6000 0590

Mining District File Summary Sheet

| | |
|---|---|
| DISTRICT | Rosebud |
| DIST_NO | 4010 |
| COUNTY<br>If different from written on document | Pershing |
| TITLE<br>If not obvious | Rosebud Mine - North Zone Resources |
| AUTHOR | |
| DATE OF DOC(S) | 1998 - 1999 |
| MULTI_DIST Y / N?<br>Additional Dist_Nos: | |
| QUAD_NAME | Sulphur 7.5' |
| P_M_C_NAME<br>(mine, claim & company names) | Rosebud Mine; Hecla Mining Co. |
| COMMODITY<br>If not obvious | gold, silver |
| NOTES | Resources; assays; statistics; handwritten notes<br>22 p. |

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 3/20/08
Initials Date

DB:
Initials Date

SCANNED:
Initials Date

Revised: 1/22/08

North Zone Resources

6000 0590
4010

ROT model 60000590
2204297.756
481568.135

North Zone

D:\North_Zone\2dmodel

Partial Blocks - north_mii_partial
4199.5, 4745.5, 7

Points - north_mii_partial_pts

| | | HW | | FW |
|---|---|---|---|---|
| mi | String | 51 | 0.010 - 0.100 | 61 |
| | | 52 | 0.100 - 0.250 | 62 |
| | | 53 | 0.250 - 0.900 | 63 |
| | | 54 | + 0.900 | 64 |

inf 900 series 951, 952 etc.

Section Cords:

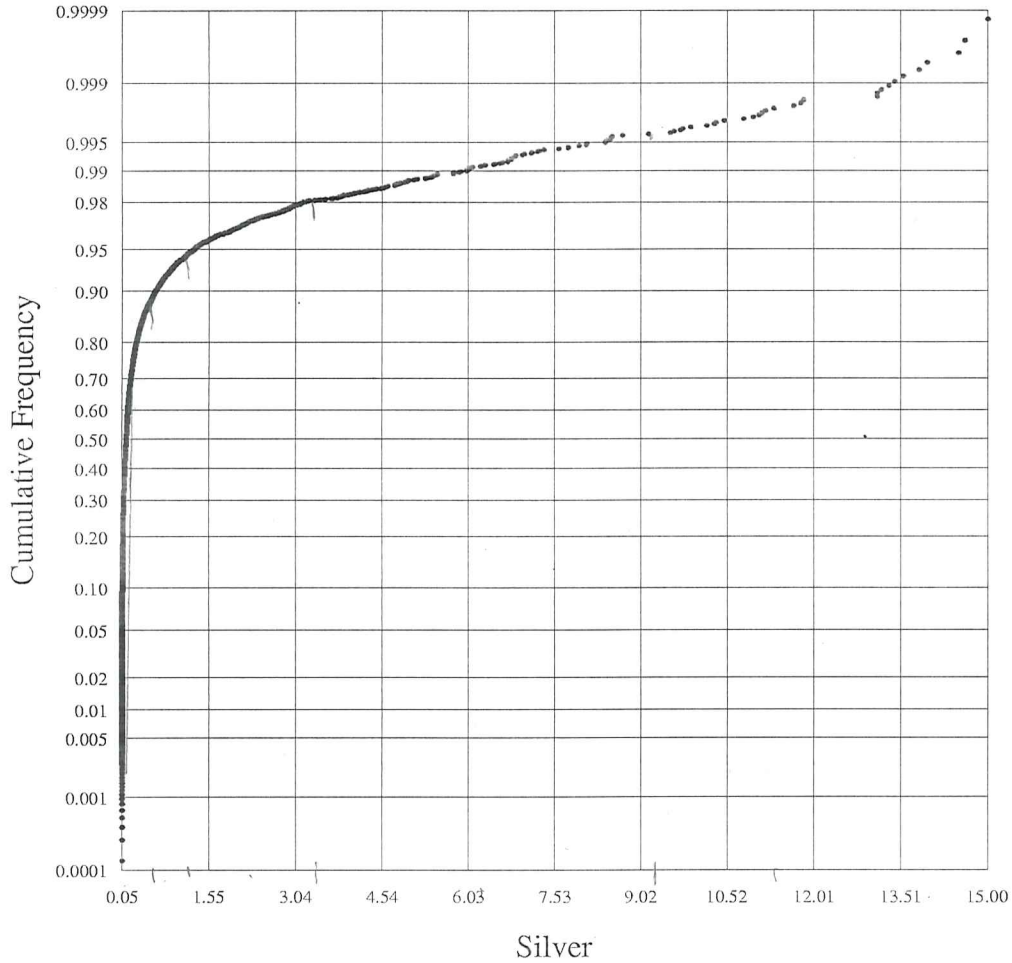
D6 - TONS
D7 - OZ

1103.5 y 162 blocks
-2319.5 x 121 blocks

rotation

| | | | |
|---|---|---|---|
| $Y_{1_0}$ | -150 | $Y_{1_n}$ | 2203461.14 |
| $X_{1_0}$ | -2650 | $X_{1_n}$ | 480583.17 |
| $Y_{2_0}$ | 1200 | $Y_{2_n}$ | 2203047.31 |
| $X_{2_0}$ | 0 | $X_{2_n}$ | 483528.29 |

Silver




## Summary Statistics

| | |
|---|---|
| Number of data points read | 7372 |
| Number of data points excluded | 31 |
| Arithmetic average | 0.37 |
| Arithmetic standard deviation | 1.07 |

## Chi-Square Goodness of Fit Test

NULL HYPOTHESIS: The sample data originate from a normal distribution.
The Chi-square test statistic is 19103.123 with 7 degrees of freedom.
==> Reject the Null Hypothesis at the 0.05 level of significance.
==> Reject the Null Hypothesis at the 0.01 level of significance.

~~0.00 - 0.50~~
~~0.50 - 1.20~~
~~1.20 - 3.50~~
~~3.50 - 9.00~~
~~+9.00~~

0.00 - 0.50
0.50 - 1.00
1.00 - 3.50
3.50 - 9.00
+9.00

# Drill Hole Assay Job #s North Zone

| Hole # | Assay Job # | Date | | |
|---|---|---|---|---|
| D-263-98 | SP 0050090 | 8/27/98 | ✓ | ✓ |
| D-264-98 | SP 0050189 | 9/10/98 | ✓ | ✓ |
| D-265-98 | SP 0050224 | 9/10/98 | ✓ | ✓ |
| D-266-98 | SP 0050183 | 9/10/98 | ✓ | ✓ |
| D-267-98 | SP 0050321 | 9/18/98 | ✓ | X |
| D-268-98 | SP 0050362 | 9/14/98 | ✓ | |
| D-269-98 | SP 0050522 | 9/16/98 | ✓ | ✓ |
| D-270-98 | SP 0050361 | 9/25/98 | ✓ | ✓ |
| D-271-98 | SP 0050523 | 9/24/98 | ✓ | ✓ |
| D-272-98 | SP 0050524 | 9/25/98 | ✓ | ✓ |
| D-273-98 | SP 0050544 | 9/24/98 | ✓ | ✓ |
| D-274-98 | SP 0050545 | 9/24/98 | ✓ | ✓ |
| D-275-98 | SP 0050565 | 9/24/98 | ✓ | ✓ |
| D-276-98 | SP 0049625 | 8/04/98 | ✓ | ✓ |
| D-277-98 | SP 0050566 | 10/01/98 | | |
| D-278-98 | SP 0050567 | 10/02/98 | ✓ | ✓ |
| D-279-98 | SP 0050586 | 9/25/98 | ✓ | ✓ |
| D-280-98 | SP 0050068 | 8/31/98 | ✓ | ✓ ★ missing 1/2 the hole |
| D-281-98 | SP 0050635 | 10/01/98 | ✓ | ✓ |
| D-282-98 | SP 0050636 | 10/01/98 | ✓ | |
| D-283-98 | SP 0050645 | 10/01/98 | ✓ | ✓ |
| D-284-98 | SP 0050637 | 10/01/98 | ✓ | ✓ |
| D-285-98 | SP 0051164 | 11/11/98 | ✓ | ✓ |
| D-286-98 | SP 0050715 | 10/05/98 | ✓ | ✓ |
| D-287-98 | SP 0050726 | 10/05/98 | ✓ | ✓ |
| D-288-98 | SP 0051001 | 10/21/98 | ✓ | ✓ |
| D-289-98 | SP 0050820 | 10/08/98 | ✓ | ✓ |
| D-290-98 | SP 0051257 | 11/13/98 | ✓ | ✓ |

