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Memorandum

August 2, 1985

To: Ben F. Dickerson III & Carole A. O'Brien

From: Don C. White & Robert W. Hodder

Subject: Summary of map compilation and renewed access to underground plus a proposed next step in target definition at the United Verde Extension gold project - Jerome, Arizona.

Preface

This memorandum accompanies plans maps (scale 1" = 40') of the 1400, 1300, 1200, 1100, 950, 905, 800, 600 and 550 levels of the UVX mine upon which Don White and Karl Budge have compiled geology and assays from the historical mine records; and two cross sections by Don White. This material has been reviewed with R. W. Hodder during the week of July 29 - August 2, in light of underground workings not examined by Phelps Dodge. These results are compared to Paul Handverger's postulated target of 1 million tons of 0.25 oz Au/t derived from a much less rigorous compilation. We conclude with a proposed next stage of target definition, employing 5500 ft. of drilling.

Observations from the Compilation

- I. Gold is most abundant in brecciated chert, probably occurring in the matrix and in the fine fractures of clasts. It probably occurs as native metal and electrum and may be

associated with sulpharsenide silver minerals.

II. The greatest gold abundance is not coincident with the greatest base metal abundance, but rather, the identified gold concentrations are peripheral to the base metal concentrations. Gold concentrations do not appear to be accompanied by the alteration mineral assemblages generally recognized in the pyritic gold occurrences of the Archean in Canada. The UVX project is on new ground in defining gold distribution relative to base metals in the massive sulphide base metal volcanogenic environment. The only other project we know of with this goal at present, is Noranda's re-evaluation of gold occurrences in and about the mined out copper ore bodies of the Horne Mine at Noranda, Quebec. At the Horne, it also appears that the gold and copper concentrations are not coincident, and that some of the better gold concentrations may not have been mined at the time of copper ore extraction. In brief, the guides to gold at the UVX, recognized to date, are (a) chert, the more siliceous the better; (b) brecciation, with a hematite matrix (cement); and (c) association with appreciable quantities of silver, arsenic, bismuth and molybdenum.

III. The greatest abundance of chert, which is known from previous production or sampling to be auriferous, appears to be on the flank of the area dominated by the quartz porphyry and the massive sulphide body, and in the area dominated by the large diorite mass, central to the upper levels of

the mine. The dividing line between the area of the quartz porphyry - massive sulphide assemblage and the diorite - chert - gold assemblage is essentially the Florencia Fault. This can be seen clearly on the 1100 level plan. It can also be observed that the chert zone peripheral to the massive sulphide body occurs mostly above the 1200 level. Therefore, the prime area of gold potential appears to lie north of the Florencia Fault, between the 1200 and the 700 levels. At the latter level, the flat lying Tertiary conglomerates lie unconformably over most of the steeply dipping Precambrian sections of exploration interest. In this block of ground, the cherty zone has the central diorite for its footwall on its east side, and schist of the Grapevine Gulch Formation for its hanging wall. West of the central diorite mass, the chert zone has diorite and schist (Grapevine Gulch Fm.) for a hanging wall, and the Verde Fault zone for a footwall. This layered rock sequence is quite comparable to that lying peripheral to the United Verde massive sulphide deposit, where it is exposed at the surface in the walls of the UV pit and on adjacent hillsides. Here, it can be examined, and probably should be sampled, to help in the interpretation of drill core from the UVX.

The important points here are: (a) The gold occurrences of initial exploration interest at the UVX occur peripheral to, and not coincident with, the base metal deposit, which contained only

0.03 oz Au/t; (b) The identified gold concentrations occur in a recognizable part of the rock section, which in the UVX, can be divided into 4 main areas of exploration interest:

1. The Florencia area

This area lies immediately north of the Florencia Fault, and is predominantly chert from the 1200 level upward. A small portion of this zone was tested by 2 Phelps Dodge drill holes (1982), and was also sampled by Fearing (1920). Paul Handverger had his samples analysed to confirm the presence of gold in this area.

2. The 1205 "vein" system

This chert layer strikes north from, and is contiguous to, the Florencia area. It seems to persist from the 1400 level to the 800 level. Presence of gold is confirmed by assays from the 1205 veins which were base metal bearing and exploited on and beneath the 1100 level. The 1205 vein system has the central diorite as a footwall, and includes, from the 6th floor above the 1100 level, to the 8th floor above the 950 level, the Gold Stope.

3. The Gold Stope area

This area is actually within the enveloping chert of the 1205 vein system, but is treated separately because it produced 35,000 tons of 0.4 oz Au/t. This tonnage was mined as a high silica smelter flux to accompany the massive chalcocite ore of the main ore body. The ore's silica content may have been as important as the gold, when mined. Production from this area has been deducted from the overall estimates, but high grade material

in and adjacent to the stope pillars has been included in the current evaluation.

4. The Verde Fault area

This zone of chert, lying between the central diorite and the Verde Fault, persists from the 950 level to the 600 level. Presence of gold is indicated by assays from samples in old workings and in old drill holes.

IV. Table 1 is a compilation, from the assembled data, of these 4 areas, including approximate zone dimensions and our estimates of the contained ounces of gold, based on limited and spotty data. Estimates are presented as best/worse cases and our preferred choice because we are not working with a systematic sampling at this time, but rather from a compendium of work done to meet a variety of goals, many of which are unknown.

Paul Handverger has estimated 1 million tons of 0.25 oz Au/t, or, 250,000 contained ounces. Our preferred estimate is 576,000 tons of 0.13 oz Au/t, or, 75,000 contained ounces.

Observations on the present Underground access

Reopening the Edith Shaft has provided access to the 550, 800, 950 and 1100 levels. Water level is approximately at the 1300 level. Three levels, the 800, 950 and 1100, give 3 approximately equally spaced slices through the areas of immediate exploration interest. However, there is some caved

ground on each of these levels which currently prevents direct access to and systematic sampling of any of the 4 areas of interest on any of these 3 levels. These caves also restrict the choice of drill sites for remote sampling. The Phelps Dodge drill station on the 1100 level is accessible and available for immediate use, while the cost and location of other sites are being determined.

A Proposal for Drilling to Increase Target Definition

The following is a first stage in further target definition which includes 5000 ft. of drilling, 2400 ft. of which would be from surface, and the remainder from underground.

1. The Florencia area should be further defined and enlarged by establishing continuity to the north and up dip. This can be tested by 3 drill holes from the Phelps Dodge drill site on the 1100 level (Section A-A'). These new holes will strike S 63° W, 11° north of the PD holes. One is inclined at +5° for 620 ft. to cut both the Florencia area and the 1205 vein system area, cutting the latter's footwall about 55 ft. above the 1100 level. The second hole at +15° for 760 ft., will penetrate both the Florencia zone and the 1205 vein system, reaching the latter's footwall and the Verde Fault about 40 ft. above the 950 level. The third hole at -13° for 430 ft. would also penetrate the Florencia area and the 1205 vein system area, ending about 75 ft. above the 1200 level.

2. The 1205 vein system area should be further defined by the

previously described 3 holes from the 1100 level, plus 3 other holes from the 950 level. These should be located as near the presently inaccessible 901S drive as reasonably possible (Section B-B'). The planned holes strike S 63° W, are inclined at -10° for 240 ft., -20° for 270 ft., and +15° for 350 ft. These holes would sample both the middle portion of the 1205 vein system area and the down-plunge extensions of the Gold Stope area. Ideally, the north end of the 1205 vein system area should be tested by opening the 816 drive west from the Edith Shaft on the 800 level, and chip-sampling carried out, and a drill station established at 7590 E, 11460 N. Three holes from this location, striking S 79° W and inclined at -25°, - 5° and +20° for 140 ft., 140 ft., and 160 ft. respectively, plus the sampling, would test the 1205 vein system area and would also probe for the possible up-plunge extensions of the Gold Stope area.

3. The Verde Fault area. If no additional access can be practicably reached from underground, this area can best be tested from surface. Three holes are proposed from a location at 7530 E, 11430 N, striking S 79° W and inclined at -60°, -45° and -30°, each for 800 ft. (Section B-B').

4. The Gold Stope area. No drilling is recommended for this area per se, as there is comprehensive sampling from past production from the stope, and some of the previously mentioned drill holes will check for its possible extensions.

Further comments by BFD

This is a good and useful compendium and base plan. Nevertheless, you should understand that I don't necessarily believe it to be unchangeable and correct holy writ. Clausewitz, or Moltke, the Elder, said: "No battle plan long survives the first contact with the enemy." I have found this statement to be very applicable in struggles with Mother Nature. Flexibility is all important in programs such as the one we are attempting, since we must be prepared for serendipity.

I am not at all enthusiastic about the surface drilling proposal, because 800 ft. angle holes drilled at small angles to the target structure will deviate, and intersection of some old (possibly unrecorded) mine working could be possible. Surface holes may be required, but only if no other reasonable choice is available. (Note: As Carole points out, if the drift on the 800 level can be opened, we can also drill a horizontal "fan" of holes from the site which would cut the Verde Fault zone at near right angles.)

If two of three holes in a "fan site" obtain no favorable results, it will be unlikely that we would want to drill the third hole. (If assay turn-around permits.)

