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2006 Semi-Annual Fugitive Dust MOU Report

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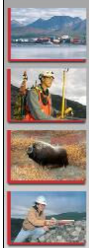
Source Modeling



Source Apportionment and Particle Deposition Modeling

- 2nd and 3rd Quarters 2006 – Completed initial review of the modeling input document with a focus on historical operational information.
- Contractor is reviewing comments and will redraft the document.
- Follow-up review of revised document will focus on confirming numeric data (stockpile heights, truck trips, % controls, loader travel, etc.)

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Source apportionment (source contribution) and modeling update.

Example of EPA collection method to determine the silt content of mine haul roads for input into the source contribution and modeling analysis.

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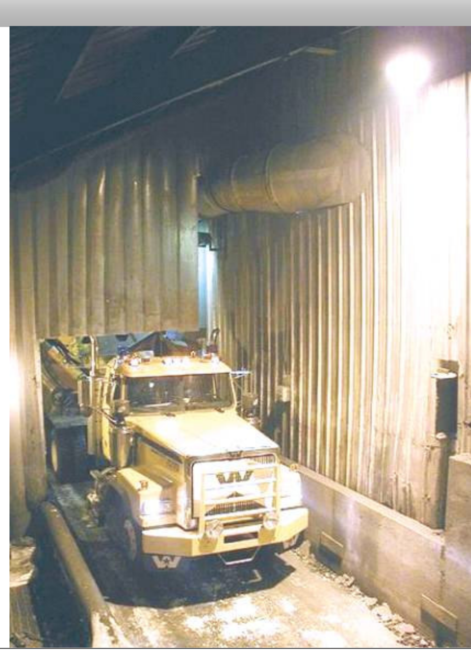
Concentrate Storage Building (CSB)

CSB Truck Loading



Dust control system in the concentrate loading area of the mine Concentrate Storage Building.

CSB Prototype Baghouse

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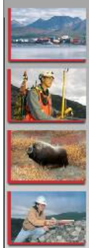
Prototype baghouse within the Mine Concentrate Storage Building. The unit is being operated to evaluate the performance of filter media within the CSB which can have very high moisture and extremely cold temperatures.

CSB Prototype Baghouse



- Dry filtration technology (baghouse using PTFE filters) is applicable for full scale CSB dust control bearing in mind that there will be periods of time when flow will be restricted due to high relative humidity in the building.
- Preliminary engineering for dust control system is currently under development. Delivery of preliminary engineering is expected in January.

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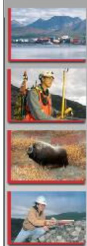

CSB Action Plan

- Holistic approach to reviewing and studying the mine CSB operation including:
  - Fugitive dust control
  - Alternate loading methods / options
  - Elimination of drive through / load-out
- Committed in 2007 to evaluate opportunities for improvements in material handling

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Crushing Related Improvements

Coarse Ore Storage Bldg Roof Before

Dark regions of the curved roof are holes in the sheet metal.

Note the new roof on the curved portion of the COSP

Proposed COSB Baghouse

- Air Quality Control Minor Air Permit has been issued for the proposed dust control system.
- System includes 50,000 cfm baghouse to generate negative pressure in the COSB.
- Preliminary engineering for structural, electrical, and architectural is starting and will provide information

Update on the proposed Coarse Ore Stockpile Building (COSB) baghouse.

Gyratory Crusher

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The Gyratory Crusher Dump Pocket Baghouse construction

Gyratory Crusher

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The Gyratory Crusher Dump Pocket Baghouse construction. Note new wing-walls and baghouse stack in foreground.

