HENRY H. GRAY
1956 BOOK I
ROCKVILLE & ATTILA DISTS.
SECTIONS 80-81
HUMING DU HE DIST.
SECTIONS 82-102

DEPARTMENT OF GEOLOGY INDIANA UNIVERSITY

AND

DIVISION OF GEOLOGY INDIANA DEPARTMENT OF CONSERVATION

LOOSE-LEAF FIELD NOTEBOOK

HENRY H. GRAY
PROJECT 56-3
BOOK 1

Please note: this PDF contains only pages with content. Blank pages have been removed.

H.H.G.)4.CH. R.L.P. SECTION 80: 1747W3297 ALONG ROARING CREEKE 1/2 MI. UP FROM BRIDGE # DIST S. OF TRIBUTARY FROME, ON SE BANK OF CK., 3/4 MI. SW OF JUNGUE PARK CKLEVEZ 540'T. (See notes of 6/15/56) of the covered from eye of creek at Unit 1 20 sologion. 3 to black shale is this show a log coop part below this love 1 100 feet north. (ALT. 137'+) Clay stane, shaley, medium gray, 2 24.0 inclestinct, even, thin bedding; irregular fracture, limonite nodules, abundant corponized plant impressions, soft, covered song most of bank but exposed at north end. Bottom contact not seen, slickensides, root impressions common in upper foot on so shale, goaly, black, indestinct, uneven, very thin pedding; copy stroks appear to be clarain, some fusain also present, bright orange-yellow stoin on fracture surfaces, platey rear north end of bank, bettom contact sharp though somewhat uneven, slickensides common. 56-3-3 + 566' LT-4.5 situtone, shaley at bottom, light greenish gray, godding absent except in lower partichere Indestinctionen, verything micaceous, inregular fracture, mica subparallel to bedding, imprite stay dong irregular fractures, well expose on north end of bank, basal contact whaten stightly unevery grates up ward from shall to silt to very & ine sand 81 82 83 84 85 86 87 11 10 117-8-9 6-1-2 4-5 3 80

to silt to very fine sand at top, large corbonaceus streaks in upper one foot may represent roots Shale, carponaceous, dark gray, indestinct .6 wavey, very thin bedding; thin bands of vitrain and bands at limonite common, gypsum xls slong several bedding surfaces, platey tracture, brittle, exposed entive length of bank, basal contact sharp but slightly uneven - towards south end of bone unit thickens and becomes loss corbonaceaux, medium gray shale Similar to unit seven 266 Ironstone, silty, medium gray, one bed, finely crystalline, somewhat nochar, 003 hard, forme discontinuous ledge for 0.5 length of bank, bosal contact sharp, slightly uneven. shale, dark gray, distant, even, very thin bedded, plater tracture, briffle, well exposed entire length bank, basal contact sharp, slightly uneven. 8 5,7 clay, silty, light gray, heading absent, slightly misaceous, mica is vandom, root impressions and corpon accous strooks through teneth of trank, hottoms eentact transitional (gradational) within O.I foot 88 81 82 83 84 85 86 87 11 10 11 78-9 6-1-2 4-5 12 unita 25 Cool, shaley, black, distinct, evento uneven very thin to thin bodding, thin hands of vitrain common in lower one foot, elsewhere appears to consist almost entirely of elianain, considerably disturbed, sandrolls and lenses, common, reaches maximum thickness near south and of hank, northward thins, splits and inter fingers with sondstone; brittle, plater tracture, possol contact sharp and uneven with relief of half of foot in three feet. -583'47 56-3-4 5 itstone, eloyey, medium groy, 10 7.0 bedding a booxt, slightly micocous, mica is random irregular fracture, limonite stain along forger tracture suptoces, form greep slope pear top of banky basol gonfort shorp, unovan, with sondy at base, shalay at top Coal, black idistingt, even, very this bands of vitrain blatey fracture brittle, well ex poset, nese top of bank, pasal, contagt trous, fional 1: nterlessed within 0.5 feet. -59p'LT- 5-6-3-5 .6 Shale, dark gray, distinct, even, very thin bedding fisse papery plant remains Song bedding surress top forms weak over wanging ledge over unit 11, hosal contact not dertainly seen, but appears sharp seven 88 81 82 83 84 85 86 87 11 10 17-8-9 6-1-2 4-5 12

Clay, medium gray, bedding absent, soft, 3 5.5 platic in upper one foot; poorley exposed near top of pank, bottom? bed of cool noor bottom of this unit, 14. 1.0 Cool, Black, 50 ft, body weathered, basa contact summed. 56-3-6 58.3/56.3 EXP. - TOP OF BANK -SAMPLE 56-3-1. MINISHALL (2) CUAL, 1747WBZh4, FROM ADV. OLD SLOPE MINE SECTION APPROX - 598 ± -GX. SH., UITRAINI DAMOS LT. QY, CLAY COAL, MINIED -587'L FALL SAMPLE 54-3-2. Uppen Besch (R) CAL. 17 N 7 W 32 h 6, AUT, 610'T. J. 727134 APPROX. 3.2 CUAZ, SHY FALL CK 81 82 83 84 85 86 87 11 10 17-8-9 6-1-2 13 12

14 138 12 CH, PELPS 6/12/56 17MAW 353 COAL, 0.8 + SS. ABV, CLAY BELOU, POUR. UPPER COAL OF SLATE CK. SEZTION. CALL IT COAL II ? SAMPLE 56-2-7 17N8W36 \$17N7W31 ALUNG SLATE CIEN FROM COVERED BRIDGE TO SUGARL CIC. ABT. 'L MI. SS, PLATITOMEN 15'4 SMALL COALYSH, 2'? MINE COV = 121 + 523 0 mosty of CIE 4-10 520 D MOSTH OF CK. BIC. SM, IRON, CONICRS, GENERALLY 5-10' ABV. CHILIVEZ, = UNIT 6'± P DK SH, 0-8 25-35 ABU, SUGARUK. 50 F 8 52,802 CIC. JAMPLE 56-3-8, FROM LOWER CIAL OF THIS SECTION! MINISHALL (?) COAL; WITH TIS UPPER COAL ?. MINISTER SMALL SCALE, GOO'LT, SAMPLE minesto and small scale, 600' LT. 56-3-9 NOTE: "SLATE (K." OF THESE MOTES IS "SLATE RUY" OF HUPKINS (1895) BUT 1) PROPERLY " SQUARE ROLL BRANCH" (Lox, 1872; AsHEY, 1898; AND LUCAL USAGE) 29 JULY 63 81 82 83 84 85 86 87 11 10 1.7-8-9 - 14

1138, 10 CH, PCLP. 6/13/56 17Ngw 29hl, Azons Sugar MILL CREEK ABY, MONFIEL APPROX. STET: 1 5'A. GB SIH. E GWE" FOUR F, 42' GW "C", INDIST X-BD4. SAMPLE FOR CHEM ESZLT. 1 1', HARD, COM-SILTY CLAY 56 x 69 COUTRED 31/4-13'+ GWNE" SEEM 1N 1954 C 125314 SOLD THE CAL CHT PEROLES SOLET THIS YEAR LEVEL 520/T, 17 NGW 7 62, ON FARM OF CLYDS SMITH 4 MI. S. OF WALKET, GOLLY E. OF FARM MEAN SECTION LINE SAMPLE IN CAN S-8. ALT. 700'+ 708 - 2'CIAL 56×70 15' GY. SH 1 30' 45.16"-= 30' BK, SIF LOWER PART OF SECTION IS OUTUR. | BEST EST. TO SYLMMY SES , MAYERE? ! BBO, FAULTEN, GY SH & FAKS TO'L ETC. PROB. DUS TO UNICHIE ! [... 1 6 4 CT 25' 4 NJ UF 10'1 civenin SUGAR CK. 1/4 MI SW. M-PRESMITALT IS CO 625 NITAGE 540'T TOU OF HARROWSBURY 65. 88 81 82 83 84 85 86 87 11 10 17, 15 + 14 13

HUSERLP 6/14/56 5-27-10W 81: 22 M 6 W 5 d 6, IN GULLY 2 V ST 5. OF FALLERI ROCIL CASCADE & 171514 BRIDGE WARREN GO. BASTOFSFETION LOVELUF LITTLE PINE LK, 560 T. unt 1 47,0 Shale sitty, medium gray, indistinct uneven, thin beading, small irregular platy fracture, numerous corbonized plant remains, large siderite concretions common near base concretions are less common & smaller towards top, eptively exposed in this and sedepol other gullies on what side at circle, bottom contoct not SPEM. WEATHERED DEBRIS IS SPLINTERY. Unit 2 34.0 Sandstone, medium ypllowish brown distinct, uneven, thick bedding in crosset lenticular medium scala beds, quarta 90%, clay-limonite 10% trace of secondary quarte x orga grass, locally obundant olay chips up to 25 min. dia moter, 3 min. thick, sorting good, flow volle, at base of unit, large blocky tracture, taily eghosive, forms lorge overhous ing with relief of 1/2' in 5 feet, in addition to genellor scale in rolls montioned above, locally strongly comented by iron oxide and sulphide at bose. 56-3-19 81.0 700. -641'LT-V 88 81 82 83 84 85 86 87 11 10 17, 15+ 14 13 12

Across CK. + JUST ABV. HIGHBRIDGE 20+ BORDEN SHOWS: SLS, LT. GY, INDISTINCT UNIVER THING BOK, PLATY FRACT, SMALL TUBULAR GEODES FURMS STEEP BANK FROM WHICH MUCH PLATY DEBRIS IS SWEDT DOWNSTREAM IT IS MOST LIKELY THAT SHALE OF UNITI, 5+27.81, 15 MAMSFIEZD. IN GULLY JUST S. OF HIGH BRIDGE SH. OF UNIT 1 M=ASURES 71' 58 OF UNITE & 8' TOTAL 79' 27 N CW 25 d6 - QUARRY (?) ORIFICOVENED, NOW WATER FILLED. PROB. PRODUCED BANDED LS. No out on @ WALCUTT. 27 N TW 2+9 + 85 ALUNG CO. RUAD ALRUSS CARPENTER CK. I M. HOW OF REMINISTON, 23° GUTC" PROBTEM 17 BELOW, 6 ABU. BRIDGE LEVEL. 15' 12 Downsing Am (SET MAP) ARE SEVERAL OTES, SH, DE, GY HARD, CARB USATH, SILVERY, M=w ALBANY. BASS OF PM NOWASRS SEGNI. Blura top 6 atulpano BMidge 1540 OPPen - Base 6' ADV. DRIDGS 88 8 82 83 84 85 86 87 11 8-1 16-17 15 + 14

Addendo to Sec. 80. 6/15/56 9.H.G. 5 R.L. B 0.5 ronstone, sity, medium gray, two beds & reported by 0,1 to 0,2 feet soft gray shale, findy crystalling, somewhat nadulary hard, forms discontinuous, ledges for length of bank, basal c 3/19htly uneven 7. Z.7 Shale, identical to description but with one pand of the flat wonstone modules up to 0,3 fact thick, one foot up from base COAL OF UNIT 9 OSTALL brax. 55, K.f.g. carb. = sell, mulas, here. SEE MEXT PAGE FOR DIAGRAM OF CUALS UP "HEART BREAK HOLLOW "

NW 60 R. S. 32, TITN, R7W. SAMPLE IN (36×71) occow uplando (C) 583'LT 53/c0 555 Sh. 55 597'LT 666'LT.