Table 1

	Length (ft)	Width (ft)	Height (ft)	Volume (cu.ft.) 000's	Tonnage factor
1. Florencia area					
Best Case	250	20	500	2,500	11
Worst Case	100	5	150	75	14
DCW-RWH preferred	150	12	300	540	12
2. 1205 "vein" system area					
Best Case	700	25	400	7,000	11
Worst Case	300	10	200	600	14
DCW-RWH preferred	500	15	350	2,625	12
3. Gold Stope area					
Best Case					
Worst Case	Not recoverable				
DCW-RWH preferred					
4. Verde Fault area					
Best Case	800	30	500	12,000	11
Worst Case	400	10	300	1,200	14
DCW-RWH preferred	500	20	350	3,500	12

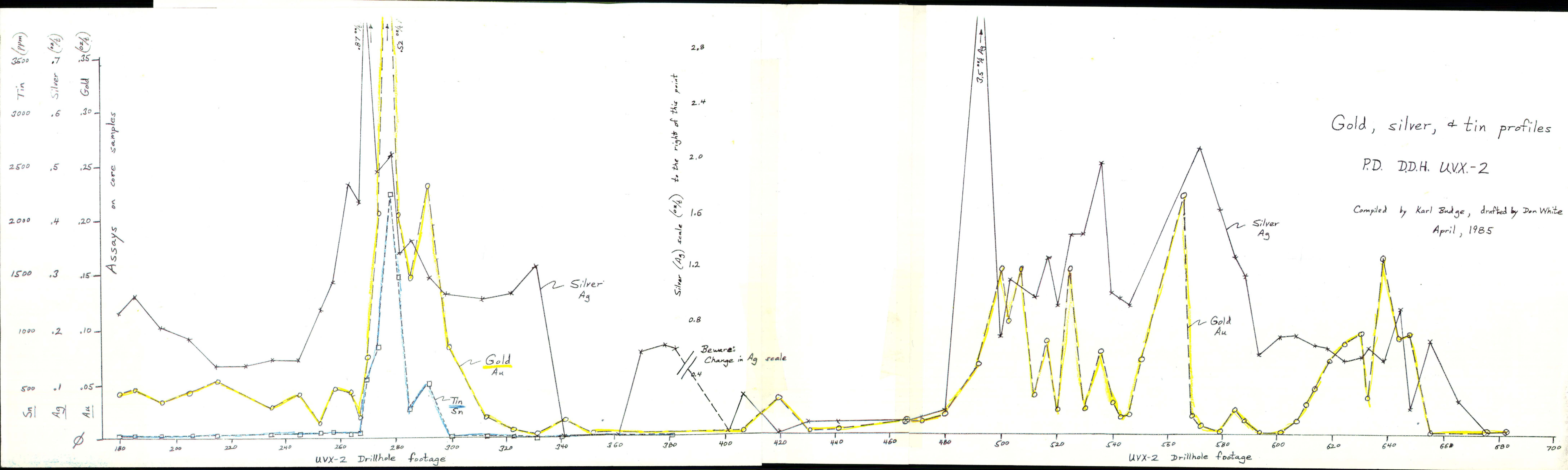
TOTALS

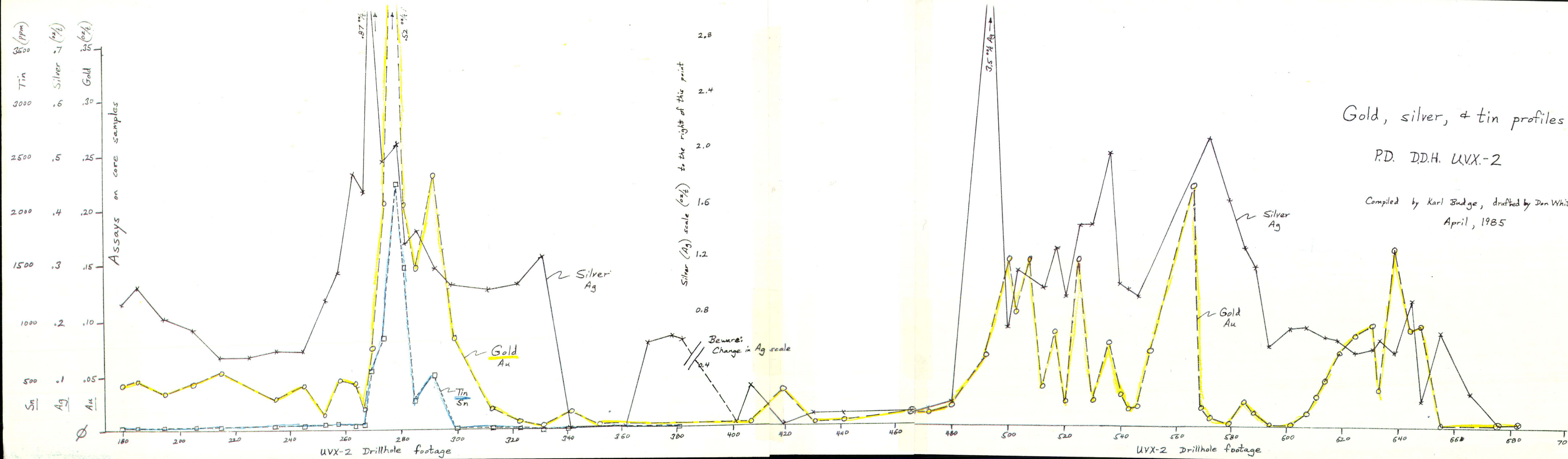
Best Case
Worst Case
DCW-RWH

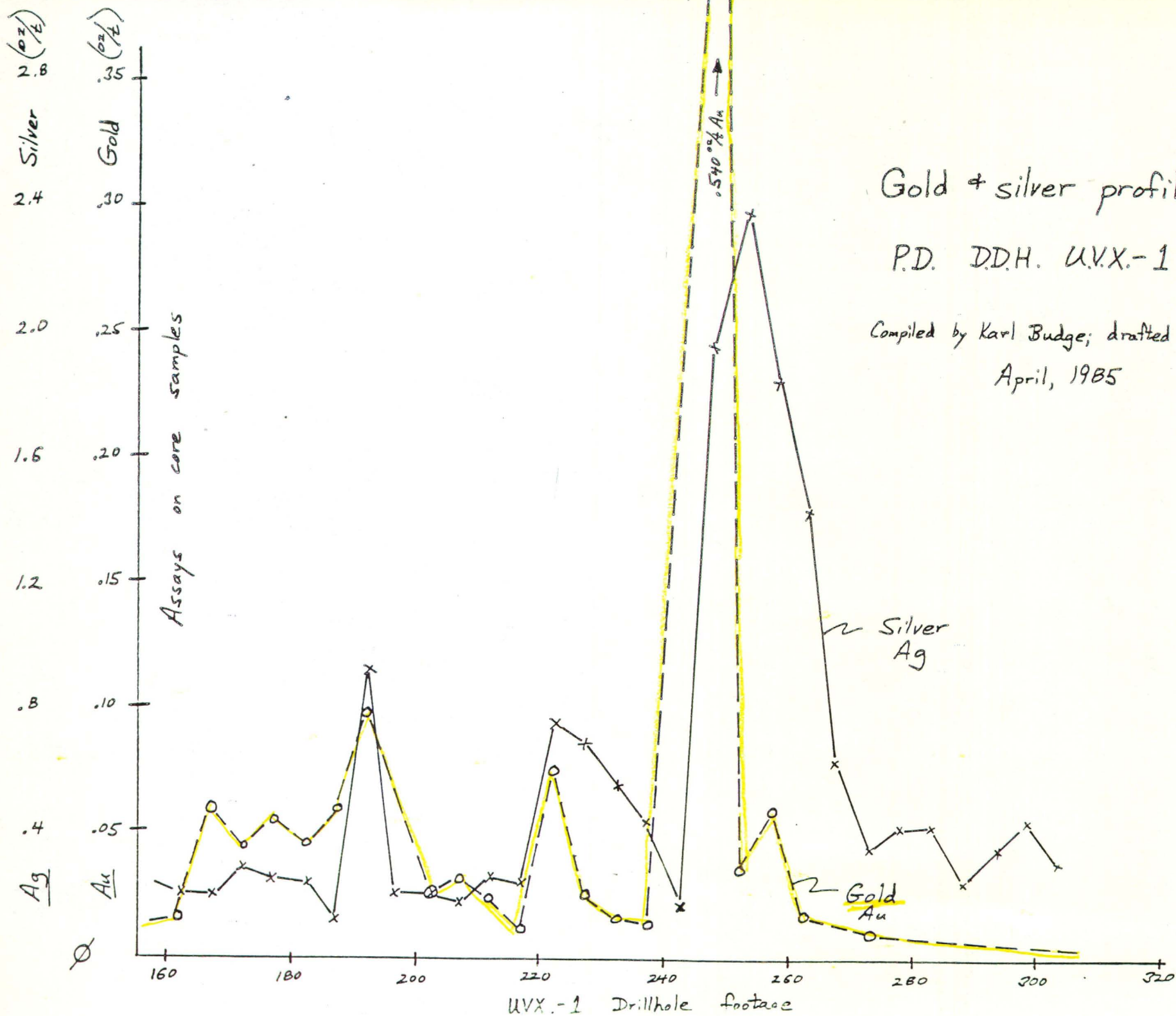
Paul A. Hanverger

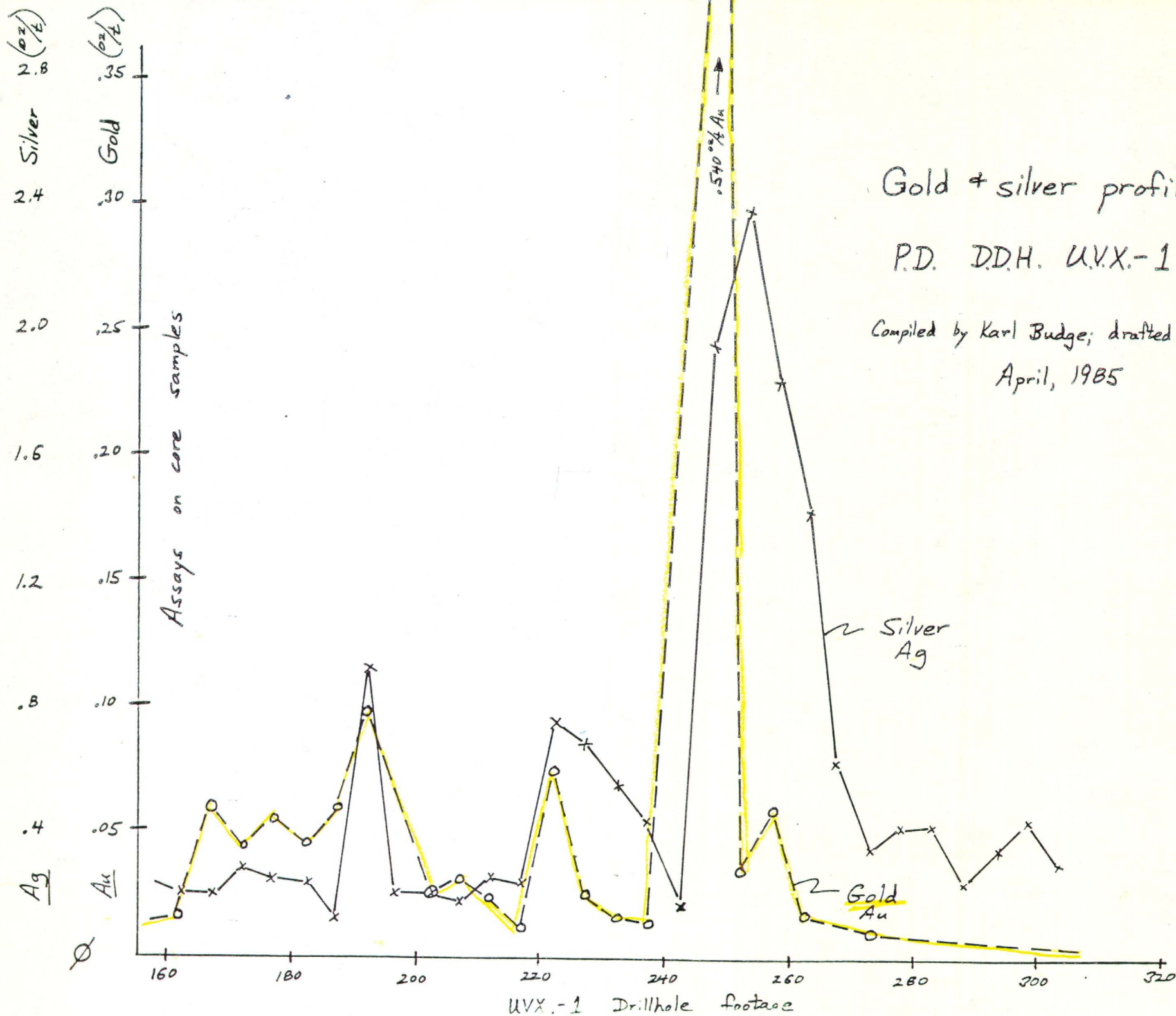
Tons 000's	Gold Grade oz/t	Contained Ounces 000's	Remarks on further target definition	Total ft. Drilled
227.3	0.25	56.8	Can be drilled from PD drill station on 1100 level; 3 holes.	1,810
5.4	0.10	0.5		
45.0	0.15	6.8		
636.4	0.20	127.3	Above 3 holes will also intersect 1205, plus 3 holes on 950 level, and 3 holes on 800 level.	1,300
42.9	0.10	4.3		
218.8	0.12	26.3		
20.0	0.50	10.0	No drilling on Gold Stope per se. Above holes into 1205 will check for plunge and lateral extensions	
0.0	0.00	0.0		
20.0	0.30	6.0		
1,090.9	0.20	218.2	Three holes from surface	2,400
85.7	0.10	8.6		
291.7	0.12	35.0		
1,974.5	0.21	414.7	Total drill footage	5,510
133.9	0.10	13.4		
575.4	0.13	74.8		
1,000.0	0.25	250.0		