| Hole # | Assay Job # | Date | | |
|---|---|---|---|---|
| D-291-98 | SP00 51 258 | 11/09/98 | ✓ | ✓ |
| D-292-98 | SP00 51 050 | 10/29/98 | ✓ | ✓ |
| D-293-98 | SP00 51115 | 10/26/98 | ✓ | ✓ |
| D-294-98 | SP00 51206 | 11/17/98 | ✓ | ✓ |
| D-295-98 | SP00 51133 | 10/27/98 | ✓ | ✓ |
| D-296-98 | SP00 51117 | 10/21/98 | ✓ | ✓ |
| D-297-98 | SP00 51345 | 11/25/98 | ✓ | ✓ |
| D-298-98 | SP00 51255 | 11/25/98 | ✓ | ✓ |
| D-299-98 | SP00 51256 DIT | 11/13/98 | ✓ | ✓ |
| D-300-98 | SP00 51348 | 11/18/98 | ✓ | ✓ |
| D-301-98 | SP00 51190 | 11/13/98 | ✓ | ✓ |
| D-302-98 | SP00 51323 | 11/25/98 | ✓ | ✓ |
| D-303-98 | SP00 51347 | 11/13/98 | ✓ | ✓ |
| D-304-98 | SP00 51368 | 11/18/98 | ✓ | ✓ |
| D-305-98 | SP00 51369 | 11/18/98 | ✓ | ✓ |
| D-306-98 | SP00 51438 | 11/25/98 | ✓ | ✓ |
| D-307-98 | SP00 51439 | 11/25/98 | ✓ | ✓ |
| D-308-98 | SP00 51346 | 11/25/98 | ✓ | ✓ |
| D-309-98 | SP00 51440 | 11/23/98 | ✓ | ✓ |
| D-310-98 | SP00 51441 | 11/18/98 | ✓ | ✓ |
| D-311-98 | SP00 51116 | 10/23/98 | ✓ | ✓ |
| D-312-98 | SP00 51502 | 11/25/98 | ✓ | ✓ |
| D-313-98 | SP00 51499 | 10/25/98 | ✓ | ✓ |
| D-314-98 | SP00 51503 | 11/30/98 | ✓ | ✓ |

| Hole # | Assay Job # | Date | |
|---|---|---|---|
| D-315-98 | SP 051504 | | PROVISIONAL |
| D-316-98 | SP 0051505 | 11/25/98 | |
| D-317-98 | SP 51506 | 11/30/98 | |
| D-318-98 | SP 51540 | 11/23/98 | |
| D-319-98 | SP 51541 | 11/25/98 | |
| D-320-98 | SP 051542 | | PROVISIONAL |
| D-321-98 | SP 51562 | 11/30/98 | |
| D-322-98 | SP 51569 | 11/30/98 | |
| D-323-98 | SP 51571 | | NA @ 12/5/98 |
| D-324-98 | SP 51572 | 11/30/98 | ~~NA @ 12/5/98~~ |
| D-325-98 | SP 051625 | | PROVISIONAL |
| D-326-98 | SP 051626 | | PROVISIONAL |
| D-327-98 | SP 051638 | | PROVISIONAL |
| D-328-98 | SP 051570 | | PROVISIONAL |
| D-329-98 | SP 051639 | | PROVISIONAL |
| D-330-98 | SP | | NA @ 12/5/98 |
| D-331-98 | SP | | NA @ 12/5/98 |

