#### **CONTENTS** SHEET NO.

810003

SF-

REFERENCE

<u>HEEI NO.</u>	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-7	BORE LOGS

**DESCRIPTION** 

# STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT** 

# **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY SAMPSON

PROJECT DESCRIPTION BRIDGE NO. 3 ON -L- (SR 1933) OVER ROWAN BRANCH AT STA. 14+88

# R003 **P**3. R PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-810003	1	7

#### **CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 TO7-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAIL

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UNPELACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHIONO OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE REVIENS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO RE UNCONTERED ON THE REVIENS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE REVIENS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE INCOUNTERED AT THE SIDE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR CUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT. 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

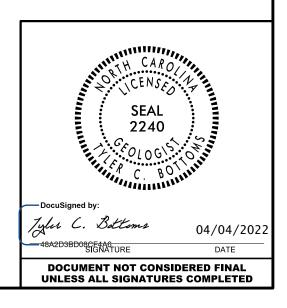
PERSONNEL

S.N. ZIMARINO

R.E. SMITH

C.M. WALKER

INVESTIGATED BY
DRAWN BY
CHECKED BY D.N. ARGENBRIGHT
SUBMITTED BY D.N. ARGENBRIGHT
DATE MARCH 2022

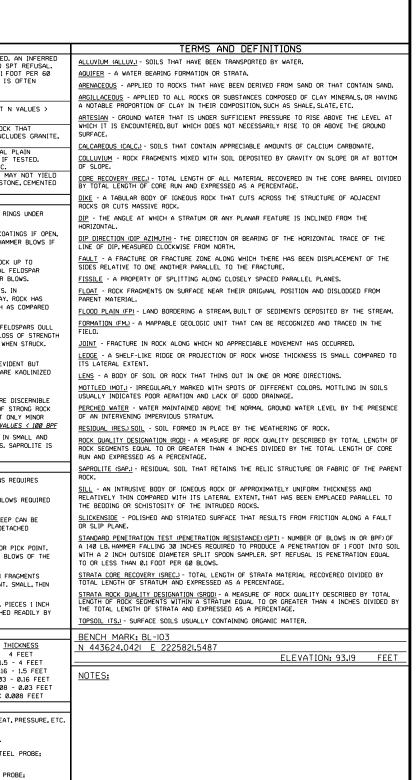


# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

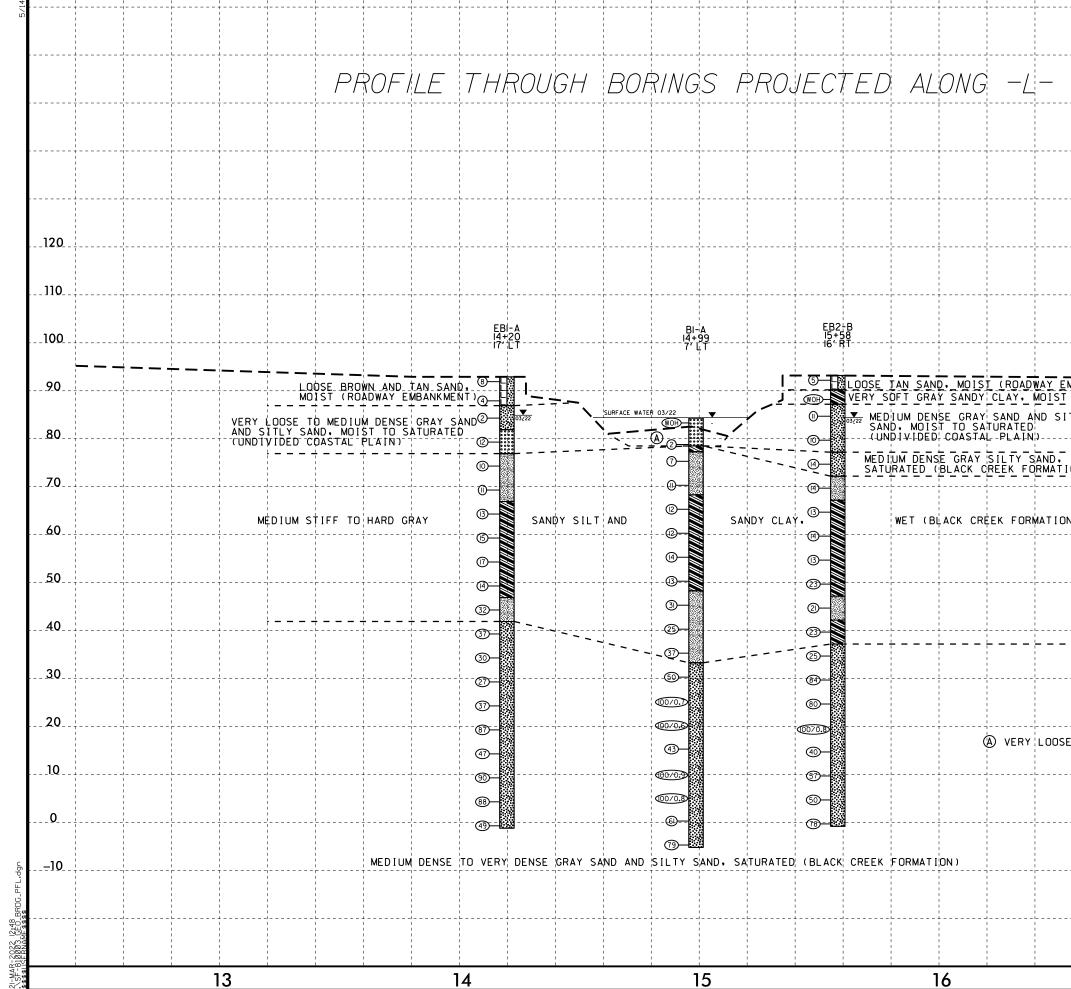
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

