



Groundwater Vulnerability Assessment Municipality of Zahleh

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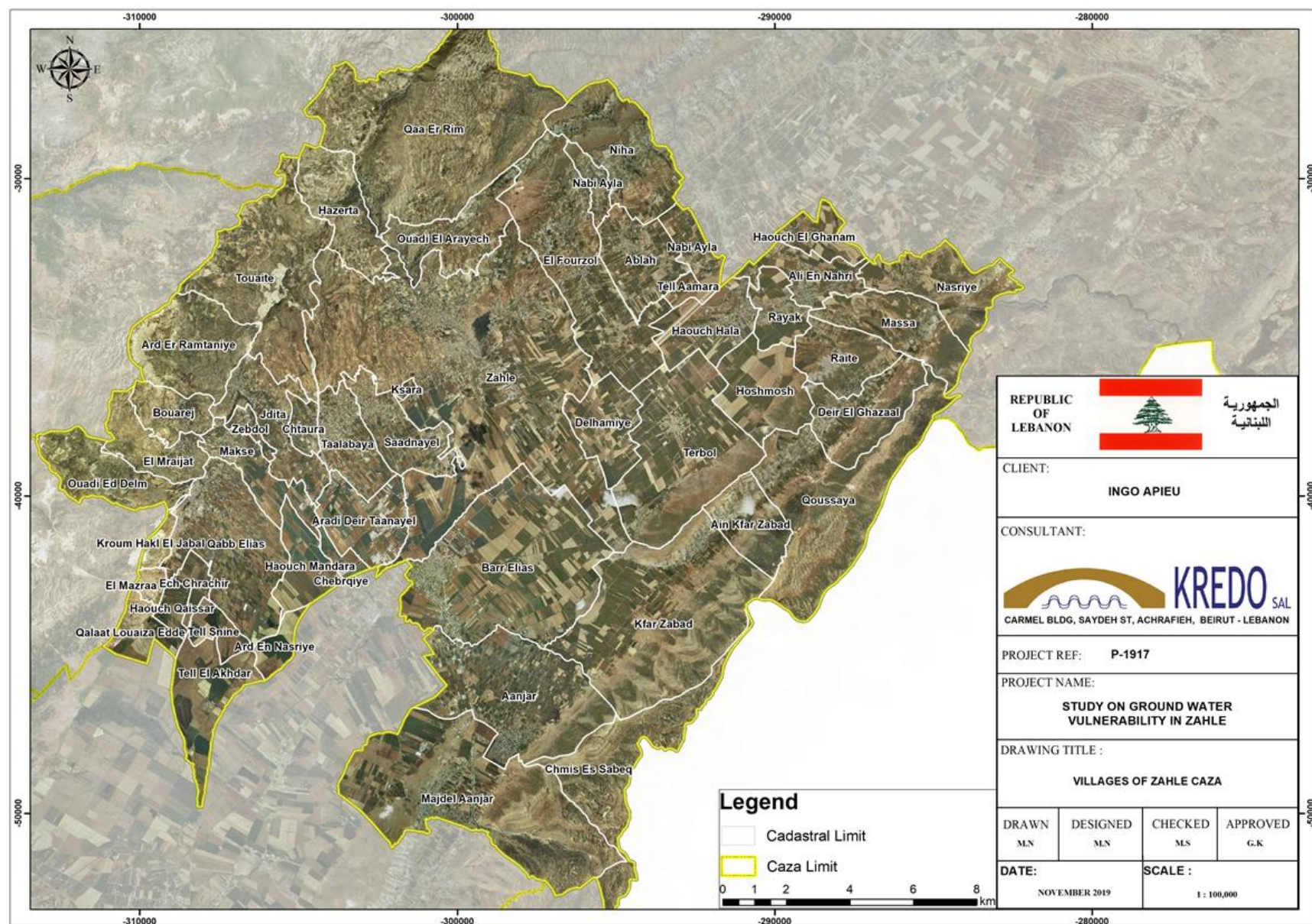
NATURAL vs. URBAN STORMWATER DRAINAGE



