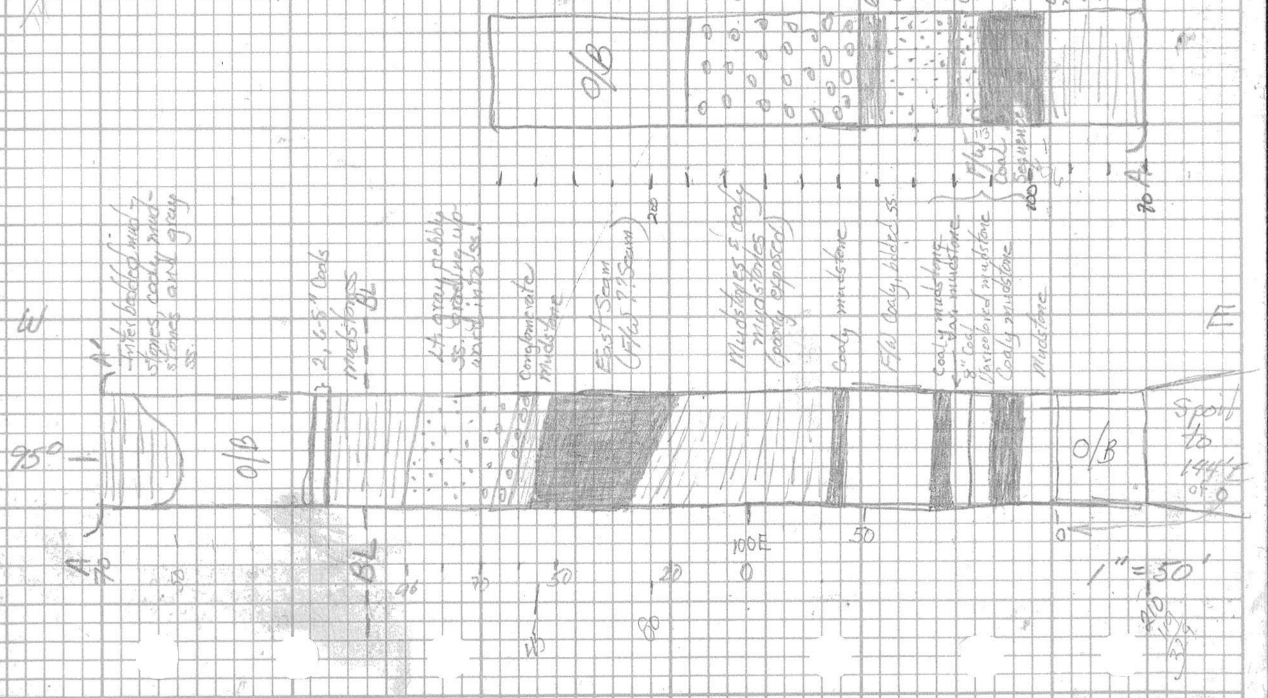
Average dip : 50°W

Note: Dips steepen to ⊥ @ HW is coal but these probably frost heaved. Use 50° as average dip

Description: Main coal of clean, commercial quality w/ only 1 3' mudstone interbed. No apparent internal folding to give measured true thickness of 53' (all dips ⊥ or to W)

167
165
186
18
173
3)518
3
21

Trench # 16 Plan View



Trench #16:

Data on E coal seam (F/W ?)

F/W Σ 40° Δ unexposed

H/W Σ 25° Δ ≈ 1

Mudstone Bed Σ 41° Δ unexposed

Approx. true thickness: 29'

Average strike: ≈ 35°

Average dip: ≈ 1

Description: This bed consists of several (at least 6), commercial quality coal seams interbedded w/ gray brown mudstone lenses. Uncommercial overall

Note: W end of #16 about 45' N of TL 18

Data on main coal bed:

F/W Σ 178 Δ unexposed

H/W ≅ 178 Δ "

Approx. true thickness: 15'

