6000 0825

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Drill Hole File - Hole No. D-22-94
AUTHOR	C. Winchester; C. Muerhoff; S. Faircloth
DATE OF DOC(S)	1994
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7.5'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Hecla Mining Co.; Rosebud Project South Zone
COMMODITY If not obvious	gold; silver
NOTES	Drill log; geology; assay; total depth 200'; receipt; handwritten notes 9p.

Keep docs at about 250 pages if no oversized maps attached (for every 1 oversized page (>11x17) with text reduce the amount of pages by ~25)

SS: DD 5/1/08
Initials Date

DB:
Initials Date

SCANNED:
Initials Date

Revised: 1/22/08

D-22-94

6000 0828
4010

6000 0825

Hecla MINING COMPANY

ROSEBUD PROJECT DIAMOND DRILL LOG

HOLE NUMBER	D-22-94	LOCATION	SOUTH ZONE	REMARKS	ORIENTATIONS STATED AS
PAGE 1 OF	6	NORTHING	2,203,544.7		∡ TO CORE AXIS; CORE PHOTOGRAPHED;
DATE	8-16-94	EASTING	481,446.5		WHOLE CORE ASSAY SAMPLES,
LOGGED BY	CB WINETEER	ELEVATION	4723.3		
SCALE	1" = 5'	AZIMUTH	131°		
TOTAL DEPTH	200'	INCLINATION	+89°		1.5gpm H_2O

%REC	RQD	HARDNESS	COLOR	LITHOLOGY	FT	GRAPHIC LOG (LITH / STX / ALT/MINR)	STRUCTURE	ALTERATION AND MINERALIZATION
60	.10 1>4" 4	MOD → MOD HD	PINK & GRY	0-10' Lithic tuff / breccia w/angular, irregular, rounded fragments of fine-grained tuff in a fine-grained siliceous matrix; contorted planar-laminations w/in fragments.			slicked open frac's @ 0'-10' w/ pale-grn clay post-mnc	Weakly silic., mod. intense arg. + sulf. of clasts mnc. on frac's 2-4% f.s. py
63	.20 2>4" 9				5			$CaCO_3$ vnlts @ 30° w/ pyr & mnc. + smcg fill + Tr pale blue double terminated celestite? 3-20' 1-2% diss f.g. cubic py. Carbonate flooded w/ 30° vnlts predom.
85	.32 2>4" 14			10-14.5' Clast-supported breccia w/ angular, planar-laminated fine-grained tuff fragments in a carbonate matrix – $CaCO_3$ flooded tectonic bx.	10		f. to c. grd. $CaCO_3$ flooded tectonic bx w/ 30° & 0° frac's	
82	.26 4>4" 19			14.5-166 Lithic tuff and lithic tuff breccia w/ interbedded flow-laminated, fine-grained tuff. Strong flow-alignment of elongated lithic fragments (84-89'); matrix-supported, massive- and flow-laminated; clasts are fine-grained, massive & flow-laminated, angular to subrounded – stretched & elongated.	15		weakly frac'd @ 0-10' & 70-80' w/ pale green clay slicks & partial open-space	
76	.34 4>4" 24		Pale, pink & green		20			20-34' mod. silic. w/ clay alt. + sulf-rich clasts 2-3% v.f to f.g. disp py. w/ minor $CaCO_3$ + py & mnc. @ 70° Tr pale blue xls. Tr spl.
			pink matrix w/ pale grey & grn clasts		25		$CaCO_3$-filled frac-slick @ 30°	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
0	5	5.0'	0.004	0.12		
5	10	5.0'	0.008	0.20		
10	15	5.0'	0.005	0.26		
15	20	5.0'	0.004	0.09		
20	25	5.0'	0.001	0.03		

HOLE NUMBER D-22-94 PAGE 2 OF 6

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
96	.68 7>4" 29	MOD HD S.A.A.			26.5'–34' post-sulfide slicks w/smeared py+clay @ 30', 40'	25–34 mod. silic. g.m. + weak arg. alt. of clasts + weak sulf. of clasts, $CaCO_3$ chl. + py + py ft marc @ 40–60'; 1-2% diss. f.g. py + Acc. celestite
94	.54 8>4" 34		30		29–33.5 matrix-supported, f.'er grained; mod.-sorted clasts 34–36.5' intensely frac'd w/ 65–75° grn clay-lined frac's	34–52' weakly silic. w/ v. wk arg. alt. w/ $CaCO_3$ + smec/ill at 35' ± py ft marc
84	.48 4>4" 39		35		35–44' swirled, contorted laminations. 36.5' sulf.-rich slick partially open partially $CaCO_3$ filled tectonic bx	
87	.68 5>4" 44		40		42–43' pale green clayey "bed's" w/in tuff – slicked w/py + chl. tectonic bx 44–45.5' w/ principal stx @ 10° – rubbly downward	micro stkwk of $CaCO_3$ ± PY ± Tr smec/ill + Access Chl. @ 30' & 30'
74	.10 1>4" 49	MOD → MOD HD Banded & brecciated pink & cream	45			
88	.30 3>4" 54	pink w/ offwht clasts pale grn gry matrix w/ offwht to gry clasts	50		49–54' Slicks w/ marc. coating bet 45–50' & 10'	52–59' irreg. microstr. of py + py ft marc. + smec/ill ± pale grn clay ± $CaCO_3$ @ 20' & 60' ± Tr spl. mod. silic. incr. + into lam. tuffs.
86	.42 4>4" 59		55 60		planar-flow-laminated at 30'	59–79' wk silic, wk arg. alt. w/ 1-2% v.f.g. diss py smec/ill vnlts @ 30'

