

FEATURE OF TECHNICAL SERVICE	
Subject	Salto Dam- Risk mitigation intervention on left bank downstream of the dam body.
Carried out by	SGAI Srl di E. Forlani & C.
Client	ERG HYDRO SRL
Service length	2019-2020
Value of works	€ 426.663,07 (S.04)

DESIGN INTRODUCTION

SGAI has conducted a study of **falling rocks risk and rocky slope stability** above the future micro hydroelectric plant with relative accesses and **mitigation interventions design**.

The mini-hydro design involves the construction of a **micro hydroelectric plant** which intends to enhance the release waters of the Minimum Vital Flow downstream of the Lago del Salto dam; taking the release flow of the MVF from the communication tunnel of the two reservoirs, near the underground maneuvering room located downstream of the **Salto dam**.

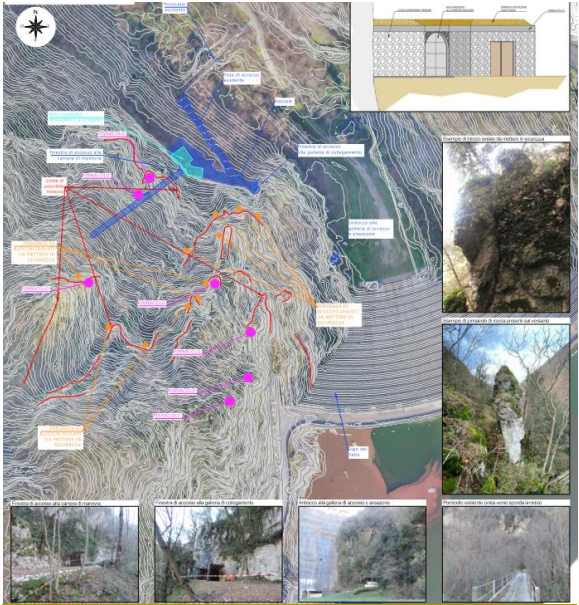
METHODOLOGICAL APPROACH

I Phase - Fact-finding part: collection of available data integrated with **surveys, site and laboratory investigations**, to create an exhaustive context for subsequent activities (**geological, geomorphological, hydrogeological, hydrological and seismic framework**).

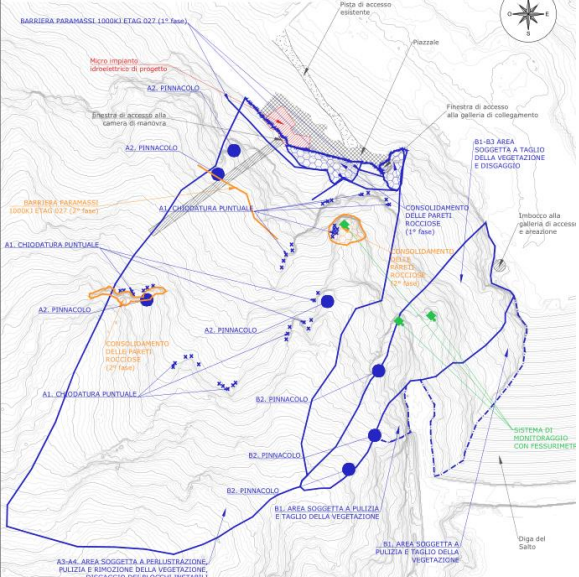
II Phase - processing and interpretation data: from the point cloud to the **reference ground model, characterization of rock mass** in terms of subsequent use (rock mass physical and mechanical characteristics: GSI, and **kinematics of possible movements**, geometries of the blocks), for homogeneous areas.

III Phase – risk estimation and mitigation course: **stability checks, rockfall trajectories analysis**. The risk is interpreted as a combination of the probability of adverse event occurrence (danger), with the damage that it can cause. Both in **construction phase** and **operational phase**, the dangerous conditions concern the release of single blocks from the slopes or the release of more conspicuous masses due to **instability of rocky slopes**.

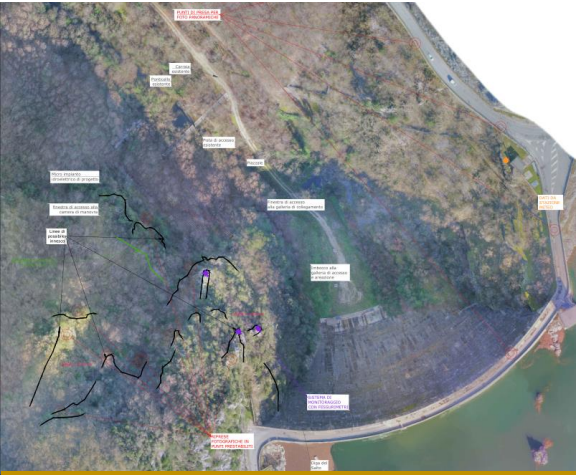
Phase IV - Mitigation design: defines the **stabilization intervention** of rocky slopes and rockfall barriers with trajectory analysis and **risk reassessment**.