Note: Use Au/Ag of 1/5
i.e. 0.13 Au to 0.65 Ag







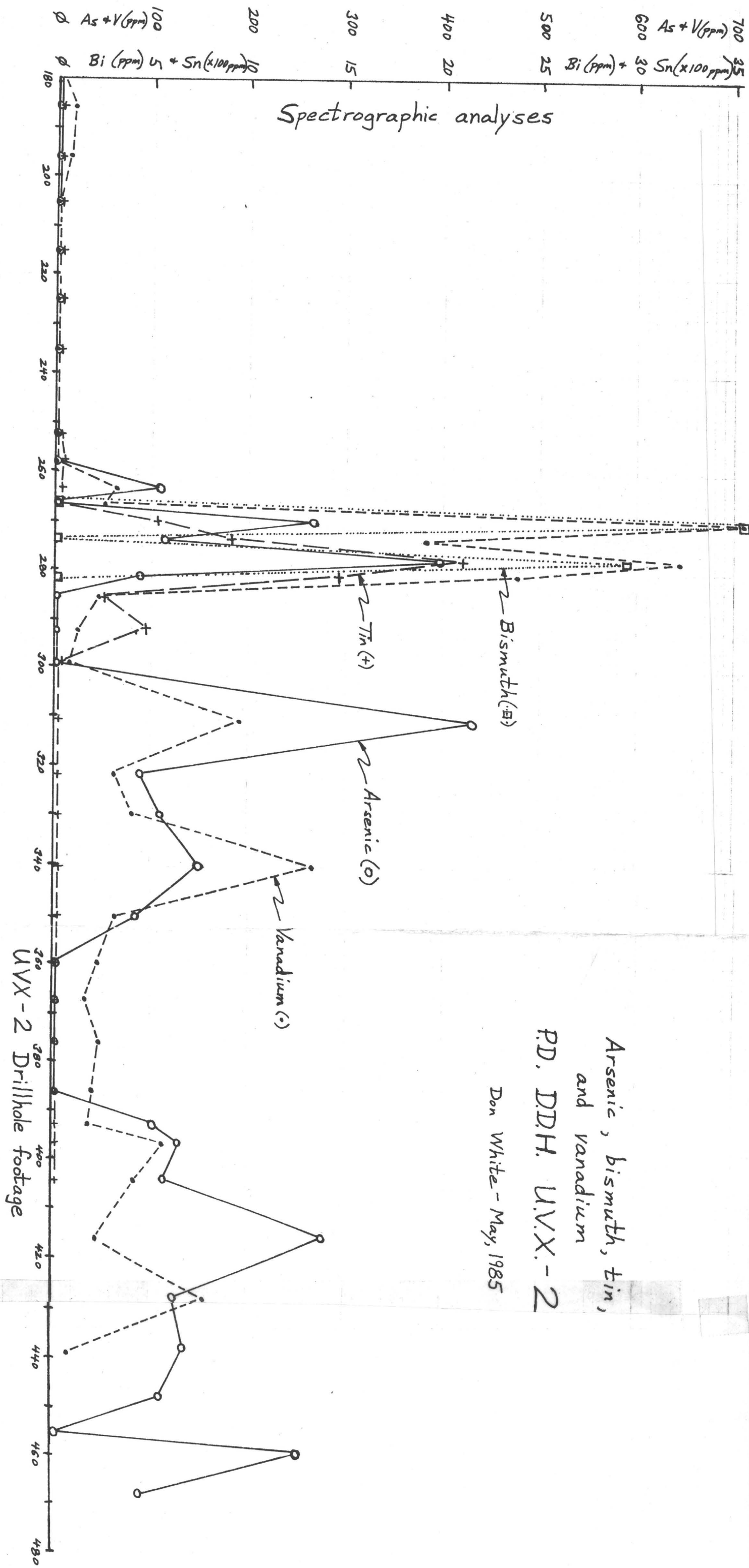


Gold & silver profiles

P.D. DD.H. UVX.-1

Compiled by Karl Budge; drafted by Don White

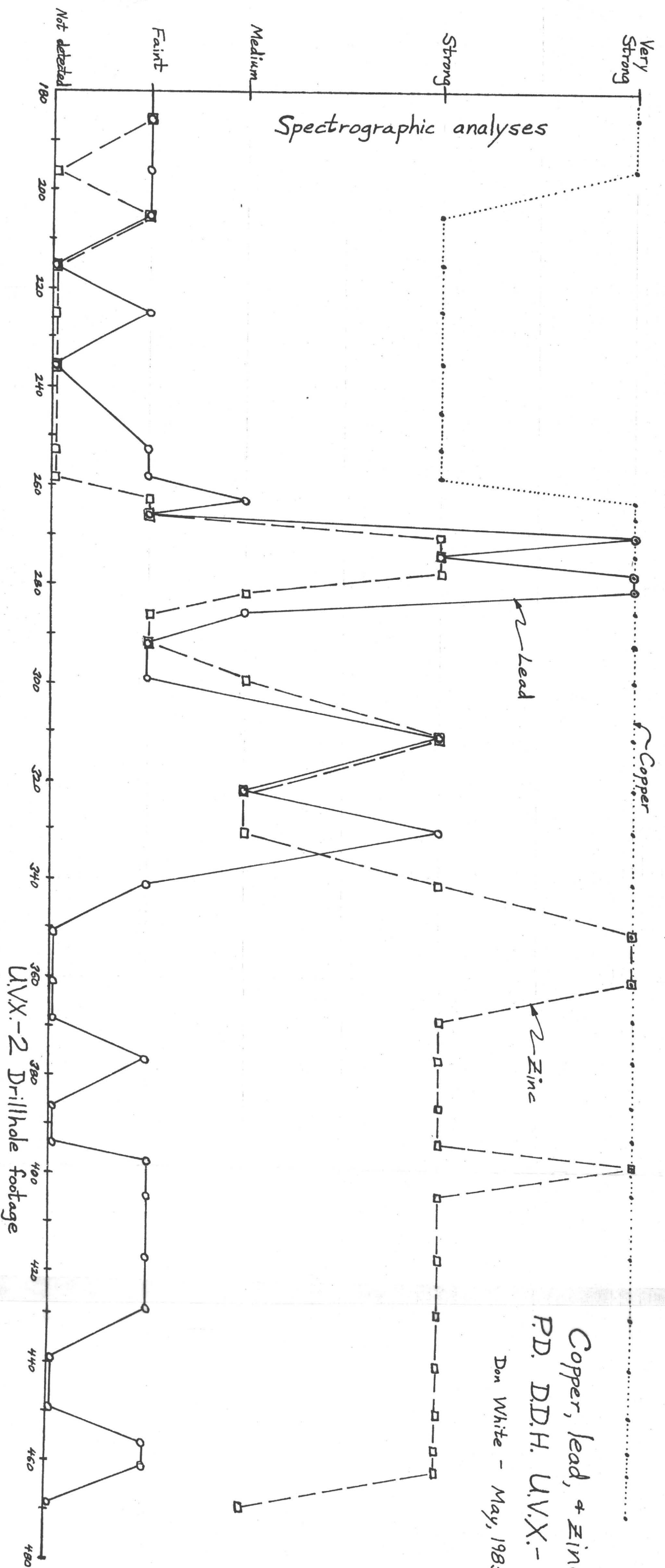
April, 1985



Arsenic, bismuth, tin,
and vanadium

P.D. D.D.H. U.V.X.-2

Don White - May, 1985

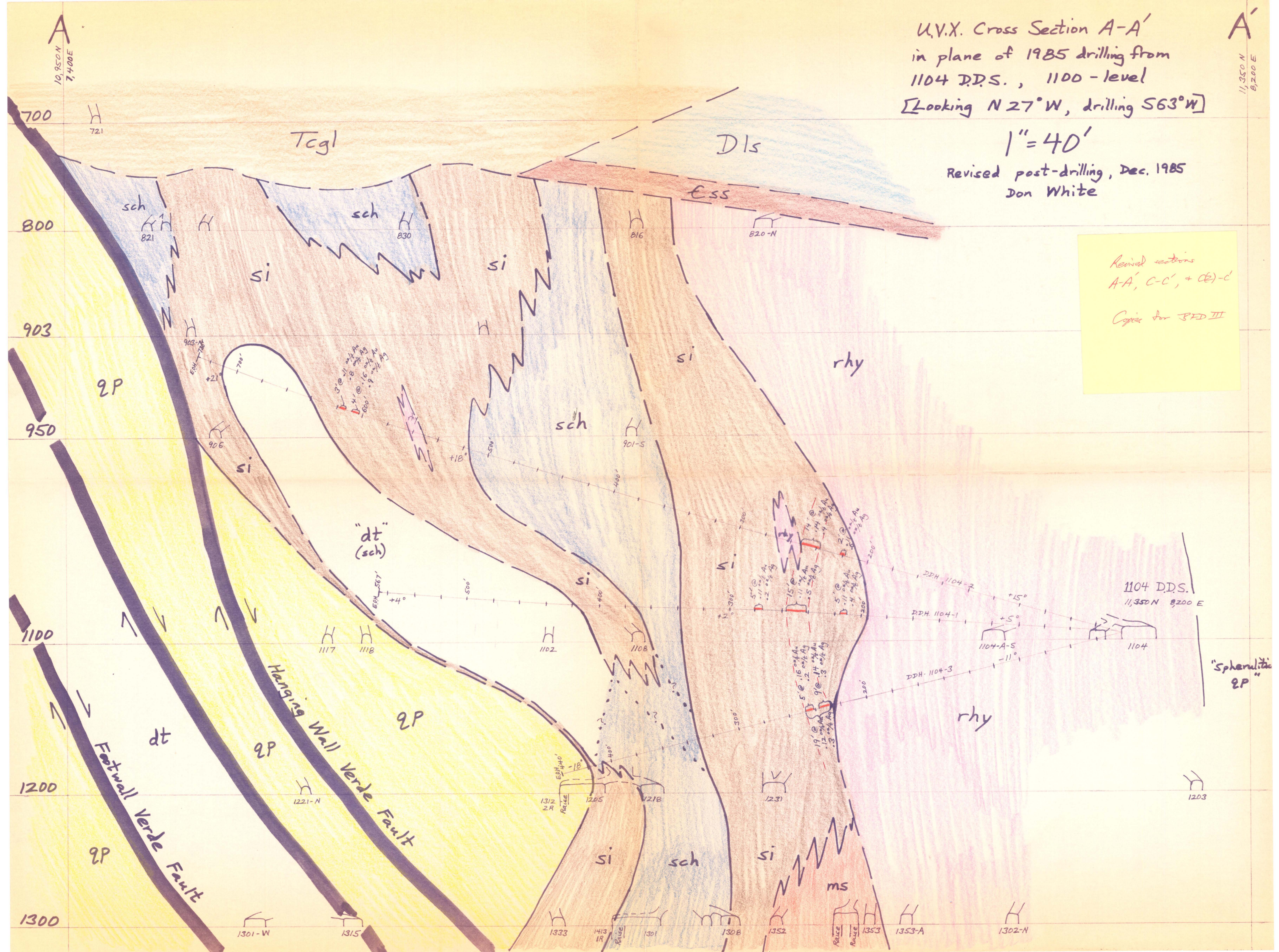


Copper, lead, & zinc
P.D. D.D.H. U.V.X.-2
Don White - May, 1985

A
11,350 N
8,200 E