	SOIL C	DESCRIPTION				GRADATI	лс NC	ROCK DESCRIPTION						
BE PENETRATED WITH A ACCORDING TO THE SI IS BASED ON THE CONSISTENCY, COLOR, TE	A CONTINUOUS FLIGHT PON TANDARD PENETRATION TE AASHTO SYSTEM. BASIC ( EXTURE, MOISTURE, AASHTO	SOLIDATED, OR WEATHERED E WER AUGER AND YIELD LESS ST (AASHTO T 206, ASTM DI DESCRIPTIONS GENERALLY IN O CLASSIFICATION, AND OTHE	THAN 100 BLOWS P 586), SOIL CLASSIFI CLUDE THE FOLLOWI R PERTINENT FACTOR	ER FOOT ICATION ING: RS SUCH	UNIFORMLY GRADED - IN	TES A GOOD REPRESENTATION NDICATES THAT SOIL PARTICLE ES A MIXTURE OF UNIFORM PAR ANGULARITY OF	S ARE ALL APPROXIM RTICLE SIZES OF TWO	ATELY THE SAME SIZE.	ROCK LINE IN SPT REFUSAL BLOWS IN NO REPRESENTED	IDICATES THE LEVEL IS PENETRATION BY N-COASTAL PLAIN M BY A ZONE OF WEAT	AT WHICH NON-COAS A SPLIT SPOON SA ATERIAL, THE TRAN THERED ROCK.	OULD YIELD SPT REFUSAL IF TEST STAL PLAIN MATERIAL WOULD YIELD MPLER EQUAL TO OR LESS THAN 0. NSITION BETWEEN SOIL AND ROCK		
		RITY, STRUCTURE, PLASTICITY ERBEDDED FINE SAND LAYERS,				TY OR ROUNDNESS OF SOIL GRA		BY THE TERMS:	WEATHERED	ALS ARE TYPICALLY I		S: N MATERIAL THAT WOULD YIELD SP1		
		AASHTO CLASSIFI			- <u>ANGULAR</u> , <u>SUBAN</u>	MINERAL OCICAL			ROCK (WR)		100 BLOWS PER FO			
	RANULAR MATERIALS 35% PASSING *200)	SILT-CLAY MATERIALS ( > 35% PASSING *200)	ORGANIC MATER	IALS	MINERAL NAT	MINERALOGICAL C		.ETC.	CRYSTALLINE			RAIN IGNEOUS AND METAMORPHIC RC REFUSAL IF TESTED. ROCK TYPE IN		
	A-3 A-2	A-4 A-5 A-6 A-7	A-1, A-2 A-4, A-5			N DESCRIPTIONS WHEN THEY AF	RE CONSIDERED OF SI		ROCK (CR)		GNEISS, GABBRO, SC			
CLASS. A-1-a A-1-b	A-2-4 A-2-5 A-2-6 A-2-		A-3 A-6, A-7		C 10	COMPRESSIB HTLY COMPRESSIBLE	ILITY LL < 31		NON-CRYSTALL ROCK (NCR)		SEDIMENTARY ROCK	THAT WOULD YEILD SPT REFUSAL		
SYMBOL 0000000000					S MODE	ERATELY COMPRESSIBLE	LL < 31 LL = 31 LL > 50	- 50	COASTAL PLAT		COASTAL PLAIN SE	DIMENTS CEMENTED INTO ROCK, BUT K TYPE INCLUDES LIMESTONE, SANDS		
% PASSING 10 50 MX			GRANULAR SILT-	MUCK,	HIGH	PERCENTAGE OF			(CP)		SHELL BEDS, ETC.			
*40 30 MX 50 MX 51	IMN IMX 35 MX 35 MX 35 MX 35 M	1 1 36 MN 36 MN 36 MN 36 MN	SOILS SOILS	PEAT	ORGANIC MATERIAL	GRANULAR SILT -		R MATERIAL	1					
MATERIAL PASSING #40 LL - ·	- 40 MX 41 MN 40 MX 41 M	IN 40 MX 41 MN 40 MX 41 MN	SOILS WITH		TRACE OF ORGANIC M LITTLE ORGANIC MATT MODERATELY ORGANIC	MATTER 2 - 3% 3 - 9 TER 3 - 5% 5 - 1 C 5 - 10% 12 - 2	5% TRACE 2% LITTLE 20% SOME	VERY SLIGHT	HAMMER IF CRYSTALL	INE. SH, JOINTS STAINED,	S MAY SHOW SLIGHT STAINING. ROCK SOME JOINTS MAY SHOW THIN CLAY C SHINE BRIGHTLY. ROCK RINGS UNDER H			
		IN 10 MX 10 MX 11 MN 11 MN	MODERATE	HIGHLY ORGANIC	HIGHLY ORGANIC	> 10% > 20 GROUND WA			OF A CRYSTALLINE NA					
UF MAJUR GRAVEL, AND SZ	0         0         4 MX           INE         SILTY OR CLAYEY           AND         GRAVEL AND SAND	8 MX 12 MX 16 MX NO MX SILTY CLAYEY SOILS SOILS	AMOUNTS OF ORGANIC MATTER	SOILS		WATER LEVEL IN BORE HOLI STATIC WATER LEVEL AFTER	E IMMEDIATELY AFTER	(SLI.)	1 INCH. OPEN JOINTS CRYSTALS ARE DULL	MAY CONTAIN CLAY. AND DISCOLORED. CR	AND DISCOLORATION EXTENDS INTO RC IN GRANITOID ROCKS SOME OCCASIONA YSTALLINE ROCKS RING UNDER HAMMEN			
MATERIALS SAND			FAIR TO BOOD		 	PERCHED WATER, SATURATED		RING STRATA	(MOD.)	GRANITOID ROCKS, MOS	ST FELDSPARS ARE D	COLORATION AND WEATHERING EFFECT NULL AND DISCOLORED, SOME SHOW CLA		
AS SUBGRADE	CELLENT TO GOOD	FAIR TO POOR	POOR POOR	UNSUITABLE		SPRING OR SEEP				DULL SOUND UNDER H	AMMER BLOWS AND S	HOWS SIGNIFICANT LOSS OF STRENGTH		
PI		- 30 ; PI OF A-7-6 SUBGROUP IS	> LL - 30									R STAINED. IN GRANITOID ROCKS, ALL I		
		Y OR DENSENESS RANGE OF STANDARD	RANGE OF UNC	CONFINED	+	MISCELLANEOUS	STMBULS		(MOD. SEV.)	AND CAN BE EXCAVAT	ED WITH A GEOLOGIS	KAOLINIZATION. ROCK SHOWS SEVERE L T'S PICK. ROCK GIVES "CLUNK" SOUND		
PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY VERY LOOSE	PENETRATION RESISTENCE (N-VALUE) < 4	COMPRESSIVE S (TONS/F	STRENGTH		ESCRIPTION P OF R	A DIP DIRECTION OCK STRUCTURES	SLOPE INDICATOR	SEVERE (SEV.)	REDUCED IN STRENGTH	ARTZ DISCOLORED OR H TO STRONG SOIL. I	R STAINED. ROCK FABRIC CLEAR AND E IN GRANITOID ROCKS ALL FELDSPARS (		