(C) 583'LT 53/c0 555 Sh. 55 597'LT

(C) 555 Sh. 555 Sh. 555 Sh. 60 611'/c1

(C) 555 Sh. 555 Sh. 555 Sh. 60 611'/c1

(C) 555 Sh. 555 Sh. 555 Sh. 60 611'/c1

(C) 555 Sh. 555 Sh. 555 Sh. 60 611'/c1

(C) 555 Sh. 555 Sh. 555 Sh. 60 611'/c1

(C) 555 Sh. 555 Sh. 555 Sh. 60 611'/c1

(C) 555 Sh. 60 Sh. 555 Sh. 60 Sh AN 5-9 9.5h. bk.sh. A co sky Obkish Aci 620'EST. 539'T Shy co 0 Minshall? 547, 35 189'LI 0 8 8 8 7 7 555' gracial fill sec. (80) 595"LT 600'LT X = 578.8 (X) = OPLET UPLAND 666 LT PROGILE 611'0.7' 589 A = 598' 583 583 9.54,00 583' blish 3' 566' 572' 589 LT (56 x 7/1) see also notes y 565 LT. 6/11/56 8 82 83 84 85 86 87 11 87 16-17 154 14 13 88

HINDERLP 6/18/56 SECTION 82: 154W 29 6788 to 31 f 2 ALUMY BLACKTOP ROAD FRUM RTE 164 TO JAJPER LAKE FRUM ERW OF 490 INT. TO BM 589 @ TOP OF HILL. - 490 -Unit 1 4,0 Sandstone, light-gray to light yellow-brown, indistinct, unaven, medium pedding, in medium scale irragular evossets, quartz 95% day 5 clay limonite 5 % trace QXO, trace dark minerals, very fine sand, subongulor grains good sorting invegular frague, east of intersection bottom not seen. unit 21.5 covered interval. - 4964-Units 0.5 Iron ove, sondy, scoriaceous & tructure, seen only as float blocks in ditch east of intersection. - 4962-Whit & 5,0 Covered interval while 10.0 mudstone, shaley, light gray, indistinct, expased in ditch on south side of rood west of intersection, but on not seel, SCATT. OTCS. GW. ALUNG PAUED RD, IN DITCHES DOTH SIDES, Un: +6 10.0 Covered, scottered, exposures of sandstone float fragments of sandy from one new top indicate possibilities that are Vises to south. 88 8: 82 83 84 85 86 87 2 18-1 16-17 154 14 13 12 Unit 7 200 Mudstone, similar to unit 5, large nearly vertical joints with difusion bands, poorly exposed in ditch on west side of paid road, bottom not seen. Units 9.7 Covered interval. 110:19 3.4 shale, dark gray, distinct, oven, very thin bedding, slightly micaceous ? carboniceous, smooth, blaty fracture, mica parallel bedding, cohoside when dry soft when woth, fairly well exposed in ditch west of pood, several ferougenous seeps as from near top of this unit, bottom covered. -586 L-10 30.0 Gray wate, medium alive-gray to medium yellow-brown distinct uneven, thin bedding, medium lenticular cross-sets, quertz 70% Clay solay limon ite 30 %, trace mied, fine grained, angulor grains, poor sorting few ripple marks, mica is random, Friable, weathers to counded masses, pasel sontect shorp, uneven, with relief of 1/2 foot in fits feet. and locally as much as 1/2 feet of englamerate, with pebblas of limonity and black shale of base, become light gray to white in upper port, with few plant in pressions in limouities cone, one prominent red ferougen ous zone zz feet from bose 83 84 85 86 87 2 18-7 16-17 154 14 13 88 89

Siltotone, shaley light yellowish brown to light gray, distinct, uneven, very Unit 11 17.0 thin bodding, micocours, some beds of very fine soud near for bedding opposes considerably disturbed, epparently by bene contemperaneous defformations but expet noture of disturbance could not be determined few large iron concretion, especially near top, boty fracture, in some places almost like whety tones, fairly well exposed in ditch and bank north of road lower contact appears sharp, but was not certainly seen. 6.0 Coverior to Bar 589 AT Huy INTERSECTION UN112 - 589'-99' /67'EXP. 83 84 85 86 87 2 18-1 16-17 154 14 88 89

ANS & RLP 6/19/56 SECTION 83: 35 4W 2997 ALONG GRAVER POP. HW OF FERDINAND, BASTORSFETION JOUT, DUY SINIT, SECTION MEASURED TO MURTHUSSET STOR TI- 5221 Unit / 8.0 Covered from level of culvert. On 12 3.0 Practure, soft, smooth, plastic, poorly expased in road bed & bank east of road, pottom not seen and oley may be some what thicker, Unit 3 1.7 Cool, shaley, block, indistinct, uneven, very thin bodding coptains some shaley clairain, badly weathered and dumped in most places, sample 56-3-12 dyg from ditan below telegroyh pole, bottom contact appears sharp, - JUF 4T - 535 LT yellow- brown indistinct even very Unit 9 0.2 thin beading, small ploty frooture, soft, smooth, plastic, bottom contact shorp and apparently even. Uni 75 16,0 mudstone, shaley, me dium dive-gray, indistinct, uneven, thin hedding, slightly silty throughout unit but particulary sify in thin pands near base, small platy fracture, well exposed in to added or on north bank, bottom 83 84 85 2 86 87 218-1 16-17 15 4 14 13 12 88 89

contact sharp and apparently even. Unit 6 1,0 Clay, shaley, light gray, indistinct, uneven, thin bedding, hackley fracture, numerous plant impressions, mostly voots with random exight of ion pink , yellowishbrown and black stain on fracture foirly well exposed in north bank of rough, basal contact transitions within 0.5 fost. Unit 7 0.01 Cooly streak, -532117-Unit 8 2.0 Clay, shaler, light grag, light yellowish- brown, indistinct, uneven, thin be deling, platy fractive, soft, in part some what silty, poorly exposed on north bank of vool, bottom can tact sharp i apparantly even. Coal, black, slumped - bodly woothered 1mit9 0.1 sample 56-3-13 day from bout north of road, bottom contact a preons shorp and even -535'LT-555LT Unit10 40 Clay shaly light gray, industinet, uneven, thin bedding, bisty fracture, soft weath, poorly expased on bapk on north fide of roadjit is possible that port of this unit may be weathered residue of the Imestone of unit 11, bass onto of 90 84 85, 86 87 20-21 88

apparently shorp and even. -539 LT 559LT Mott 11 1.5 bimestone, silty, light gray, in one bad, rough blocky Proefure, Fysilines = byschiopods spouse, ophesive, forms week ledge on north bank of road, battom contact not seen, Flint, medium gray, in one ou two beds, Unitt2/1.0good ledge which, appears to be ver possible for holding up topognophic bench, in part poraus "Tripoli", basef confact sharp = uneven, space spiritors and other brackio pods, findy coustalling. chert, shaley, light goog indistinct, une very thin bedding, find cay stalline, rough play to extene, by ittley 13 1.3 some what inegular. contact shows & with medium beginsh red, one 74 0.1 bed, finly cay stalline, appears oblitic poorly exposed of topoot road ban by Boffon contact not soon. 40 Covered to ground level of pipe 41 /33'Exp Salar - 5671 x15 4.0 90 84 85 2 86 87 2187 16-17 15 4 14 122 20-21

SECTION 84: 35 HW 30 a 5, ALONG GRAVEL 120 2 MI, W. OF FERDINAND. BASE ON SECTION 475'T TOP 570'T. MEASURED IN EASTERLY DIRECTION EROMNALLEY OF HUNTLEY CK. - 480'KT Unil 1290 Covered, slumped shows of clay = SS CARBONACEUSS LT. GY: DISTINCT UNEVER! 2.5 THIN BOG; QUARTE 90 to Clay 10 % very fine sand subang lav grains, gray shale and several very thin layers of vitrain; trioble; abundat banded with Imonite along some beds; small exposure near mail look; bottom not seen. 50m ble 56-3-14 from more carbonaceous parts of thisun;+ -512 --3 14,5 Graywake, medium yellowish-brown; distinct, uneven medium bedding in medium scale lenticular cross-sets. quartz 70 % clay : cay Imonite 30, Spundant mica; time sand, subangular grains, poor sorting; Priste but for he well exposed on sharp and uneven with reliet of 0. 2 foot in two feet. + 2,5 Covered interval 88 89 90 84 85 86 87 2 18-7 16-17 154 14 122 20-21