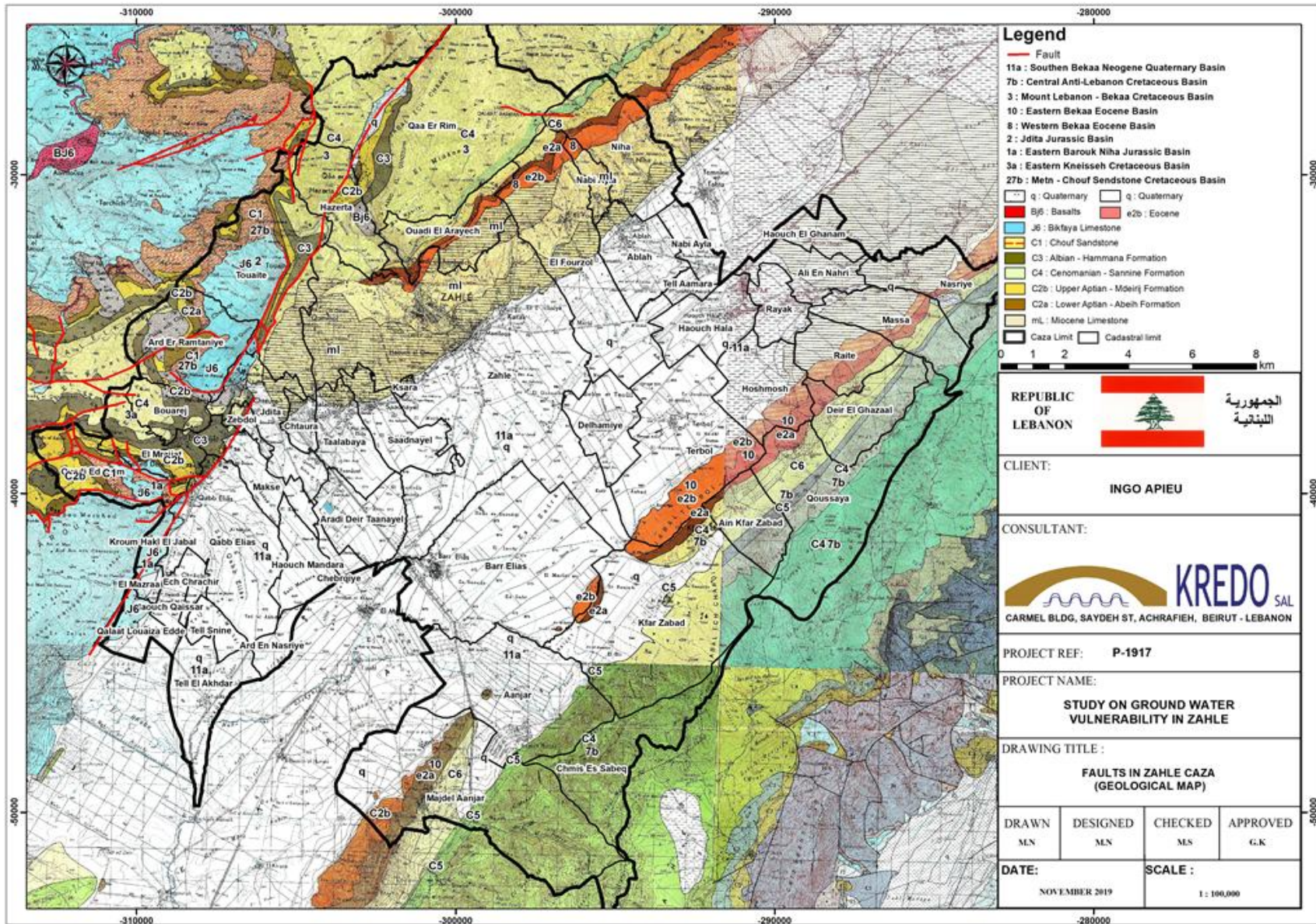
Stormwater infiltrates into the ground
Plants and trees work to absorb stormwater

Water hits impervious surface and runs off roofs, streets, parking lots etc.
Runoff goes into the sewers