Current state plan and existing works

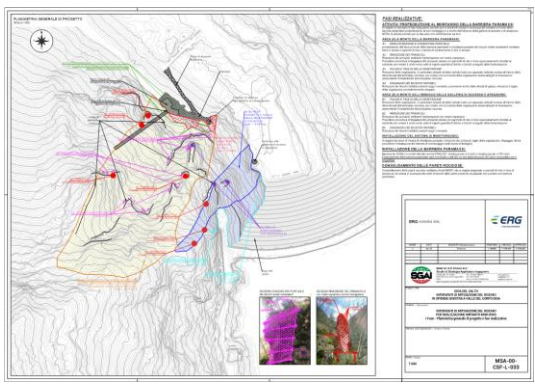
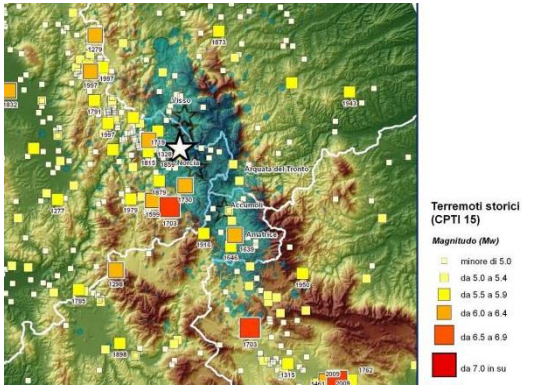
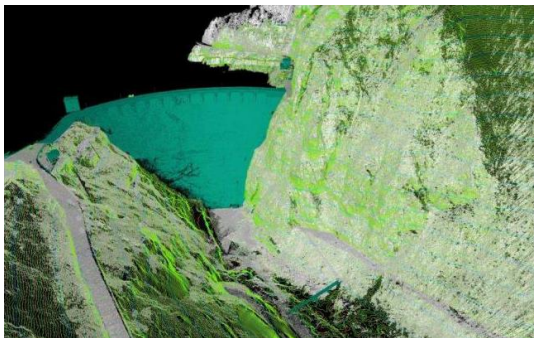


Interventions plan



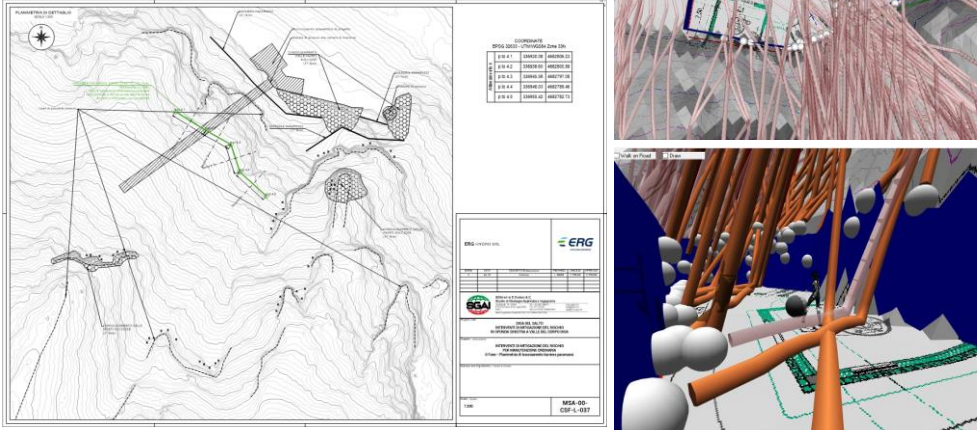
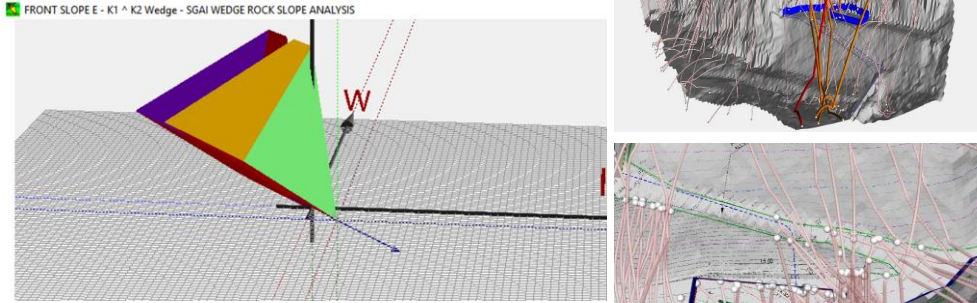
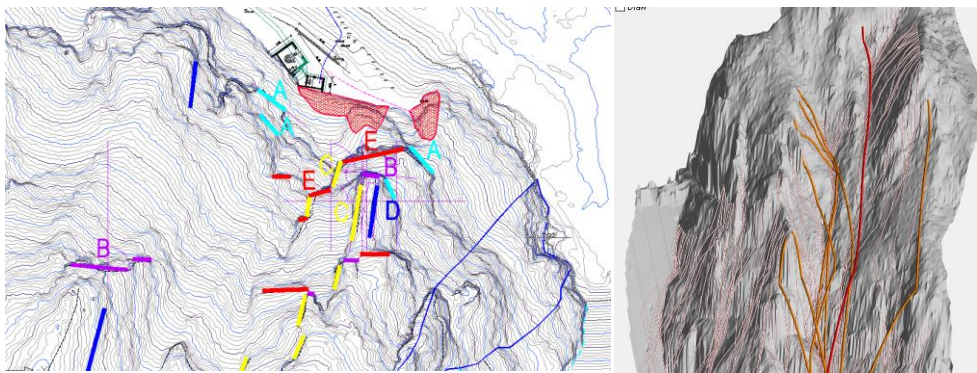
Monitoring plan