Plenum within Gyratory

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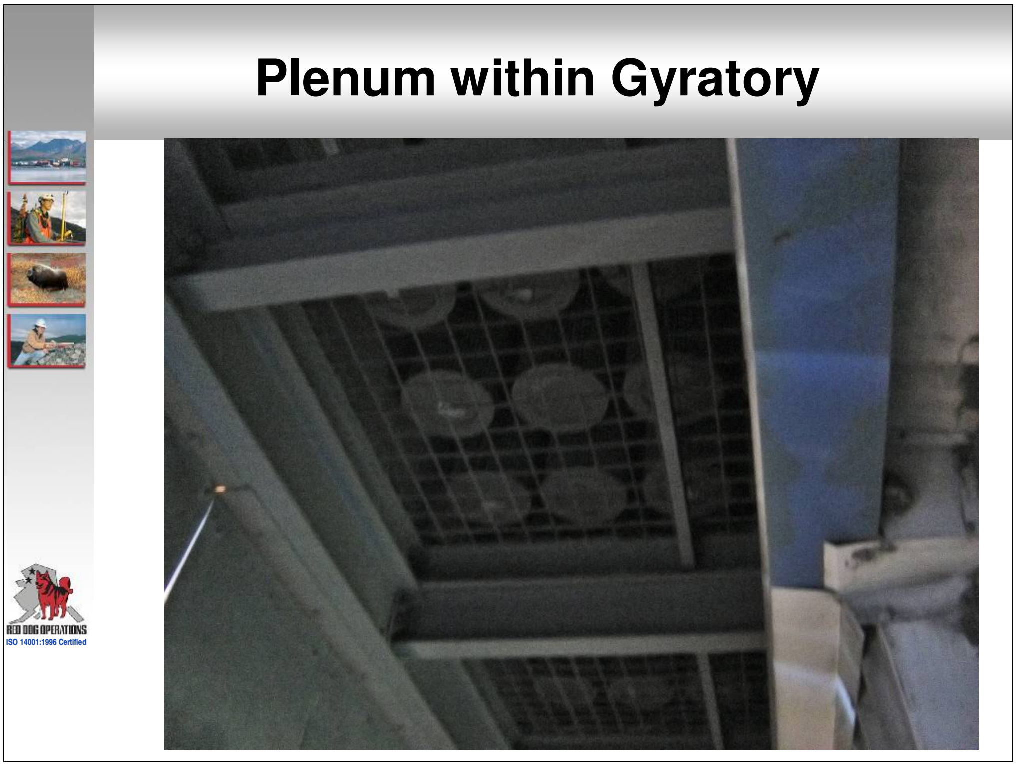
Air plenum for the Gyratory Crusher Dump Pocket Baghouse. The Plenum is directly above the dump pocket.



The Gyratory Crusher Dump Pocket Baghouse construction. Note filter assemblies (circles).

Jaw Crusher

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Jaw Crusher with newly installed baghouse, stilling curtains, and wing walls.

Dump Pocket Emission Before

Fugitive dust from ore unloading at the Jaw Crusher dump pocket prior to baghouse installation.

Dump Pocket Emission After

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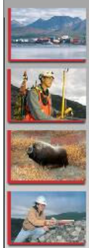
Unloading of ore at the Gyratory Crusher dump pocket post installation of baghouse, and wing-walls.



Source Test Results

Gyratory Crusher Dump Pocket Baghouse

(37,000 cfm) – August 12, 2006

Particulate Matter	
gr/dscf	0.0002
lb/hr	0.076

Jaw Crusher Dump Pocket Baghouse

(34,000 cfm) – August 16, 2006

Particulate Matter	
gr/dscf	0.0006
lb/hr	0.212

Third party source test results from the new jaw and gyratory crusher baghouses. Results are orders of magnitude below the permit limits.