GENERALLY GRANULAR	LOOSE MEDIUM DENSE	4 TO 10 10 TO 30	N/A		SOIL SYMBOL	VST PMT	TEST BORING	INSTALLATION		TO SOME EXTENT. SOM IF TESTED, WOULD YIE		TRONG ROCK USUALLY REMAIN. 100 BPF		
MATERIAL (NON-COHESIVE)	DENSE VERY DENSE VERY SOFT	30 TO 50 > 50 < 2	< 0.25				R BORING	CONE PENETROMETER TEST SOUNDING ROD	SEVERE	BUT MASS IS EFFECT	IVELY REDUCED TO S	R STAINED. ROCK FABRIC ELEMENTS AF OIL STATUS, WITH ONLY FRAGMENTS O ROCK WEATHERED TO A DEGREE THAT		
GENERALLY SILT-CLAY MATERIAL	SOFT MEDIUM STIFF STIFF	2 TO 4 4 TO 8 8 TO 15	0.25 TO 0.5 TO 1 1 TO 2	0.5 1.0 2				TEST BORING WITH CORE	COMPLETE	ROCK REDUCED TO SO	IL. ROCK FABRIC NOT	NN. <u>IF TESTED, WOULD YIELD SPT N</u> T DISCERNIBLE, OR DISCERNIBLE ONLY BE PRESENT AS DIKES OR STRINGERS		
(COHESIVE)	VERY STIFF HARD	15 TO 30 > 30	2 TO 4	4	ALLUVIAL SOI				ALSO AN EXAMPLE.	DOCK III				
	TEXTURE	OR GRAIN SIZE				RECOMMENDATION	SYMBOLS		VERY HARD	CANNOT BE SCRATCHE	D BY KNIFE OR SHAF	RP PICK. BREAKING OF HAND SPECIMEN		
U.S. STD. SIEVE SIZE OPENING (MM)	4 10 4.76 2.00	40 60 200 0.42 0.25 0.075	270 0.053			UNCLASSIFIED EXCAVATION UNSUITABLE WASTE		SSIFIED EXCAVATION - ABLE, BUT NOT TO BE		SEVERAL HARD BLOWS	OF THE GEOLOGIST"	S PICK.		
BOULDER COBB	BLE GRAVEL	COARSE FINE SAND SAND	SILT	CLAY	SHALLOW UNDERCUT	UNCLASSIFIED EXCAVATION ACCEPTABLE DEGRADABLE		N THE TOP 3 FEET OF KMENT OR BACKFILL		TO DETACH HAND SPE	CIMEN.	LY WITH DIFFICULTY. HARD HAMMER B DUGES OR GROOVES TO 0.25 INCHES D		
(BLDR.) (COE GRAIN MM 305	B.) (GR.) 75 2.0	(CSE. SD.) (F SD. Ø.25	0.05 0.005	(CL.)	AR - AUGER REFUSAL	ABBREVIAT MED MEDIUM	VST	- VANE SHEAR TEST	HARD			ST'S PICK. HAND SPECIMENS CAN BE D		
SIZE IN. 12	3				BT - BORING TERMINATED CL CLAY	D MICA MICACEO MOD MODERATE	ELY $\gamma$ -				DEEP BY FIRM PRESSURE OF KNIFE ( EICES 1 INCH MAXIMUM SIZE BY HARD			
SOIL MOISTURE SC		CORRELATION OF	TERMS		CPT - CONE PENETRATION CSE COARSE	N TEST NP - NON PLAST ORG ORGANIC	IC $\dot{\gamma}_{d}$ -	DRY UNIT WEIGHT		POINT OF A GEOLOGIS				
(ATTERBERG LIMI		PTION	UID: VERY WET. USU		DMT - DILATOMETER TES DPT - DYNAMIC PENETRA e - VOID RATIO	ST PMT - PRESSURE	IC S-I	MPLE ABBREVIATIONS BULK SPLIT SPOON			RAL INCHES IN SIZE	NIFE OR PICK. CAN BE EXCAVATED IN BY MODERATE BLOWS OF A PICK POIN URE.		
LL LIQUID LI	(SAT.	) FROM BELOW	THE GROUND WATE	ER TABLE	F - FINE - FOSS FOSSILIFEROUS FRAC FRACTURED, FRAC	SL SILT, SILT SLI SLIGHTLY	Y ST- RS-	SHELBY TUBE ROCK RECOMPACTED TRIAXIAL	SOF T			AVATED READILY WITH POINT OF PICK. Y FINGER PRESSURE. CAN BE SCRATCH		
RANGE <	- WET -		EQUIRES DRYING TO MUM MOISTURE	כ	FRAGS FRAGMENTS	w - MOISTURE (		- CALIFORNIA BEARING	F	RACTURE SPAC	CING	BEDDING		
		- (M) SOLID; AT OR	NEAR OPTIMUM MC	DISTURE	HI HIGHLY EOU DRILL UNITS:	V - VERY		-	<u>TERM</u> VERY WIDE WIDE	MORE 3 T	<u>SPACING</u> THAN 10 FEET 'O 10 FEET	TERM VERY THICKLY BEDDED THICKLY BEDDED 1		
SL SHRINKAG			DITIONAL WATER TO	0	X CME-45C	CLAY BITS		TOMATIC MANUAL	MODERATEL CLOSE VERY CLOS	0.16	TO 3 FEET TO 1 FOOT HAN 0.16 FEET	THINLY BEDDED 0. VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00		
	ים /	ATTAIN OPTI	MUM MOISTURE		CME-55	8" HOLLOW AUGERS		ZE:	THINLY LAMINATED <					
		ICITY INDEX (PI)	DRY STREND	атн	CME-550	HARD FACED FINGER BI			FOR SEDIMEN	ARY ROCKS, INDURAT		ING OF MATERIAL BY CEMENTING, HE		
NON PLASTIC SLIGHTLY PLASTI MODERATELY PLA	IC	0-5 6-15 16-25	VERY LOW SLIGHT MEDIUM	N	VANE SHEAR TEST	TUNGCARBIDE INSERTS			- FRIABL	E	GENTLE BLOW B	FINGER FREES NUMEROUS GRAINS; BY HAMMER DISINTEGRATES SAMPLE.		
HIGHLY PLASTIC	2	6 OR MORE	HIGH		PORTABLE HOIST			ST HOLE DIGGER ND AUGER		ATELY INDURATED	BREAKS EASILY	SEPARATED FROM SAMPLE WITH ST WHEN HIT WITH HAMMER. FFICULT TO SEPARATE WITH STEEL		
		COMBINATIONS (TAN. RED.	(CLI ON DECUM C	C. C.D.4.11				UNDING ROD	INDURA	TED		BREAK WITH HAMMER.		
		COMBINATIONS (TAN, RED, KED, ETC. ARE USED TO DE						NE SHEAR TEST	EXTREM	MELY INDURATED		BLOWS REQUIRED TO BREAK SAMPLE 5 ACROSS GRAINS.		