Revised post-drilling, Dec. 1985
Don White

Copies for BFD III

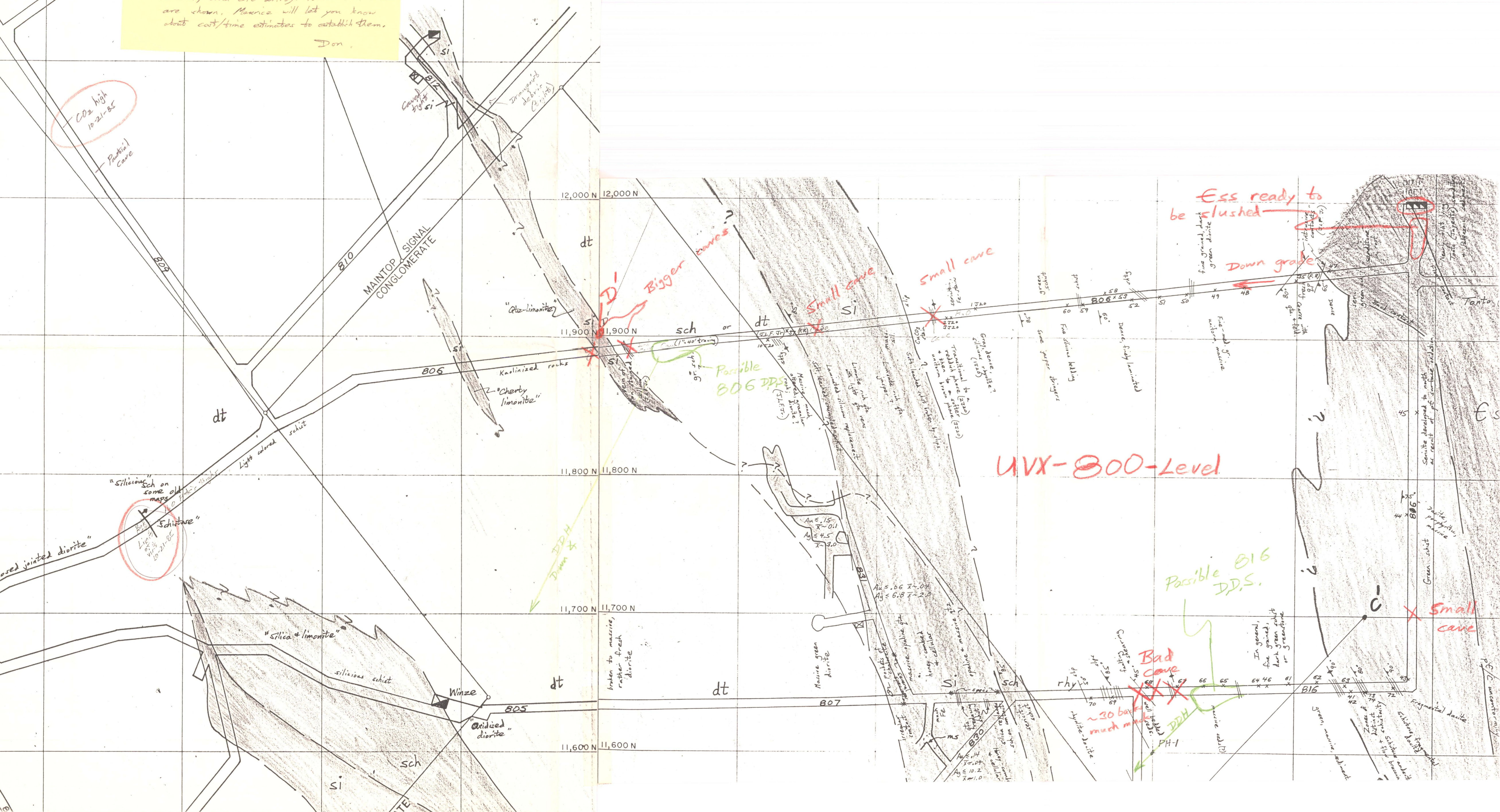


Ben + Carole,

12,200 N

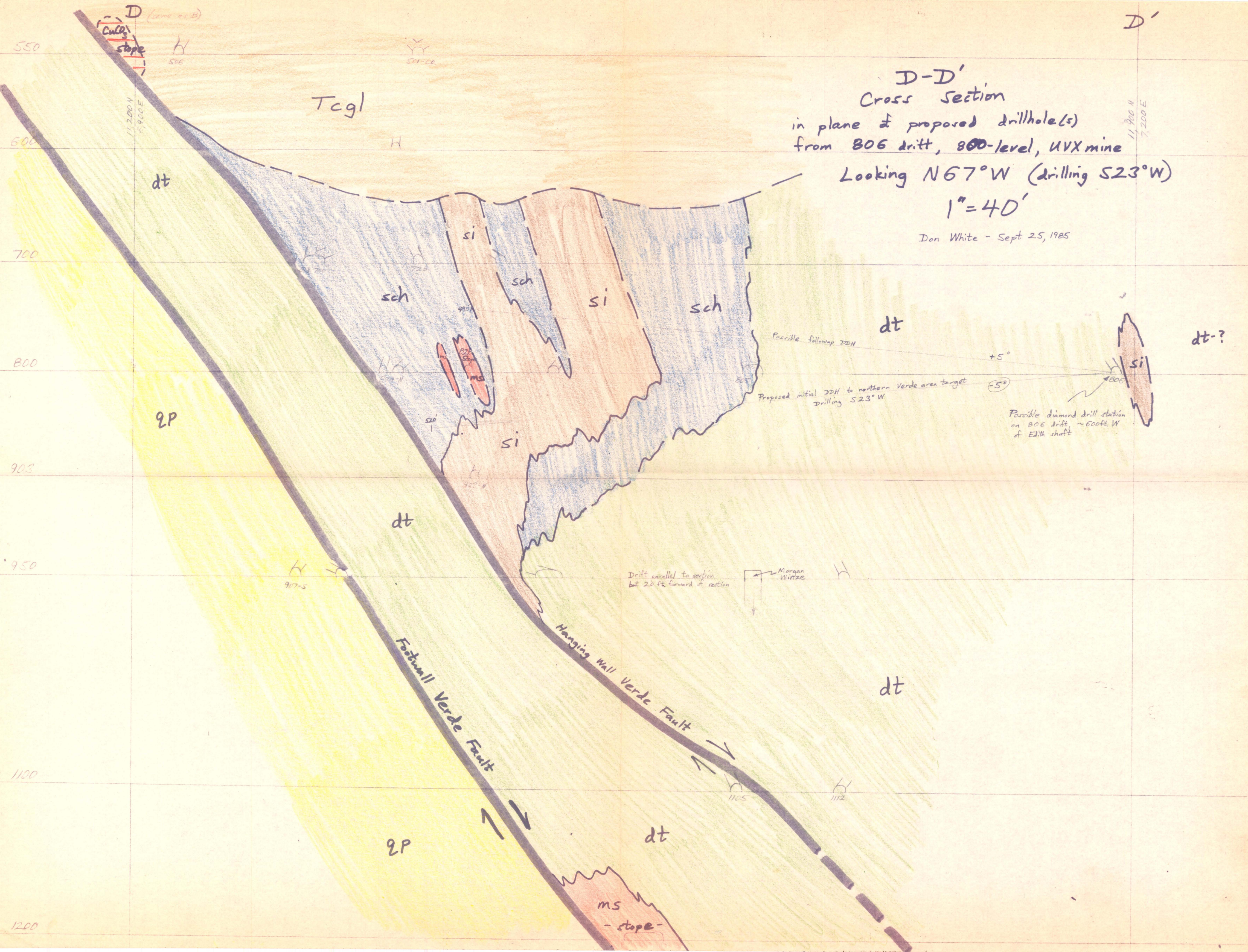
Results of our recon of the 806 drift are attached on the map copy. I will sample the accessible "51" units tomorrow (on the 806 drift, three locations, and 810 drift). Possible drill stations are shown. Maurice will let you know about cost/time estimates to establish them.