1. D-Drive
2. Rosebud
3. 1998 Grade Control
4. Analytical ~~Data~~ Reports

## NORTH ZONE RESOURCE - 1999 (MEASURED & INDICATED)

| Zone | Grade Interval | Volume | Tons | Grade | Ounces |
|---|---|---|---|---|---|
| 51 | 0.000 - 0.100 | 14,763,171 | 1,070,330 | 0.026 | 27,829 |
| 52 | 0.000 - 0.100 | 95,797 | 6,945 | 0.094 | 653 |
| 53 | 0.000 - 0.100 | 8,125 | 589 | 0.015 | 9 |
| 54 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 61 | 0.000 - 0.100 | 5,680,025 | 411,802 | 0.023 | 9,471 |
| 62 | 0.000 - 0.100 | 74,961 | 5,435 | 0.084 | 457 |
| 63 | 0.000 - 0.100 | 1,649 | 120 | 0.040 | 5 |
| 64 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| Total | 0.000 - 0.100 | 20,623,728 | 1,495,221 | 0.026 | 38,423 |
| 51 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 52 | 0.100 - 0.180 | 2,908,472 | 210,864 | 0.139 | 29,310 |
| 53 | 0.100 - 0.180 | 8,342 | 605 | 0.143 | 87 |
| 54 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 61 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 62 | 0.100 - 0.180 | 244,173 | 17,703 | 0.143 | 2,532 |
| 63 | 0.100 - 0.180 | 1,263 | 92 | 0.154 | 14 |
| 64 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| Total | 0.100 - 0.180 | 3,162,250 | 229,264 | 0.139 | 31,942 |
| 51 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 52 | 0.180 - 0.250 | 28,989 | 2,102 | 0.183 | 385 |
| 53 | 0.180 - 0.250 | 25,266 | 1,832 | 0.223 | 409 |
| 54 | 0.180 - 0.250 | 307 | 22 | 0.193 | 4 |
| 61 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 62 | 0.180 - 0.250 | 51,065 | 3,702 | 0.194 | 718 |
| 63 | 0.180 - 0.250 | 5,545 | 402 | 0.208 | 84 |
| 64 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| Total | 0.180 - 0.250 | 111,172 | 8,060 | 0.198 | 1,599 |
| 51 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | 0.250 - 0.900 | 1,223,031 | 88,670 | 0.413 | 36,621 |
| 54 | 0.250 - 0.900 | 4,653 | 337 | 0.709 | 239 |
| 61 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | 0.250 - 0.900 | 117,955 | 8,552 | 0.394 | 3,369 |
| 64 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| Total | 0.250 - 0.900 | 1,345,639 | 97,559 | 0.412 | 40,229 |
| 51 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | + 0.900 | 14,491 | 1,051 | 1.058 | 1,112 |
| 54 | + 0.900 | 156,986 | 11,381 | 1.997 | 22,728 |
| 61 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 64 | + 0.900 | 8,460 | 613 | 1.918 | 1,176 |
| Total | + 0.900 | 179,937 | 13,045 | 1.918 | 25,016 |
| Total | + 0.180 | 1,636,748 | 118,664 | 0.563 | 66,844 |

## NORTH ZONE RESOURCE - 1999 (INFERRED)

| Zone | Grade Interval | Volume | Tons | Grade | Ounces |
|---|---|---|---|---|---|
| 51 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 52 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 53 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 54 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 61 | 0.000 - 0.100 | 61,385 | 4,450 | 0.020 | 89 |
| 62 | 0.000 - 0.100 | 3,172 | 230 | 0.094 | 22 |
| 63 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 64 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| Total | 0.000 - 0.100 | 64,557 | 4,680 | 0.024 | 111 |
| 51 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 52 | 0.100 - 0.180 | 8 | 1 | 0.104 | 0 |
| 53 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 54 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 61 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 62 | 0.100 - 0.180 | 108,016 | 7,831 | 0.138 | 1,081 |
| 63 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 64 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| Total | 0.100 - 0.180 | 108,024 | 7,832 | 0.138 | 1,081 |
| 51 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 52 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 53 | 0.180 - 0.250 | 217 | 16 | 0.234 | 4 |
| 54 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 61 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 62 | 0.180 - 0.250 | 1,601 | 116 | 0.190 | 22 |
| 63 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 64 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| Total | 0.180 - 0.250 | 1,818 | 132 | 0.195 | 26 |
| 51 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | 0.250 - 0.900 | 374,222 | 27,131 | 0.409 | 11,097 |
| 54 | 0.250 - 0.900 | 5 | 0 | 0.738 | 0 |
| 61 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | 0.250 - 0.900 | 22,302 | 1,617 | 0.364 | 589 |
| 64 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| Total | 0.250 - 0.900 | 396,529 | 28,748 | 0.406 | 11,685 |
| 51 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 54 | + 0.900 | 41,445 | 3,005 | 1.976 | 5,938 |
| 61 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 64 | + 0.900 | 1,474 | 107 | 2.143 | 229 |
| Total | + 0.900 | 42,919 | 3,112 | 1.982 | 6,167 |
| Total | + 0.180 | 441,266 | 31,992 | 0.559 | 17,878 |