# project reference no. SF-810003







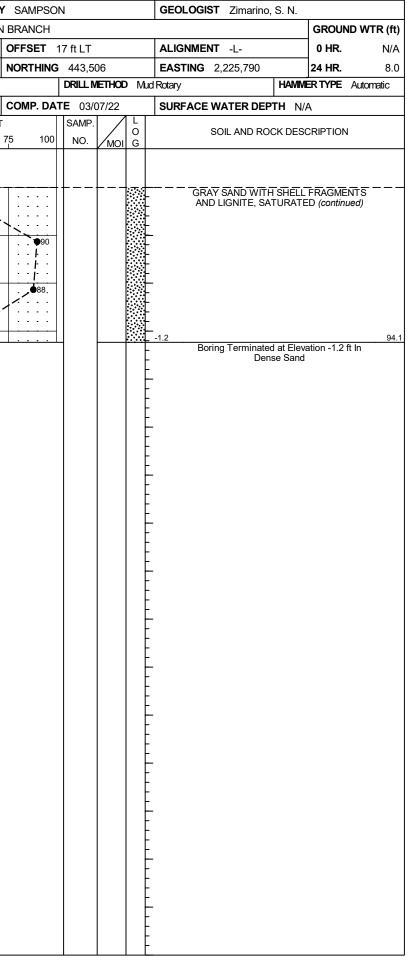
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## GEOTECHNICAL BORING REPORT BORE LOG