Don



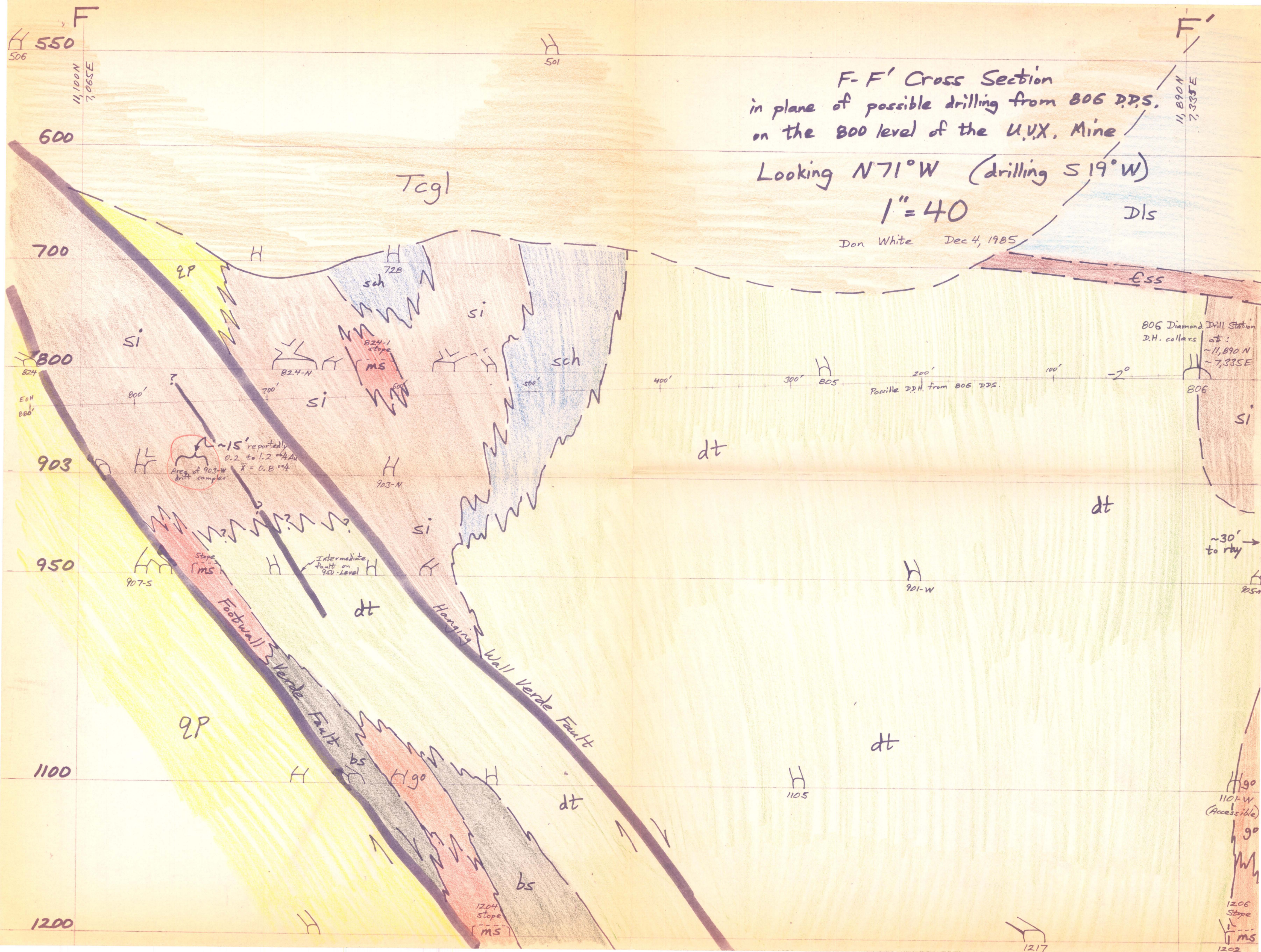
D'

D-D'
Cross Section
in plane of proposed drillhole(s)
from 806 drift, 800-level, UVX mine
Looking N67°W (drilling S23°W)
1" = 40'
Don White - Sept 25, 1985



Looking $N 71^\circ W$ (drilling $S 19^\circ W$)

Don White Dec 4, 1985



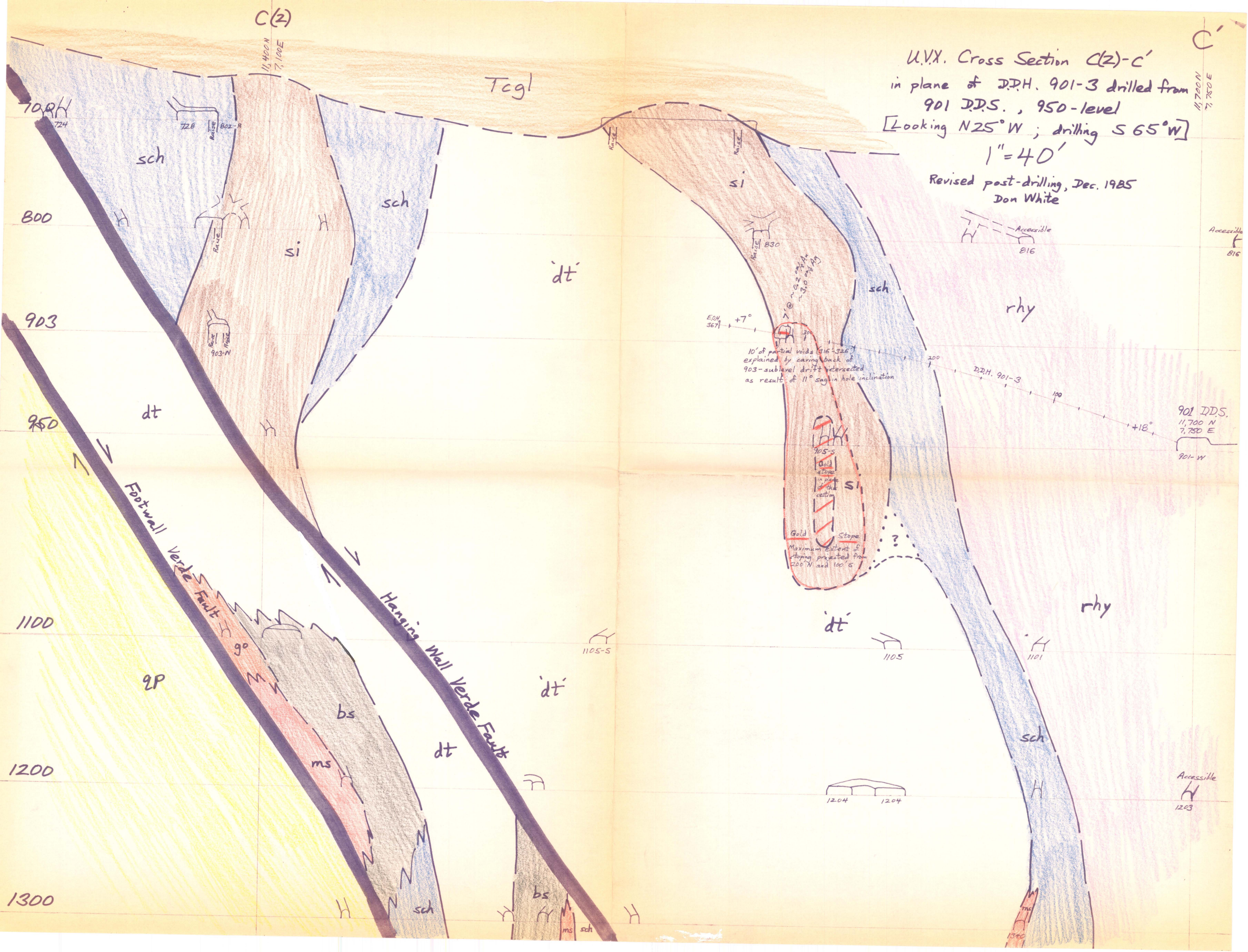
C(2)

C'

U.V.X. Cross Section C(2)-C'
in plane of D.D.H. 901-3 drilled from
901 D.D.S., 950-level
[Looking N25°W; drilling S65°W]