PHASE I.



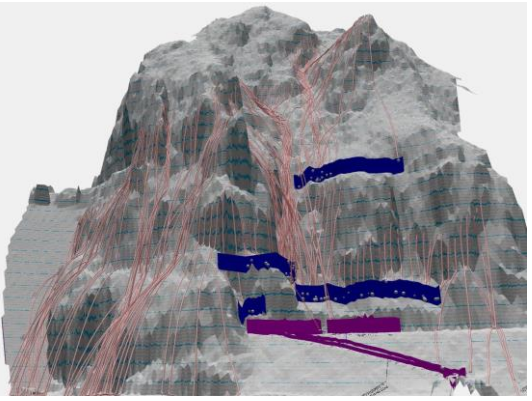
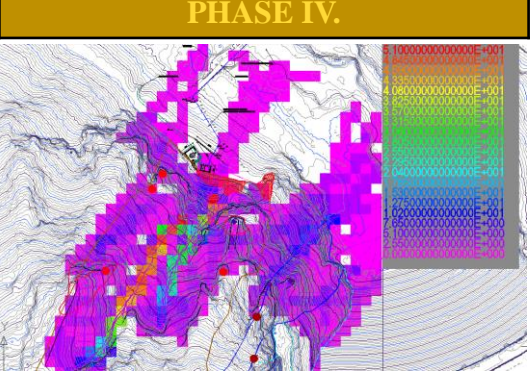
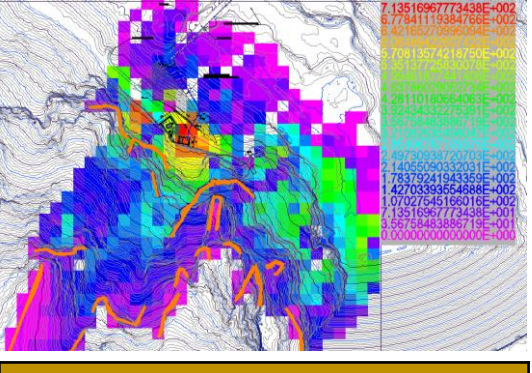
I. General plan and construction phases

PHASE II.

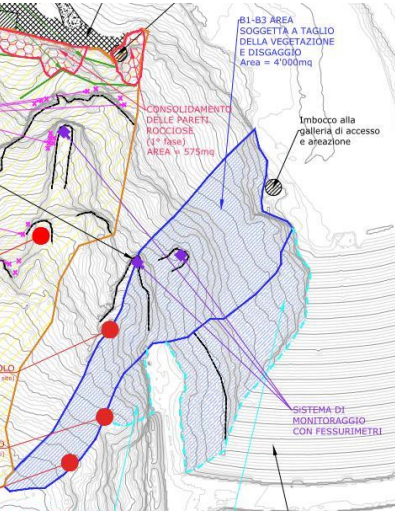


II. Rockfall barriers tracking plan

PHASE III.



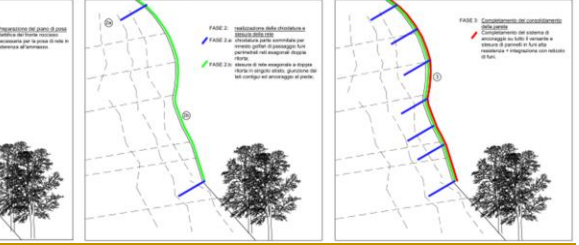
III. Risk mitigation intervention connected to tunnel access



Risk mitigation intervention connected to tunnel access



Rocky walls stabilization – Construction phases



IV. Rocky walls stabilization – Construction phases