MIRE         PADDL2.1         THE         SF # 500000         CORMAY         CORMANCE         SECOND WITKING         MIRE         MIRE <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>-</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>									-																			
BORNO DC ENGA         STATION 14/20 10         OPPERT (7):1:1         ALIGNMENT -:									I				GEO	LOGIST Zimarino, S. N														
COLLAR ELV         C2:1         TOTAL DEPTH         41.1         NORTHMO         44:30         Ext TOTAL DEPTH         64:11         75:11         TOTAL DEPTH         64:11         75:11 <th 75<="" th=""><th>-</th><th></th><th></th><th></th><th>DGE N</th><th></th><th></th><th></th><th>ER ROWA</th><th>1</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>R (ft)</th><th></th><th></th><th></th><th></th><th>DGE N</th><th></th><th></th><th></th><th>R ROWAN</th></th>	<th>-</th> <th></th> <th></th> <th></th> <th>DGE N</th> <th></th> <th></th> <th></th> <th>ER ROWA</th> <th>1</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>R (ft)</th> <th></th> <th></th> <th></th> <th></th> <th>DGE N</th> <th></th> <th></th> <th></th> <th>R ROWAN</th>	-				DGE N				ER ROWA	1								R (ft)					DGE N				R ROWAN
DBL LIGH-MARK PERAMI         COUNT OF AN IF COUNT OF AND COUNT O	BOR	ing no.	EB1-/	4		S	TATION 1	14+20		OFFSET	17 ft LT			ALIG	NMENT -L-	0	HR.	N/A	BORI	NG NO.	EB1-/	A		ST	TATION 14	l+20	C	
DEPLICE         START DATE         603722         COMP DATE         603722         SUBJECT WATES DEPTH INA         DEPLICE         When CM           00         DOT DATE         00000 CM         MARE         00000 CM         DEPLICE         00000 CM         DEPLICE         00000 CM         DEPLICE         DEPLICE         When CM         DEPLICE         DEPLICE         When CM         DEPLICE										NORTHING																		
No.         No. <td>DRILL</td> <td>RIG/HAN</td> <td>VIMER EF</td> <td>F./DAT</td> <td>E GFO</td> <td>20075 (</td> <td>DME-45C 87%</td> <td>611/23/202</td> <td>1</td> <td></td> <td>DRILLI</td> <td>METHOD</td> <td>) Mi</td> <td>ud Rotary</td> <td>HAI</td> <td>MIMER</td> <td>TYPE Autom</td> <td>atic</td> <td>DRILL</td> <td>RIG/HAM</td> <td>MER EF</td> <td>-F./DAT</td> <td>E GFO</td> <td>20075 C</td> <td>ME-45C 87%</td> <td>11/23/2021</td> <td></td>	DRILL	RIG/HAN	VIMER EF	F./DAT	E GFO	20075 (	DME-45C 87%	611/23/202	1		DRILLI	METHOD	) Mi	ud Rotary	HAI	MIMER	TYPE Autom	atic	DRILL	RIG/HAM	MER EF	-F./DAT	E GFO	20075 C	ME-45C 87%	11/23/2021		
III       IIII       IIII       IIII       IIII       IIII       IIII       IIIII       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	DRIL					S	TART DAT	<b>E</b> 03/07/	22	COMP. DA	<b>TE</b> 03/	/07/22		SUR	FACE WATER DEPTH	N/A			DRIL	L <b>ER</b> W	alker, (	С. М.		ST	START DATE 03/07/22			
Image: Display and the second seco		DRIVE	DEPTH	BLC	on wo	UNT		BLOWS	S PER FOO	T	SAMP					ESCRI				DRIVE	DEPTH	BLC	ow co	UNT		BLOWS	PER FOOT	
90     10     <	(ft)		(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	моі		ELEV.				PTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	25	50 7	
03     00     03     04     05     050     050     050       99     90     40     2     7     7       00     653     76     2     7       00     653     76     2     7       01     633     764     4     6       02     70     70     70     70     70     70       70     703     764     4     6     7       70     703     764     4     6       70     703     764     4     7       70     703     764     4     7       70     703     764     4     7       70     703     764     4     7       70     703     764     6     7       70     703     764     6     7       70     703     764     7     7       70     703     764     7     7       70     703     766     7     7     7       70     703     766     7     7     7       703     766     8     7     7     7       703     766     8     7     7																												
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00       40.3       2       2		92.9	± 0.0											92.9				0.0		-	-	13	21	26			47	
B       B       B       C <thc< th=""> <thc< th=""> <thc< th=""></thc<></thc<></thc<>	1		ł	1	3	5								-						-	-							
10       103       10	90	88.9	Ŧ <sub>40</sub>								-		$\lfloor \cdot  brace$	_			,		10		82.6	8	31	59		+		
65       24       1			+	5	2	2	$  _{\phi_4}$						Ľ.	- 86.9				6.0		-	-							
1       2       1	85	85.3	† 7.6				:::::												5	5.3	- 87.6							
80       803       72       7       6       6       7 <td></td> <td></td> <td>+</td> <td>2</td> <td>1</td> <td>1</td> <td><b>Q</b>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>TO SATUR</td> <td>Y SAN</td> <td>ID, MOIST</td> <td></td> <td>5</td> <td></td> <td>-</td> <td>24</td> <td>36</td> <td>52</td> <td></td> <td></td> <td></td>			+	2	1	1	<b>Q</b> 2							-	TO SATUR	Y SAN	ID, MOIST		5		-	24	36	52				
30       7       8       6       14       25       1       15       14       25       1       15       16       16       1       16			‡					· · · ·						81.9				11.0		4	-						/	
13     11.4	80	80.3	12.6	7	6	6							0000	-					0	0.3	92.6	14	20	29				