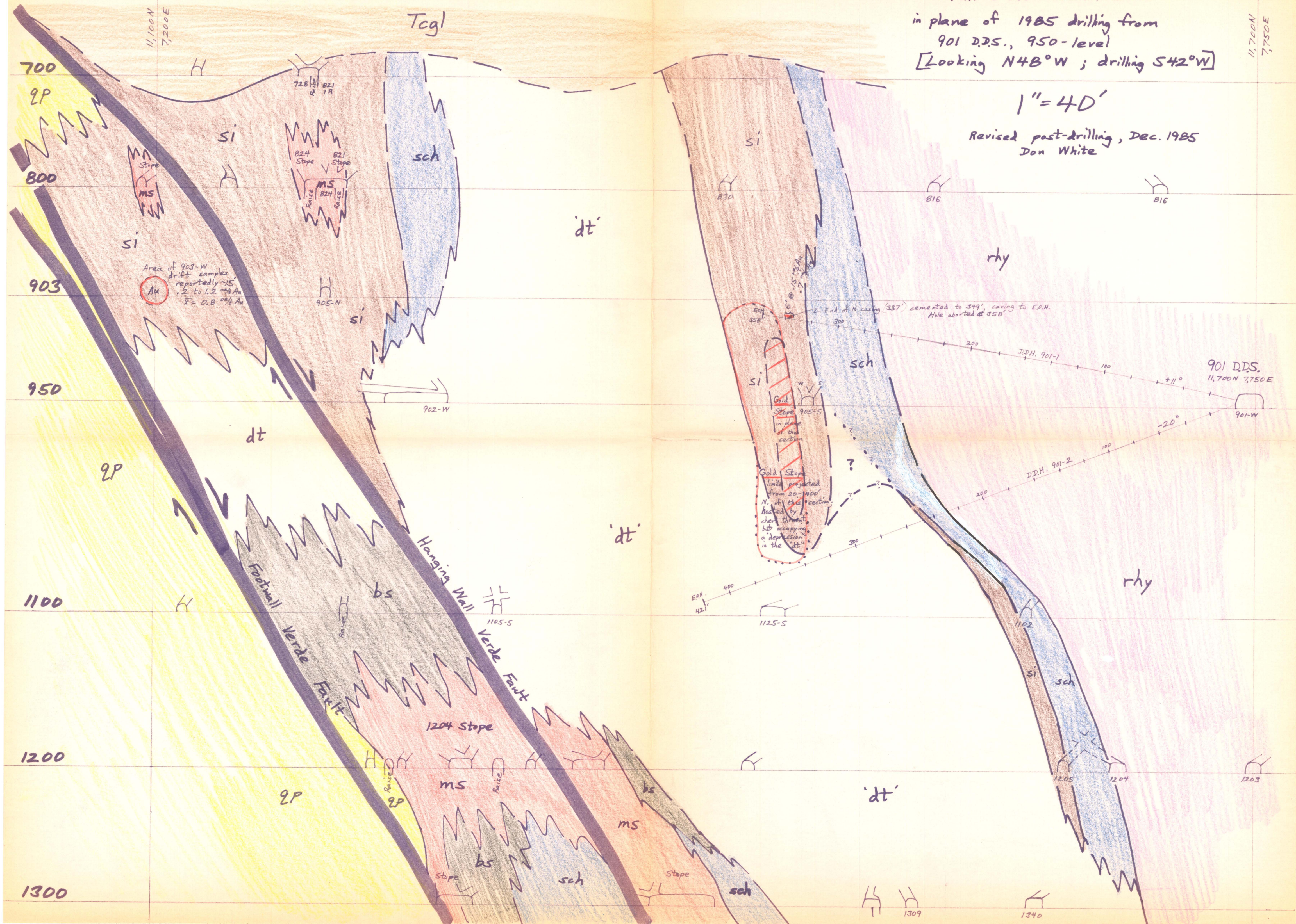
1"=40'

Revised post-drilling, Dec. 1985
Don White



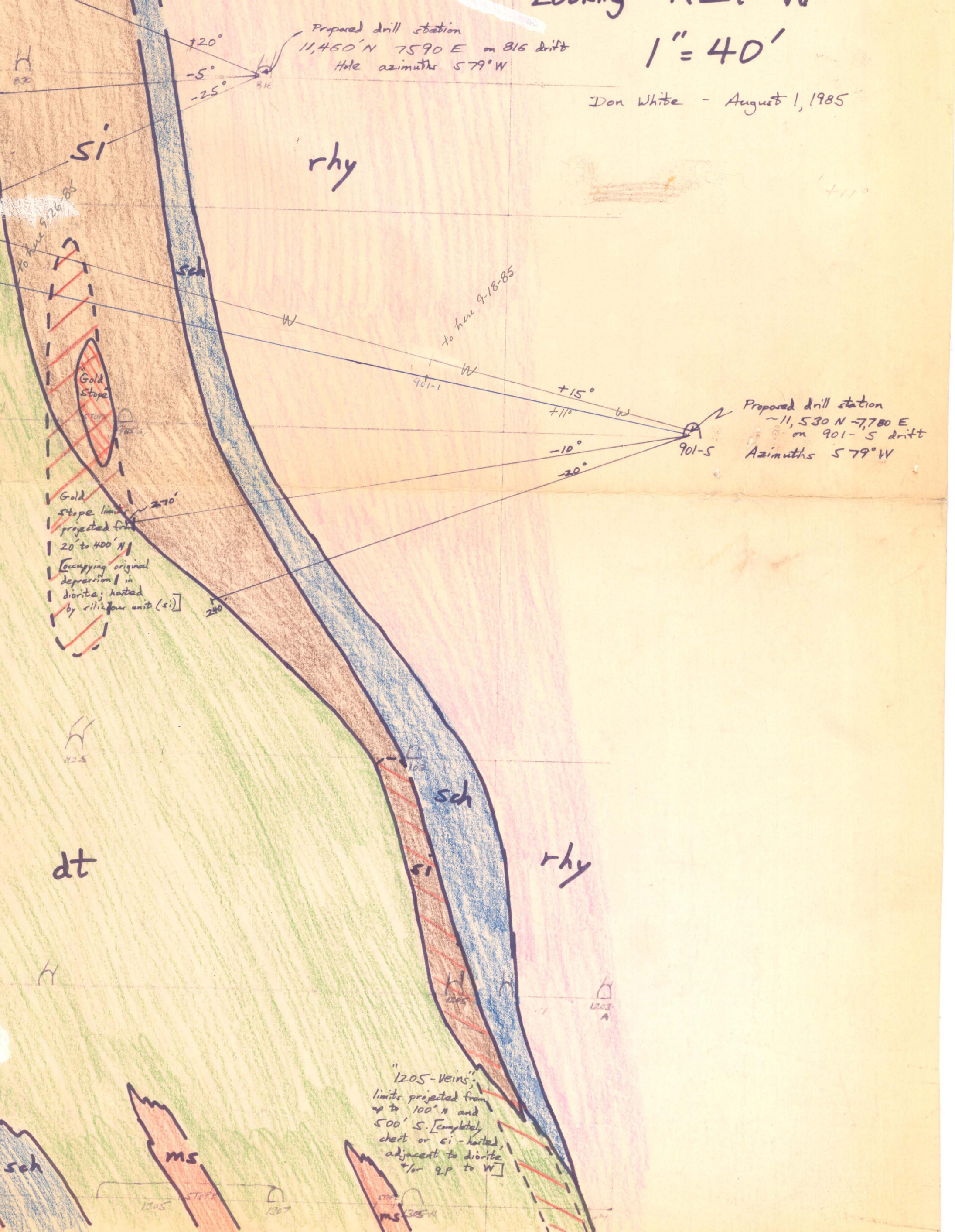
11,700N
7,750E

Revised post-drilling, Dec. 1985
Don White





B-B'
 Cross Section
 in plane of proposed drill holes from
 new 901-S station, 950-level
 Looking N 21° W
 1" = 40'
 Don White - August 1, 1985



550

11,400 N
7,000 E

E'

352

E-E' Cross Section
in plane of possible drilling from
806 D.D.S., 800 Level, U.V.X. Mine
Looking N56°W (drilling S34°W)

1" = 40'

Don White Dec 4, 1985

Dls

Ess

806 D.D.S.
D.H. Collars at
~ 11,890 N
~ 7,335 E

dt

200' 100' -3°
Possible D.D.H. from 806 D.D.S.

806

si

sch

H

905N

rhy

H
901-W

dt

H
1101-W 90°

sch

MS
1206
Stope

1202 1206

1105 1112

H
1217

Tcgl

sch

si

sch

H
805

300'

828-2
Stope
ms

903N

si

sch

Hanging Wall Verde Fault

Footwall

Verde Fault

dt

9P

903

950

1100

1200

dt

EOM
640'

600'

~20 ft reportedly
0.5% to 1.5% Au
X = 0.5%

Small
Stope

Stope?
ms

bs

E(2)

U.V.X. Cross Section E(2)-E'

in plane of possible followup hole 802-2 to mineralization found forward of this section in DDH 806-1

Section looking N42°W

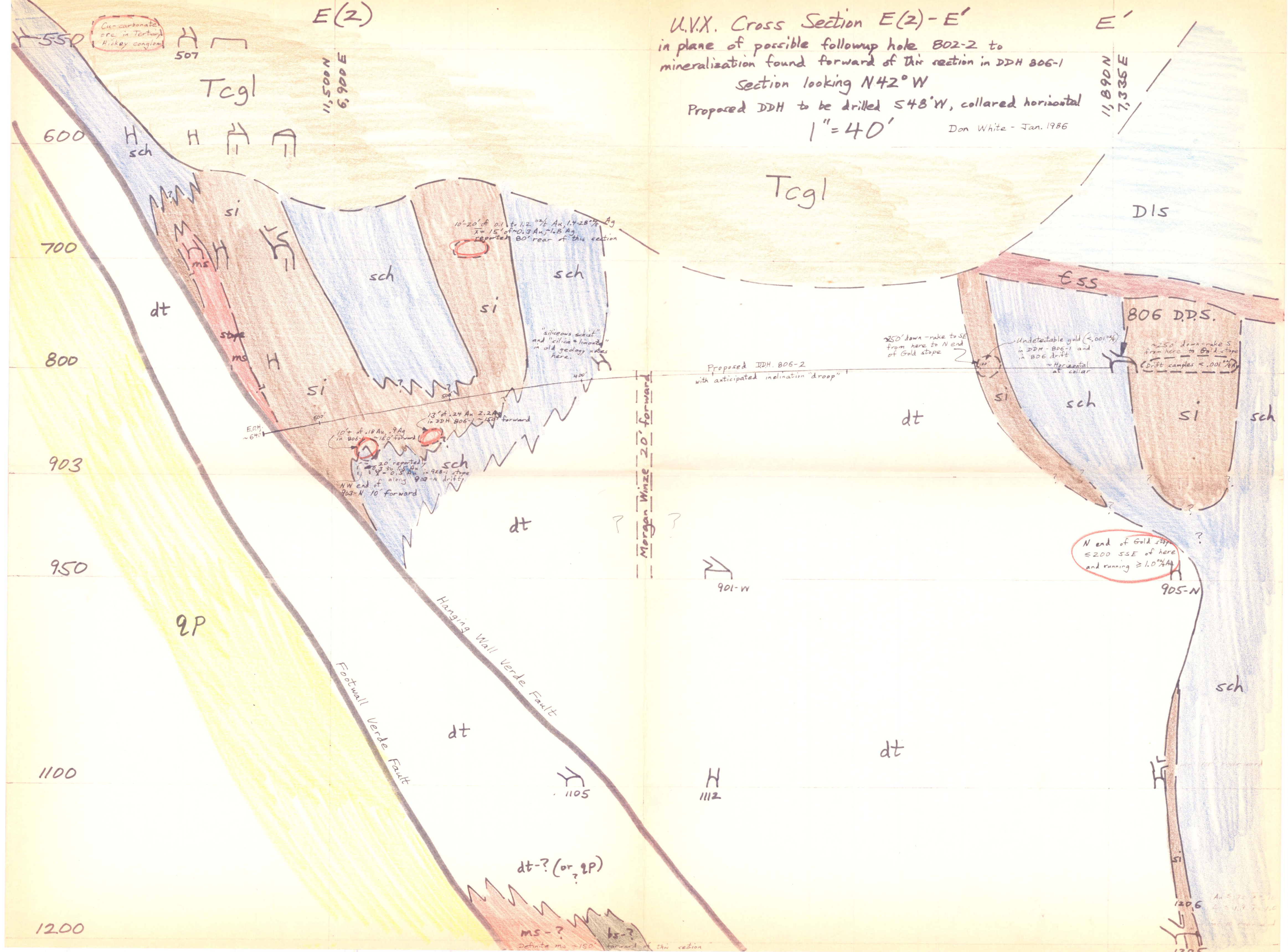
Proposed DDH to be drilled S48°W, collared horizontal