North Zone Block Model - 1999 Resource
Measured and Indicated Resource

| grade_mi | Volume | TONS | grade_mi |
|---|---|---|---|
| 0.0-0.1 | 37379454 | 2710010 | 0.020 |
| 0.1-0.18 | 2219896 | 160942 | 0.133 |
| 0.18-0.25 | 753228 | 54609 | 0.211 |
| 0.25-0.9 | 1286250 | 93253 | 0.406 |
| 0.9-9999.0 | 119364 | 8654 | 1.324 |
| Grand Total | 41758192 | 3027469 | 0.046 |

North Zone Block Model - 1999 Resource
Measured, Indicated and Inferred Resource

| grade_mii | Volume | TONS | grade_mii |
|---|---|---|---|
| 0.0-0.1 | 36674932 | 2658933 | 0.021 |
| 0.1-0.18 | 2720676 | 197249 | 0.134 |
| 0.18-0.25 | 993328 | 72016 | 0.212 |
| 0.25-0.9 | 1560650 | 113147 | 0.405 |
| 0.9-999.0 | 142002 | 10295 | 1.291 |
| Grand Total | 42091588 | 3051640 | 0.051 |

-1100 -1707

**HECLA MINING COMPANY**

COEUR D'ALENE, IDAHO 83815

| BY | DATE | JOB TITLE | JOB NO. |
|---|---|---|---|
| CHK. | DATE | | DIVISION |
| DWG. NO. | | | SHEET OF |

1100 95

| | | | |
|---|---|---|---|
| North | 2203445 | 492200 | 2516 |
| East | 2202690 | 493278 | 2516 |
| | 1792 | 1792 | 3584 |
| | 7 | 7 | 14 |
| | -55 | 0 | 0 |

254 max

| | | |
|---|---|---|
| ounces=mii | R | -1.000 |
| ounces_mi | R | -1.000 |
| tons | R | -1.00 |
| grade_mii | R | -1.000 |
| grade_mi | R | -1.00 |
| factor | R | 0.0725 |
| inf_tag | I | -1 |
| ind_percent | R | -1.000 |
| ag_tons | R | -1.00 |
| ag_ounces | R | -1.00 |
| ag_grade | R | -1.00 |