ANALYTICAL DATA						
FROM	TO	W	Au	Ag	Au2	Ag2
25	30	5'	0.003	0.07		
30	35	5'	0.002	0.15		
35	40	5'	0.004	0.07		
40	45	5'	0.005	0.24		
45	50	5'	0.002	0.12		
50	55	5'	0.004	0.25		
55	60	5'	0.041	0.20		

HOLE NUMBER D-22-94 PAGE 3 OF 6

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
90	.50 5>4" 64	MOD HD S.A.A.			planar - flow. lam. @ 0-20'	
98	.50 4>4" 69		65		microlex @ 25'	68-72' C. xln diss. $CaCO_3$ + py @ 10°, 80°
98	.68 5>4" 74		70		69-79' pale grn clayey slicks @ 10'	
100	.78 7>4" 79		75			$CaCO_3$ + chl. + py @ 10'
100	.86 6>4" 84	pink matrix w/pale gry clasts	80			79-84' mod. silic. w/abund. discont. pale grn clay x-cut by 50° c. g. $CaCO_3$ 1-2% v.f.g. diss. py; mod. silic. wk arg. alt.
100	.40 3>4" 89	pale grn-gry w/loc pinkish tint matrix w/abund. elong. lt. gry clasts.	85		elongated flow-aligned clasts @ 0-5'	84-116 weak silic. g. m. wk arg. alt. + v. wk v.f.g. diss. py + minor irreg. 70° $CaCO_3$ ± py
95	.50 94		90 95		slicks @ 20° w/ $CaCO_3$ + smect.? + py - smeared minor high ∡ frac's	

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
*						
60	65	5.0'	0.172	5.49	0.182 (grav)	
65	70	5.0'	0.002	0.04		
70	75	5.0'	0.003	<0.02		
75	80	5.0'	<0.001	0.02		
80	85	5.0'	<0.001	0.04		
85	90	5.0'	0.002	0.02		
90	95	5.0'	<0.001	0.02		

HOLE NUMBER D-22-94 PAGE 4 OF 6

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
95	.68 99					
98	.52 104	104-113' Flow-lam., thinly-bedded f.g. lithic tuff w/ lam's parallel to core axis.;	100			101-103.5' C. xln. open-space $CaCO_3$ @ 0-10'
100	.70 109		105		106-107.5 Minor pale green clay + microbx @ 25'	
97	.74 114	113-116 Fine-grained, planar lam. tuff.	110			
96	.82 119	116-118 lithic tuff 118-121 $CaCO_3$ flooded tectonic bx w/ pale green clay gouge matrix	115		118.5-121' C. xln. $CaCO_3$ w/d tectonic bx @ 0-5°	116-123' C. xln $CaCO_3$ + py stk wk in weakly silic. wk arg. alt. frac'd rx. wall rx → pale grn gouge → $CaCO_3$ Tr-1% diss. f.g. py.
94	.48 124	121- Lithic tuff breccia; poorly-sorted, matrix-supported, angular to rounded f.g. tuff fragments (commonly planar laminated) in a fine-grained siliceous groundmass.	120		Slicks w/ chl + py @ 45-50'	123-127' Minor $CaCO_3$ micro veins in weak chl. alt. v. wk silic., wk sulf. Tr-1%
98	.42 129		125 130		123-126.5' Microbx + pale green clay - slicks @ 10° w/ R&G stx's @ 50 on frac/slick surfs. 128' slick + microbx + pale green clay @ 55'	127-130' wk silic. w/ pink FeO_x/alunite matrix, disc. dark grn chl. clay lined frac's.; 1-2% diss. f.g. py. 1st order reaction rims w/ pinkish grey SiO_2-rich rims.

