

# GEOMELETI



GEOTECHNICAL ENGINEERS & GEOLOGISTS

HYDRAULIC DESIGNS

*...committed to the Art and Science  
of Geotechnical Engineering*

*...aiming for maximum quality  
through simple and cost-effective solutions*





## GENERAL

GEOMELETI is a Consulting Engineering Company managed and operated by experienced engineers / geologists committed to the art and science of Geotechnical / Infrastructure engineering, always aiming in giving high quality, simple and cost-effective solutions to the projects undertaken.

GEOMELETI, is staffed with experienced Engineers and Engineering Geologists and managed by P. Laskaratos and T. Katsoularis, having extensive experience respectively, among others, in all aspects of Geotechnical / Infrastructure Engineering (Railway Projects, Hydraulic works, Road and Bridge design, Building foundation design, Tunnels, Slope design etc).

The Company owns modern equipment including drilling-rigs, in situ and laboratory testing devices and with the use of specialized software, can give reliable, fast and economical design solutions to all Geotechnical Problems.

## OUR CLIENTS - COLLABORATIONS

GEOMELETI provides design, supervision and consulting services to the main organizations, managing infrastructure projects in Greece and abroad, such as:

- Greek Ministry of Public Works and Transportation,
- Greek Railways and Metro Authorities,
- Greek Highway Authorities,
- Infrastructure, Building and Industrial Contractors (Hochtief, AKTOR, GEK, TERNA, J&P, ABENGOA, etc)

Our collaborations also include major international engineering firms, such as, W.S. Atkins (UK), Faber-Maunsell (UK - USA), Hochtief (Germany), 3P (Austria), SSF and ISP (Germany), DBI International (Germany, Qatar), etc.

## MANAGEMENT

### **Petros Laskaratos:**

Geotechnical - Civil Engineer M.Sc, having more than 35 years of working experience in Geotechnical Engineering Projects, offered Consulting Services to the owners of the major highway authorities (Attiki Odos, Athens - Thessaloniki Highway, Egnatia Odos) in Greece, the Athens Metro and having an extensive experience in design of all types of infrastructure engineering projects, including building foundations, ground improvement, tunnels, bridges, dams, motorways, etc.

### **Tassos Katsoularis:**

Engineering Geologists, having more than 25 years of working experience in investigations, quality control and geological and geotechnical design for all types of infrastructure engineering projects, including buildings, tunnels, open-cuts, dams, bridges, motorways, railway lines, etc.

- Programming of Investigations
- Inspection of Geotechnical Works
- Interpretation of Investigation Results
- Sampling Boreholes: On-shore / off-shore
- Trial Pits
- Special Sampling Works
- In situ permeability Testing
- Standard Penetration Tests (S.P.T.)
- Plate Loading Testing
- Wagon Drillings
- Cone Penetrometer Testing
- Pressuremeter Testing
- Trial Embankments
- Borrow Areas Investigations
- Geophysical Investigations
- Physical Properties Laboratory Testing
- Engineering Properties Laboratory Testing
- Chemical Properties Laboratory Testing