Updated 4/30/99

## NORTH ZONE RESOURCE - 1999 (MEASURED & INDICATED)

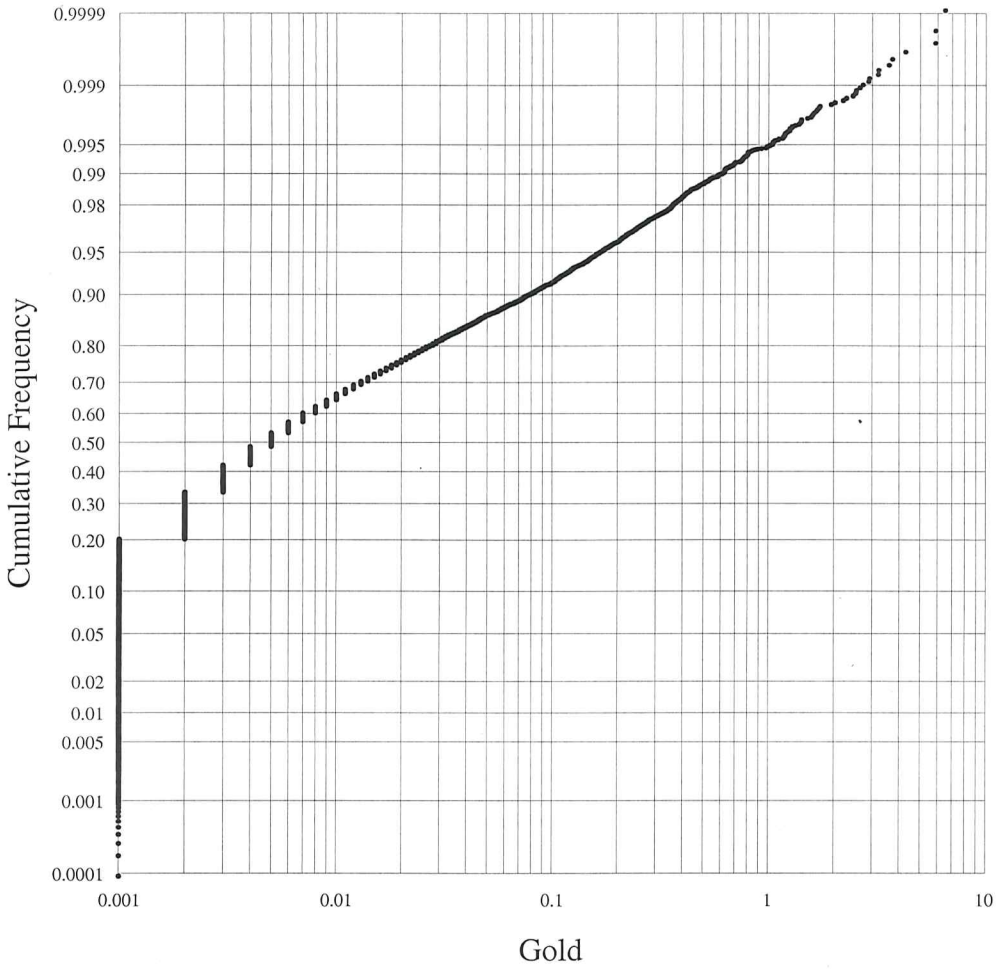
| Zone | Grade Interval | Volume | Tons | Grade | Ounces |
|---|---|---|---|---|---|
| 51 | 0.000 - 0.100 | 14,763,171 | 1,070,330 | 0.026 | 27,829 |
| 52 | 0.000 - 0.100 | 95,797 | 6,945 | 0.094 | 653 |
| 53 | 0.000 - 0.100 | 8,125 | 589 | 0.015 | 9 |
| 54 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 61 | 0.000 - 0.100 | 5,680,025 | 411,802 | 0.023 | 9,471 |
| 62 | 0.000 - 0.100 | 74,961 | 5,435 | 0.084 | 457 |
| 63 | 0.000 - 0.100 | 1,649 | 120 | 0.040 | 5 |
| 64 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| Total | 0.000 - 0.100 | 20,623,728 | 1,495,221 | 0.026 | 38,423 |
| 51 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 52 | 0.100 - 0.180 | 2,908,472 | 210,864 | 0.139 | 29,310 |
| 53 | 0.100 - 0.180 | 8,342 | 605 | 0.143 | 87 |
| 54 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 61 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 62 | 0.100 - 0.180 | 244,173 | 17,703 | 0.143 | 2,532 |
| 63 | 0.100 - 0.180 | 1,263 | 92 | 0.154 | 14 |
| 64 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| Total | 0.100 - 0.180 | 3,162,250 | 229,264 | 0.139 | 31,942 |
| 51 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 52 | 0.180 - 0.250 | 28,989 | 2,102 | 0.183 | 385 |
| 53 | 0.180 - 0.250 | 25,266 | 1,832 | 0.223 | 409 |
| 54 | 0.180 - 0.250 | 307 | 22 | 0.193 | 4 |
| 61 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 62 | 0.180 - 0.250 | 51,065 | 3,702 | 0.194 | 718 |
| 63 | 0.180 - 0.250 | 5,545 | 402 | 0.208 | 84 |
| 64 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| Total | 0.180 - 0.250 | 111,172 | 8,060 | 0.198 | 1,599 |
| 51 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | 0.250 - 0.900 | 1,223,031 | 88,670 | 0.413 | 36,621 |
| 54 | 0.250 - 0.900 | 4,653 | 337 | 0.709 | 239 |
| 61 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | 0.250 - 0.900 | 117,955 | 8,552 | 0.394 | 3,369 |
| 64 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| Total | 0.250 - 0.900 | 1,345,639 | 97,559 | 0.412 | 40,229 |
| 51 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | + 0.900 | 14,491 | 1,051 | 1.058 | 1,112 |
| 54 | + 0.900 | 156,986 | 11,381 | 1.997 | 22,728 |
| 61 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 64 | + 0.900 | 8,460 | 613 | 1.918 | 1,176 |
| Total | + 0.900 | 179,937 | 13,045 | 1.918 | 25,016 |
| Total | + 0.180 | 1,636,748 | 118,664 | 0.563 | 66,844 |