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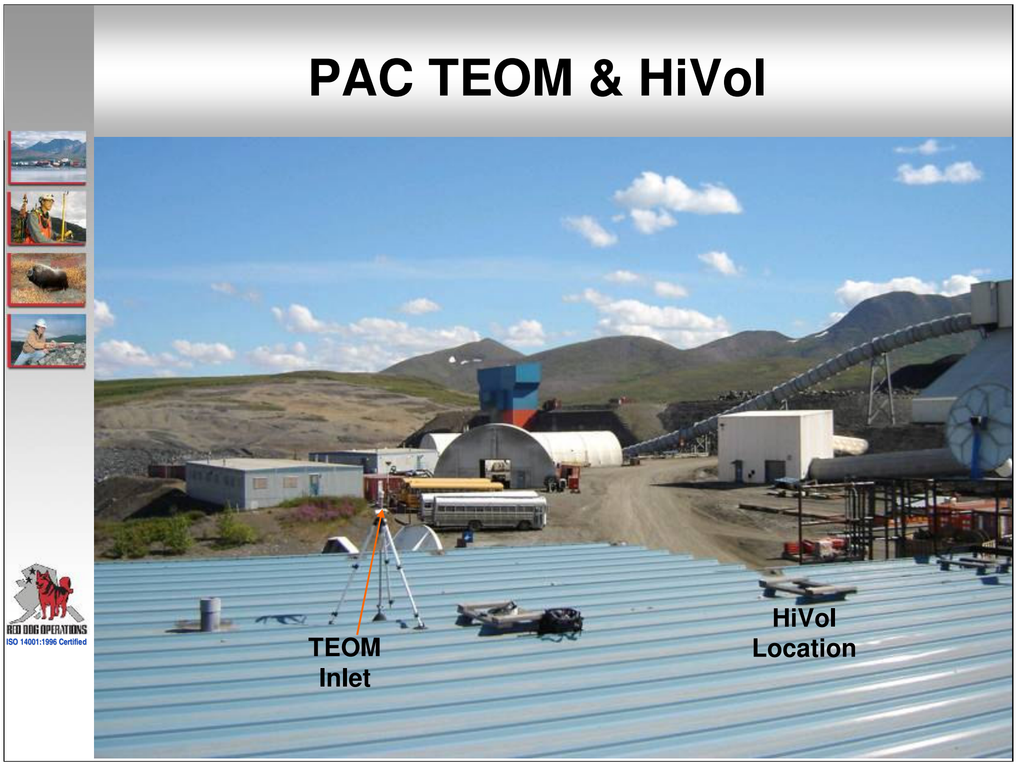
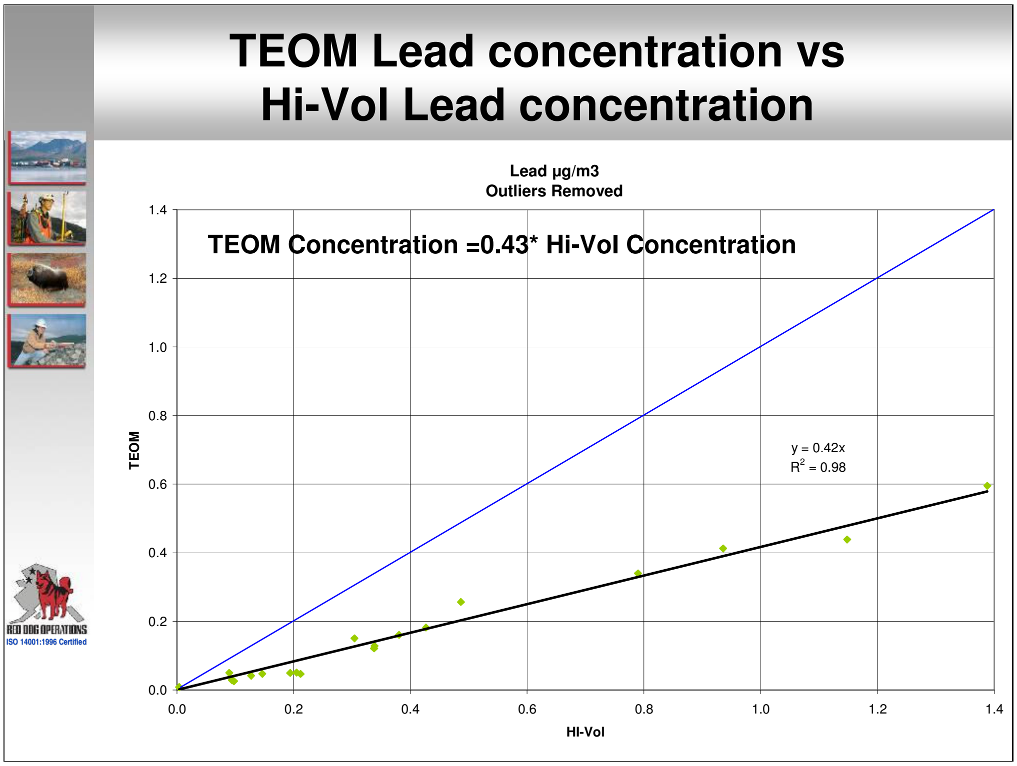
TSP Monitoring