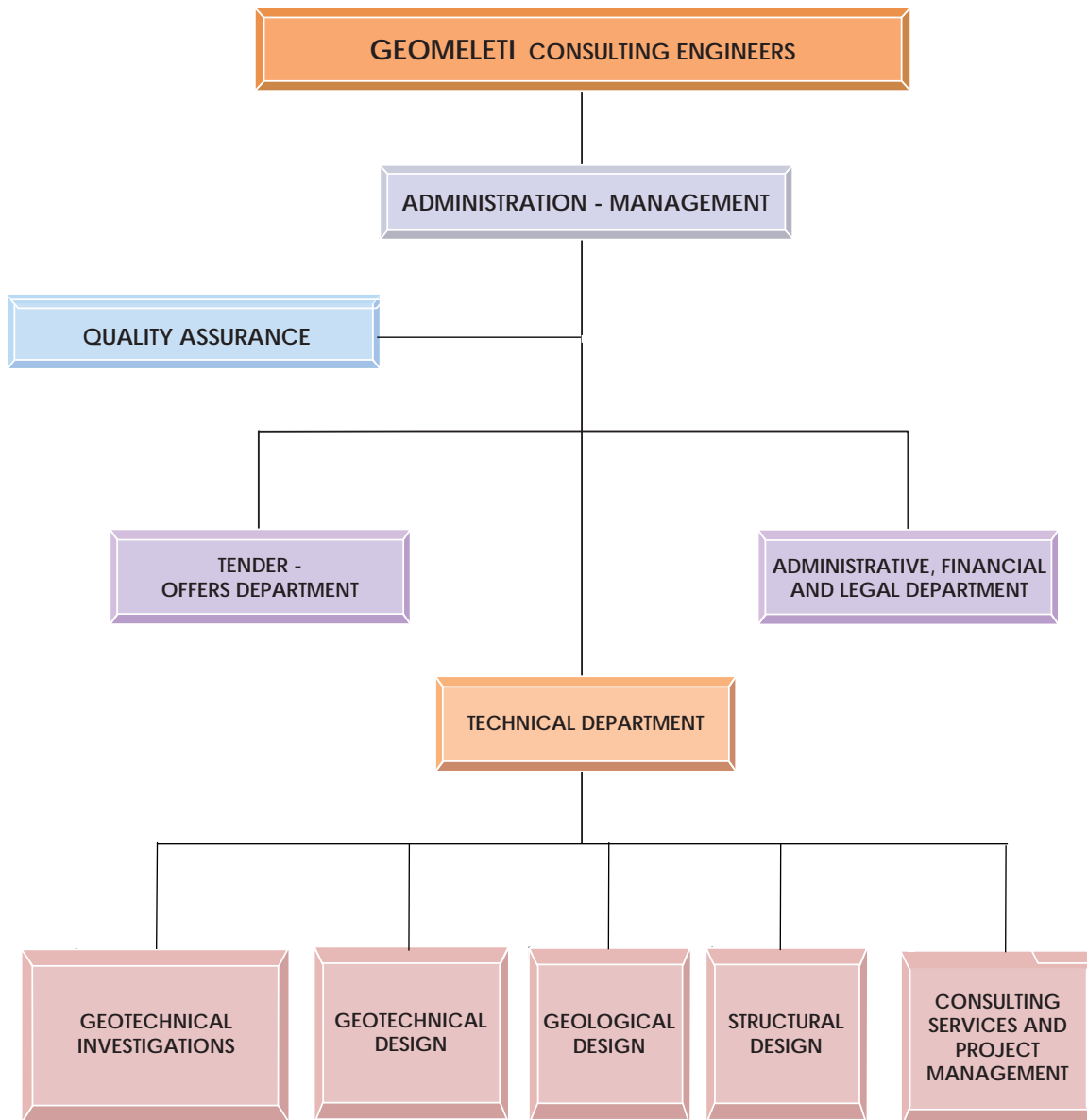
**GEOTECHNICAL  
INVESTIGATIONS**

- Shallow - Deep Foundations
- Ground Improvement / Treatment
- Underpinning
- Dams - Hydraulic Projects
- Borrow Areas - Damping Sites
- Embankments
- Excavations
- Slopes and Landslides
- Geosynthetics (Design and Application)
- Retaining Structures
- Road / Airfield Pavements
- Tunnels - Underground structures
- Water Filtration and Drainage
- Port Structures / Offshore Geotechnics
- Instrumentation
- Landfills
- Bridges
- Industrial / Residential Buildings
- Ground Water Management

**GEOTECHNICAL -STRUCTURAL  
ENGINEERING DESIGN**

- Checking of Design
- Expert Evaluations
- Inspection of Geotechnical Works
- Material Quality Control
- Observation / Interpretation of Instruments
- Modification of Design During Construction
- Preparation of Tender Documents
- Evaluation of Contractors' Offers

**GEOTECHNICAL  
CONSULTING SERVICES**



EXPERIENCE IN

# HYDRAULIC WORKS

DAMS, RESERVOIRS, etc.