## NORTH ZONE RESOURCE - 1999 (INFERRED)

| Zone | Grade Interval | Volume | Tons | Grade | Ounces |
|---|---|---|---|---|---|
| 51 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 52 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 53 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 54 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 61 | 0.000 - 0.100 | 61,385 | 4,450 | 0.020 | 89 |
| 62 | 0.000 - 0.100 | 3,172 | 230 | 0.094 | 22 |
| 63 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| 64 | 0.000 - 0.100 | 0 | 0 | 0.000 | 0 |
| Total | 0.000 - 0.100 | 64,557 | 4,680 | 0.024 | 111 |
| 51 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 52 | 0.100 - 0.180 | 8 | 1 | 0.104 | 0 |
| 53 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 54 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 61 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 62 | 0.100 - 0.180 | 108,016 | 7,831 | 0.138 | 1,081 |
| 63 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| 64 | 0.100 - 0.180 | 0 | 0 | 0.000 | 0 |
| Total | 0.100 - 0.180 | 108,024 | 7,832 | 0.138 | 1,081 |
| 51 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 52 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 53 | 0.180 - 0.250 | 217 | 16 | 0.234 | 4 |
| 54 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 61 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 62 | 0.180 - 0.250 | 1,601 | 116 | 0.190 | 22 |
| 63 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| 64 | 0.180 - 0.250 | 0 | 0 | 0.000 | 0 |
| Total | 0.180 - 0.250 | 1,818 | 132 | 0.195 | 26 |
| 51 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | 0.250 - 0.900 | 374,222 | 27,131 | 0.409 | 11,097 |
| 54 | 0.250 - 0.900 | 5 | 0 | 0.738 | 0 |
| 61 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | 0.250 - 0.900 | 22,302 | 1,617 | 0.364 | 589 |
| 64 | 0.250 - 0.900 | 0 | 0 | 0.000 | 0 |
| Total | 0.250 - 0.900 | 396,529 | 28,748 | 0.406 | 11,685 |
| 51 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 52 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 53 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 54 | + 0.900 | 41,445 | 3,005 | 1.976 | 5,938 |
| 61 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 62 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 63 | + 0.900 | 0 | 0 | 0.000 | 0 |
| 64 | + 0.900 | 1,474 | 107 | 2.143 | 229 |
| Total | + 0.900 | 42,919 | 3,112 | 1.982 | 6,167 |
| Total | + 0.180 | 441,266 | 31,992 | 0.559 | 17,878 |

# North Zone Drill Hole Gold

## Gold




## Summary Statistics

| | |
|---|---|
| Number of data points read | 16790 |
| Number of data points excluded | 5692 |
| Arithmetic average | 0.040 |
| Arithmetic standard deviation | 0.184 |

## Chi-Square Goodness of Fit Test

NULL HYPOTHESIS: The sample data originate from a lognormal distribution.
The Chi-square test statistic is 3099.246 with 7 degrees of freedom.
==> Reject the Null Hypothesis at the 0.05 level of significance.
==> Reject the Null Hypothesis at the 0.01 level of significance.

1605

-1605.5

North Zone Non Resource

2230.5
-1479.5

1103.5
-2319.5 X

# blocks y = 162
# blocks x = 121
max z = 4745.5 4199.5, 4745.5, 7
# levels = 79

North Zone Variography

V512adip

Domain 51 & 52 Both Springs 1 & 2

Spherical, 2 structures, 5' lag

| Az | Plunge |
|---|---|
| 100 | 0 |

$C_0 = 0.002$

$C_1 = 0.001$

$R_1 = 34.02$ feet

$C_2 = 0.000$

$R_2 = 173.52$ feet

V512ag

Global 51 & 52 Spherical, 2 structures, 5' lag

$C_0 = 0.002$

$C_1 = 0.001$

$R_1 = 27.85$ feet

$C_2 = 0$

$R_2 = 100.84$ feet

V512ast (Strike Direction)

Spherical, 2 structures, 5' lag

$C_0 = 0.002$

$C_1 = 0.001$

$R_1 = 27.85$ feet

$C_2 = \emptyset$

$R_2 = 106.73$ feet

V512aP (Plunge Direction)

$R_1 = 29.66$ feet

$R_2 = 92.68$ feet

DOMAIN 61 & 62

GLOBAL STRUCTURE, SPHERICAL, exp 5

$C_0 = 0.006$

$C_1 = 0.004$

$R1 = 30.12$ feet

V61 2ST STRIKE DIRECTIONS

$C_0 = 0.006$

$C_1 = 0.004$

$R_1 = 47.80$ feet.

V61 2 a DIP (DIP DIRECTION)

$C_0 = 0.006$

$C_1 = 0.004$

$R1 = 37.82$ feet

V61 2 a PL (PLUNGE DIRECTION)

$C_0 = 0.006$

$C_1 = 0.004$

$R1 = 35.10$

CHANGE WINDOWS & LAG LENGTHS

try NARROWING the window on those.

