

# LITHOLOGIC LOG

LOCATION MAP:

BLM-1-435

BLM-2-482 •

BLM-7-509 •

BLM-10-517 •

NORTH

SITE ID: NASA-WSTF LOCATION ID: BLM-2-482.4

SITE COORDINATES (ft.):

N 225654.8 E 402994.1

GROUND ELEVATION (ft. MSL): 4535.48 (BRASS CAP)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: AIR-FOAM ROTARY

DRILLING CONTR.: LARJON

DATE STARTED: 11 OCTOBER 1987 DATE COMPLETED: 25 OCTOBER 1987

FIELD REP.: COOPER, KASZUBA, MORSE

COMMENTS: Total Depth = 550'. Bedrock not reached.

SW 1/4 SW 1/4 SW 1/4 NW 1/4 S 4 T 21S R 3E

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
				0'-430' cuttings	0'-38'	<u>SURFICIAL ALLUVIUM</u> : The color of the samples throughout the interval is 60% grayish orange (10YR 7/4) to 40% light to dark gray. Average cutting size is 0.1 inches with cuttings up to 0.75 inches. Cutting shapes range from flakes to blocky angular fragments. Grains in samples range from silt-size to 0.1 inches, are sub-rounded to angular and are 10-15% of a sample. The lithology is an unconsolidated to poorly consolidated gravelly alluvium which consists of transparent to milky-gray, mostly iron-stained quartzite; light to dark gray limestone mostly chips and flakes; dusky red (5R 5/4) siltstone (Abo), small tabular chips; dirty white rhyolite with iron staining; fairly high clay content, light brown (5YR 6/4) in color; < 10% white calcite chips; some caliche layers throughout with sporadic occurrent in samples.
5	++++V=		16			
10	++++E=V		5			
15	+++++V		4			
20	+++++V		12			
25	+++++V		25		10'-15' Significant increase in clay content.	
30	+++++V		10		20'-25' Significant decrease in clay content and cutting size.	
35	+++++V		5			
40	+++++V		11		30'-70' Increase in cutting size and clay content.	
45	+++++V		11			
50	+++++V		16		38'-475' <u>GRAVELLY ALLUVIUM (Santa Fe Group)</u> : Color of unwashed cuttings is moderate orange pink (5YR 8/4) to light brown (5YR 6/4) due to clay content. Color of washed cuttings is light gray (N 7) to dark gray (N 3). Average cutting size is 0.1 inches and ranges in size from <0.1 to 1 inch. Cuttings are mostly angular blocky shapes with some flakes present, moderately sorted. Average grain-size is 0.1 inches and ranges from silt-size to 0.75 inches. Grains are subrounded to angular. The lithology is a poorly to moderately consolidated fine-grained sand to cobble conglomerate containing clasts of light gray (N 7) to dark gray (N 3) limestone;	

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
50	++++E=VV: //		16	38'-475'	GRAVELLY ALLUVIUM (Santa Fe Group) Continued: dirty white to white (N 9) to moderate red (5R 5/4) rhyolite with significant amounts of iron staining; grayish green (10GY 5/2) and grayish red purple (5RP 4/2) andesite with epidote in lower part of section; transparent to light gray (N 7) quartzite and chert; moderate red (5R 4/6) to dusky red (5R 3/4) siltstone (Abo); light brown (5YR 5/6) to moderate brown (5YR 4/4) calcite cemented sandstone; possibly some limonite; some caliche mostly in upper part of section; light brown to moderate orange pink clay matrix.	
55	++++E=VV: //		10			
60	++++E=VV: //		15			
65	++++E=VV: //		8			
70	++++E=VV: //		8	70'-75'		Clay is very sticky and balls up while washing sample.
75	++++E=VV: //		12	75'-90'		Significant decrease in cutting size.
80	++++E=VV: //		16			
85	++++E=VV: //		10			
90	++++E=VV: //		18	90'-100'		Slight increase in cutting size.
95	++++E=VV: //		13	95'-475'		Noticeable increase in sandstone content but < 10% of sample, sandstone has a calcite cement.
100	++++E=VV: //		20	100'-105'		Large chert fragments, grayish green and grayish red purple andesite more abundant than before.
105	++++E=VV: //		3	105'-155'		Very significant increase in cutting size with cuttings up to 1 inch in size.
110	++++E=VV: //		3			
115	++++E=VV: //		2.5			