Average strike: 178

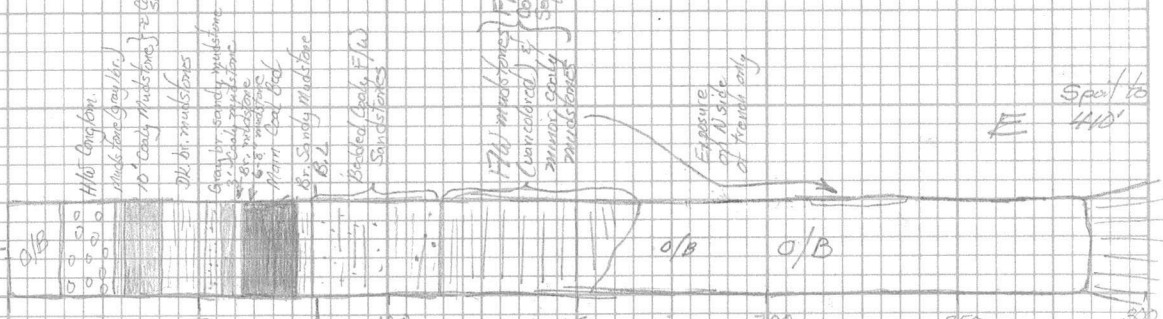
Average dip: unknown

Description: Clean, commercial coal w/ one 8-12" thick mudstone 1' from top of bed

35
0

Till = 2-8'
No permafrost

Trench #17 Plan View



Trench #17:

Data on main coal bed:

Attitudes:

H/W ∠ 0° ∆ 56°W

F/W ∠ 0° ∆ 64°W

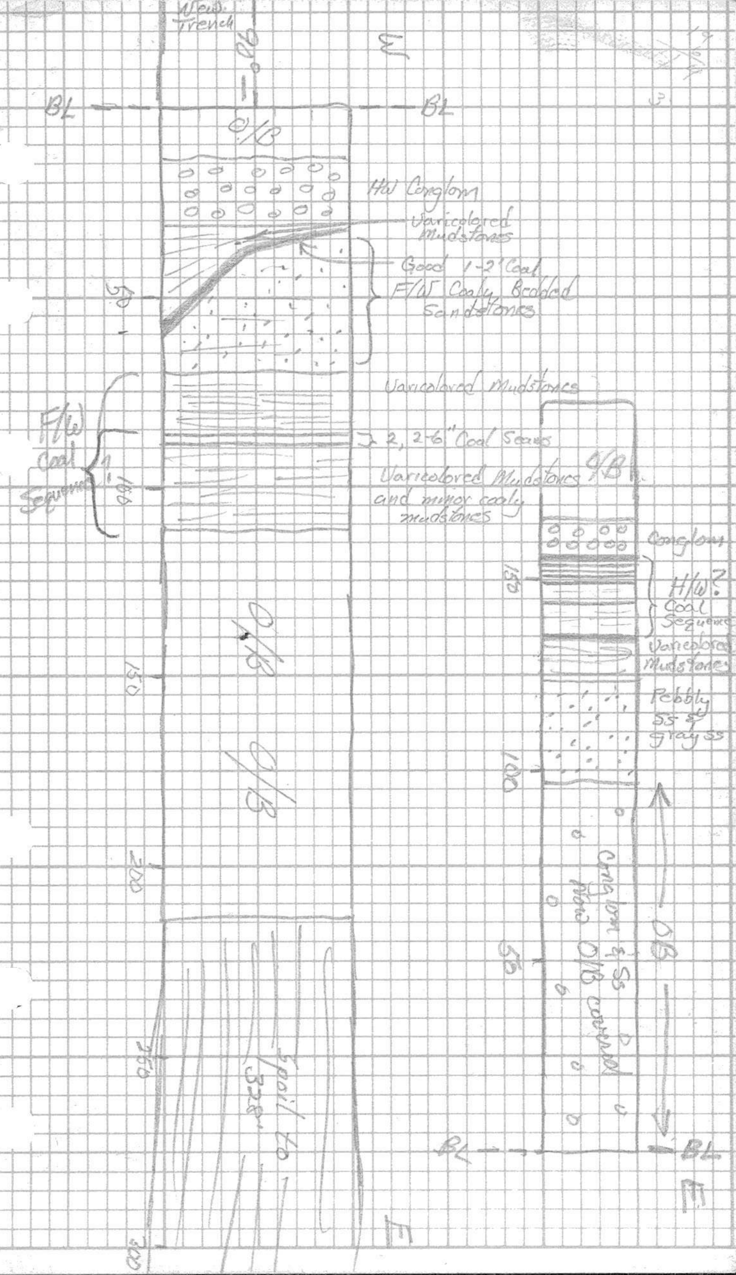
True thickness: 13'

Apparent thickness: 14.5'

Ave. strike: 0°

Ave dip: 60°S

Description: Main bed is clean commercial coal w/ only 1 6-8" thick mudstone interbed 1-1.5' from top of bed.