Nock the Nugget lower

54 - Nearest Neibor - inverse Distance =>
53 -

Try 51-53 together & see how it changes
& then maybe make call on that &

Combine 51, 52, 53
Don't APPLY that to 54°.
54 => structure

ID => go to 3

63 & 64 - use isotropy same as 61 & 62.

51-52 - change lag - change window & play with.
try 6-7-8' lag. 20, 25 lag.

Keep RATIO of Nuggut to S.ll under 50%.

51 & 52 Cut to max of 0.250 opt Au

VS12Bg

global LAG 3' WINDOW 11.25° SEARCH of 75' MAX DIST 150

Co 0.001

C1 0.002

R1 12.02

C2 ∅

R2 57.28

DIP DIRECTION 100; 0°

VS12BDIP

R1 23.63

R2 58.74

PLUNGE DIRECTION 10; +50°

VS12BP

R1 29.72

R2 61.06

Strike DIRECTION 10; -40°

VS12BST

R1 31.46

R2 65.12

Zones 53+54 global

$C_0 = 0.589$

$C_1 = 0.354$

$R_1 = 29.21$

Take Nugget from Short Lag & put in nested
w/ longer Lag & fit everything else.

Nugget global
Co 0.001
$C_1$ 0.001

If you can get a low Nugget w/ Poor variogram
& A High Nugget w/ Good "
get a compromise.

North Zone Variography 1999

51+52

V512CG - global Lag 3' Window 22.5° Search 150' Max 200'

$C_0$ - 0.001

$C_1$ - 0.001 Min 0.010

$R_1$ - 18.33 Max 0.250

$C_2$ - 0.001

$R_2$ - 89.96

51+52

V512CST

$C_0$ - 0.001 10° Az

$C_1$ - 0.001 -40° Dip

$R_1$ - 15.15

$C_2$ - 0.001

$R_2$ - 89.51

51+52

V512CP

$C_0$ - 0.001

$C_1$ - 0.001

$R_1$ - 16.97

$C_2$ - 0.001

$R_2$ - 75.45

51+52

V512CDip 100° Az

$C_0$ - 0.001 0° Dip

$C_1$ - 0.001 (No plunge)

$R_1$ - 23.32

$C_2$ - 0.001

$R_2$ - 96.31

North Zone Variography 1999

Zones 51, 52+53

V5123ag global Lag 3' Window 11.25° Search 150' max 200

$C_0 = 0.016$

$C_1 = 0.021$ Min 0.010

$R_1 = 17.42$ Max 1.000

$C_2 = 0.009$

$R_2 = 99.51$

V5123bg global Lag 5' Window 22.5°

$C_0 = 0.010$

$C_1 = 0.014$

$R_1 = 21.50$

$C_2 = 0.004$

$R_2 = 98.12$

V5123bst

$R_1 = 17.88$

$R_2 = 95.85$

V5123bdip

$R_1 = 25.58$

$R_2 = 111.72$

V5123bp

$R_1 = 21.04$

$R_2 = 99.93$

North Zone Variography 1999

V612bg global Lag 3ft Window 45° Search 150' Max 250'

$C_0 = 0.002$

$C_1 = 0.002$ Min = 0.010

$R_1 = 34.01$ Max = 0.250

V612bst

$C_0 = 0.002$ Az = 10° Plunge = 40° Strike

$C_1 = 0.002$ = 100° 25° Dip

$R_1 = 47.80$ = 10° -50° Plunge

V612bdip

$C_0 = 0.002$

$C_1 = 0.002$

$R_1 = 33.74$

V612bp

$C_0 = 0.002$

$C_1 = 0.002$

$R_1 = 25.13$

File Names - D:\Rosebud\North_3rd2dmodel\partial_model

north_mi_partial*.str  * : 4199.5, 4745.5, 7
partial block model - MI+I

rot_north_mi_partial*.str
partial block model - MI+I - rotated to SPCS

north_mii_partial*.str  MII+I
rot_north_mii_partial*.str  ↓

rot_north_mi_results *.str  * = 4203, 4749, 14
_mii_

D1 = tons/block
D2 = Ounces/block

Combine the 2 files in Field Amalgamation to put the MII tons/block in D1
MII ounces/block in D2
MI tons/block in D5
MI ounces/block in D4