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
					GRAVELLY ALLUVIUM (Santa Fe Group) Continued
115	++++VVV: =		2.5		
120	++++VVV: =		5		
125	++++VVV: =		5		
130	++++VVV: =		4.5		
135	++++VVV: =		3.5		135'-140' Clay content is < 10%.
140	++++VVV: =		3		
145	++++VVV: =		5		
150	++++VVV: =		5		
155	++++VVV: =		3.5		
160	++++VVV: =		5		160'-185' Cutting size decrease.
165	++++VVV: =		6		
170	++++VVV: =		4		
175	++++VVV: =		5		175'-475' Red and white mingled rhyolite more abundant.
180	++++VVV: =		8		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
					GRAVELLY ALLUVIUM (Santa Fe Group) Continued
180	++++VVV: =		8		
185	++++VVV: =		6.5		185'-305' Cutting size increase and clay content usually < 10%.
190	++++VVV: =		3.5		
195	++++VVV: =		3		
200	++++VVV: =		3		
205	++++VVV: =		6		
210	++++VVV: =		4		
215	++++VVV: =		3		
220	++++VVV: =		4		
225	++++VVV: =		9		
230	++++VVV: =		7		
235	++++VVV: =		4		
240	++++VVV: =		2.5		
245	++++VVV: =		3.5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
					GRAVELLY ALLUVIUM (Santa Fe Group) Continued
245	++++VVVV: =		3.5		
250	++++VVVV: =		7.5		
255	++++VVVV:		8	255'-475'	Significant increase in volcanics especially rhyolite.
260	++++VVVV: =		7	260'-475'	Increase in grayish green andesite, granite fragments have become > 10% throughout most of the rest of the section.
265	++++VVVV: =		7		
270	++++VVVV: =		10	270'-475'	Epidote has become very noticeable in andesite.
275	++++VVVV: =		2	275'-475'	Iron-stained (?) mineral possibly limonite, also iron veins or fracture fills in rhyolite cuttings, clay and siltstone <10%.
280	++++VVVV: =		4		
285	++++VVVV:		5		
290	++++VVVV:		7		
295	++++VVVV:		4		
300	++++VVVV:		10		
305	++++VVVV:		26	305'-315'	Noticeable increase in volcanic percentage.
310	++++VVVV:		3		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
					GRAVELLY ALLUVIUM (Santa Fe Group) Continued
310	vvvvv:		3		
315	vvvvv/		9		
320	vvvvv/		11		
325	vvvvv/		8.5		
330	vvvvv/		26		
335	vvvvv/		5		
340	vvvvv/		6		
345	vvvvv/		6		
350	vvvvv/		7		
355	vvvvv/		3		355'-360' Increase in cutting size.
360	vvvvv/		7		
365	vvvvv/		8		365'-395' Significant decrease in cutting size.
370	vvvvv/		11		
375	vvvvv/		5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
					GRAVELLY ALLUVIUM (Santa Fe Group) Continued
375	VVVVV		5		
380	VVVVV		4		
385	VVVVV		4		
390	VVVVV		5		
395	VVVVV		5		395'-480' Andesite with epidote more abundant.
400	VVVVV		5		
405	VVVVV		7		
410	VVVVV		10		
415	VVVVV		5		415'-430' Volcanics are much more abundant ≥ 40%.
420	VVVVV		5		
425	VVVVV	7			
430	VVVVV	8		430'-440' core ***** core interval ***** See attached description.	
435	VVVVVVVVVV	--			
440	VVVVVVVVVV	--			440'-450' Still increasing percentage of volcanics ≥ 70%.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
					GRAVELLY ALLUVIUM (Santa Fe Group) Continued	
440	VVVVVVVVVVVV++			440'-490' cuttings		
445	VVVVVVVVVVVV++		5			
450	VVVVVVVVVV+++		5			
455	VVVVVVVVVVVV++		4		455'-530'	Volcanics predominantly comprised of grayish red (5R 4/2) to blackish red (5R 2/2) Orejon andesite. Epidote alteration of plagioclase and matrix (not as fracture filling) in - 10% of Orejon cuttings results in color changes to pale olive (10Y 6/2) and greenish gray (5GY 6/1).
460	VVVVVVVVVVVV++		5		460'	Water level.
465	VVVVVVVVVVVV++		3			
470	VVVVVVVVVVVV++		4			
475	VVVVVVVVVVVVVV		2.5		475'-550'	<u>ALLUVIUM (Andesite rich)</u> : Significant color change in samples, muds are purplish color, average cutting size is 0.1 inches, ranges in size from <0.1 inches to 0.25 inches, dusky red (5R 3/4) to blackish red (5R 2/2) andesite volcanics are 95% of sample, clasts of limestone, sandstone and other volcanics still present. Possible volcaniclastic.
480	VVVVVVVVVVVVVV		2.5			
485	VVVVVVVVVVVVVV		2.5			
490	VVVVVVVVVVVVVV		3		490'-500' core	**** core interval **** See attached description.
495	VVVVVVVVVVVVVV		--			
500	VVVVVVVVVVVVVV	--		500'-550' cuttings		
505	VVVVVVVVVVVVVV	2				

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
					<u>ALLUVIUM (Andesite Rich) Continued</u>	
505	VVVVVVVVVVVVV		2			
510	VVVVVVVVVVVVV		2			
515	VVVVVVVVVVVVV		3			
520	VVVVVVVVVVVVV		3			
525	VVVVVVVVVVVVV		3			
530	VVVVVVVVVVVVV		3			
535	VVVVVVVVVVVVV		3		535'-550' No sample returns.	
540	VVVVVVVVVVVVV		3			
545	VVVVVVVVVVVVV		3			
550	VVVVVVVVVVVVV		3		Total Depth = 550'.	
555						
560						
565						
570						