

1. Site Visit and Findings

This report is intended to summarize the findings of the Site Visit which is part of the Site Assessment Phase of scope of works. It will provide a structural geology and geomorphology descriptions of the actual status of the Project to protect the Majdal Baana sorting and composting facility from landslides or any failure in stabilities or leakage.

The proposed facility is located in Majdal Baana area - Alay Caza- Mount Lebanon, near the secondary road at a public plot No.1, at the following center coordinates:

$$\begin{aligned} X &= -323279 \\ Y &= -41084 \\ Z &= 940 \text{ m} \end{aligned}$$

(Ref. Topographical Map 1/10,000)

Geologically, The Majdal Baana facility is located on the Aabay geological formation C2a1 belong to the lower cretaceous to the lower Aptian epoch, The Aabay sandstone formation is characterized by cream and green sandy marl intercalated with sandy limestone and Silt, The thickness of this formation varies between 120-150m. this formation overlay by pale gray massive hard limestone belongs to the Mdairej Formation C2a2, it is outcrop North side of the project area, the thicknesses of this formation varies between 40-45m. The layers in these formations are dipping towards the Northwest at an angle of approximately 5-10° opposite of the topographic Slopes, the Limestone cliff is stable ,So no risk of large blocks falling on the proposed project.

(Ref. Geological Map attached 1/15,000)

Geomorphologically, the proposed facility is located on the right bank of the Ghaziri Valley, The difference in altitude between the bottom of the cliff (Mdairej formation) or top of the Aabay formation (at 962 m a.s.l.) and the Northern border of the facility (at 940 m a.s.l.) is 22 m in a distance of at least 35 m (along a straight line). The gradient, accordingly, is less than 1 in 1.5 (1V/1.5H), on less than 35%, the topographic slope is not very steep above the facility and the thin geological layers are dipping against topographical slope, so in the event of any erosion it does not danger risk to the facility site, especially if surface water runoff is flow without obstacles.

After the Site Visit the following observations to be implemented:

- Remove all loose material or accumulated material above the proposed facility resulting from weathering of the mother rocks.
- Remove the rocks close to the western concrete wall.

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- Construct of the concrete water channel close to the retaining walls from the north and west sides to collect the water coming from the higher levels and secure the water flow to the valley to prevent it from being stored inside the soft layers, where their width is one meter and the invert level of the channel in the beginning is one-meter-deep from the top of the wall and the slope of the channel is not less than 1%.
- Fiber reinforced epoxy coating the three slabs of composting facility.
- We noticed cracks within outdoor slab between sorting plant and concrete rooms, we suggest assessment by civil engineer for the appropriate action to do.

The following photos give an idea of the Project actual status:



Photo 1– Show the limestone cliff (C2a2) and loose materials required to be removed overlay the Aabay formation(C2a1).