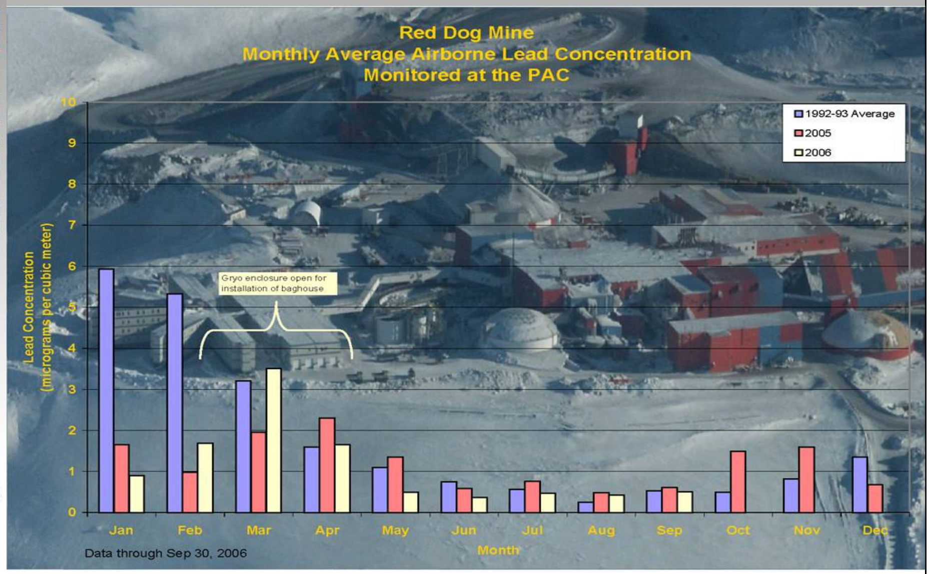


View from the roof of the PAC looking east toward the gyratory crusher showing the locations or the TEOM inlet and the Hi Vol location.



Correlation between TSP from TEOM and TSP from a Wedding Hi-Vol Particulate Monitor. From Comparison of the Total Suspended Particulate Collection Efficiency of a HI-Vol Particulate Collection System and a R&P 1400AB TEOM Particulate Collection System

Pb in Air From PAC TEOM



Graphed data adjusted using Hi-vol / TEOM correlation factor

TSP trends as measured by TEOM or TSP monitor corrected by correlation in the previous slide.

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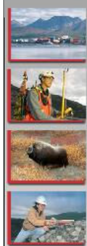
Particle Fate
Trail Research

Program



- Soil samples were taken from the surface and a depth of 10 cm from the Triangle and site TT3 along the port road.
- A reference sample was taken from the gyratory crusher.
- Samples were analyzed for metal content, examined by Mineral Liberation Analyzer and Humidity Cell tests.

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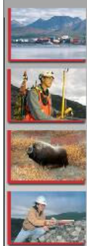
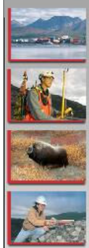
Analysis of Soils used in Humidity Cells



Area	Soil	Pb mg/kg	Zn mg/kg
Triangle	Surface	19,000	6,000
Triangle	Mineral	900	800
TT3	Surface	<100	<100
TT3	Mineral	<100	<100

Total Pb and Zn from soils used in particle fate study. TT3 is near MS-10 along the DMTS Road.