20 Dams and 20 Off-River Reservoirs, Small Hydro Power Plants, etc.



**FLOOD RISK ASSESMENT AND FLOOD LINES DELINIATION FOR 13 PV PARKS AT KOZANI PREFECTURE, NOTHERN GREECE**

Client:  
SK PLUS / LIGHTSOURCE BP

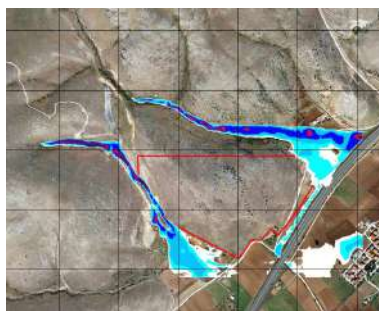
Flood Risk Assessment with Flood Lines Definition, for several Flood Return Periods (10, 20, 50, 100, 200, 500 years), provideing Depth, Velocity and Hazard Maps.



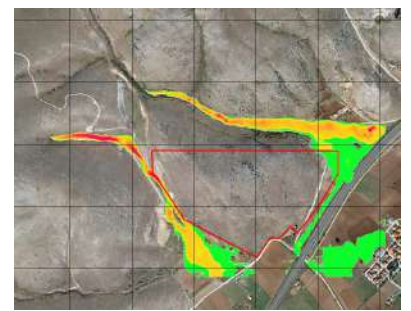
PV Parks Location



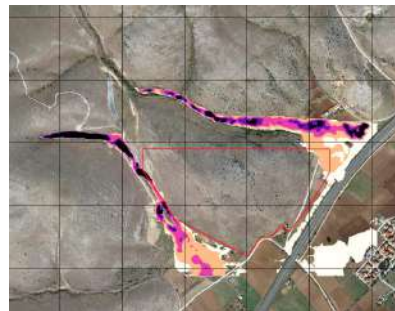
Main stream's flow directions Model



Water Depths modelling Results Map



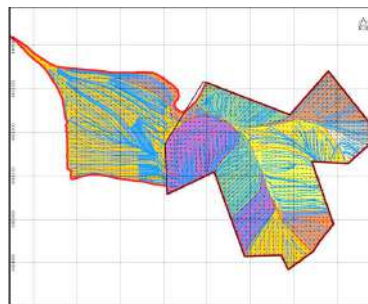
Water Velocities modelling Results Map



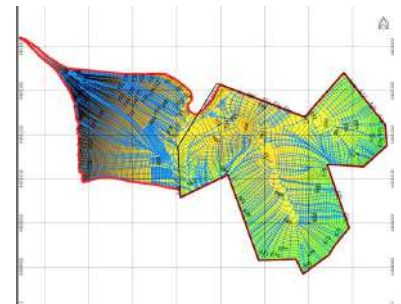
Flood Hazard Map



Catchment Delination



Sub-Catchments division with flow direction arrows Map



Contour Lines for the greater area Map

**FLOOD RISK ASSESMENT AND FLOOD LINES DELINIATION FOR 8 PV PARKS AT KOZANI PREFECTURE, NOTHERN GREECE**

Client:  
KIEFER/ENEL Green Power

Flood Risk Assessment with Flood Lines Definition, for several Flood Return Periods (10, 20, 50, 100, 200, 500 years), provideing Depth, Velocity and Hazard Maps.