New Trench
W
BL
BL
O/B
H/W Conglom
Varicolored Mudstones
Good 1-2' Coal
F/W Coaly Bedded Sandstones
50
Varicolored Mudstones
2, 2-6" Coal Seams
Varicolored Mudstones and minor coaly mudstones
F/W Coal Sequence ?
100
O/B
O/B
150
200
Spoil to 325'
250
E
300
O/B
Conglom
150
H/W? Coal Sequence
Varicolored Mudstones
Pebbly SS & gray SS
100
Conglom & SS from O/B covered
OB
50
BL
BL
E

Trench #18:

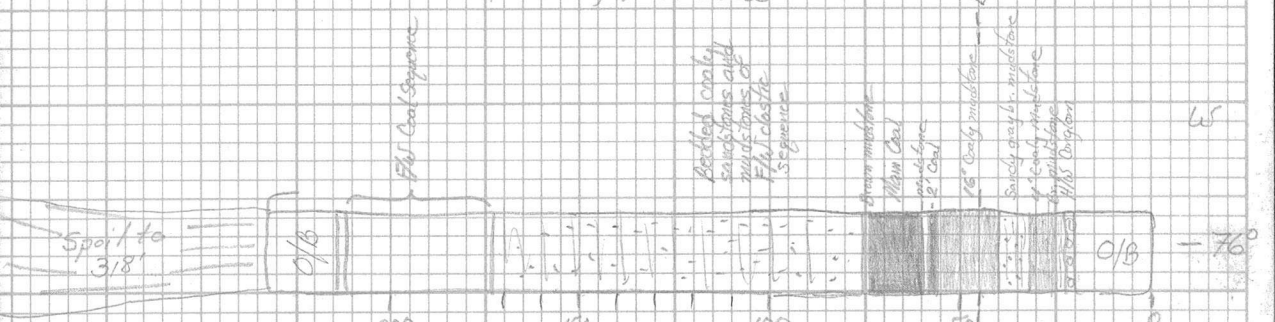
Attitude on main (?) bed variable. Has 2, 2-6' coal seams in the F/W ∑ 175°. Main (?) seam of commercial quality but no volume.

176
178
.9

Coal beds in H/W (?) sequence strike 176°, 178°, 178° w/ subvertical dips

Till 4-6'
No permafrost

Trench #19, Plan View



Trench #19:

Attitudes:

H/W Σ 175° Δ 68°W)

F/W Σ 166° Δ 75°W

True Thickness: 13'

Apparent Thickness: 14'

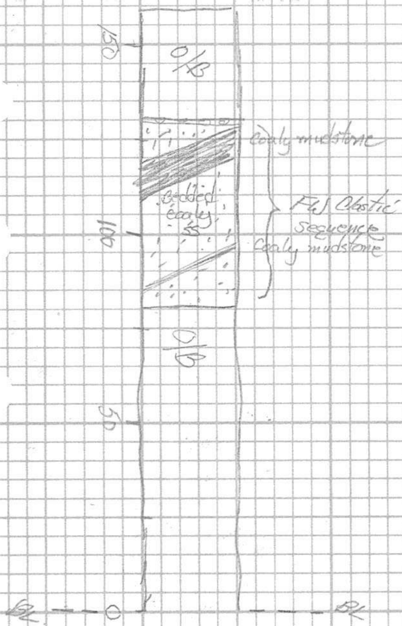
Average Fluke: 171°

Average dep: 72°W

Description: Main coal bed is clean, commercial coal w/ one 2-6" mudstone interbed 6-8" from top of bed

Note: Strat. sequence here is identical to that of #8 Trench and #9 trench wrt. F/W clastic sequence

F/W coal sequence is a 40' interval of interbedded coals (6"-2' thick) and coaly mudstones and sandstones. Sequence in this trench correlative w/ that in trenches #18, #17, #16, #9, #8