Graywake light gray to light yellow-brown; distinct, even, thin dedding; Quartz 80, cray = 0/24 /months 250% Unit 5 25.0 Fine sand, subangular grains, poor souting, ploty functure, in boyt inter bedded with siltstone, that has thin sholy partings which see levely carbonageous, copesive, fairly well exposed, on north bank and in road Bed; bottom confact not spen; appears to become some what silty near topi unit 6 6.0 covered to ground level on top -560 XT 80' /42 ' EXP. 454W 23 c2. NEW BOEHMAN STRIP 14 Gw, wx. 4-11' SU, BIC, SLY SOME BIC. GW. 3.5-4 COAL, BLUCKY 88 89 90 91 85 86 87 2 18-1 16-17 154 23 22 20-21

SECTION 85: 45 4 w 23 62 to 26 93, ALONIS GRAVEL ROAD I'M MI S OR ST. MZINRAD 5 JUST S. OF BOSMAN MINIF. BASE OF SECTION 415T. TOP @ 570 T. SECTION MEASURED IN SOUTHERLY DIRECTION. - 416'ET Covered from level of road of bridge; Unit 1 22.0 scattered exposures of dumped gray day. no indication of position of st. Meinrad Coal which in the Behman strip mines on opposite side at vally is from 10-15 feet above valley level. Clay, shaley, light gray to light yollow-brown; indistinct, unguen, thin bedding; platy fractive, soft, smooth, some what, plastic of road, Bottom not seen, upper part largly covered. - 448 47 -33.0 Graywate, light gray to medium gollowish-brown; distinct, even, thin bedded; medium scaled lanticular cross-sets; Unit3 quartz 80% clay to clay smanite 20% Troce mica, fine sond, subangglar grains porallel to bedding; rough blocky fracture, mico is subporollely friable; lower part fairly well exposed in both ditches and west bank, top poorly exposed, basal contact not seen but inferred to be sharp and somewhat uneven because it is thought to be equalicent to upper graywake. In Bapmen nume (see notes of prepending pegg) and because of abundant 91 85 86 87 2 18-1 16-17 154 23 22 20-21

pebbles of clay, corbonaceous shole, and cool in lower foot of this unit. Unit of 20,05/tstone shaly, light yollow brown, Tistingt, unden very thin bedding, slightly micaceous, platy hacture, wicos paralle ledding, soft but fairly well exposed in both ditches any banks, basal contact, transitional within to feet, probably interleaved as some beds of gray wake occur in lower part of This unit, Clay shaly in lower part, light gray, bedding absent soft, smooth, plastic, Units 40 some what slamped, scattered, in dit ches on both sides of road, bottom contact fromsitional (gradetimal) within 0.5 feet - JOS'ET -3.0 Gray wake, medium alive - gray, aux te 702 clay, alay limonite 300/0, trace mica; indistinct, even, thin, parallel bedling, Fing soud, subongular grains poor sorting, irregular blocky fracture micas subsporsilel frigula, poorly exposed in bonk west of road, boss contact not seen Graywake, medium yellowish la our, distinct, uneven, thin favallet bedding 7 8.5 89 90 91 92 86 87 2 187 16-17 6 15 4 23 22

quart 2 60 %, chan tolay limonste 40% Troce mica, very fine sond, regargular grains, poor sorting, platy fugeture, micos parallel, some what, friable populy exposed in ditch o bout exept of road, basal gontact propobly gradational within one foot or so. 1.0 Clay, lightars y, soft, plastic, Unit 8 Unity 11.0 Covered scattered expassives of gray wake similar to unit 10. Graywoke, modium pollowish-brown; 8.5 distinct uneven thin bedding; apporently in medium lenticular evass sets; Quarto 90%, clay + day limouite 10% trace mica, time sand, subongular grains, good sorting, numerous bonds of limiquite payottel to bedding, sub parallel, fairly cohesive, fairly well exposed on poth banks of your, chips common in a few beds. scattered exposures of Covered, Unit 11 30.5 progranke similar to unit to of hill. -568//T-154 /88 Exp. 88 89 90 91 92 86 87 2 18-7 16-17 6 15 4 , 23 22 , 20-21

6/20/56 4111351210 SAMPLES FROM SECT. 61: LOWER CUAL (56×72) (UNIT 3) IN CAN S-1 (1.1' THICKMESS) (56×73) UPP TR COAL (UNIT 5) IN CAN 5-2 (0,6'THICK) SAMPLE FROM 155W 26 +5 @ WATER TOWER IN JASPER. UPPER BLOCK? (56×74) co, 2.5', SAMPLE (1". Gw"0"-2'+ IN CAN 5-3 5711LT-1505515515 CLAY, 2,5'EST. 97, SLAVEY SHALE 6' EST. ST. CORMER 76017 15 5w 35 f8, ALONG SR 45 205 TS OF JET W/ 5R, 56, W #38 OF HU-1 485 552 - 10-120ME CARB, CLAY BRN. CARB. SH. 475155 CO, SHY, 3' 56-3-15 COAL THINS TO N. CLAY GY 1447 15V52 4651T 90 91 92 86 87 7 18-1 16-17 154 23 22 20-21

45 +W8CC HASEDORN PIT ZMI. NE OF MARIAN HILL. ZCOALS - LOWER MORE EXTENSIVERY MINETO- AUT 520'LT HALFBORN SAYS NO 48 OVOR WAS BUT COLITIC SIDERITE WAS SEEN IN SPOIL. OVERBURDENI CLAY & CLAY SHALL WITH MONSTONES & LOCALLY MUCH FAILE UPPER COAL ALT. STOLT, CLAY FLOOR, SEVENAL SPLITS OR LOWER BEDS COMSINEMABLE STRUCTURE (SLUMPING PERECONTEM PORANTONS LOCALLY SHOWN AY ON ENTATION OF MONSTUNES), FAILE & SYSH AMV UPP SH CUAL 60' TO TOP UF 1416 555w24d1, grang w, 5195 S.R. 245, COAL, 1.31; CLAY BENEATH, CLAY-SHALS ABV SAMPLE 56-3-16 9LT. 411 T wow in BLOCK(?) (56 X 75) SAMPLE IN CAN S-11 FROM COAL, UNIT 7 14 554, 67, CARB, SH, UNIT 6 INCHUDED ADDENDA TO SEZ. 66 UNIT 16. SLS, CARR, DIG GY, W/ ROOT IRPRESSION. 16 a 0-0.5' STEN ONLY UNE PLACE ALUNG CUT, PROB. DEP. IN DEPRESSIONS ON UNIEVEN SURFS, OF UNITS 14 \$15. COAL SHY DIL. BARLY WEATHER 166 0-0.5 SIEM UNILL ONE PLACE ALONG CUT PROB ALSO IN DEPRESSIONS, WALCE ART PERHAPS AS MUCH AS Z' DEEP. DAMPLE 56-3-17 16 2. 5.5 Covener, As BEKORS 92 86 87 2 18-7 16-17 61 24

654W9 R8 STRIP PIT FOR GLAY 3MI.W OF MAXVILLE AREA tripoli, med. yell bra 460' T 12. for, say, rodular C107-56

73 SECTION 86: 55 3W 29 86 AU d6 ALONG NO RO. * (MOUTDSLIGHTLY E FROM MANPED POSITION). STETION MEASURED TOWARDS. BASE 420'T, TOP STO'T -H23 41 415T Just 1 4.0 Covered Unit 2 17.0 shale, medium dive-gody, distinct, even, very thin bedding, mostly alay, platy difusion bands, limonite stoing on some be deling sarfaces, sofit, smooth, foirly well exposed in ditch east of road; bottom contact not seen Out 3 5.0 Silt stone, shaley, light yellow- brown distinct slightly wavey, this to very thin be doing, Elightly mic socous, platy frocture forms wesk ledge and waterfall in ditch, bottom confact freensitional (interloaved I with in about I foot, 4 9.0 Covered 5 9.5 Gray wake, light pollow from a parallel bedding, audita 60 %, of sy olay limonite 40 %, slightly micageous, mica is vandam, vough platy fracture, very fine sound, subjugulor grains, poor sorting, taily, cohesive, to only well exposed in ditch west of road, bottone not seen. 15-76, 24 23 22 20-21 87 2 18-19 88 89 90

at top is zone of limenite comount clay silty, light gray, pedding hackury 2,5 abundant not impressions particularly at top, basal contact sharp and apporently over upper . 2 feet brown & slightly corbonice ous. 0.3 CLAI, CARBONACEOUS, DARK PURPLISH-BROWN; BEDDING ABSENT, MAN-1 LARGE VESICULAR CONCRETIONS OF RED IRON OXIDE, HACKLY FRACTURE. BOTTOM CONTACT TRANSITIONAL (GRADATIONAL) WITHING O.OS FT. SAMPLE 56-3-18, CARB. CLAY, \$ 56-3-19, 1ROVI ORE. - 450 - - 46267 10,0 GW, MED. YEZ. - BRAI, INDIST, UNEVEN THIN R. BOG. IN MEDIUM-SCALE LEYTICULAN CROSS-SETS, QT2 70%, CLAY & CLAY-LIM302, TR. MICA; FINESD, SUB-ANG GRAINS POOR STE, ROUGH BLOCKY FRACT, MICHS 11, FRIABLE, FAIRLY WELL ETP. ON PITCH & BANK W. OF RD, BASON CONTRET STARP & APPROPRIENTLY FAIRBY EVENI CLAY CAIPS ADVANDANT IN SOME BEDS. COVERED TO THE OF RUMP CRADE UPLAND LEVEL TOP OF HILL - 490T 44 EXP. 89 90 91 92 93 87 2 18-19 5-26 24