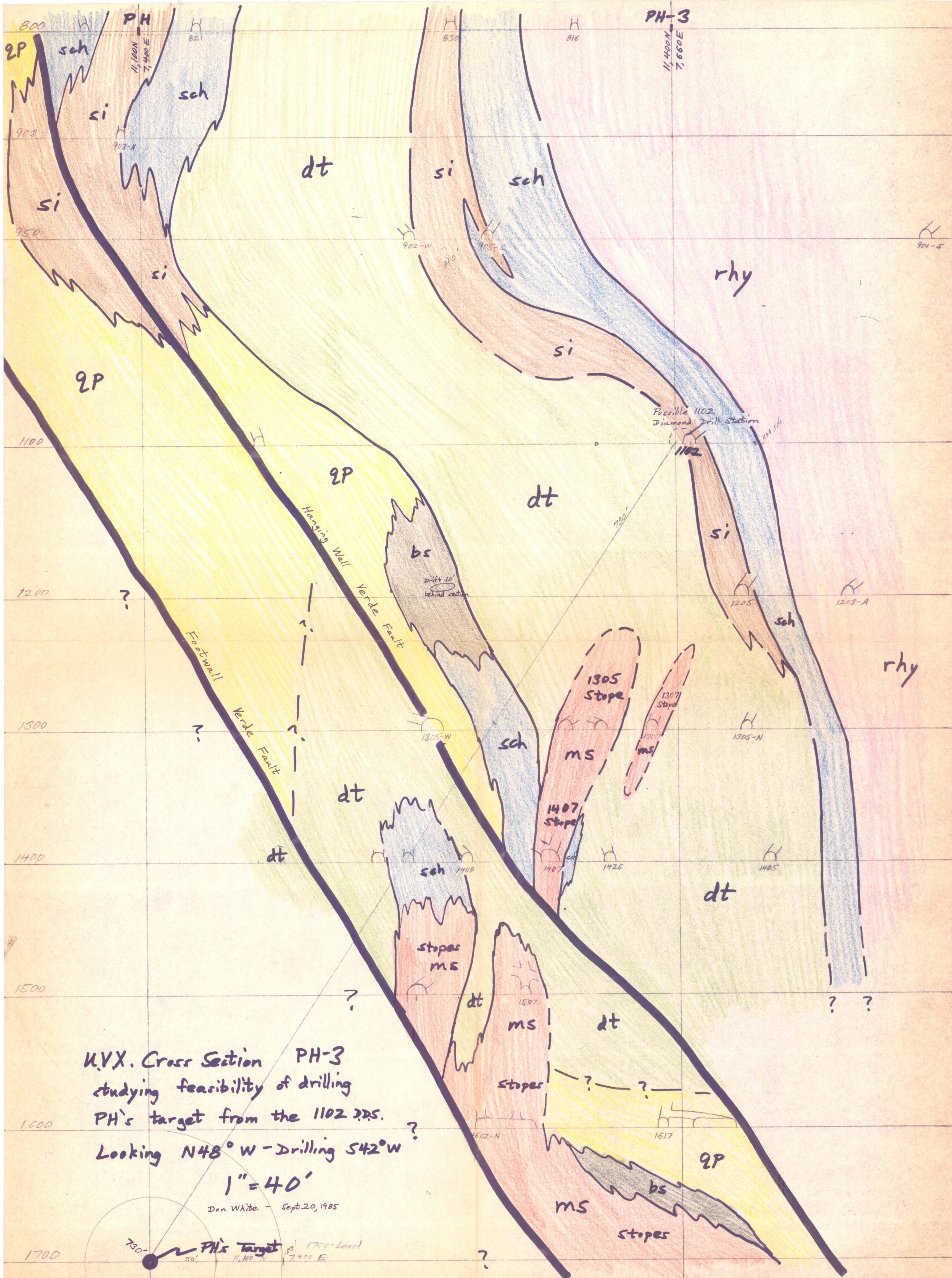
1" = 40'

Don White - Jan. 1986

E'

11,890N
7,335E

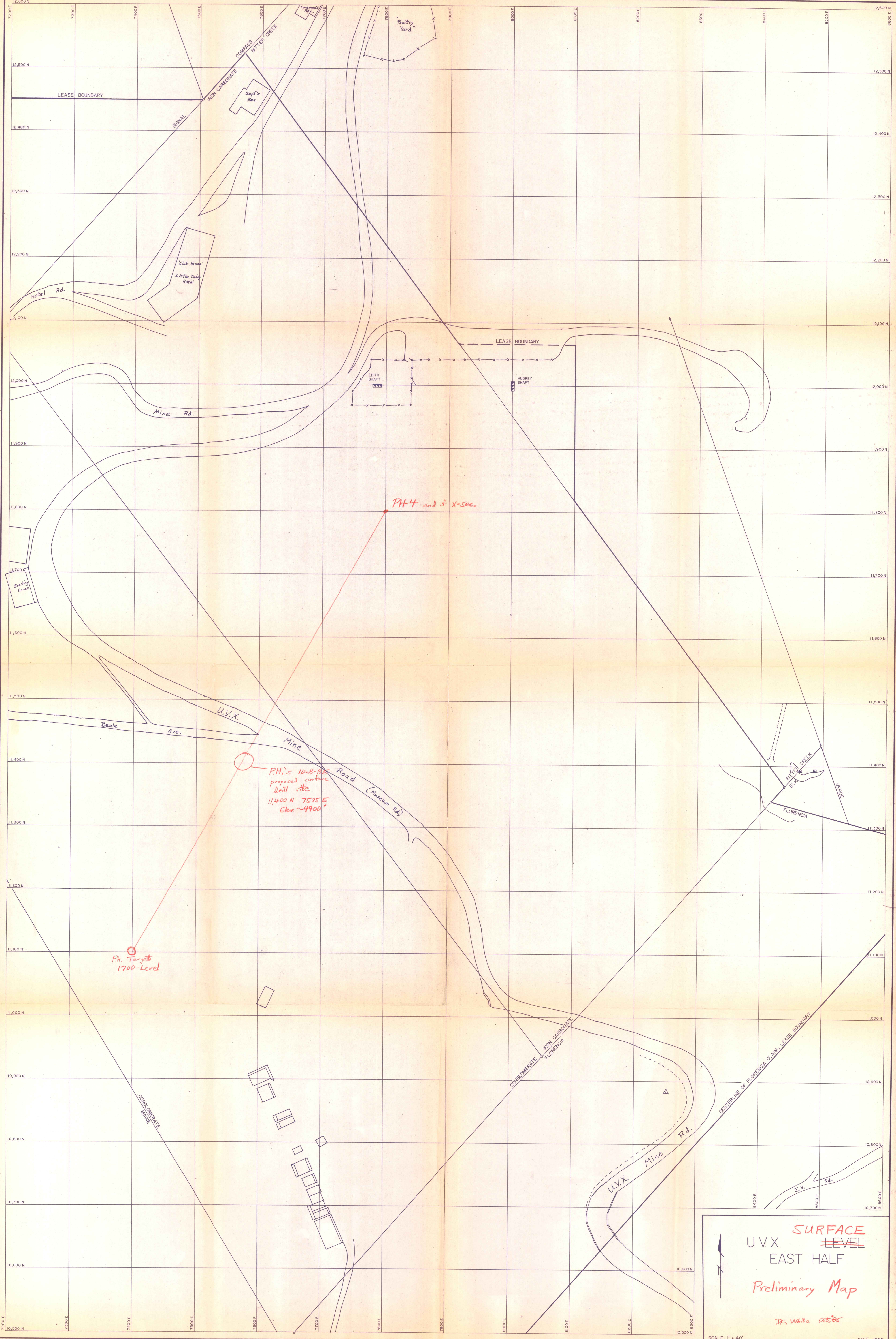




U.V.X. Cross Section PH-3
studying feasibility of drilling
PH's target from the 1102 D.S.
Looking N48°W - Drilling S42°W
1" = 40'

Don White - Sept 20, 1985

730° 50' PH's Target 1700' - Level 11,100' N 7400' E



P.H.'s 10-8-85
proposed surface
drill site
11,400 N 7575 E
Elev. ~4900'

P.H. Target
1700-Level

N

SURFACE
LEVEL

U.V.X.