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
95	100	5.0'	<0.001	0.02		
100	105	5.0'	0.008	0.02		
105	110	5.0'	0.003	0.05		
110	115	5.0'	0.009	0.23	0.010	
115	120	5.0'	0.018	0.20		
120	125	5.0'	0.017	0.04		
125	130	5.0	0.006	0.07		

HOLE NUMBER D-22-94 PAGE 5 OF 6

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
94	.52 134				post - $CaCO_3$ + sulf sticks w/pale green clay & micro bx @ 30'-20'	130-135' wk to mod. chl. alt. w/ mod. abund. disc. dk grn chl. stringers + py ± Tr spl. $CaCO_3$ c.g. str. 133-135' Tr-1% diss. f.g. cubic py
95	.58 139		135			135-151' mod. intense silic. g.m., strong 2nd & 3rd order reaction rims w/ SiO_2-rich cores; 1-3% diss. f.g. cubic py @20-40' minor $CaCO_3$ + py + marc. + tabular elongated py ft sulf. ± Tr spl. ± ill ± Tr celestite
92	.74 144		140		post - sulf. slicks @ 50'	
87	.46 149		145		sulf-rich clay gouge on 40° slicks	
90	.32 154	149.5-151 frac'd & brecciated block of f.g. massive bedded tuff/tephra	150		25° post sulf. slide w/ R & G's @ 75° green clay gouge	
92	.28 159		155		mod. intense frac's @ 25° & 70° w/ pale grn clay gouge	151-161' mod to wkly silic. + mod. arg. alt. g.m.; mod arg. + sulf. alt. clasts w/ 2nd-3rd order reaction rims (w/ small SiO_2 cores) 3-7% diss. f.g. py; mod. intense frac's w/ open-space f.g. Q, ill + py + py ft marc + marc + cpy ft marc. + celestite + carbon; Tr $CaCO_3$
89	.26 164	163.9-165' Tectonic bx w/ stepped 30° contacts & carbon-clay-rich matrix 165-166' Lithic tuff bx w/ "ghost" sulf-repl. lithic frags.	160 165		* 155'-199.8' 44.8' @ 0.480, 2.82	161-164 sim. to above w/ incr. carbon + ill ± cpy + marc.; SiO_2 bands @ 60° up to 1"; poss polybasite 164-165' gray to black sticked clay w/ fragments of py, marc, polybasite?, cpy

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
130	135	5.0'	0.003	0.06		
135	140	5.0'	0.002	0.04		
140	145	5.0'	0.004	0.11		
145	150	5.0'	0.006	0.26		
150	155	5.0'	0.050	0.19	0.050 (grav)	
155	159.5	4.5'	0.156	3.47	0.158 (grav)	
159.5	164	4.5'	0.356	3.99	0.402 (grav)	
164	165	1.0'	2.012	25.20	2.942 (grav)	

HOLE NUMBER D-22-94 PAGE 6 OF 6

%REC	RQD	LITHOLOGY	FT	GRAPHIC LOG	STRUCTURE	ALTERATION AND MINERALIZATION
99	.70 169	166-171' Tectonically brecciated, hydrothermally silicified breccia w/in fine-grained, silicified /or argillically altered massive-bedded tuff/tephra; generally clast-supported w/ local matrix (SiO_2) - supported; angular fragments. Matrix dominated by dark grey to black carbon 169-171 w/ SiO_2 f.g. open-space + illitic clay			166' apparent slicked contact @ 45'	165-177' mod. silic. g.m w/ Tr-1% diss py.; mod. arg. alt. clasts w/ strong 2nd order RR's, w/ 1-3% diss. py sulf-carbon micro stringers @ 20°s 60° minor 10-15' c.g. $CaCO_3$ stringers (carbon-coated bladed sulf) SiO_2 flooded tectonic/ hydrothermal bx-vns @ 30° w/ ill
87	.36 174		170		post-carbon & sulf slicks @ 45°	
80	.40 179	171-177' Lithic tuff breccia, poorly-sorted, matrix-supported, similar to above.	175			177-182" disc. sulf str. minor $CaCO_3$ + py @ 30° v. weak silic.; mod. str. clay. alt. 2% diss py
69	.22 184	177-184' Tectonically brecciated, hydrothermally silicified, carbon-rich (181-184') w/in f.g. massive bedded tuff/tephra	180		177' 50° contact 177-181' angular frags in ∠ clay gouge	
65	.20 189	184-199.8' Poorly-sorted, matrix-supported, massive-bedded lithic tuff breccia dark grey to black carbon on 70°s 20° surfaces w/20°'s str & 70's pos. bdd surf.'s.	185		181-184 angular frags of f.g. massive tuff/tephra in carbon + illite + SiO_2 rich matrix	182-199.8' mod. silic, + mod arg. alt. g.m. 2nd → 4th order RR's 1-4% diss cubic & bladed sulf.; patchy vuggy diss. w/fg. open-space Q + carbon-coated bladed sulf. discont. ill in matrix + 184'
90	.70 190		190			
80	.50 195		195		grey clay gouge on 18° str	
88	.50 200	199.8-200' Fine-grained, massive-bdd, well-sorted, dense, greenish grey tephra/tuff.	200		199.8' sharp py-coated 50' contact	199.8-200 Mod. strong. silic. Tr diss. sulf. minor py-coatings on frac's