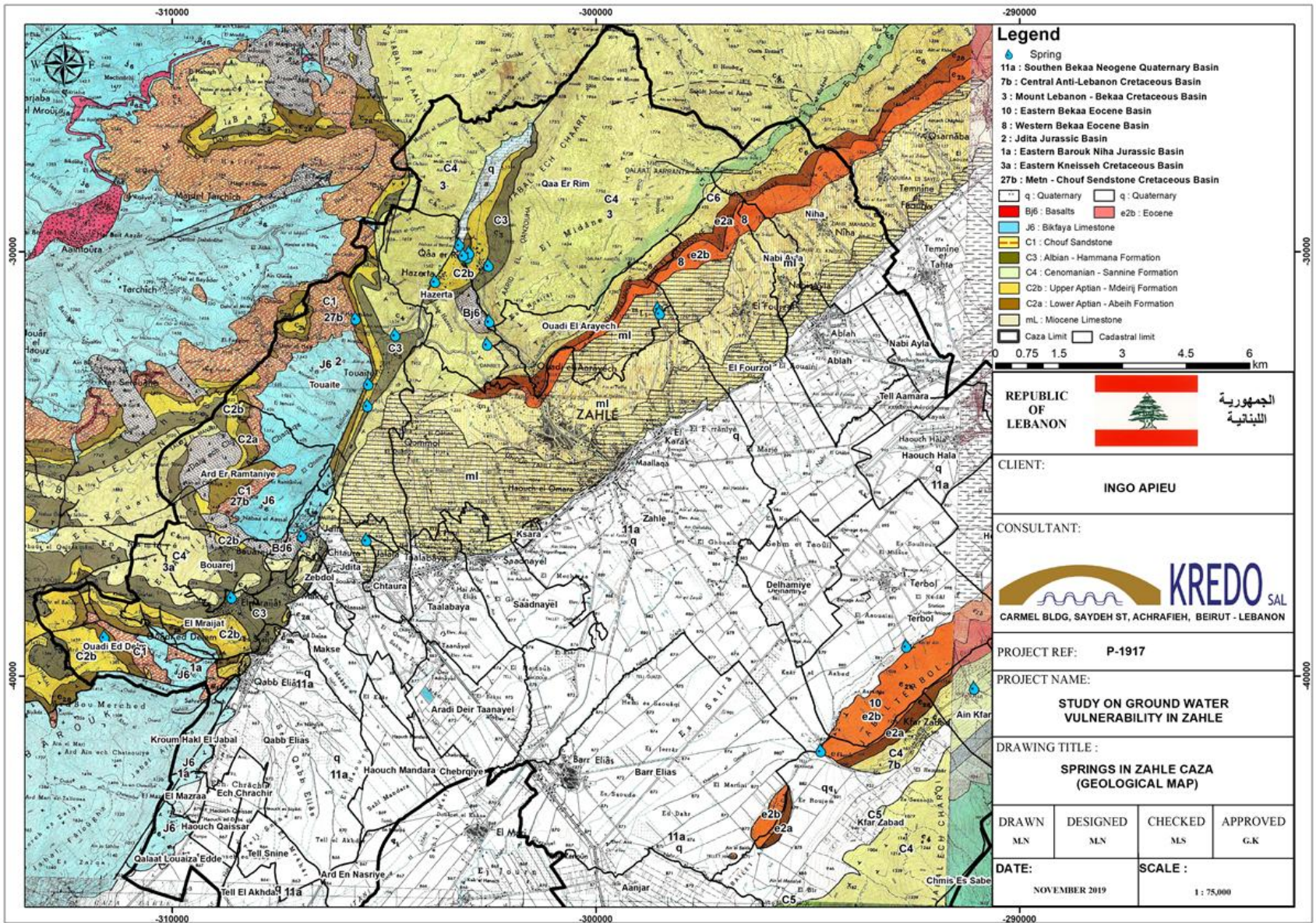
STUDY AREA - ZAHLE CAZA AND CADASTRAL LIMITS



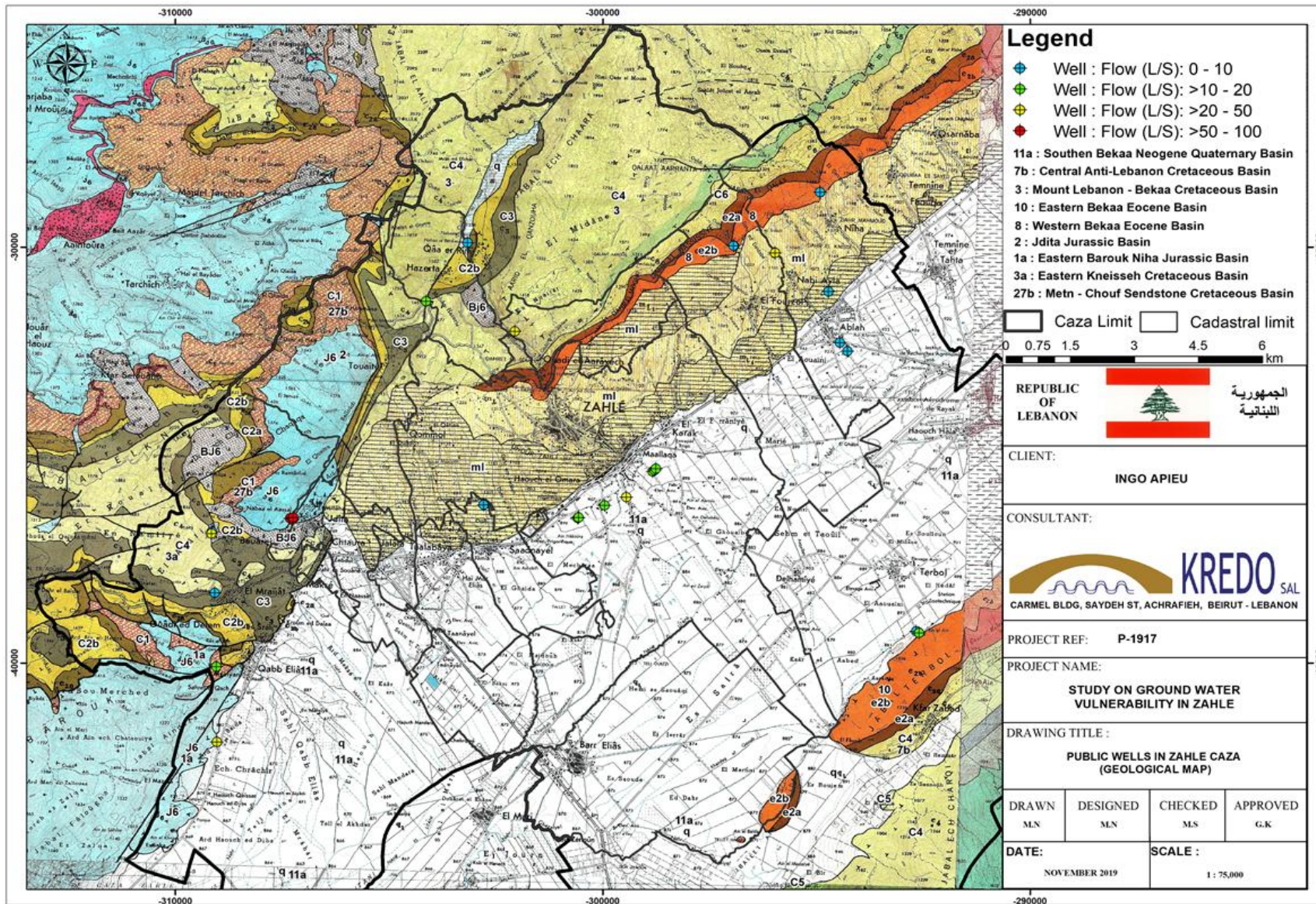
GEOLOGICAL MAP WITH FAULTS



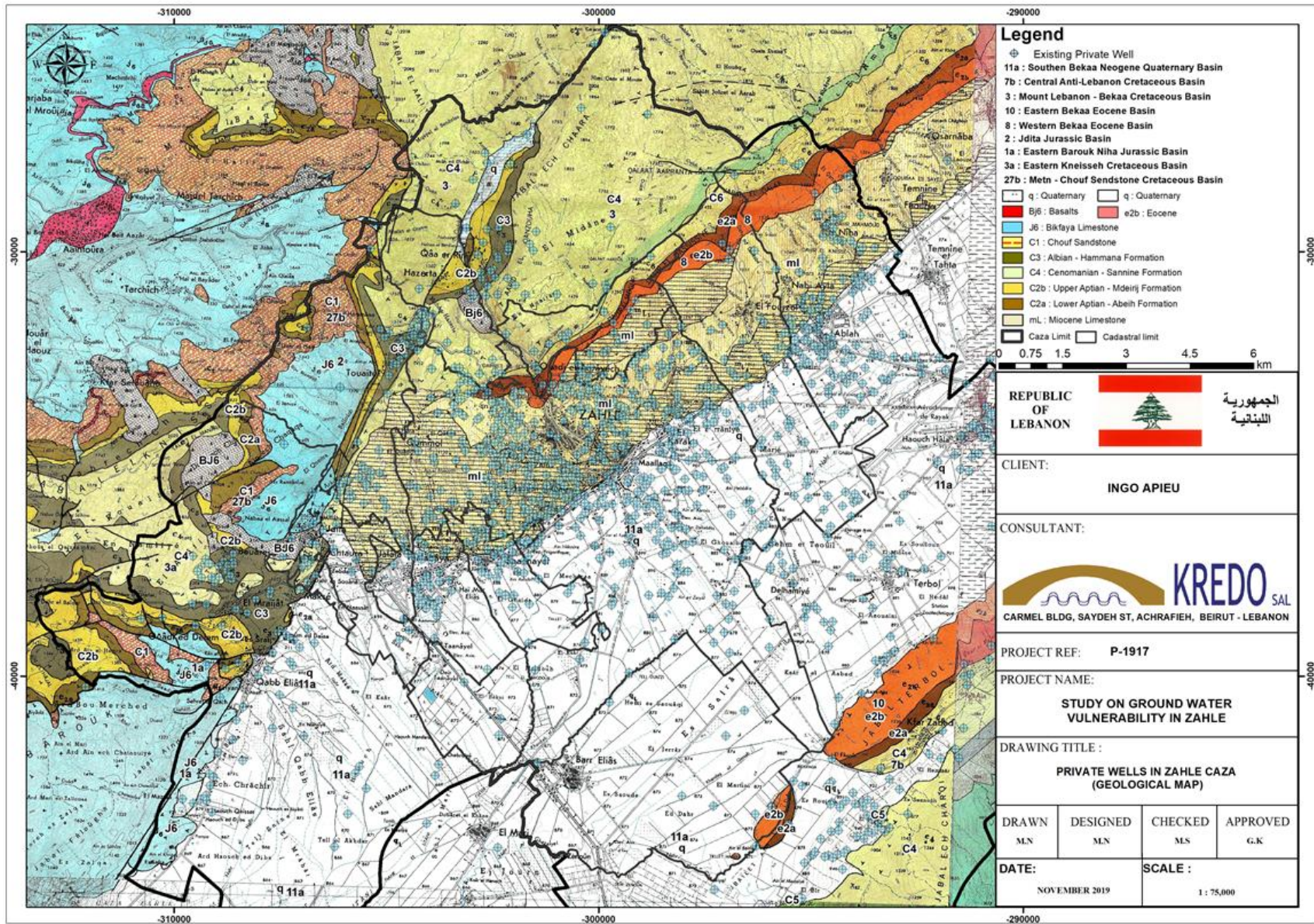
SPRINGS OF ZAHLEH