73       73       73       73       74       4       4       5       1 <td></td> <td></td> <td>ŧ</td> <td>  '</td> <td></td> <td>Ŭ</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0 0 0 0 0 0 0 0 0 0 0 0</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>20</td> <td>25</td> <td><u> </u></td> <td><u> </u></td> <td><b>4</b>9</td>			ŧ	'		Ŭ							0 0 0 0 0 0 0 0 0 0 0 0	-							-		20	25	<u> </u>	<u> </u>	<b>4</b> 9	
10       10       4       4       0			±										0000	76.9				<u>    16.0  </u>		-	-							
n       na       228       -	75	75.3	<u>  17.6</u>	4	4	6		+							GRAY SANDY SILT AN	D SAN	DY CLAY,			-	-							
10       10.3       12.4       4       4       7         65       66.3       22.4       4       4       7         65       66.3       22.4       4       5       8         60       65.3       22.6       -       -       -       -         65       66.3       22.6       -       -       -       -         65       66.3       22.6       -       -       -       -         70       70.3       6       8       9       -       -       -         66.3       22.6       -       -       -       -       -       -         66.3       22.6       -       -       -       -       -       -       -         66.3       22.6       -			ŧ											-	WET (BLACK CILLER		MATION)			1	-							
4       4       7       1	70	70.3	+ 22.6				::::							-						4	-							
65       65.3       27.6       4       5       8       7       1<	70		+	4	4	7	1 . • 11 .							-						4	-							
66       653       27.6       4       5       6       • </td <td></td> <td></td> <td>ŧ</td> <td></td> <td></td> <td></td> <td>  ::::</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>66.9</td> <td></td> <td></td> <td></td> <td>26.0</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			ŧ				::::							66.9				26.0			-							
90       903       328       4       6       9         65       553       37.6       6       8       9         65       553       37.6       6       8       9         65       553       37.6       6       8       9         66       46.3       47.6       7       10         40       403       42.6       6       12       20         36       35.3       57.6       5       15       15         30       30.3       52.6       5       16       17         30       30.3       52.6       5       16       17         30       30.3       52.6       16       17       12         30       30.3       52.6       16       17       12         30       30.3       52.6       10       17       12       12         30       30.3       52.6       10       17       12       12       13         30       30.4       5       16       15       15       16       16       16         30       30.2       5       10       17       16       16	65	65.3	27.6			0								-						-	-							
90       90.3       32.6       4       8       9			Ŧ	4	5	°	•13.		•   • • •					-						-	-							
100       1013			Ŧ											-						-	-							
55       553       37.6       6       8       9	60	60.3	<u>+</u> 32.6	4	6	9								_						-	-							
55       53.3       37.6       6       8       9        1			ŧ											-							-							
30       40       6       8       9		55.2	+ 27.6											-						4	-							
50       50.3       42.6       -<	55		1 3/.0 1	6	8	9	1	7												-	-							
50       50.3       42.6			ŧ											-						-	-							
45       45.3       47.6       12       12       12       20         40       40.3       52.6	50	50.3	42.6				]  · · <i>i</i> ·							-						-	-							
45       45.3       47.6       12       13       13       15       10       17       12       12       12       12       12       12       12       12       12       12       12       12       13       13       16       14		] .	Ŧ	4	6	8	• 14							-						7	-							
40       40.3       52.6			Ŧ				::::						N	46.9				46.0		1	-							
40     40.3     52.6     6     12     25       36     35.3     57.6     5     15     15       30     30.3     62.6     5     10     17       25     25.3     67.6     -     -       20     20.3     72.6     31     37     -	45	45.3	<u>+ 47.6</u>	12	12	20								_						4	-							
40       40.3       52.6			‡					1		·   · · · · ·				-				FIO			-							
40       40.3       32.6       6       12       25         35       35.3       57.6       5       15       15         30       30.3       62.6       5       10       17         25       25.3       67.6       22       12       25         20       20.3       72.6       31       37       50		40.2	+ 52 6				11	1						41.9				<u> </u>		4	-							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		40.3	+ <sup>32.0</sup>	6	12	25	1								AND LIGNITE, SA	TURA	TED			-	-							
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		35.3	57.6		1-	15	11		· _ · · ·												-							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		] .	Ŧ	5	15	15		●30			]			-						-	-							
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		30.3	62.6	5	10	17		<u>  </u>	-	-				-						4	-							
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			Ŧ											-						-	-							
		20.3	72.6						: ::::					_						4	-							
	20		‡	31	37	50	1 1				11			-						4	-							
			‡				1 1		·   · · · ·   · · · ·	· / · · · · ·				-						4	-							
	15	15.3	77.6				1 1		· <u> </u>					-						-	-							