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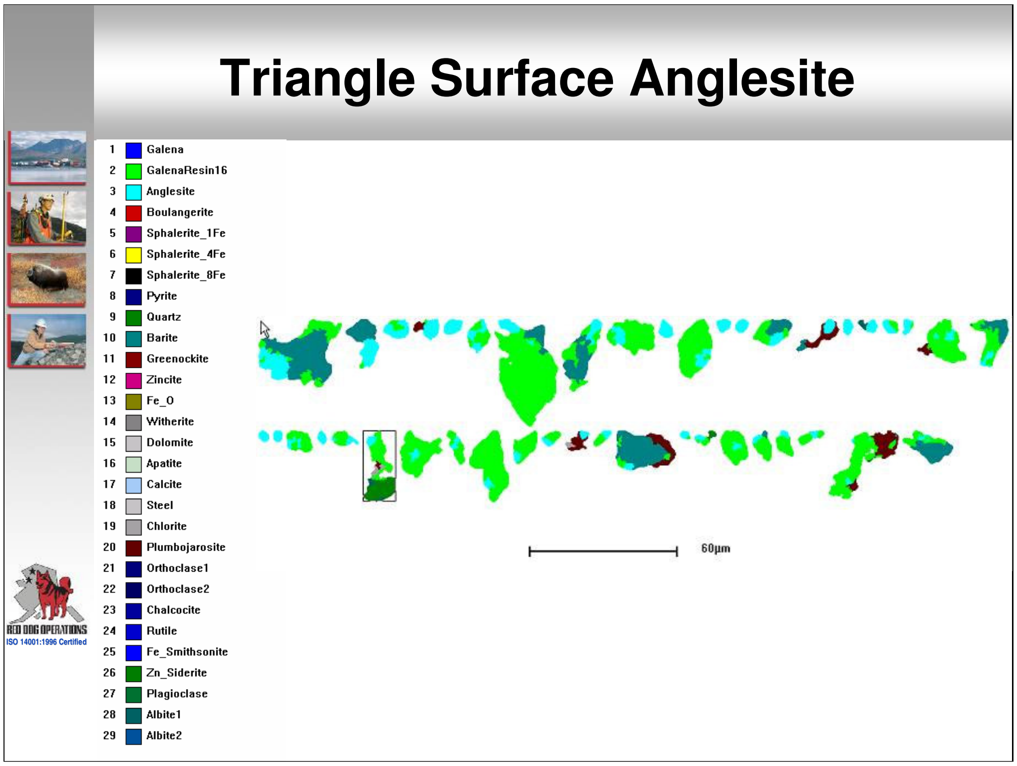
MLA Micrographs

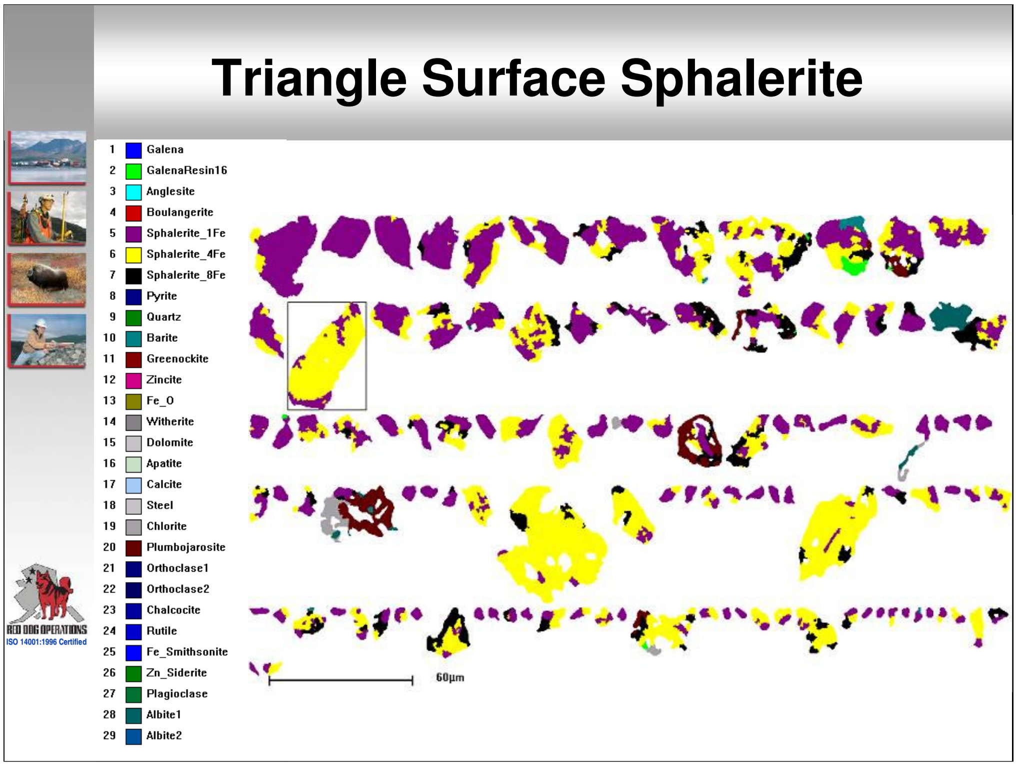
1 Galena
2 GalenaResin16
3 Anglesite
4 Boulangerite
5 Sphalerite_1Fe
6 Sphalerite_4Fe
7 Sphalerite_8Fe
8 Pyrite
9 Quartz
10 Barite
11 Greenockite
12 Zincite
13 Fe_O
14 Witherite
15 Dolomite
16 Apatite
17 Calcite
18 Steel
19 Chlorite
20 Plumbojarosite
21 Orthoclase1
22 Orthoclase2
23 Chalcocite
24 Rutile
25 Fe_Smithsonite
26 Zn_Siderite
27 Plagioclase
28 Albite1
29 Albite2