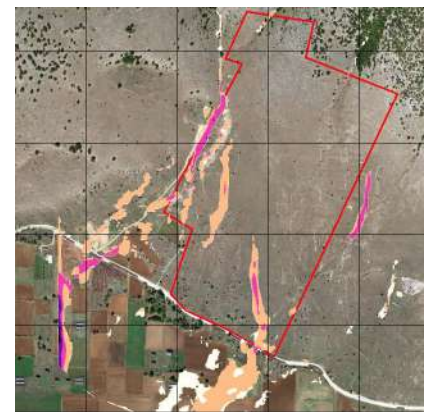
PV Parks Location



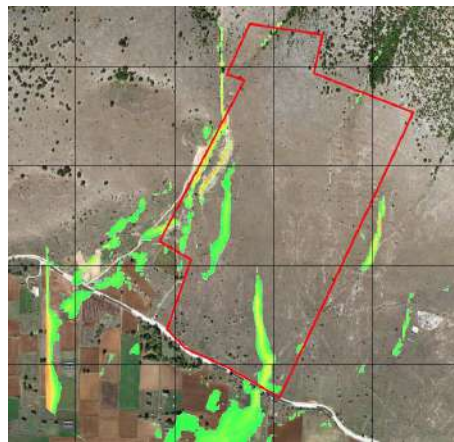
Main stream's flow directions Model



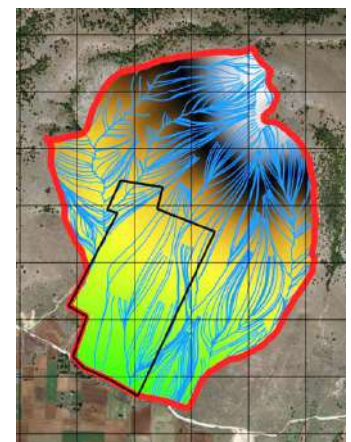
Water Depths modelling Results Map



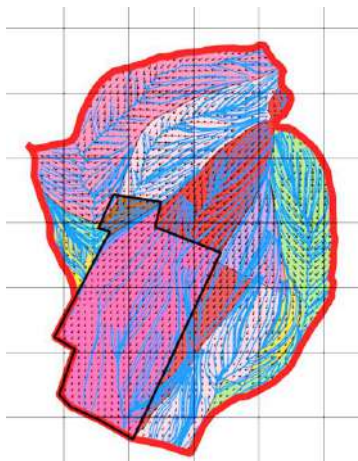
Water Velocities modelling Results Map



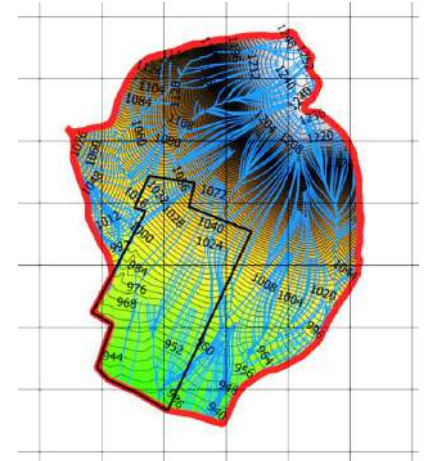
Flood Hazard Map



Catchment Delineation



Sub-Catchments division with flow direction arrows Map



Contour Lines for the greater area Map



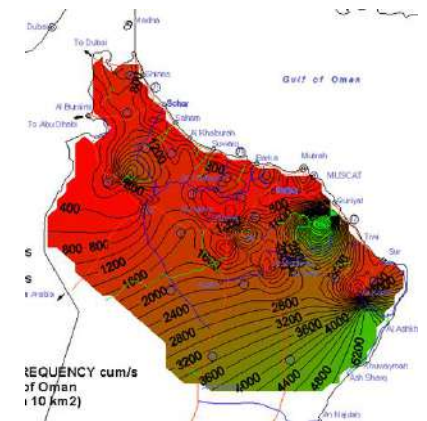
**FLOOD RISK ASSESMENT AND FLOOD LINES DELINIATION OF PV PARKS OPWP Manah Solar I IPP and Manah Solar II IPP, IN OMAN**

Client:  
ASD SQUARE/EDF

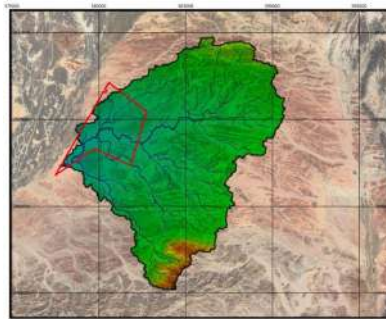
Flood Risk Assessment with Flood Lines Definition, for several Flood Return Periods (10, 20, 50, 100, 200, 500 years), providing Depth, Velocity and Hazard Maps.