END OF HOLE AT 200'

ANALYTICAL DATA

FROM	TO	W	Au	Ag	Au2	Ag2
165	170	5.0'	0.307	2.43	0.340 (grav)	
170	175	5.0'	1.066	7.36	1.178 (grav)	
175	179	4.0'	0.044	0.49		
179	184	5.0'	0.243	0.99	0.243 (grav)	
184	189	5.0'	0.216	0.60	0.222 (grav)	
189	194	5.0'	1.052	1.26	1.083 (grav)	
194	199.8	5.8'	0.255	0.40	0.275 (grav)	
199.8	200	0.2'	0.004	0.04		

ANALYSIS REPORT

American Assay Laboratories
P.O. BOX 71060
RENO, NV,,U.S.A.,
Ph.1-702-356-0606, Fax.1-702-356-1413
Telex:

Posted

HECLA MINING CO.

COPIES TO : CHARLIE MUERHOFF
:
:
:

CLIENT REFERENCE No: D-22-94
LABORATORY JOB No. : SP030575
SAMPLE TYPE :

RECEIVED : 23 AUG 1994
REPORTED : 2 SEP 1994
No. SAMPLES : 42

0.157
0.379
2.477
0.324
1.122
0.344
0.243
0.219
1.068
0.205

44.8 @ 430, 2.82

ANALYSIS	ANALYTICAL METHOD	QUALITY PARAMETER	UNIT	DETECTION
Au(OZ)	FA60	15%	OPT	0.001
Au(RZ)	FA60	15%	OPT	0.001
AuGRAV	GRAV	15%	OPT	0.001
Ag(OZ)	D210	10%	OPT	0.02

AMERICAN ASSAY LABORATORIES
ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-22-94
JOB NUMBER : SP030575
REPORTED : 2 SEP 1994

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SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-22-94 000-005	0.004			0.12
D-22-94 005-010	0.008			0.20
D-22-94 010-015	0.005			0.26
D-22-94 015-020	0.004			0.09
D-22-94 020-025	0.001			0.03
D-22-94 025-030	0.003			0.07
D-22-94 030-035	0.002			0.15
D-22-94 035-040	0.004			0.07
D-22-94 040-045	0.005			0.24
D-22-94 045-050	0.002			0.12
D-22-94 050-055	0.004			0.25
D-22-94 055-060	0.041			0.20
D-22-94 060-065	0.172		0.182	5.49
D-22-94 065-070	0.002			0.04
D-22-94 070-075	0.003			<0.02
D-22-94 075-080	<0.001			0.02
D-22-94 080-085	<0.001			0.04
D-22-94 085-090	0.002			0.02
D-22-94 090-095	<0.001			0.02
D-22-94 095-100	<0.001			0.02
D-22-94 100-105	0.008			0.02
D-22-94 105-110	0.003			0.05
D-22-94 110-115	0.009	0.010		0.23
D-22-94 115-120	0.018			0.20
D-22-94 120-125	0.017			0.04

AMERICAN ASSAY LABORATORIES

ANALYSIS REPORT

American Assay Laboratories

CLIENT : HECLA MINING CO.
PROJECT : ROSEBUD
REFERENCE : D-22-94
JOB NUMBER : SP030575
REPORTED : 2 SEP 1994

SAMPLES	Au(OZ) FA60 OPT	Au(RZ) FA60 OPT	AuGRAV GRAV OPT	Ag(OZ) D210 OPT
D-22-94 125-130	0.006			0.07
D-22-94 130-135	0.003			0.06
D-22-94 135-140	0.002			0.04
D-22-94 140-145	0.004			0.11
D-22-94 145-150	0.006			0.26
D-22-94 150-155	0.050		0.050	0.19
D-22-94 155-159.5	0.156		0.158	3.47
D-22-94 159.5-164	0.356		0.402	3.99
D-22-94 164-165	2.012		2.942	25.20
D-22-94 165-170	0.307		0.340	2.43
D-22-94 170-175	1.066		1.178	7.36
D-22-94 175-179	0.044			0.49
D-22-94 179-184	0.243		0.243	0.99
D-22-94 184-189	0.216		0.222	0.60
D-22-94 189-194	1.052		1.083	1.26
D-22-94 194-199.8	0.255		0.275	0.40
D-22-94 199.8-200	0.004			0.04