- Mineral Liberation Analyzer (MLA)
  - Mineral identification
  - Mineral association
- Soil samples prepared for analysis

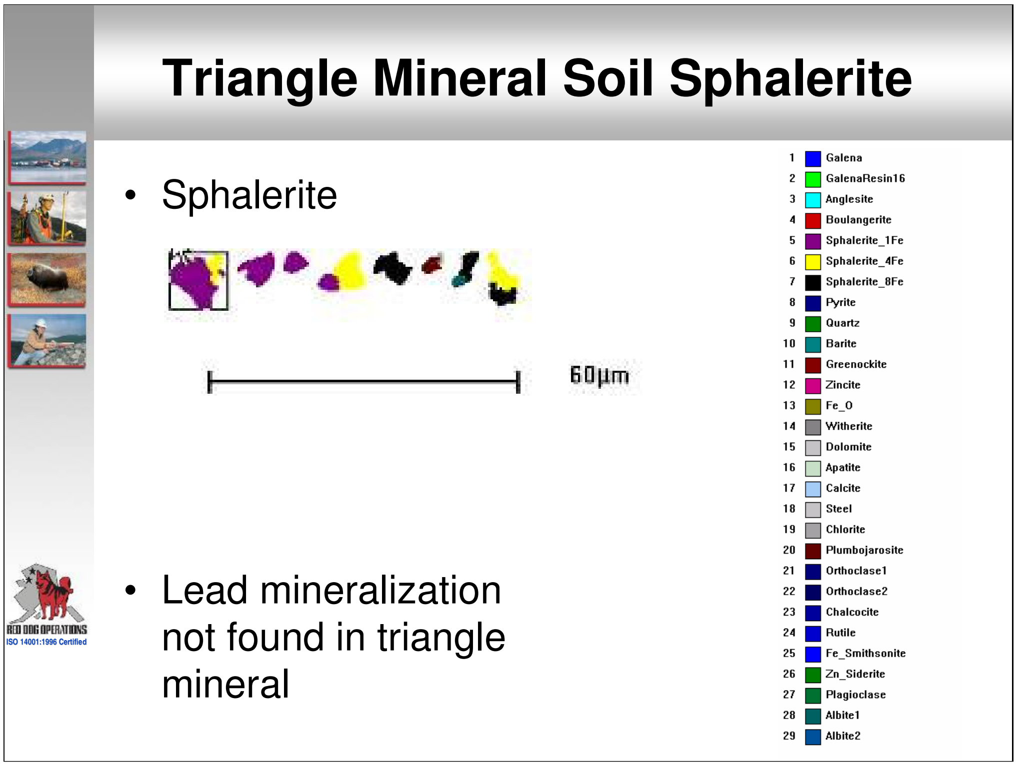
The MLA system combines an SEM, energy dispersive spectral (EDS) X-ray analysis and a backscatter electron (BSE) detector with image analysis. The MLA is capable of generating quantitative mineral identification.