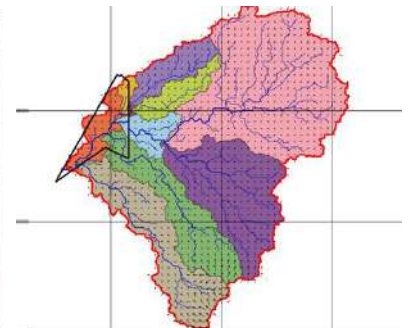
Location of the Parks



(50years) Flood Peaks Frequency cum/s, for areas more than 10km2 Northern Oman



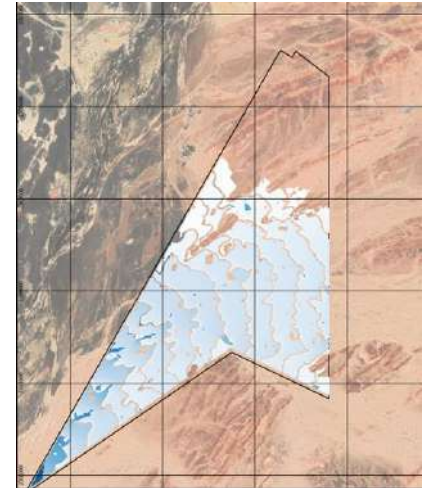
Catchment of wadis coming through site area



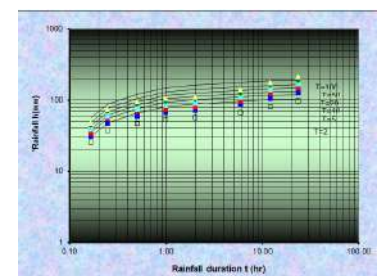
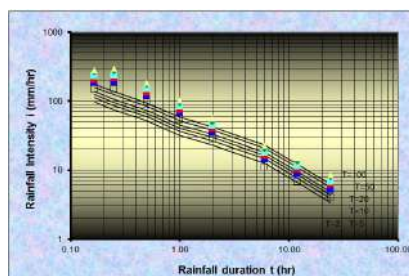
Flow direction arrows for the Catchments



Water Velocities modelling Results Map



Water Depths modelling Results Map



FUj6ZU~ bHybg]m8i fUhcbl: fYei YbWm.....FUj6ZU~8YdH\8i fUhcbl: fYei YbWm  
fB: E'7i fj Yg.....fB8: E'7i fj Yg

## **"EGARES" OFF-RIVER RESERVOIR, NAXOS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Geotechnical Consulting Services and Quality Control during the construction of the reservoir, 20m in height and 150m long and 600.000m<sup>3</sup> in volume.



## **"PANAGIOTIKO" DAM IN MAGNISIA MUNICIPALITY, THESSALY, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Final Geotechnical Design of the rock-fill Dam, 40m in height, 150m long and 2.500.000m<sup>3</sup> in volume with an up-stream concrete slab.



## **"DESKATI" DAM OF GREVENA CITY AREA, MACEDONIA PREFECTURE, GREECE**

Client:  
MUNICIPALITY OF DESKATI

Geotechnical Design of the earth Fill Dam, 26m in height, 280m long and 1.000.000m<sup>3</sup> in volume.



**“KATO PITSA” OFF-RIVER  
RESERVOIR, PELOPONNESSE  
PREFECTURE, GREECE**

Client:  
MUNICIPALITY OF KORINTHIA

Consulting Services - Quality Control  
during construction of the Reservoir,  
15m in height, 120m long and  
315.000m<sup>3</sup> in volume.



**“ERESSOS” DAM,  
LESVOS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Consulting Services during  
construction of the Dam, 30m in  
height, 350m long and 2.750.000m<sup>3</sup>  
in volume.



**“KORIS GEFIRI” DAM,  
CHIOS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Consulting Services - Quality Control  
during construction of the R.C.C.  
Dam, 37m in height, 120m long and  
3.000.000 m<sup>3</sup> in volume.