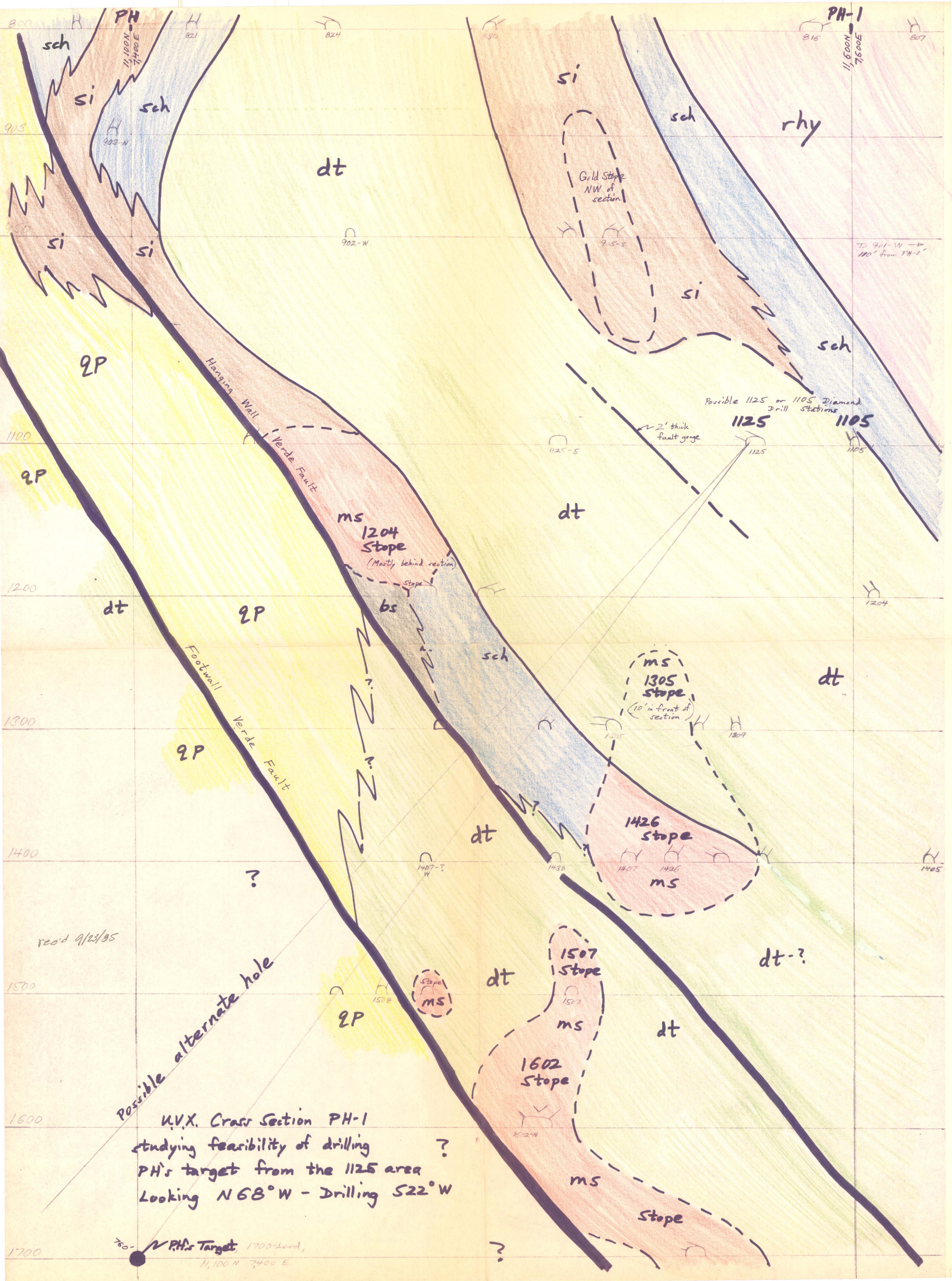
EAST HALF

Preliminary Map

J. White *as is*

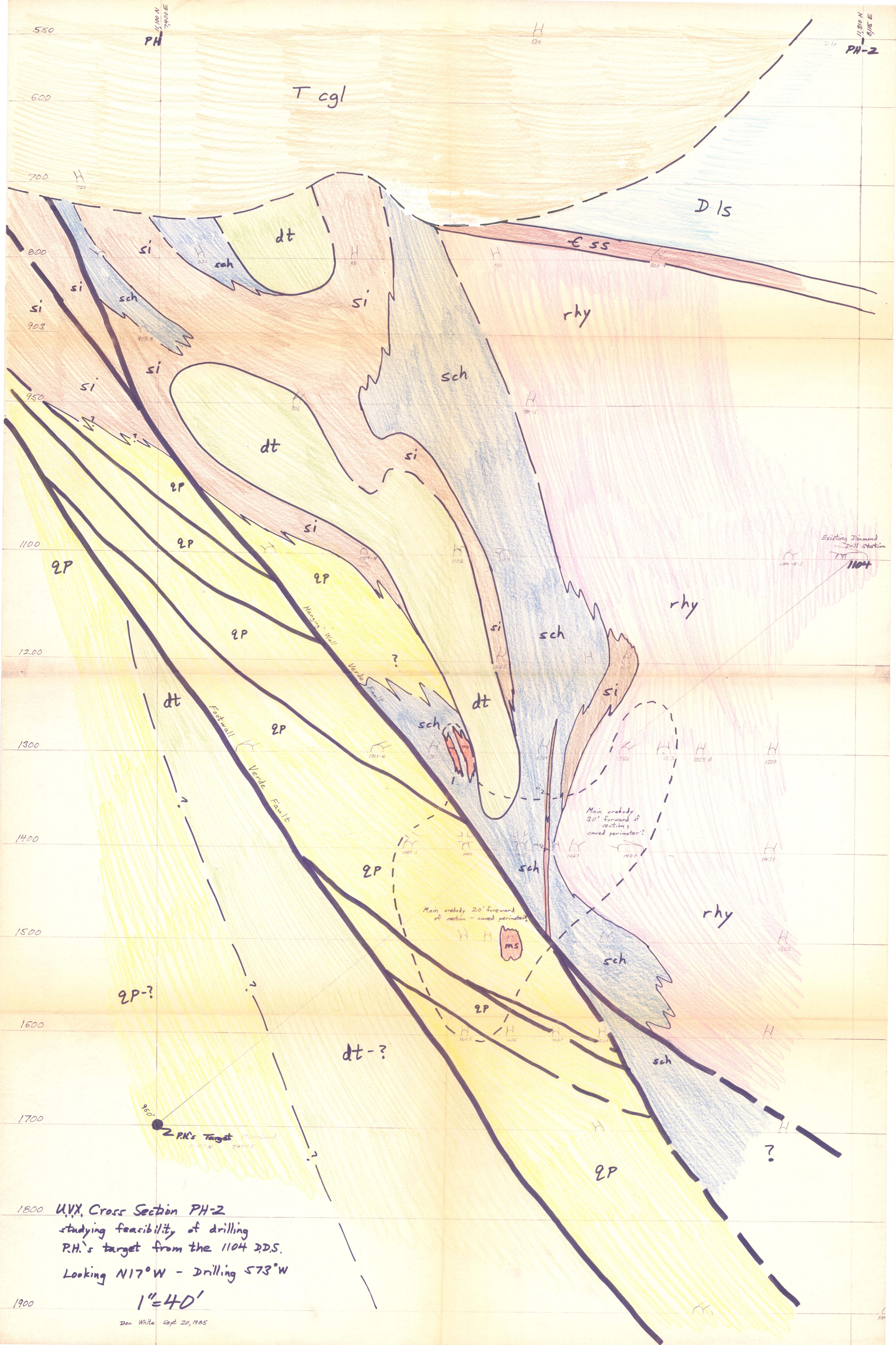
SCALE: 1" = 40'

JUNE, 1985

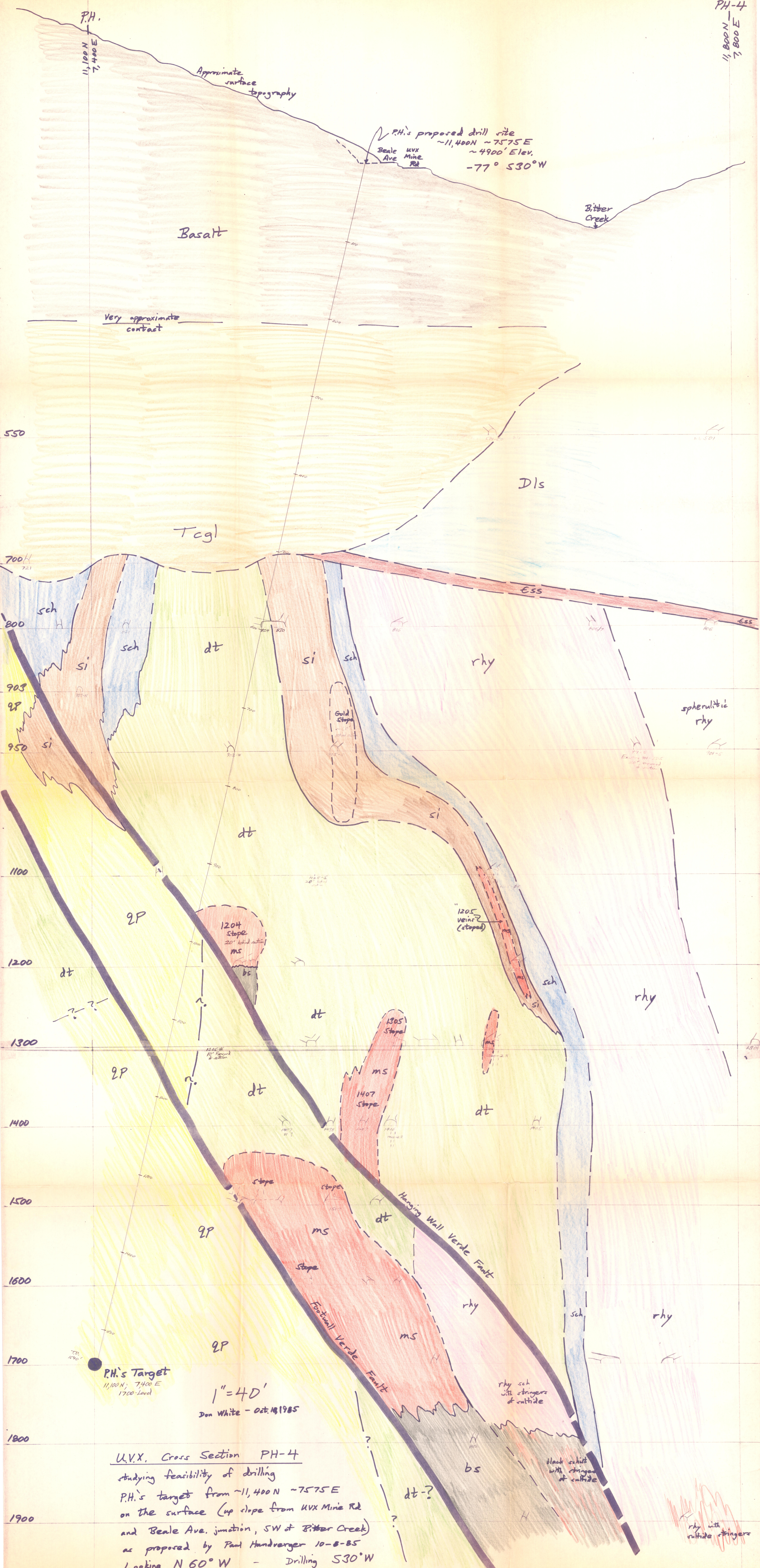


U.V.X. Cross Section PH-1
studying feasibility of drilling
PH's target from the 1125 area
Looking N68°W - Drilling S22°W

PH's Target, 1700-Level,
11,100 N 7400 E



Don White Sept 20, 1985



U.V.X. Cross Section PH-4

studying feasibility of drilling
P.H.'s target from ~11,400 N ~7575 E
on the surface (up slope from UVX Mine Rd
and Beale Ave. junction, SW of Bitter Creek)
as proposed by Paul Handwerker 10-8-85
Looking N 60° W - Drilling S 30° W