14118 2 MP 6/2//56 SECTION 87. 55 3 W 5 B 5 to a 3, MENSURED EASTERLY ALUNG GRAVEL RD. WHICH WAS CLEAMED & GRADED LAST YEAR (*!?) BASE OF SECTION 4157, TOP 4 - 410KT- 405 Unit1 6.0 Covered from level of outvert. 2 13.0 Siltstone; light gray to light yollow-buren; indistinct, uneven to contorted, thin bedding; micacoas, locally carbonaceous, fucciols and scour marks; irregular blocky fracture; fairly well exposed in ditch north of road; bottom contact not seen; at top is terrogenous concretiziony zone 0.1 foot thick. 3 5.5 Clay, light give-gray to light gray; bodding absent; silty in lower half; hackly fracture; poorly exposed in ditch north at rood except ter, concretionary iron one zone at top of unit, 2 contact would, be gradational within I foot. 4 3.5 Covered interval. Clay; silty in lower 1/3, light 294 to light 5 /2,5 yellow-brown; bedding posent through most of unit though may be in his finet present in lower port; soft; offer port Postic hackly free two; real, im pression common especially towards top; poorly exposed in diten north of road i mostly 27- 25-76 24 23 22 20-21 88 89 90 91 92 93 87

nother body weathered and sumped; may in large part actually be daystone or mud stone; bottom not seen. Voit 6 0.2 Coal; clayer; black to dark purplish-brown; badly weathered; other enoroderisties connot be seen - Sample 56-3-29bottom contact apporently sharp and - 451'LT - 446 mudstone; medium yellow-brown; indistinct unpown, thinbedding; splintery fractive; poouly to fairly 7 32,0 well exposed in ditch and bank north ofroad; bottom contact, apparently sharp & oven limonite ditusion bonds common in upper 1/3 of ynit; to and tocks pedding i middle 13 is shite y with fairly well developed thin bedding and platy knochure coal; dayen; black; bally weathered, other characteristies cannot be 8 0.1 observed - sample 56-3-21bottom contact shorp and even. - 483'LT - 478-Mudstane; medium yellowish - prown; 9 11.0 indistinct uneven, this bedding; slightly micoceous i clayey with splintery fracture of bottom grading upward to silty, with platy tracture st top. mica subparallel; rather poorly exposed inditch north et even with a by zone o. 1 foot thick, 88 89 90 91 92 93 94 27- 25-26 24 23 22 20-21

immediatly above cool of unit 8; Kerry red iron oxide bonds in upper part of 10 9.0 graywocke; light yellowish-brown; Indistinct, uneven, thin bedding; Trace mize, very fine sond, subangul grains, poor oorting; rough play racture; micas random; bower part fairly well exposed, upper, part poorly exposed in ditch north of rope; basal contact gradational within about I foot. 11 12.5 Covered interval Graywacke, medium yellow-brown; distinct 12, 5,5 even, thin bedding; awante 70%, clay; olay lime as well hime sand, supangular grains, poor sorting, blaty fracture, micas parallel, fridble; basal contact not seen; fairly well expased in ditch north of road. 13 4.0 Covered interval Groywocke; medium yellow-brown; distinct even thin bedding; quarte 60, clay jolay 1: monite 40%, trace mica, cry fine sand, supangular grains, poor souting; platy fracture, miscas parallel; friable fairly well exposed in ditch north of road; bottom not seen. 92 93 94 27- 25-26 24 23 22 29-30 88 89 90 91

15. 9.0 Proposed inferval Grayworke; medium yellow- brown distruct, even, thin bedding in medium scale lanticular cross-sets; cross bedding less conspicious in lower less well exposed port of unit, avortz very fine sand; subarquer grains, poor sorting; splintery to blocky frocture; micos parallel, Priable; fairly well exposed in both banks of road near I foot above road level at exest of a rade; basal contact not seen; covered intervals 13 = 15 probably occupied by grayworks similar to flat of units 12-14-16 -361 47 150' /115' = 40 92 93 94 27 25-26 24 23

Sec 88 6 453- 29 65 63, \$ 63, IN ALMOS BASE OF SECTION 4 TO'T, TOP SOU'T. SELTION @ FALE IN E END, N SIDE OF CK. Gool; black; distinct, even, thin bedding; Onit 3 4.0 approx equal parts vituain = clairain; blocky fracture; seen in vecently active gart, of pit; bottom graditions through shaley cor bonaccous clay .05 feet thick; top 2 foot is bong & ganneloid; locally there is some pyrite; cool vises steeply to north and cost. -474'LT unit \$ 3,0 Thate; carbonaceous; black; distinct, even, very thin bedding, trace mica; platy Fracture; mices parallel bedding; brittle, seen immediatly above coal on high way: base gradetional through . 01 foot 26.5 Section moved to pit 100 yels 500 88 6 Unit 5 17.0 sitstone; shaley; medium gray; indistinct, aneven thin booking : Elightly corbonaceous, trace mics, hockley froduce, britle, forms of pits tolol thickness of unit was not measured at ayyone place interval may there tore be some what in error, boto contect gradational within about . 5 foot, as seen at top of section 886 5. It done light you low - brown, inclishing 6 0,7 contorted thin bedding; rough platy tracture forms weak ledge along lighwall books contact gradational within a few feaths 89 90 91 92 93 94 27- 25-26 6 24 23 22 29-30

cleystone; shaley; medium groy; indistinct, soft, smooth, root in pressions in upper part; forms steeps/ope, basal, contact gradational within 2 tentes 0.7 Shale; cooly; black; distinct, over, very thin bodding, many very thin vitrolly sharp and evan, - Sample 56-3-22-9 10,0 est. shale, carbonaceous, dark purplishthin vitroin boards in, lower port, upper and more westherd port medium gray, platy froature, about the splitable, forme steep slope at top if highwell; bottom contact sharp and even. 60 /60' END, -511' FT -SELTION 85 a . BRAIN DISCH OF WEST PIT -450'4T-5it stone; medium yellow-brown, indistint meren, they beading, miceceous, rough blocky traduce, micas random, cohesive, seen in arain of pit SW of sees. 88 bic, some thin pede of very fine grained sand stones, and several beds about oil foot theck of clayed l'monite, upper port at unil is quite clayed with considerable limonite stain on fracture sur foces. 95 89 90 91 92 93 94 27- 25-26 24 23 22 29-30 clay, sity, madium gray, inclisting conforted thin bedding imicaceous, carbonacous, bookly fracture, mioss sub parallel, soft, fairly well exposed in ditch draining sw pit, bottom, contact fransitional within is togt, lower unit, may in fact be weathered ognalivant. Transfer section to active cost and of pit, 200,103 E 91 92 93 94 27 25-76 24 23

5527,001 89. 354W27a4 IN OLD GUARRY MEXT TO PRESERVE MILL OF ST. MEINRAND 55, Co. Edni At thousand Workers Unit 1 3.0 Sandstone; white bonded with light yellow-bown, indistinct way thin belding; Questo 95 to sand, subsingular grains, good sorting, blocky tracture, one parting 1.7 feet up from base, caposive, basal contact not seen Guaywalle, shoey, medium gray, distind Uni+2014 wavy, very thin bodding, anothe 20%, oley clay limonte 30 to trace mica, platy fracture, micos parollel, forms slight vecess in weathered guarry fore, possi contact fromsitional within . 05 Foot Cinterleaved, this unit does not persist to apposit wall of guarry 55., similar to unit one, possible 0.6 root impressions on upper surface grayworke, similar to unit two. 4 0.7 this unit appears to thin ; wedge, out within 20 feet perpendicular to guarry face but its posistant along Lace of quarry though thickness decreases toward east end. 95 89 90 91 92 93 94 27- 25-26 24 23 31- 29-30

SS, similar to unit I but confaining in 5 1.6 ond root impressions, this unit thickens an Exet wall of quarry ore shown 6. 2.0 grayworks, similar to unil 2, but grading upwork into similar materal with contorted bedding clay, silty, medium gray, bedding absent, 7 1.0 corbonoceono, migaceono, mimerous roa impressions with random orientation, exposed in gullies on north wall of quarry gradational within 0.2 foot, 8 8.3 Coal, black, distinct, every very thin pedding specially largly atorien small platy well of guarry . - Sample 56-3-23 bottom contact 5 harp and even, - 549 LT -Shale, corbonaceous, dark purplish-brown; 9 0.6 distinct, even, very thin bedding, platy tracture, numerous corponized plant frog ments and some well presende leaves parallel to bedding soft, bottom contact sharp and every 95 96 90 91 92 93 94 27- 25-76 24 23 31 29-30

0.1 from stone, vovious shodes of yellowish brown, in one bed uneven cruetod structure, invegator troofure, bottom contact shorp and apparantly even, Silfstone, medium rellow - brown, contorted bedding, slightly micageous, irregular gradational within 0.5 foot except for ironstone layer noted below, bedding of this unit is yety contorted. and tubes with rondous orientations 12 8,5 Shole; silty; light yollow - brown; distinct even, very thin bedding; micaceous; platy fracture, micos porallel, several bottom contact gradstigual within 1/2 foot and lower port this unitohous bedding confortions similar to those of unit 11 below. UNKOLDED SKETCH OF QUARRY WALLS, NOT TO SULL South War NORTHWALL gro. 2 pmot. pr. 7 Shan PHOTO BY RUP will get 95 96 90 91 92 93 94 27- 25-26 24 2 33 31 29-30

5227104 90: 353W 29e6 40 E3, EASTWARD ALONG COUNTY ROAD FROM JUT. W. ROAD TO S E OF HURRICAME CK BASE 445'T TOI SENT 4387 Covered from junction with vood to south 15, light gray findistanct, even, medium 1.0 bedding lorgly coloite, linky xline, srregular tracture, abundant brack opods, westhers to roun her blocks; bottom not seen. 15; ferrogenous, dark redish- prown; finly, xline abundant prachipods, weathers to large rough blocks; basal contact shapp and dishtly 445 -1 -Shole; melium gray, indistint, even, 3.0 soft, smooth; besal contact shorp but not well, seen jupper port of unit badly covered; covered; relation between units 4 and 5 1.5 6 not observed. 95 96 90 91 92 93 94 27- 25-26 24