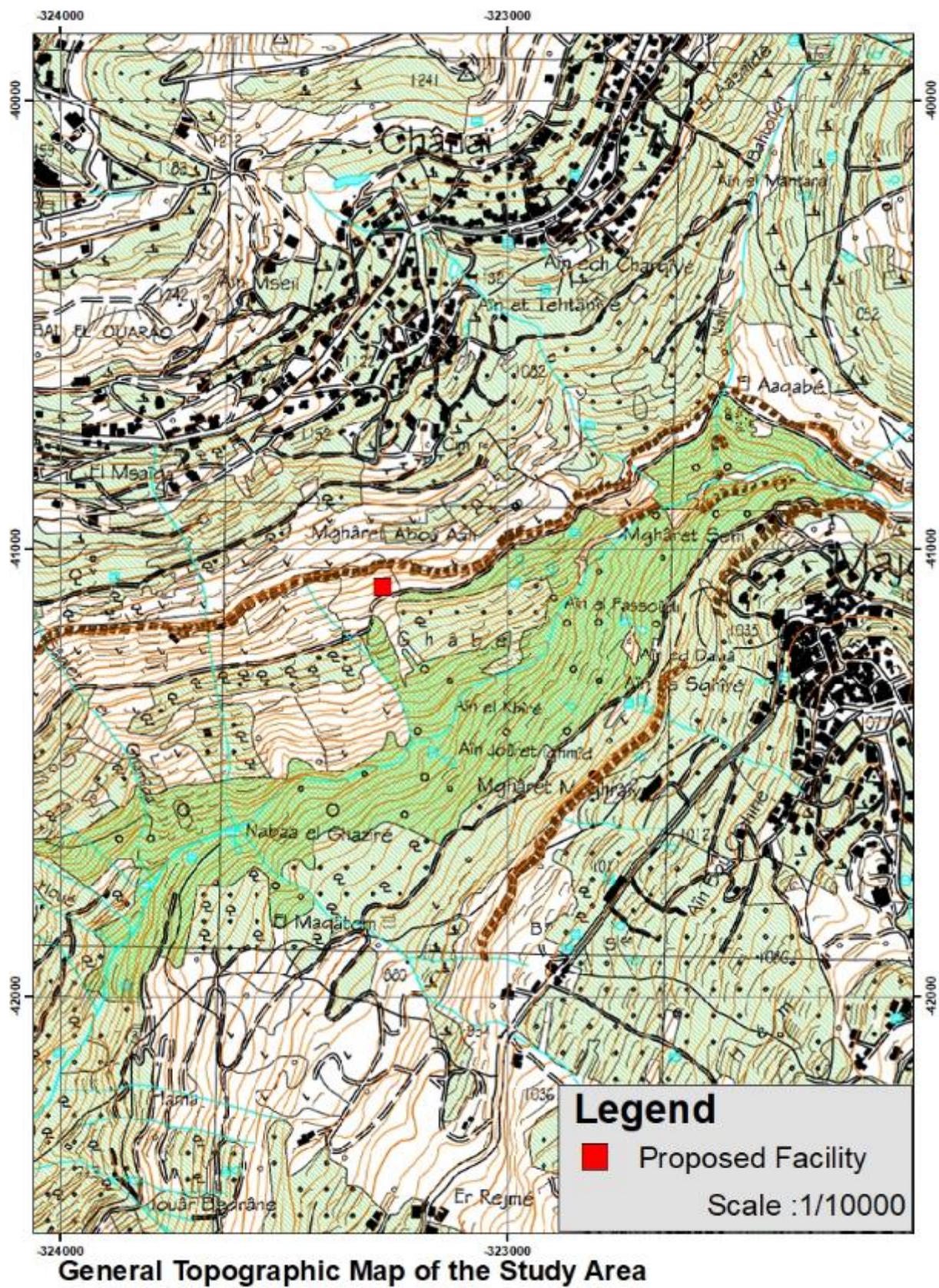
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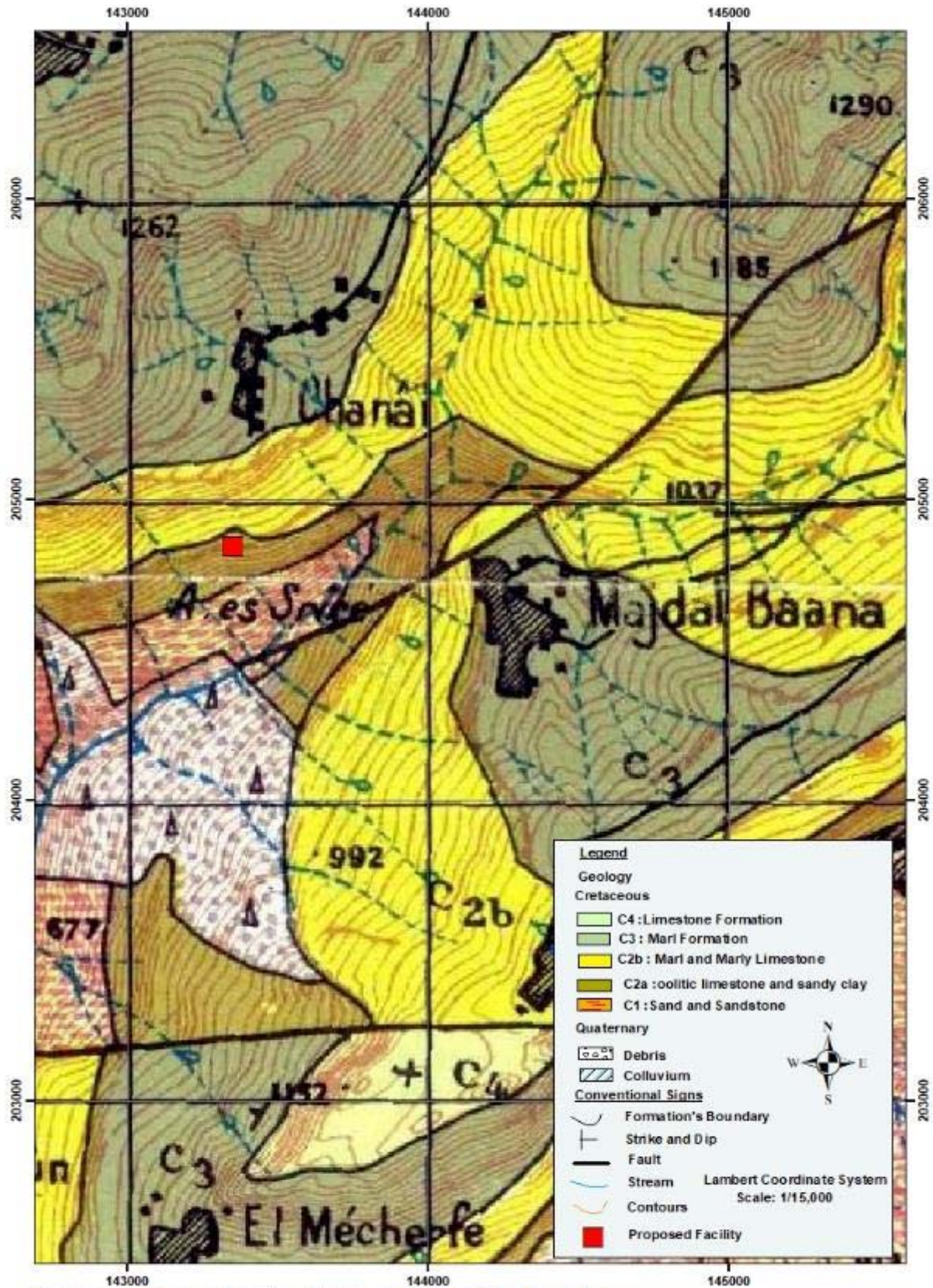


Photo 2– Show on the left side the rocks limestone required to be removed.



Photo 3 – Show the limestone layers dipping toward the north west.





General Geologic Map of the Study Area