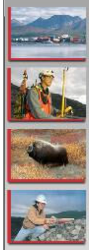
Lead grains recovered in the Triangle Surface soil sample contain both galena and Anglesite $PbSO_4$.



Zn bearing grains from the Triangle surface soil contain sphalerite with variable Fe content minor barite and trace galena. Note how corroded some grains are.



Not many sphalerite grains were found in the mineral soil. In fact they may be contamination from the upper layer. No Pb minerals were found in the mineral soil.



TT3 Site

- Sphalerite and galena/anglesite not identified in TT3 samples

With <100 ppm initial values mineral grains would be hard to find.

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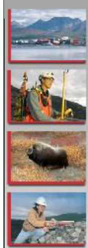
RED DOG TUNDRA VEGETATION IMPACT STUDY



METHODS (continued)

- Established long-term monitoring transects (4 km long) in July 2006, with intervening plots starting at 0 m to 4000 m. Plant cover was quantitatively measured and vascular plants identified to species; non-vascular plants (lichens, mosses, and liverworts) were identified to genus, with species identification where possible.
- Set up treatment plots in August 2006 at three locations near the mine: the triangle area, the west tailings area, and north of the Red Dog Creek diversion (Figure 1). At each site, dolomitic lime was applied at a rate of 500 lbs/acre. Additional treatments may be applied in the future, pending results from the plant tissue and soil analysis (not available at the time of the 2006 August treatment effort).

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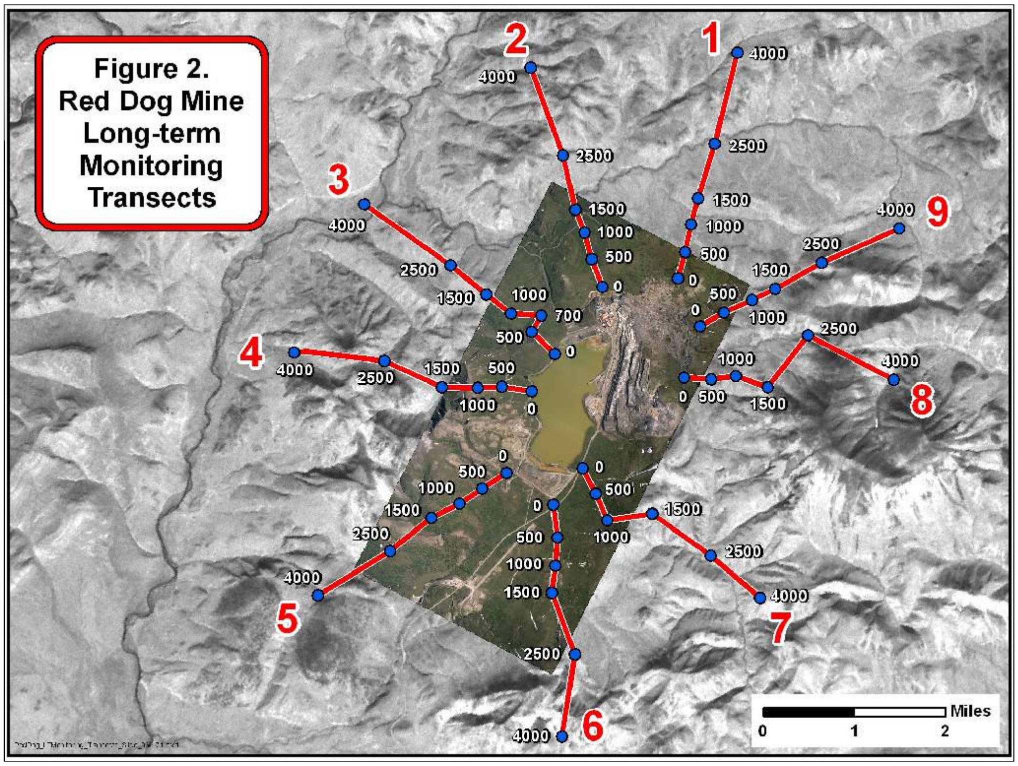

Numbers are meters from the beginning of the transect.