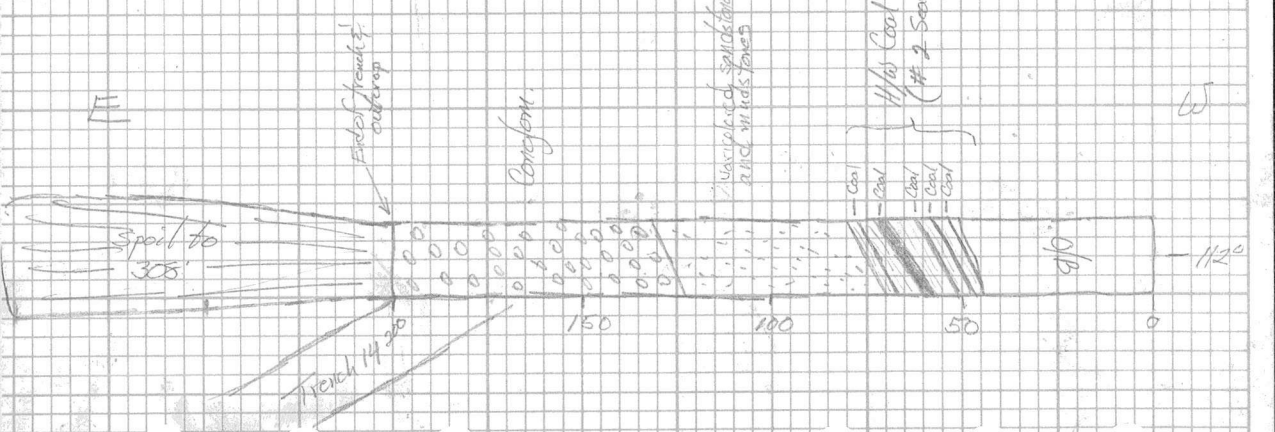

150
O/B
coaly mudstone
bedded coaly ss
FWS Clastic Sequence
coaly mudstone
100
O/B
50
BL
0
BL

320 LX Pacific Rainproof

Trench #20

T.M = 3'
No permafrost

Trench #21, Plan View



Trench #21: (Contiguous w/ #14)

Data on H/W coal sequence:

Average strike: 170°

Average dip: 50°W

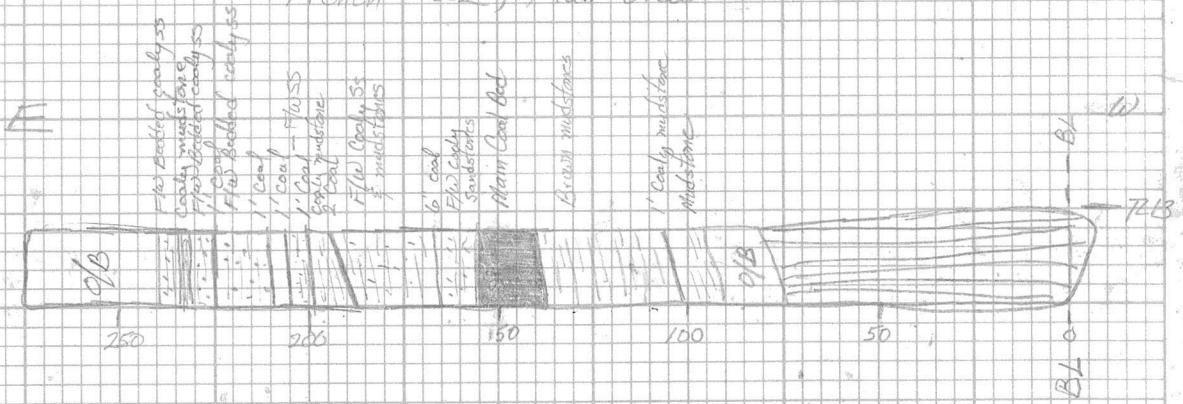
Apparent thickness: 24"
(top to bottom coal)

True thickness: ≈ 20'

Description: H/W coal of non-commercial quality due to large amount of interbedded mudstone per sketch

O/B = 6-8'

Trench #22, Plan View



Trench # 22:

Data on main coal bed

Attitudes:

F/W ∠ 2° Δ ≈ ⊥

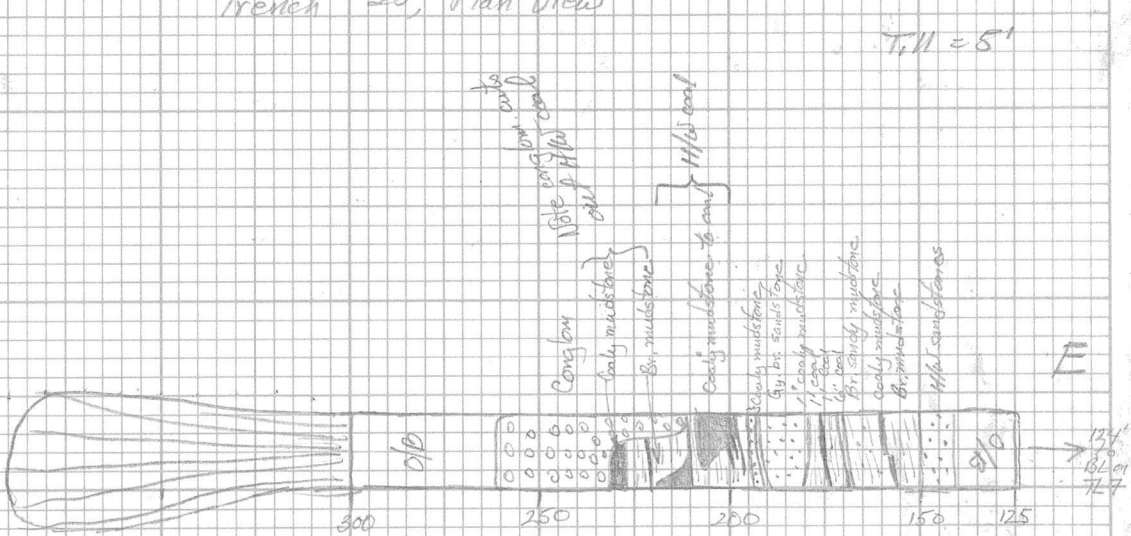
H/W ∠ 166° Δ 75°W

Apparent thickness: 20'

True thickness: 19'

Description: main seal of clean commercial quality w/ < 1% interbedded mud-stone

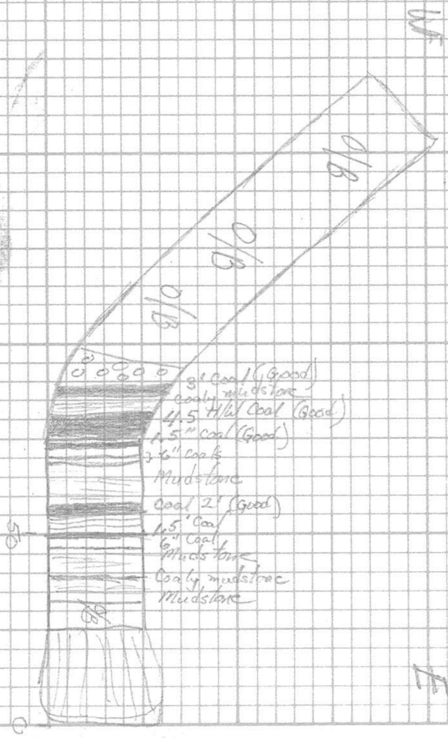
Trench #23, Plan View



Trench #23:

Attitudes:

Best 5 data on H/W and beds below is 176-178° w/ dips of 55-60°W H/W coal of uncommercial quality due to included mudstone lenses & unconformable truncation by conglomerate


W
O/B
O/B
O/B
3' Coal (Good)
Coaly mudstone
4.5 H/W Coal (Good)
1.5" coal (Good)
3 6" Coals
Mudstone
Coal 1' (Good)
1.5' Coal
6" Coal
Mudstone
Coaly mudstone
Mudstone
E

Trench #24:

Attitudes on H/W bed

F/W Σ 168 Δ 52°W

H/W Σ 166 Δ 54°W

Ave. strike: 167°

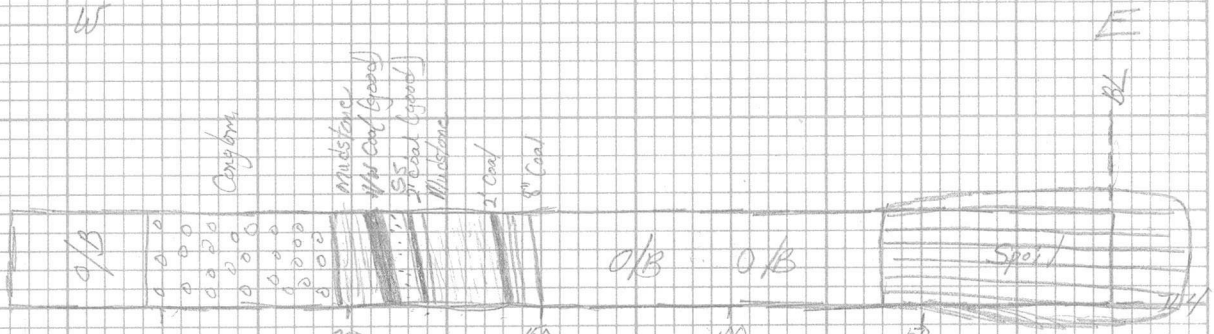
" dip: 53°W

Approx true thickness: 4.5'