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# GEOTECHNICAL BORING REPORT BORE LOG

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WBS	BP3.F	R003.1			T	IP SF-81	0003	CC	OUNTY	SAMPSC	N			GEO	DLOGIST	Zimarino,	S. N.				BP3.R					P SF-81			ITY SAN
SITE	DESCR	RIPTION	BRI	DGE N	D. 3 (	DN -L- (SR	1933) C	VER R	OWAN	BRANCH								GROUN	D WTR (ft)	SITE	DESCR	IPTION	BRID	DGE N	0.30	N -L- (SR	1933) OVE	ER ROW/	-
BORIN	NG NO.	. B1-A			s	TATION	14+99			OFFSET	7 ft LT			ALI	GNMENT	-L-		0 HR.	N/A	BORI	NG NO.	B1-A			SI	TATION	14+99		OFFS
		<b>EV.</b> 84				OTAL DEP				NORTHING					<b>5TING</b> 2,2	25,799		24 HR.	N/A		AR ELE						<b>PTH</b> 89.5		NORT
DRILLI	rig/hai	VIMER EF	-F./DAT	E GFC	0075	CME-45C 87	%11/23/2	021			DRILL	METHO	OD	Mud Rotar	/		HAMME	RTYPE	Automatic	DRILL	RIG/HAN	IMER EF	F./DATI	E GFC	20075 C	ME-45C 87	%11/23/2021	i	
		Valker, (			S	TART DAT	<b>FE</b> 03/0	9/22		COMP. DA	<b>TE</b> 03	/09/22	2	SUF	RFACE WA	TER DEP	<b>FH</b> 0.1	ft		DRIL	LER W				ST		TE 03/09/	22	COMF
ELEV	DRIVE ELEV	DEPTH		w cou				NS PER			SAMF	P. <b>▼</b> ∕	<b>1</b> ℃		SOIL	L AND ROC	K DESC	RIPTION		ELEV	DRIVE ELEV	DEPTH	BLO	W CO				S PER FOO	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50		75 100	NO.	_/мс	DI G						DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75
85	84.3												/	84.3	WA	ATER SUR	FACE (0	3/09/22)	0.0	5						┟┝╾───	Mat	tch Line	
	0.1.0	Ŧ	WOH	WOH	WOF	•0	· · · ·						000	0000	TAN SA	ALL ND WITH V	UVIAL		TS		-	+							
80		‡							· · · · · ·				000	00	.,	SATU	IRATED		,	0	1.3	83.0	16	25	36				
	79.8 -	<u> </u>	1	1	1								000	- 78.5					5.8	0	-	ŧ.							\ <u>.</u>
	76.3	+					·   · · ·   · ·	· ·   ·	· · · · · ·	· · · · ·				77.3	GRAY S	COAST SANDY SILT	TAL PLAI		7.0 AY.		-3.7	88.0					· · · · ·	.	N II
75		1	2	3	4	1 <b>.</b>		-						- -		(BLACK CF				-5	-0.7	00.0	18	31	48				<b>\_</b> 79_
		ŧ					·   · ·	.	· · ·												-	ŧ							
	71.3	13.0	4	5	6			:: :						()  -							-	ŧ							
70	-	ŧ			U									- 68.3					16.0		-	t i							
	<u> </u>	+						.	· · ·										10.0		-	Ļ							
65	00.3	18.0	4	5	7			-													-	Ł							
		ŧ							· · ·												-	Ł							
	61.3	23.0	4	E	7			:: :													-	Ł							
60	-	ŧ	4	5	1	• 12_															-	L							
		Ŧ					•   • •														-	F							
55	56.3	<u>† 28.0</u> †	4	6	8			-													-	F							
	-	Ŧ												F							-	F							
	51.3	<u> </u>						-													-	F							
50	-	Ŧ	4	5	8	13				+											-	F							
		Ŧ							· · · ·					48.3					36.0		-	ŧ							
45	46.3	<u>† 38.0</u> †	8	15	16		31							0 <b>⊢</b>							-	t -							
	-	Ŧ																			-	F							
	41.3	+ + 43.0												8 <b>-</b>							-	÷							
40	-	ŧ	9	11	14	]	25							<u> </u>							-	ŧ							
		ŧ					·   \ · ·	.	· · · · · ·					8- -							-	ŧ.							
35	36.3	<u>† 48.0</u> †	10	14	23	:::	:   : \ <b>`</b>							8- -							-	ŧ							
	-	ŧ					· · · ·	× <u> </u>						- 33.3					51.0		-	+							
	31.3	+ 53.0						:`\; :	· · · · · ·							RAY SAND	WITH LI IRATED	<u>GNITE,</u>			-	t t							
30	-	+	20	21	29	1	• • • •	50						-		0,110					-	+							
		‡					·   · · ·   · ·	· ·   ·													-	F.							
25	26.3	58.0	33	59	41/0.2			:: :													-	ŧ							
20	-	‡								100/0.7				-							-	ŧ.							
	21.3	+ 63.0					·   · ·	· ·   ·	· · · · · ·												-	ŧ.							
20		- 03.0 -	50	78	22/0.′	¶ <b> </b> · · ·		-		100/0.6				-							-	Ļ							
		‡					·   · ·	-	 <u>.</u>												-	-							
	16.3	68.0	10	18	25	41:::	.		·												-	ŧ							
15	-	<b>†</b>			20			•• <sup>43</sup>		+											-	ŧ							
	11.0	+						· ·   ·	· · · ·												-	ŧ							
10	-11.3	<u>† 73.0</u>	25	44	56/0.4	¶ <u>                                     </u>		-						-							-	ŧ							
		ŧ								100/0.9	[]										-	ŧ							
Ļ	6.3	78.0	40		25/2			.													-	Ł				l			
5		[]	40	65	35/0.3	<u> </u>				100/0.8				÷[							-								

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۲١	SAMPSO	N			GEOLOGI	ST Zimarino,	S. N.		
٩N	I BRANCH				•			GROUN	ID WTR (ft)
	OFFSET	7 ft LT			ALIGNME	NT -L-		0 HR.	N/A
	NORTHING	443,5	85		EASTING	2,225,799		24 HR.	N/A
		DRILL		) Muc			HAMME		Automatic
٦	COMP. DA	TE 03/0	09/22		SURFACE	WATER DEPT	<b>H</b> 01	ft	
T T		SAMP.		L	10010102				
	75 100	NO.	моі	O G		SOIL AND ROC	K DESC	RIPTION	
	-								
	T/.	+	+			GRAY SAND			
•	1					SATURATE	D (conti	nuea)	
					_				
Ś									
	`\_::::								
-	<b>0</b> 79	-			5.2 Bo	ring Terminated	at Eleva	tion -5.2	89.5 ft in
				F		ring Terminated Very De	nse Sar	d	
				F					
				F	-				
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## GEOTECHNICAL BORING REPORT BORE LOG

