

GREAT STEP 2018

MINEO CASE STUDY

PROBLEM STATEMENT



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While hiking in the hills near his home in Araku valley in Andhra Pradesh, a geologist found some gossan on one of the hills. The gossan was about 15 meters wide and dipping roughly at 40 degrees and he found a similar gossan on two other hills over a strike length of about 2 kilometers. Excited about this find, he started exploring in the gullies between the hills and found indications of sulphides of copper, silver and gold about 50 meters below the hill tops. When he traced the gossan vein back from the gullies, he found that the gossan cap was about 15 meters thick. He immediately requested a local borewell driller for information about water drilling activities in the area and surmised that the metal sulphide deposit probably extended to a depth of at least 300 meters. Using some of his own money, he drilled five vertical holes at a spacing of 500 meters along the strike of the gossan collared at about the same elevation and intersected the deposit in all the holes. Sampling of the intersected sulphides showed the following information:

Drill Hole Number	Intersected width (m)	Assay values	Depth at top of intersection (m)
1	21	2.0% Cu, 10 ppm Au, 120 ppm Ag	299
2	19	1.8% Cu, 12 ppm Au, 110 ppm Ag	305
3	19	2.1% Cu, 15 ppm Au, 100 ppm Ag	300
4	22	1.9% Cu, 18 ppm Au, 110 ppm Ag	304
5	20	1.8% Cu, 18 ppm Au, 140 ppm Ag	303

Reasonably assured that there is a sizeable deposit of value in the ground, he wants to prepare a document that can help him seek financial assistance either from a partner or from a lender. Please help him estimate the size of the deposit and

create a plan for mining the ore. Your plan should show all aspects of mine design including at least the following:

1. Ore resources
2. Mining methods (surface and underground methods or combination)
3. Ore reserves and production rates
4. Pit design and underground excavation design
5. Mining equipment requirement
6. Economics of the operation (capital and operating costs, annual cash flow and NPV)
7. Environmental factors and how you plan to address the issues related to waste disposal
8. Path forward

You may make assumptions regarding the rock types, rock strength, availability of materials and manpower and costs, but all assumptions must be listed along with the reason for making the assumption. The path forward should include information on how you would address the assumptions made regarding the project.