Groywocke, light yollowish-brown; 17,0 distinct, uneven, contarted, thin bedding; Quarta 60%, clay; clay invoite to to, very fine sand, subongular grains, poor sorting; rough platy tracture, locally comsiderable bedding contartion, microfaulting, slickensides und other evidence of distyrbance which tiltedjugits up to 60; degues to, the SESE, in Ler bedded with silt stone medium jellow- brown; indistinct, uneven to contexted thin bodding; slightly microerus mica = sub paralle), rough platy fracture, in most aspects similar to graywocke, fairly well exposed in diffeh north of rodd, thick negs measured is toppy graph is thisleness, stratigraphic thick noss would be much greater but too this distersions is considered to be the result of compaction of sea iments in a clee o pre-monsfield valley, the ox 15 of which would run NE-500 2 1+10 SE of this point, the convention-Ally measured strotterophic Hock ross would have little meaning, the s. of unit 2 13 considered a small hilltop outlier as nogo then outcrops were found in the immediate widin ity, bottom contact of unit 6 is not seen Coverad interval 3.5 95 96 97 91 92 93 94 27- 25-76 24 2 33 31 29-30

gray wacke; light yo llow brown; indistinct unevery thin bodding 5.5 8. very the sand subprogular grains ripple makes on some bedding surfaces ecomponied by scattered limonitic concretions, rough blocky fradens, cohesive appears to be nes posible for holding up a our topographic bench, the attitude of bedding is essentially por : zon tol but vestoin between this and unit 6 06 seyred by covered interval, top of exposures not seen 371/27' EXP - 475 LT -96 97 91 92 93 94 27- 25-76 24 2 33 31 29-30

and the bed to be		
7/10/50		1414 & BCTD
O=Color	N/2 ST. ANTHUNY QUAD,	
124 4014	THE ST. HATHONY GUAD	Q. V. 163 OTES
Trement I	21 02	311
5 96 97	92 93 94 27- 25-26	5 (2 33 31 29-30
		4-35

1/11/56 HHC ERLP SECTION 91: 253WIGEL to b2, SOUTH ALONG RO. VE FROM BRIDGE OVER GRASSI FORK 1 'L MI. SE OF SCHNELL VILLE, DUBOIS CO. 6 -558 L-Unit 1 2.5 Covered from lovel at vood at bridge, medium beaded graywacke is exposed in creek bed below bridge anit 2 5.0 Graywocke; medium yellow brown; be dding generally absent, few indistinct thin beds Free mica ; very fine sond i subangular grains, poor sorting; locally banded with smoll blocky fracture; micos random; somewhat freshle, but fairly well exposed inditch east of road; bottom not seen. Uni+3 0.5 Covered interval Unit + 26.5 Graywacke; light pink to light yelow-brown; distinct unoven thin bodding in medium scale irregular cross-sets; auartz 80%; clay 5 eleg 1 monite 20% trace mica; irregularly distributed specks of knowite gives speckled yellow-brown sred colors; Jery fine sand, sabangular grains, poor sorting; blocky to platy fracture; micas random; tairly cohesive; tairly well ox posed in dital & bank east of road; bottom contact not seen but probably gradational itrough short covered interval into unit 2, in upper 2/3 are soveral neds of shaly graywacke or sitt stone less than I took thick at very top is a some of 92 93 94 27- 25-26 24 96 97

Imprite banding about 0.5' thick. Unit 5 21.0 Covered interval. Unit 6 8,5 Siltstone; shaly; light gray; digtinot wavy very thin bedding with many small lenticular crogs sets; nicoccous, ferougonous, small platy fracture, micas parallel, locally hoosy finanite stain on some bedding surfaces prittle; forms thinly covered slope on bont west of read; basal contact not seen - 622 61 Must 7 24.0 Grayweeke; light red to medium yellows brown, distinct, even, thin bedding, in medium scale lenticular to fabrilar cross-sets; augutz go to; chy ; clay Imonite 10%, trace mica, trace Qxo, very fine sond, subongular grains, good sorting; many bonds of lin on the up rough blocky fracture; friable, but well exposed on bank west of road; lower part is less well on posed than upper and basal contact is not seen but was rather closly picked on basis of float fragments and, small forougenous spring in ditch. Man + 8 200 Covered interval 95 96 97 98 92 93 94 27- 25-26 24

Muit 9 9.5 Graywocks; medium yollaw-brown; bistiret even, thin bodding; apparently in large scale cross seta; poosite 9000 clay 5 clay tomorate 10 %, have mice, tracce axo; this every worke of unit 7 are of "Rollston" ty pe with the clas occurring largely do eggregates of sand size; fine sand, sub-angulor, good sorting; irregular platy Produce; mices subparallol; soveral zones of very heavy limonite concentration in bonds pud acquios in upper 13 of unit; fairly frishly but generally well exposed in ditche i bank west of road; bowerf part of anit better exposed than upper port; bottom not seen. Writ. 10 6,0 covered inter ust to intersection of top of hill. -664 -106'Y /74'EXP. 95 96 97 98 92 93 94 27- 25-76 24 2 33 31 29-30

SECTION 92. 25 AW 16 78 0017 hl, NW GLONG RD (UP FROM TRIBUTARY TO FLAT CREEK, 3 MI, NW OF ST. AMTHORY. 4 Unit 1 14.5 covered interval from level of culosof Maitz 1.5 Graywache; light yellow-brown; distinct uneven thin bedding; ausutz 90%, day relay limenite 10 % trace mice, trace ax o locally elew clay ching; fine agud, subangular grains, good softing, rough blocky fracture; micos sub-privallo locally some lineonite in bands and concretions; fairly cohesive; parely exposed in ditch out of road; bottom Grayworke; light yallow-brown; distinct uneven thin bedding; avoite 80%, clay to clay timonife 20%, trace mica, Unit 3 2.0 Very fine sand, subangular, poor sorting; clay chips abundant in several zones which eppear shaly but are merely more thinly bodded than jest of units limonite bonds common, slong bedding surfaces; postly exposed in ditch est of within about 0.5 feet. 95 96 97 98 92 93 94 27- 25-26 24 2 33 31 29-30

Unit 4 34.5 Claystone; chaly; light gray to light yellow-brown; Indistingthe even, very fain bedding becoming distinct at top, smooth i clayer in lower 1/3, upper 1/3 contains many very thin silty interbeds; small ploty tracture, numerous hoavy 1:monite ditusion bands along few promingut vertical joints, and limonite stain commun on some bedding surfaces; failly cohesive; fairly well exposed in ditch and bank east of roal; lower supper parts not so well exposed 25, middle; lower part in particular shows evidence of slymping; bottom confect not well exposed but oppears shorp & fairly even. Covered in ferval, from instance of Ploat it appears that this is underfain by silty mudstone, similat to knot Unit 5 7.5 Clay; silty; light gray to light puplish Unit 6 8.5 brown in oppor foot, bedding obsent in lower part of unot, indistinct, uneven very thin bedding in upper 2.0 feet; Spper part carbonaceous; rough blocky to small platy tracture; well exposed in ditch east of road; several bands of light yellow-brown limonite near base; basal contact 95 96 97 98 99 93 94 27- 25-26 24 233 31 29-30

Unit7 0.5 Coal; shaly; black; distinct, every very thin bodding; bodly weathered, east of road; thick ness ranges from 0,2 to 0.7 feet; thicken forwards south where it is topographicaly 3.0 foot lower, these variations may be due to 5 hump and creek, boffor contact gradational with in 0,2 feet - sample 56-3-24 - Thin veins of ironstone occupy nearly vertical joint seams. -544'LT-Groywocke; light yellow brown; distinct Unit8 8,5 uneven, thin bedding; ausutz 70 to, day solay limovite 30%, trace mica, trace a.x.o.; very fine sond, subong alor grains, poor sorting; rough platy fracture; some what trisble; poorly exposed inditch and bank east of wood; one or two ledges are prominently exposed at top of unit; basal contact sharp and perhaps somewhat upeven, but opposers somewhat disturbed as a result of slymping mentioned inconnection with underlying unit, several floot blocks of "scouraceous" ivonore appoor above the coal and, may belong with this unit, but they were not seen in place. PLANT FRAGS. common IN SOME BEDS. 3.0 COUSTRED gray wacke, silty, light gray; indistinct meven thin bedding, 60 tauants 40% ay à elog limonite, trace mica; very fine 95 96 97 98 99 93 94 27- 25-76 24

sand irregular tracture; micas random; poile some straight root impression with random orientation; tairly colosive; but poorly exposed in ditch east of road; basal confact not seen unit 11 6,0 covered to level of road near top of -565'T-90' / 59' Exp. LEVEL OF CAREM 25 4w 21 h5-4, ON HEWLY GRAPED ROAD, DITCH 5. UF 120. 11 LT. 4=2. BRN 1 B" GW. er in Lowers 2/3 SAMPLE 16-3-25 533'LT 344. 64. MST: W/ LIMON, @ BASE OK. 47. 547, E" &W. 2.3 1.1 GANISTEVE 44. SHY, CLAYSTONE W/ LIESEGAMS; DITCH W. JEVED COV. 2544892 CO, BARLY WX. & SLUREP FT @ 480'T. SAMPLE 56-3-26 95 96 97 98 99 93 94 27- 25-26 6 32 33

35 4W11 9-62 ALUNG GULLIED DIRT RUAD SOF 708' IMPERSECTION 708 INT ABUNDANT 21 COVENED E LT. GY, SHY MST, W/ FERRUL PLANT IMPRESSIONS (a) 1345+ (c) SLUMPED, SAMPLE 56-3-27 6651-C3. Gy "B" GW. GRADING UPWARD INFO WHITE SILTY CLAY OF EXPOSURES APPROXINGS SMALL ARD, STRIPMINE ? IN FEROE CHAL. 353W70-48 ALT UF CHAL 64017, 3' CLAYEY SIX, BIZOW 3'+ GU"E" ABV. NV LS. ON OVMP. COAL RISTS RAPIRLY TO SEI SAMPLE 56-3-28, ABT 1' COAL OTES ON HUNTINGBURG & ST ANTHONY QUADS, Q.V. 115 OTUS. MAPPED. 96 97 98 99 93 94 27-28