Description: H/W bed of commercial quality but too thin

O/B = 12'
No permafrost

Trench # 25, Plan View



Trench #25:

Data on H/5 coal beat

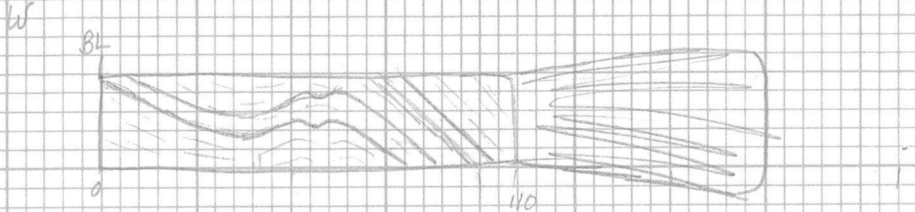
Strike 164°

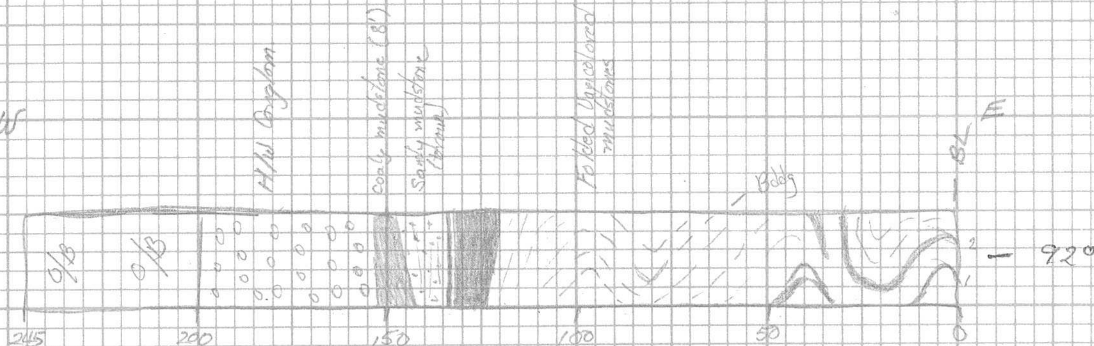
Dip 75°W

Apparent thickness: 5'

Approx true " : 4.5'

Description: H/5 good commercial coal but too thin


W
BL
0
110


W
H/W Conglom
Coaly mudstone (8')
Sandy mudstone (brown)
Folded Varicolored mudstones
E
BL
Bddg
O/B
O/B
2
1
92°
245
200
150
100
50
0

Trench #26:

Data on main bed

Attitudes:

H/w Σ 4° Δ ≈ ⊥

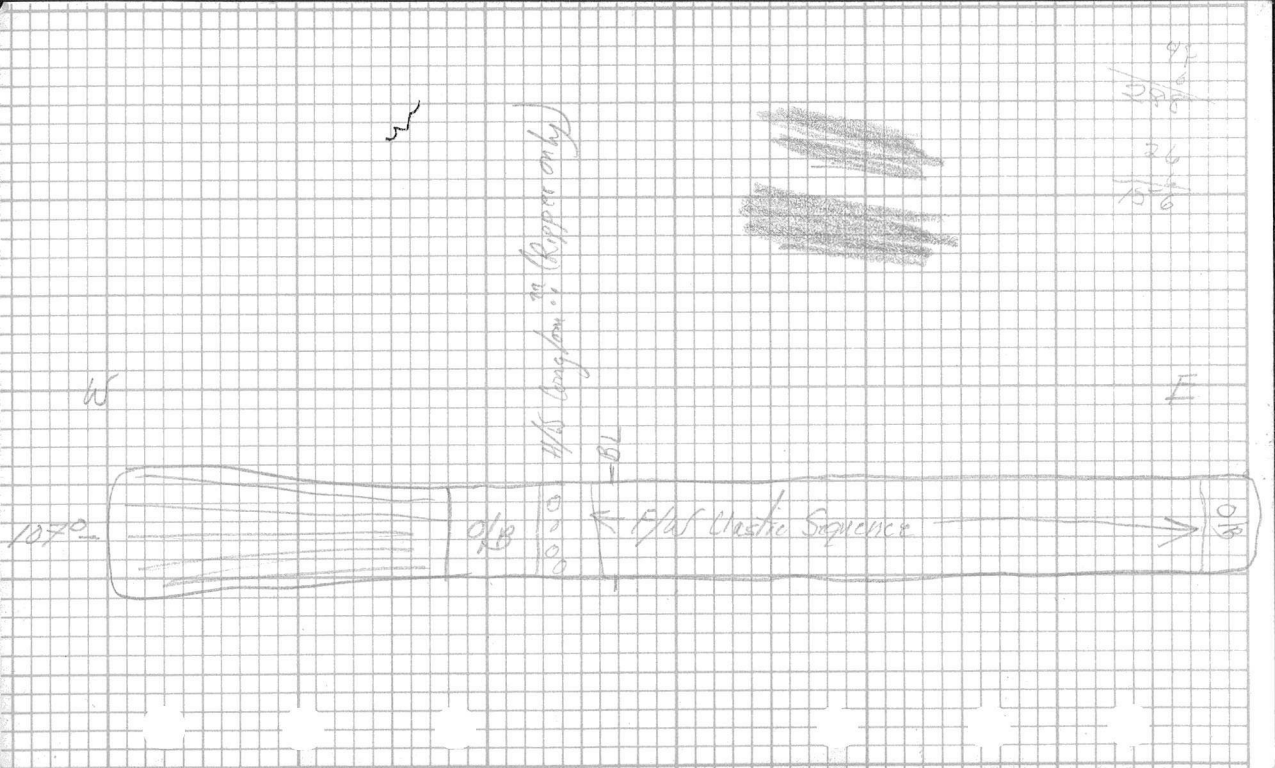
F/w Σ 25° Δ ?

F/w undg on "pinch & swell"

Apparent thickness: 13'

True thickness: ≈ 11'

Description: Good commercial coal w/ 6"-18" mudstone bed @ top as shown


W
E
137°
Flat Clastic Sequence

Garbage moved to 26, Sept

Trench #7

7100 yds

Trench #8

100' × 14' × 10' = 14,000 ft³ = 1550 yds

Trench #9

125' × 28' × 10' = 35,000 ft³ = 3,900 yds

Trench #10

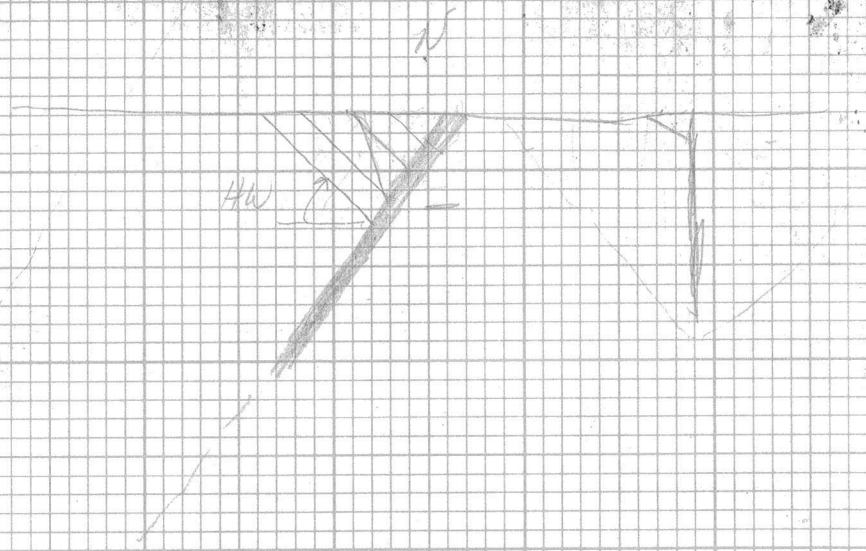
225' × 28' × 10' = 73,000 ft³ = 8,100 yds

Trench #11

100' × 28' × 8' = 22,400 ft³ = 2,500 yds

Subtotal 23,150

Trench #12


N
HW