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	BP3.R					IP SF-810		Y SAMPSC	N		GE	OLOGIST Zimarino, S. N.			BP3.R					<b>P</b> SF-81000		JNTY	
				GE NO			,	RROWA	N BRANCH					GROUND WTR (ft)					GE NO			33) OVER RO	WAN B
	NG NO.				_	TATION			OFFSET				GNMENT -L-	0 HR. N/A		NG NO.				_	ATION 15+		0
	AR ELE						<b>PTH</b> 94.0		NORTHING				STING 2,225,822	<b>24 HR.</b> 8.8		AR ELE					TAL DEPTH		N
DRILL	. RIG/HAN	IMER EF	F./DATE	E GFC	0075(	OME-45C 879	%11/23/2021			DRILL	METHOD	Mud Rota	y <b>HAMM</b>	ER TYPE Automatic					GFO	0075 CN	ME-45C 87%1	1/23/2021	
DRIL	LER W					TART DAT	TE 03/08/2	22	COMP. DA			SU	RFACE WATER DEPTH N//	A	DRIL	LER W					ART DATE	03/08/22	C
ELEV	DRIVE ELEV	DEPTH	BLO	W COL				PER FOO		SAMP			SOIL AND ROCK DES	CRIPTION	ELEV	DRIVE ELEV		BLOV	N COL			BLOWS PER F	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.		ELEV	. (ft)	DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	5 50	75
95		$\vdash$										-			15			-10+	15	-25		Match Line	e
	93.2	0.0	1	2	3	<b> </b>     <b>1</b> - · · ·		· · · · ·				93.2	GROUND SURF/ ROADWAY EMBAN			-	-		10	20			
90	-	+				<b>17</b> <sup>5.</sup>	.   .					90.2	TAN SILTY SAND, I		10	- 10.7 -	- - 82.5			- 05			
- 30	89.2	4.0	WOH	WOH	WOH	1							GRAY SANDY CLAY			-	-	18	22	35		· · · · <b>)</b> 5	7
	-	ŧ.					·   · · · · ·					87.2	GRAY SILTY SAND, M	6.0		-	_					/	::
85	85.7 -	- 7.5	4	4	7							-	SATURATED		5	5.7 -	- 87.5	17	22	28		· · · · / · ·	•••
	-	t l					.   .									-	_						
	- 80.7 -	- 12.5										_				0.7 -	92.5					· · · ·   · ·	
80		-	3	4	6	10						_			0		-	15	28	50			
	-	Ł				· i · ·						77.2		<u> 16.0</u>		-							
75	75.7 -	17.5	3	6	8								GRAY SILTY SAND, SATUR	RATED (BLACK		-	_						
	-	Ł		-		¶14							CREEK FORMAT			-							
	- 70.7 -	- 22 5										72.2	GRAY SANDY SILT AND S	SANDY CLAY, 21.0		-							
70		- 22.5	5	7	7	<b>–</b> –– <b>•</b> 14						Ĩ	WET			_	-						
	-	F										67.2		26.0		-	-						
65	65.7 -	27.5	4	6	7	· ·  · ·										-	-						
	-	F	-	Ū	'	¢13										-	F						
	-	F					·   · · · · ·		·   · · · · ·							-	-						
60	60.7 -	- 32.5	4	6	8	<b>_</b>	· · · · · ·					1				-	-						
	-	+					 		·   · · · · ·							-	-						
55	55.7 -	37.5	_	-		] ::¦::	.   .									-	-						
	-	+	4	6	1	13										-	-						
	-	t i														-	-						
50	50.7 -	42.5	7	9	14	'	23									-	-						
	-	+					· <b>T</b> 23 · <b>T</b>		·   · · · · ·			47.2		46.0		-	-						
AF	45.7 -	47.5					1							40.0		-	ŀ						
45	-	$\frac{1}{2}$	7	9	12		<b>2</b> 21									-	F						
1211 210	-	+					·  · · · · ·  · · · ·		.			42.2		51.0		-	F						
40	40.7 -	52.5	8	11	12		·									-	È						
40	-	t					$\left  \begin{array}{c} \Psi^{23} \\ \Psi \end{array} \right  $		.					50.0		-	F						
	- 35.7 -	- 57.5				]  : : : :	·   · · · ·					<u>37.2</u>				-	F						
35			6	10	15	]	25						SATURATED	)		-	F						
	-	Ł					.		.							-	F						
30	30.7	62.5	27	36	48							Ŀ				-	Ł						
	-						.		• • • • • • • • • • • • • • • • • • •							-	Ľ						
		675							·   ·i · · ·			Ĩ				-	F						
	25.7 -	- 67.5 -	30	35	45			+	• • • • • • • 80			-				-	F						
	-	F					.									-	F						
20	20.7 -	72.5		40	E0/0 0											-	F						
20	-	F	22	42	30/0.3				100/0.8	•		-				-	F						
	-	t					.									-	F						
15	15.7 -	77.5					-									_	t						

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