MIG ERLY 7/12/66 SOU. RY. ONTS WIDE ENGLISH - REELSVILLE ISPLIT ZBENCHEZ LS-10'+ APART, SH. BETWEEN ELWRIN BETZHER, "CYPRESS, SALUNDA HARRINSBURY, UNDERLINED monnons Fully Exposin Bull Cla. & 402. EXP. FULL THICKNESS IN ONE EVT REVISULTE IS ALSO SPLIT IN HWY CUT DUNG SRGY WOKENGLISH 114 MI. JSIWILEH TUIGH MEST UP HILL ON S. R 66 W. OF MAGNET Marykan S (RED-BRH XTAN, W. 717 94.5H. 10 F 54.54. W/ 452-LS. FRAGS. L STRAGY 34. 748' -1 9 42' BEN ARY US GAMBRASH 672 - 2 for you ARY. 45. 42' 414 GRA-BRM & GY.SH. 5105 ROAD, - 35 WAVY BOOK 35. 5" 606 1' + 15 BOUF 47.54. 17 VIETUNA 414 RED & GRA. MUDST. 623 WAVY BOD SS. 15: /cov. 414 258 21' / THICK BOD, GY XTAL, WS, (CON DEAN) RED MUDST, + WALY-BODSS 4/4 WAUY-BOD \$5, 280 GRN-BRN MUDST. 6 94 YELLOW ARG. LD. GY. XTALLING W. COUERTO; ROD & GRA/ MST. FLUAT 363 SS, MOSTEY WAVY BOD. 2114 96 97 98 99 93 94

651W 33 e3 to ft. 101 = GEORGE CUEF. LEVELLED FROM FIETO @ BASE OF SLOPE, GY XTALLINE LO. GLEM DOWN 30' COV. WAVY-1300, 58 76' COV FLUOD PLAIN 40017 96 97 98 99 93 94

July 13, 1956 HHG & R.L.P Section 93 35 4W 13 W8 14 21 south 2 long 57 264 from 694 intersection I mile 500 of entrance to Fordinand State Forest Unit 1 2.0 Covered interval Un: +2 8.0 Clay; shaley; light purplish-brown; inglistingt, even, very thin bedding; olightly our bonoceous; soft; smooth, plastic; lower part poorly exposed but appears to be silty; blacky to blaty tracture; poorly exposed in dite, h west of read; bottom contact not seen. Units 0.7 chart, black; one bed; finly x'line; rough blocky fracture; numerous fossils, including principally crinoid columnos, brachiopol frogments and possibly some plecepods, tenistrate bryozoons and Fusilines; well exposed in ditch west of part is light tan, porous "Tripoli" Unit 4 0,5 Covered, may be underlain by porous, leached, highly fossiliferous light gray to light vellow brown oher tripoli " float fragments of which are abundant above chert of unit 3, tripoli is at least 1/2 foot thick and appears to directly overlie chert. 95 96 97 98 99 93 94 38 37 36 32 33 31 29-30

Unit 5 1.5 Covered, mottled gray i vallow-brown day, Marit 6 1.0 limestone imedium gray; one bed; tipely x'line; irregular fracture, no fossils seen; cohesive, one block only seen in ditch west of road; basal contact not seen Shale; light olive gray; distinct even, thin Unit 7 11.5 bodding; soft, smooth, small platy fracture, fairly well expused in ditches and banks on both sides of read; basal contact not certainly seen but apprears sharp. 31 /21 EXP. 354W 14 27, @ SET 4/ FARM RO. 50 5. 21 LS, SY, YTAL

ZONG FISS CUT, BK, TRIP @ TOP

CLAYEY CAPES, SH. RO. JCT -COALY SH, SAMPLE 51-3-29 44 5H 354WZ1 82, Acong RO. Imi, MOF FERDINAMA, ABU 6W "E" 51025-11 1 50, UX, SAMPLE 51-3-30 G CLAY, COU, OF PAST 96 97 98 99 100 94

STUTION 94: 35 4W4 a8, 5a1, 8 h1, 89 h8, ON RD TO WOF S.R. 162 114 MI. S. OF BRETZVILLE DUBOIS G., @ 508/ INT. - 508 -Unit 1 11.0 Shole; medium gray; distinct, even, thin bedding; slightly carbonoceous; contains stew very thin, Tight gray, siltstone beds; soft, platy from ture, well exposed in ditches and banks at junction; bottom not seen Unit 2 4.0 shale; darle goon; distinct, even, very thin bedding; corbonsceaus; briffle; platy fractive; well, exposed on both sides of side road; thickness ranges From 3 to 6 ft; bottom contact gradational within 2 Pt. Unit 3 21.0 Graywacke, medium yellow-brown; distino even, thin bedding; in medium scale Conticular cross-sets medium sond, subsingular grains, poor, sorting; one conspicious de felog-chip conglomerate about middle of writ; fyidale; well exposed in bank on s side of road; bottom contact not well seen but appears shorp and somewhat anguen with velice fof 3 feet in 25 feet; Quanto 70 30 clay i clay monite, trace mica. covered to top of cut. thirty 6.0 05 42/36 EXP _5501 95 96 97 98 99 100 94 1 38 37 36

383W 748 to 668, M. ALDRIG PERE 5=27 wow 95 Jo 676 INIT @ TOP OF HILL, ZMI, SWOFKYANA - 576 L+ Unit 1 8.0 covered from level of road at boundas Unit 2 45,0 Graywookes; medium jollow brown; distinct even, thin bedding in large scale lenticular cross-sets; Quarts 20 days clay limonite 30 % , trace of mica; medium sand, subangular grains, poor sorting; rough blocky frocture; micro subpossed friable, fairly yell exposed in ditale and bouch sest of road; bottom not seen; hollow ironstone pelobles sound out in some zones new top. The SIGILLARIA, ET. MOLDSFROM CUT 1/4 MI. S. TOP 15 SOM FUTHTI Lower INI CUT TOS. Unit 3 250 covered, IN RD. CUT 1/4 MI.S. THIS INTERVAL IS OCCUPIED BY: MURSTONE, SHALY, LT. GY: THOIST. THIN EVEN BOG; SOFT, SMUDTH, MANY DIRFUSIUM BANDS UP TO 0.05' THICK; PLATY FORALT: SUFT, FAIRLY WELL TYP IN BAYIS & DITCH E. OF 1917 BASAL CONTACT GRADATIONAL WITHIN 1'. UNIS Unit 10 Clay; light gray; indistinct, even, thin bedding; , Smooth, some what plastic; numerous light purplish-brown plant impressions, mostly probably roots; irregular tracture; poorly exposed in ditch west of road. Unit 5 2.0 Shale; cooly; dark groy; distinct, even, very thin bedding; numerous very thin beds of fusain; small platy fracture, abundant 95 96 97 98 99 100 101 38

blant fassil fragments poorly preserved; soft; poorly exposed in ditableast of road; at base is limonite 20 ne 0.05 fort thick; basal confact sharp and apparently even Jample 56-3-31 Covered. IN GUT 1/4 MI. S. THIS INITUME IS 6 8.0 OCCUPIEDBY SLS, LTIGY, INDISTINCT ONEVEN THIN BOG. CARDONALTONS, MICALEUUS : PLATY FRACT, MICAS 11 AB, PLANT FRAYS, SOFT, POORLY EXP. BAS & SWARLE. 7 2.0 Band stone; light yellow-brown; supponently one ged; Quarte 90 %, clay s clay timorite 10% very time sand, subougular grains, good sorting; upper surface is somewhat irregular; hard; resistant to weathering, form ; boom to track with is spel lower at more bottom not seen. covered to love of 676' intersection 8 9,0 - 6761-100 /50 ETP. 97 98 99 100 101 38 37 36

7/25/56 ABERRIP. 255W14 F4 ABD STRIPMINE JUST S. UF RD. 2° CO, CLAY PARTING. 536LT -> 56-3-32 CISS CLAYEY @ TUP. 56-3-33 36' E. SHYMST, CY, WEATH, Y-B. 498'7 4'+ CO, SHY, BK, MINION. 255WITE2 IN E. DITCH OF ORD. JUST H. OF IMT. 53016 -> CARR CLY (515 47.66) - TO UPP-12 Z SHY 40. COALS MOTLAST 5 /563 64,064, 5700 25 5w 22 at sions H. BAHK OF COUNTY RD. JUST E. OF 5, R. 45. " Gw" B" 9w - E " 517'47 - 0,5 (5, CO, SAY, SAMOLE 56-3-34 GYSH. W/ FEST, CLAY & TUP Huy LEVEL 502'T. 25 5W 1564 ALUNG S.R.45 IMI. S. OF PRIVILAR W. JIDF OFRD. 5 / Gw. "B" 455'T -= w, BHY, W=ATH, DIPS N 1/10'= 11 555 C1, GY 56-3-35 32-33 36 96 97 98 99 100 101 38 37 102 34-35

255W9 LJ. ONW. SIDE OF COUNTY RO. NEAR BEND. STRIP WINE 34/SS GYEL 488'LT 44.5H GW "E 94 54. 450'27 co, BLOCKY, BIG 255W 18 h 3? ALUNG COUNTY RD JUST W. OF COLONDO BRIDGE ACROSS PATOKA RIVER LI LS GY FOSS, ONE BED 491/4 SLUMPOD SLY, SH. 331 (PENELUNTEMPOR?) 4581L. 0.5' 1 555 94 chy CO, DARLY WEATH . 56-3-36 LEVEL OF BOL104 = FLUOR 450° 66 ores & MINES LUCATED ON HUNTINGBURG & ST ANTHONY QUADS. 96 97 98 99 100 101 102