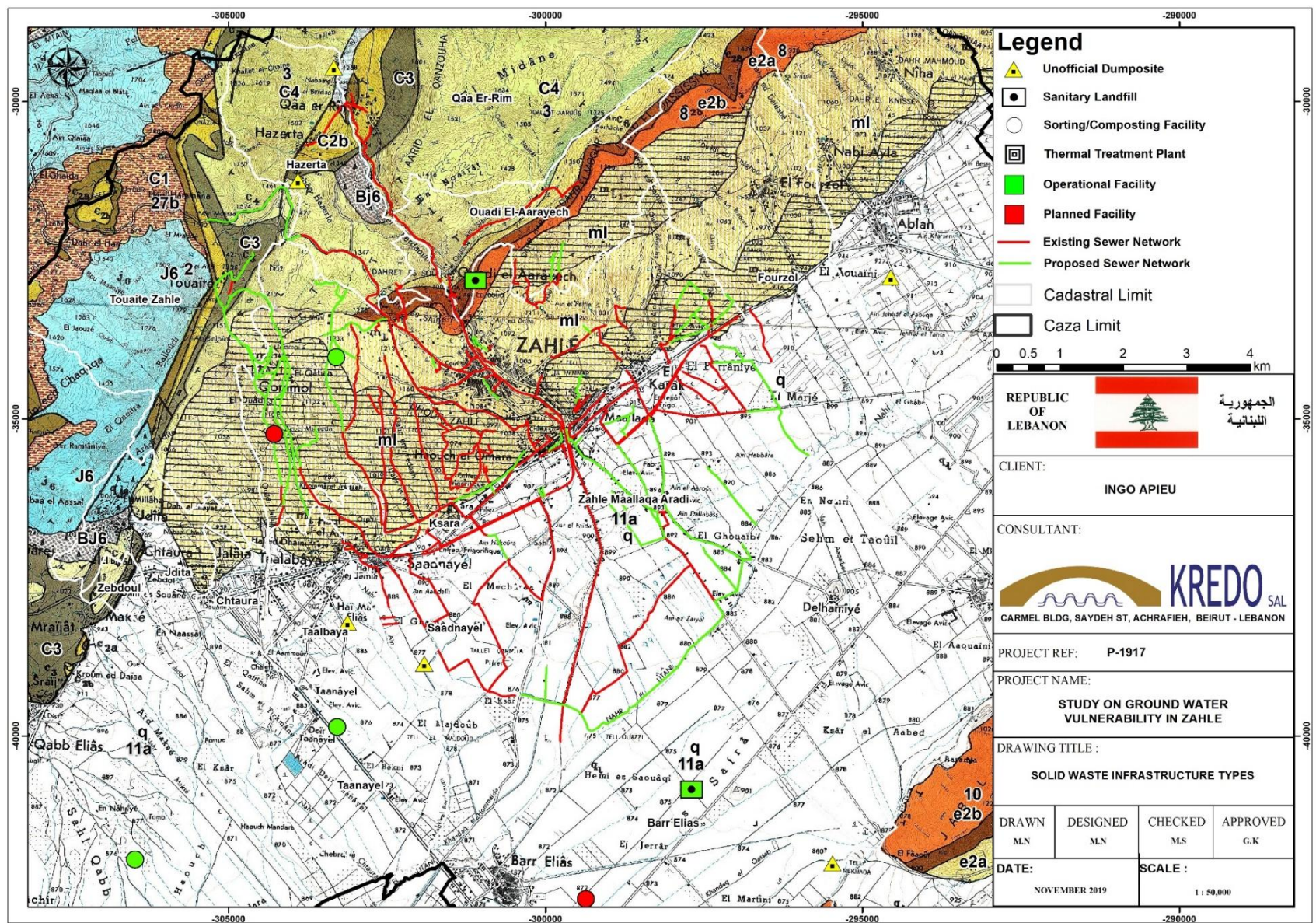
PUBLIC WELLS IN ZAHLE CAZA



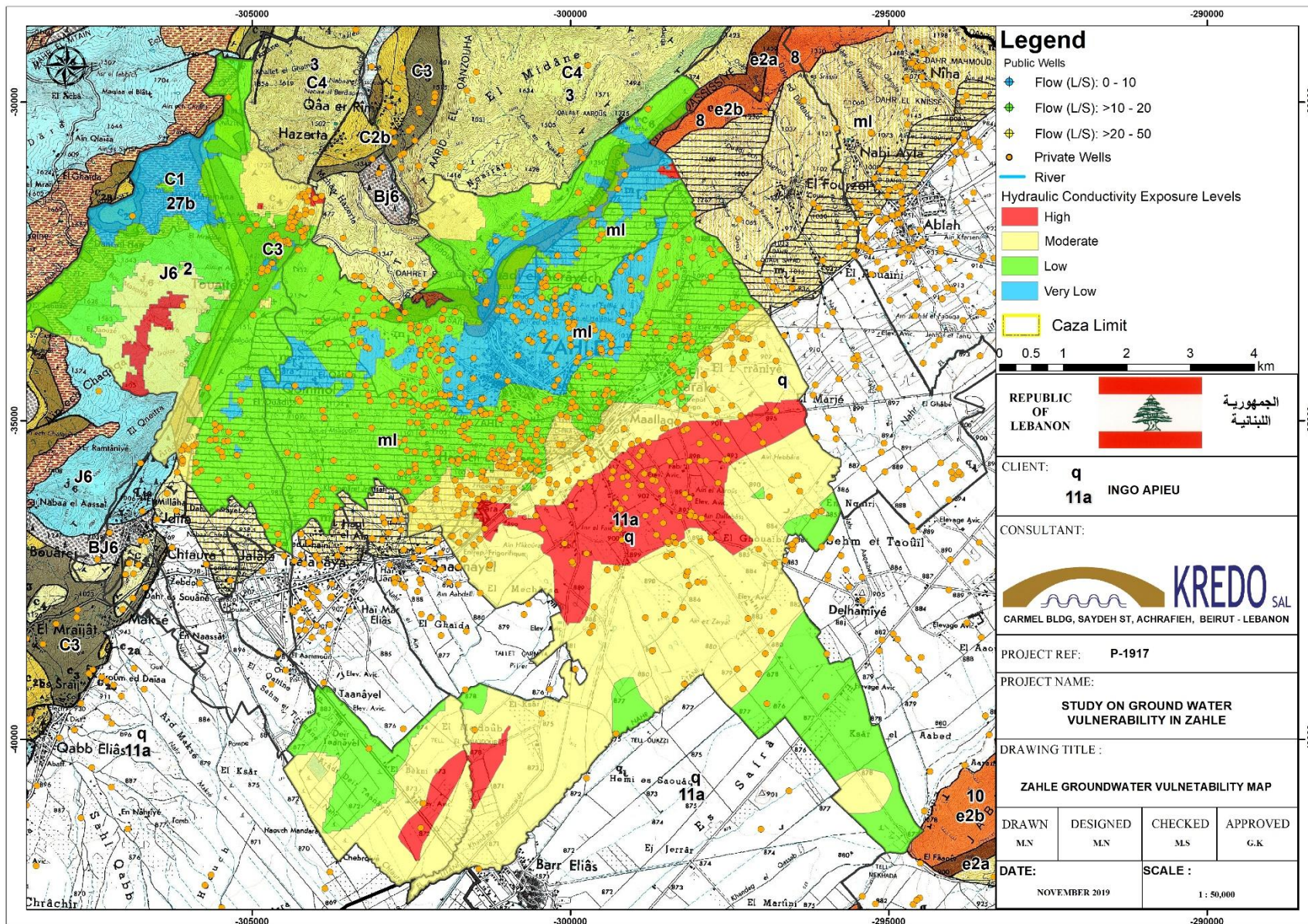
PRIVATE WELLS IN ZAHLEH



MUNICIPAL SOLID WASTE DUMPSITE & SEWER NETWORKS (CNRS, 2020)



GROUNDWATER VULNERABILITY MAP OF ZAHLE CAZA (INGO APIUE)



VULNERABILITY ASSESSMENT PER BASIN

Cazas	Aquifer Water Balance	Pollution Potential
Zahleh	Negative	High
Toueiti	Positive / Negative	Moderate
Wadi El Arayesh	Negative	High
Deir Tanaayel	Negative	High
Saadnayel	Negative	High
Bar Elias	Negative	High
Zebdol	Negative	High
Chtaura	Negative	High
Taalabaya	Negative	High
El Forzol	Negative	High
Hazerta	Positive	Low
Qaa El Rim	Positive	Low
Ksara	Negative	High
Jdita	Negative	High

RECOMMENDATIONS

Temporary Moratorium on Ground Water Abstraction in the Following Cazas (11/14):

Zahleh City

Wadi El Arayesh

Taanayel

Saadnayel

Bar Elias

Zebdol

Chtaura

Taalabaya

Fourzol

Jdita

Ksara

THANK YOU