

Mining – Hydraulic – Waste Disposal Project

Detailed Design for Two (2) Tailings Management Facilities (TMF) at Skouries Gold Project

Chalkidiki, Northern Greece

Project

Elaboration of detailed design of two (2) Tailings Management Facilities (TMF) at Skouries Gold project to store the tailings from ore processing mined from the open pit.

Construction Cost

Total cost: approx. € 29 m.

Project Schedule

Design: 2013 – 2016
Construction: 2013 – on going

Project Description

Karatzas Lakkos TMF

- Dam crest length: 605m
- Dam crest width: 15m
- Height in the dam axis ≈ 160m
- Cumulative tailings surface area: 522.000 m²
- Cumulative tailings storage volume: 22,6 Mm³

Lotsaniko TMF

- Dam crest length: 455m
- Dam crest width: 15m
- Height in the dam axis ≈ 155m
- Cumulative tailings surface area: 308.000m²
- Cumulative tailings storage volume: 13,4 Mm³

Geology

Porphyry intrusions, breccias, mica schists-gneisses, chloritic, biotitic, sericitic schists-gneisses, muscovitic, chloritic gneisses-schists, groundwater

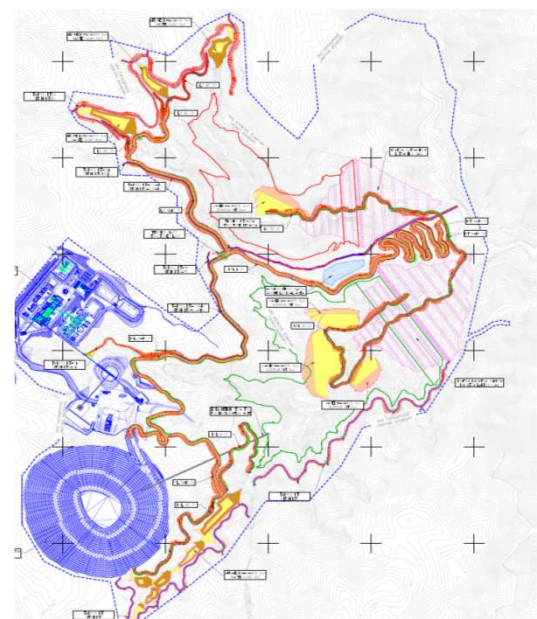
Our Services

- Detailed design of Karatzas Lakkos TMF (including rockfill dam)
- Initial design of Lotsaniko TMF (including rockfill dam)
- Dams construction & deposition schedule
- Dams risk analysis and break-out study
- Detailed hydraulic design
- Detailed design of all required structures
- Contaminant risk study
- Water Management / Diversion Works / TMF Water Balance*
- Tailings transportation pipework*
- Dams & slopes stability analysis & assessment
- Tailings liquefaction analysis & assessment
- Internal road network design
- Geotechnical Investigation Program Planning and Supervision
- Geological – Hydrogeological – Geotechnical Interpretation and Evaluation
- Construction follow-up services / Technical expertise consulting
- Designer on site services
- Tender documents for construction – BoQ's
- Permitting design

[*] Designs jointly elaborated with Golder Associates (UK) Limited



Construction works



Skouries TMF general plan view

Client

HELLAS GOLD S.A. {Subsidiary of ELDORADO GOLD (CA)}

Mining Project

Basic Engineering, Tailings Dams in Skouries Mine Stratoni, Chalkidiki

Northern Greece

Project

Basic Engineering Design of tailings dams in Karatza Lakkos and Lotsaniko streams

Construction Costs

Total costs: approx. € 15 m.

Project Schedule

Design: 2010
Construction: 2012 - on going

Project Description

Karatza Lakkos Dam

- Dam crest length: 533m
- Dam crest width: 15m
- Vertical dam height in the dam axis: 143m
- Cumulative tailings surface area: 714.600 m²
- Cumulative tailings storage volume: 29,2 mil. m³

Lotsaniko Dam

- Dam crest length: 380m
- Dam crest width: 15m
- Vertical dam height in the dam axis: 131m
- Cumulative tailings surface area: 348.200m²
- Cumulative tailings storage volume: 14,9 mil. m³

Geology

Two-mica silicified at places schists, amphibolitic and chloritic schists, amphibolitic gneisses

Our Services

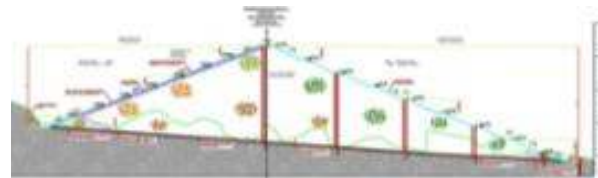
- Geological – hydrogeological – geotechnical evaluation of the project
- Hydraulic study and hydraulic design of the management outflows in the embankments area
- Pre-study and design of general dams layout
- Risk assessment of potential failure of the two tailings dams due to structural, seismic and overtopping reasons
- Bill of Quantities

Client

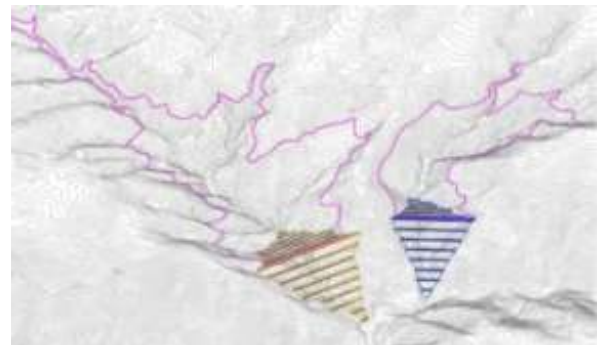
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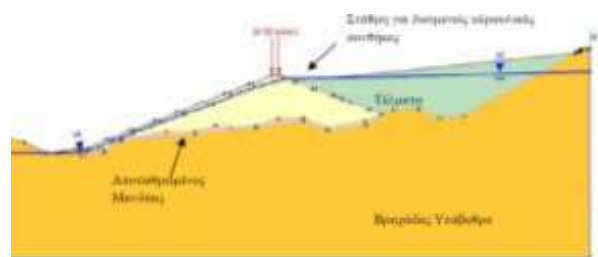
Dam's typical cross section



Monitoring instrumentation



Plan view of dams



Geotechnical simulation model