HING ERLP 7/26/56 926, SECTION 96: MILLEN HILL 65 2W 1601 to ALDNE RD. UP FROM VALLEY OF MIDDE DEER CK. BAST OF SECTION 422'; TOP 680'EST - 422'-Covered from level of Bridge Unit 1 25.0 Unit 28.0 Shale; medium greenish-gray, disting eventhin bedding; rough platy fractive, soft intervedded with sitstone; light greenish - gray, slightly micaceous rough ploty frocture siltstone occomes more abundant toward top, begoing surfaces show numerous irregular morkings and flow structures; to it , well exposed on ditch on south side of road, bottom not seen - 4551 Unit 3 11.0 Limestone; orgalaceous; medium yellow-brown tindy x'line, nodular appearing, at least one zone is fossiliterous with 2 av move species of Brachiopods; occurs mostly às boulders in ditch, many of which are slightly out of place; is most likily a series of nodular imestings about one Davits foot thick interbedded with shole; 3-4 poorly exposed in ditch south of ros. AFF poton contact not seen, more competition MM ExposED IN ALTERNATE RUAN TO 5. Uni+4 10,0 Mudstone; shaley, medium gleenish-gray; indistinct, uneven, thin bedding; uneven tracture; probably fossiliterous; interpoded with medium beds of Ime fore, medium gray, finely x line, fossil levous, cohosive 97 98 99 100 101 38 96 102

poorly exposed inditch south of roads bottom contact appears sharp. Unit 5 20,5 Mst; shy; medium greenish gray mothed with medium yellow-brown, indistinct even, thin bedding invegulor fracture; poorly exposed inditen south at road, bottom contact apparently sharp. IN ANIE ROAD JUST S. 2' FOSS, CALL SS. SHOWS AT POSITIO 5: Hotong; medium oliver gray to dork Unit 6 3. redish-brown, distictie vanithin bels nicaceous; rough platy tracture; Md numerous cyling vircol mud umps on some bedding surforce; cohesive; poorly exposed and partly slumped in ditc south of road; bottom contact not seen. - 500'L -Out 728.0 mud stone, similar to that of unit 5 toward top are several beds at siltstone similar to those of unit 6 entire unit is poorly exposed and parts a largly covered -528'E 14:48 1ho Covered, floot of greenich-gray mudston and vellow- brown org Noceous lines tone VERLIFIED BY EXPOSURED ALONG ALT. 140AD Unit9 40 Shole, medium olive grou, indistinct ever, very thin bedding i micoceous, small platy fracture, micas parrellel bedding, sift, poorly exposed in ditch south of rood; bottom not e ecv. 98 99 100 101 38 102

Limestone and a brecoid, mother light Unit 10 3.5 gray to medium yellow brown, Vorieties of la. up to 19 mm dia. Fabric abundant prachiopuds of fue WA or more general, toinly conside, forms small but persistant ledge; well exposed in book on south side at road; bottom contact not seen, Woit 11 24.5 Mostly covered, scottered outdrops of fossiferzus catearrous sont near base; most of unit oppears to consist of Jacopal top one several feet at a pu a few loose plates of finely x line gray la Kits fond to North fall 61 Histo -576 L Covered, several feet of slumped at by scotlered stumped places of growske and siltstone soft gray shake can be duy from bank near middle of unit sonstone, light yellowish - Brown, distinct Mait 13 5,5 change chay to name to to, axo, very the sond, sub originar grains, poor sorting few ripple marker some belling surfaces heavily dosted with Imonite, rough ploty frontine 97 98 99 100 101 38 103 37

cohosive, well expessed in ditch was for road; bottom not seen, Siltotone; light pupplish brown to /19+ yellowish - known; distinct wavy to mesen thin bedding in wace airs; in part componaceous, poor sorting lumpy How rolls on mony heading surfoces rough platy tracture, micos supporable, soft and somewhat Righter but well exposed in ditch wast of road , bagal contact radational within one took movite difusion bonding slong widely spaced ventical joint = 621/2. Unit15 85 Grayworke, medium yellowish brown; distinct, even, medium bedding, and to 20, clay 5 clay kinonito 30, trace QXO trace mica , very fine sand, subangular grains, poor sorting, one set large rippole morks, a symetrical indicate north flowing current two or three zones of smell elay chip conglomerate some small pebbles of white fromstucent quartz, only micas parallel, cohosive, Pairy well exposed in ditch west of road but some what shumped in part, bass contact appears shape Conced 16 500 97 98 99 100 101 38 102

anit 17 7.0 Braywacker, medium jellowich - brown, distinct, even, medium bedding; quarts 70 cky & char inquite 30 have min trace axo, very time sand, supergular marks seen in float frequents, blocky poorly exposed in difehes on poth sides of road, probably slightly slumped, bottom not seen. North 600 Covered MN.419 7.0 Mudolone, shy, light olive gray; indistanct over thin bedding i prioceaus slightly carbones sough platy tracture, mices parallel, numerous Imonife concretions in In several zones, soft but fairly well exposed in d. tohos on both sides of road, bottom not seen mit20 160 Graywocke, light yellow ish- brown, distinct even thin bodding in medium apparant at top thon at have a venta trace ato; very line surf, subangulu grains, poor sorting, ploty frocture, mice possel is some anat friable but fairly well in hitches on both sides of road, bottom contact spans and opposently even. When 1/3 of anit not completely exposed 97 98 99 100 101 38 104

United 22.0 Covered to grast of grade new 278 156Ex /68 EXP Pm SECTION 97:65 44 9 68 TO 88, ALUNG RD \$ 0 C.Ay PIT '2 M. H. UE S. R. TU. BASS 0 £ 552713 N' 380'T, TOP 465'T Klew als 10 9an Graywoode, light vellowish bours; distinct Unit 1 2,0 Centicular cross-sets, overte 70 clay and clay unovite 30, trace mica, time carrien are and material, very fine sand, poor sorting, ploty frocture, mayor parallel, whesene, well exposed it NE bridge about ment, bottom not see Grayuscke; by ht yellowish brown, disti even, thin bedding in medium scale lenticular cross-sels, Quartz 80, clay clay limonite 20, trace mica, tear QXO, platy fractive, much purallel, cohesine, forms strong ledge Peur about 100 feet along creek NE of bridge, individual bedding units and lower conduct dip notice all 5F, boach 98 99 100 101 38 102

Unit 3 5.0 Covered Unif 4 5.5 mudotone ony at have silly at to light purplish brown to Cight yellowesh, brown indistinct, our, try tedding, musicano, car ponarcous, tou small tractice, miss parallel, fring well exposed in direct east of road, pasol contact not Unit 5 14.5 Covered long shots and frotigraphic Unit6 20 Granwarke, ganister, jight gray, indistinct uneven thin bedding to bedding obsert anata 80 clay and clay amonite 20 hars mire frace axo un line sand poor sading whose hard poorly exposed in ditch east of road, may be somewhat stemped, bottom not seen, Mudstone, mediam purplish-brown, hedding absent to indistinct, uneven and thin, mice come a locally slightly contangeous, very sily, also andom Lainly eshesing, party exposed in ditch east of roud, 98 99 100 101 38 102

basel contact not seen but apparently sharp. unit 8 5.0 covered may include some light gray plantin commalay. 439LT Pos. of word? Siltstone, medium aline gray distinct, 8.5 wayy, very thin bedding, misaccous, small play brackers, mices parallel, Painty cohesine well exposed of entrance to sit on east side of road, vasal contact not seen, Crayworke, dank gray, bedding mostly 10 2.5 even very thin bedding, swaste 50 day 50; very line sand, poor sorting, contrangueurs, miraceous inequal fracture, misos random fairly consiner well en poseding cost wall of pit, botom contact not seen number blunt langments in besteld put of unit. broug wache, meding yelfourish having distinct ineven thing to negling hedding, Quarts 80 clay and clay umante so trace mine trace axo very time sand, subangular grains, par sorting, totally shows reculiar low fluting (rogster tails) brashes cods & paraly found in upper part 98 99 100 101 38 37 102

at mit, conesure, well and posed in east wall of bit, wotom contact sharp and Some what menen but whit is Caterally persis heurt. 442 LT- 452LT linestone, donk gray, anding absent, Unit12 0,6 and Erinaid Stems alrendent, verd, well exposed on east face of pity Unif13 0,7 Shale, medeum olive squay, indistinct even thin bedding; wheepilen buchure; numerous Lessits, mostly small; soft, well exposed on east face al bit, bollong content gradultanal within Oil foot. Unit 14 1.0 indistinct to absent, line, probably highly argilaceous, blocks Traduce, contains numerous crinoid and yelly spole and mino fossils; weathers to soft light yellowish have surtage i well exposed in east wall of bit, top and bottom of unit are deaply weathered and one up resented conduct goodational within 0.1 foot 98 99 100 101 38 102

Siltstone, thy, medium olive - gray, distant, warry, thin bedding, misaceurs, platy havene, mias parallel, soft, but well exposed in gost woll of pit, basel contact sharp and opporently Unt 16 1.5 mudstone, medium penplish- wown, bedding absent, corbangeauto and micaclaus, circalan tradens, above main werling for a blasal confust gradational within 10 feet clay, cight years, blackie, bookly lin 17 1.0 smut shouks, 18 1,5 Covered. - 400 LT - 470LT Tripoli and chert, medium gray to white, see thered blacks at top of our lunder not sufficiently in place to determine 19 2.0 the stratigues his anangement, but hetingen law bads of chart. Fossil trachio pode 3 parsa. 20. 3.5. SCATION SHOWS OF UNITS 15 & 19. SHOW 85 / 56 PM EXP =465-7 - 475T 98 99 100 101 38 103

5 5 2 7 10 M 98: 355 W 23 h 1 to f 1 \$ 24 h 8 to f 8, ANDRE ST HEMRY BASE OF STINN 510'7, TUP @ 585'T. -510'T -50 51 Unit 1 100 Covered from level of road at autvert, -520'LT- 515-1 chart, light gray to light yellowish - brown, distint even thick bed, Linky x' line, irregular tracture, hard, fossils foreilly common, mostly go molden arinais, lenge gentlars and other trachopads well exposed in disch east of road, botom contact straips and even but underlying rock not Shale silversony nadism ofine - your destinat wavy them bedding total platy franching, to solds, hard teinly room funt, fairly will exposed in ditch east of good, the more sil careous but of this unit appear as concretions and weather out in will, bottom contact sparks and even shale; clayer, light alive gray of have to light grow et to p y no stinet green very than building, plenty Unit4 2.5 ditch east of road, basal contact opporently from would within 98 99 100 101 38 102

Unit 5 15 Mudstone carbonaceous, dark purplishbrown, bedding absent, timely meaneous, erregular freetine, micos random, poorly exposed in ditch east of road, basal contact gradational within 2 toot. Cool; shaly, black, distrinct even thin bedding, small platy tracture, books explosed in ditch east of ward, partly dele to slumping of overlying unit one is some what greater bosal content short and apparently even-56-3-37 -532'4T ~ 527 4T Unit 7 16.0 Grayworke, light yellowish brown, medium sools portunder cross-gets, Quarte 80 clay and clay unquite 20, trace mice, treise QXO, very time sand, Subengulan grains, good sorting, Irrable, but well ex posed in ditches and banks on Rost sides of road, bosal contact short and appearantly Some what unever Chrit 8 6,0 Coursed 99 100 101 38 37 102

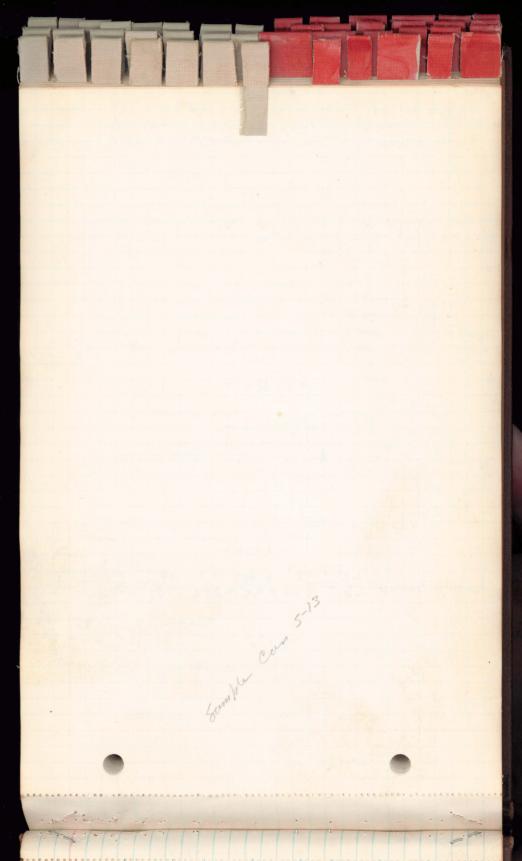
Graywache by ht yellowish - hours, distinct wany this bedding, overte Unit 9 17.0 To along 5 along unquite 30, track ming, truce ato, very fine send, suborque grains, soar sorting, creeg way sipple marks common, rough planty france mices subparally co pagere, fairly well exposed in ditch west of road, bettom confact not seen. Arraymache, medium yellarigh hiam 10. 15.0 distanticony mederny hedding / duente 70 clan and clan temante 50 trace mice, very line sand, subangula grains, pour sorting, play fracture expend in ditch west tart wither expend in with ditches on south side of hill, basal contact appears gradational ristan about 5 Rest. 76' /60'EXP/11'PMEX 256 7 - 581T LOCATED 26 OTLS, & MINES ON ST. MEINDAR, TELL CITY, & HUNTINGOURG QUADRANGUES 99 100 101 38

NNSERLP 7/27/56 5-27. 99 23 +w 30 95 to +5 SALUMS From care Bottom To Hice top - 495'7 -Unit 15,5 Covered from love of road at stream Unt 26.0 distint, even, they warding in modium 5 cala len seular crois set due 12 70 clay and clay imanita 30 trace min, trace 0 x0, vory Pine 5 and cub angular grains poor sorting, in agrilar Practice, mines sulphandled, some of line in a land think at the top weeken into small but the fourty wall exposed in dethingst of road base not seen. - 507 LT-Shela , light aran gudin ab word into silt store, stay, light gray, distruct, even, very then bodding micacans plate tracture, micas parallel, soft, and poorly exposed in alteh west of no sal, busul contact not seen. 99 100 101 38 102

Chaywarte, light to medium yellowish trown, distinct, every, thin, todaling +422,5 an medium scale benficular cross-sits grains, pour suring, irragular frontes, exposed in ditch west of rough upper 3 feet on so is more consure and Lame a week ledge, voral appearantly should Covered to dop of hill. 33 Pm exp. - 560'7-65' 5527.100: 254w 18d 5 to c6 20004 COUNTY PED BAJ = 06 'har, Sw. OF MALTERSVILLE. SELTION 480'T YOR 560'T. - 479 Tcovered from level rook of private road to west Unit 2 21.0 Grayworke, light vallawish brown to bedding & unto 70 clay and day at 0 clay and day at 0 clay and day at 0 clay grains, soot sorting along subject of the grains, subject sorting along the fractions, might subject to be sorted to be subject to be sorted to be so with about equal amounts of 102 100 101

0 weny to even, then to very him bedding, micecour, continuesous, mines life to 2 mm diameter, platy Individual units are a feet on to lesse of wint or whole not seen, where doeply weathered unit as appearance of muddone Unit 3 3.0 Covered 4 180 Brayworks, dark resish - known, distruit, even thin bedding in medium scull lan Licalan cross-sets, Quarte 70 clay and clay Cimonte 30, frace mea, trase axo, sorting, having red man acide wands part of unit, inequal an sharing, mices rundow, Priable poorly exposed on both beach and diferes, bottom contact not seem 5 22,0 Covered. Brogwack, medium yellayed - Voung des finet, even, thin, hedding in medium tenticular cross - sets, Quante 70, clay and clay amounts 30, fine sand, subangula grains, good surving, totocky fructure, miles random, somewhat highle but well. 6. 9.5 expased in road ved ven top of hell, basal 102

contact not seen, 5.0 caused to top of will 82' / 49' Har inp. - 561 T-12AO SOE J.R.64 & SOJ. RY, Unt 1 36.5 Covered from level of bridge at R. R. Xing Mudstone light gray to insdian y allowish - brown; indistingtione went, this bedding, with, smooth, some what pluster, megular huntine, poorly, exposed any segrental sharped in dit has on both sides of wood, be tom contact not seen. - 489 LT can+ 3 0.5 Chert, dank gray, bedding absent, Kinly X'line, rough blocky tracture, scart and brachio pods and rumains smaller fossils, hard, bittle, Somme weak ledge in both ditches, bottom contact should. Chart, similar to writ 3, but longly weathered to dank yellowing - brown tripoli , bottom contact apparently spend and uneven. Unit 5 60 mud stone, oby, dark olive - gray notfled with medium brownish-y slaw; indistinct, even very thin bedding, several zones of pseudo o'o lite 102



botryoidal from oxide, inreguler francis, soft but fairly well exposed in both dichae, bottom contest not seen, Clay, shy, ned gray, bedding indistruit to alesent, saft, amooth, some what plastic, wregula hacking, numerous rout in pressions with random arrantation perfeculary at top, well exposed in ditches on both sides of road, wood contact gradational within one foot True stratig ruphic thickness of civits 556 may as less than shown because of apparent nexthings dip: on the other hape these units may thinken southward as chart does not opper to Lift as steeply es coul of unit 7 Unit 7 1.2 Gool, black, distinct even, very thin badding, angly clair win with some very thin hours of vityseen and fram, platy machine, well exposed in bitch and bende on both sides of wad bottom content spent sample 56-Cool continues to vise to south. - 503'LT-Unit 8 5.5 Shale, deal gray, distinct even very, him bedding, continueous, slightly misseous, papery Lewine, britte, well exposed in Comes in woth sides of wood, thing to south where certaint by grayweeks of unit ?, basul content sherp and even. Un: 49 10.0 Graywacke, light yellowish - bown, distinct, uneven, medium, bedding, Querts 80 chang? clay timonite 20, frace QXO, very tene sand, sullangular grains, good scoling, sough blocky hearture, comme, will epposed in bank cust of road, bottom con shorp and stightly unevery with select of 0.1 12217 72 / 32 Exty15: TPm Unit 10 40 ast Covered to top of ha 102

18105 ERLA 05 35 +W18 e 6 TO E4 EAST ALUNG CO. RD. UP FROM HONESY CK, TO TOPO. DENCIS @ CA. 0 F GRAD DAST OF SECTION 495 T TOP, 555'T. -493'T-Cosered from level of pridge over tributary to Mait / 1.0 Hunky greek about one foot of below white alsy shows in creat 5 Graywork, neglium yellowish brown, district, ever, very, thin hedding in small scale tenticular cross-sets, querto 60 clay + glay limonte 40, have mica, platy fracture, nings parallel, very line grains, how sering, triable, fairly well or posed in part worth of road, lottom content Brogueche, medium gray, distinct, even, very Prin bedding, Quanto 50 clay and clay importe 00, trace micas trace contonaisons margial, very line send, poor sorting, platy tracture, much lates and compour fragments parallel reading, soft, poorly apposed in dital not seen, unit appears to dip slighty to expet, and it may be that lower part to upper part of unit 2. Unit 4 25 Coverad 102

in the same Unt 5 17.0 Greag work, median yellowish- brown, distend ten hichar cross sets, Quest 2 80, clay and clay timonite 20, trace man, times, soul sorting, with rendom means supper part more eshesive with sub-parallel micas, entire unit is poorly ex board en ditch and brank worth of word, buttom contact not seen Unit 6 6.0 Covered Scand stones light yellowish bourn, Crist 7 17,0 dis finet uneven, medijim badding, partly in medium scale anticular 100 have mice frace QXO, Sine seard, subsequence grains, good souting, blocky stoller, mices subsequences, exposed in brush covered hank south of road, potom contect not see Consider of the redistribution of gray chest was made approx position of Ferdinant o -556'To Unit 8 12.0 681 42' Pm Exp.