**MAKROCHORI II SMALL  
HYDROELECTRIC POWER PLANT,  
VERIA, GREECE**

Client:  
GREEK PUBLIC POWER CORPORATION

Geotechnical Design of the Deviation  
Canal for Electric Power Production



**"TELMATA" DAM AT  
SKOURIOTISSA MINE, CYPRUS**

Client:  
HELLENIC COPPER MINES

Special Design and Geotechnical  
Investigations. Inspection of Earth Fill  
Tailing Dam, 45m in height, 700m long



**"VRACHOS" DAM, KASTORIA  
PREFECTURE, GREECE**

Client:  
MINISTRY OF AGRICULTURE

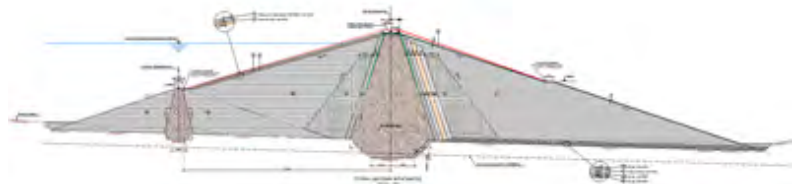
Consulting Services for the construction of the rock Fill Dam, 38m in height, 265m long, 8m wide and 1.948.500m<sup>3</sup> in volume.



**"ASOPOS" DAM,  
KORINTHOS PREFECTURE,  
GREECE**

Client:  
PELOPONNESE PREFECTURE / MINISTRY  
OF AGRICULTURE

Geotechnical Investigation and Design and Consulting Services of the Earth Fill Dam, 70m in height, 10m wide, 425m long and 4,100,000m<sup>3</sup> in volume.



**"FEREKAMPOS" DAM AND CONDUIT, SKIROS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

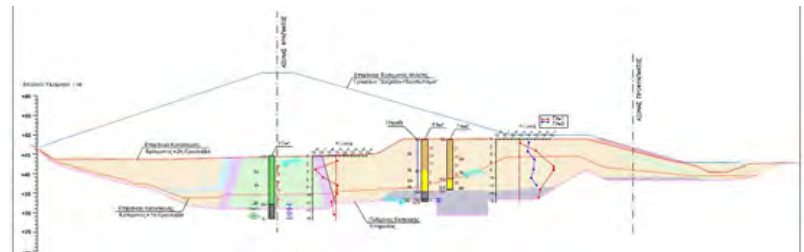
Consulting Services for the construction of the Rock Fill Dam, 25m in height, 245m long, 6m wide and 900.000m<sup>3</sup> in volume.



**"KRITINIA" DAM, RHODES ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

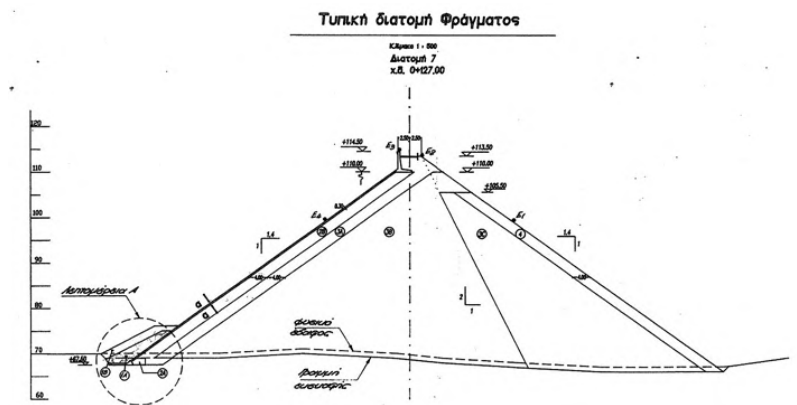
Special Design / Consulting Services for the construction of the earth Fill Dam with Clay Core, 35.5m in height, 557m long, 8m wide and 2,100,000m<sup>3</sup> in volume.



**"TSIKALARIO" DAM,  
NAXOS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Consulting Services for the construction of the rock Fill Dam, 43m in height, 257m long and 3.000.000m<sup>3</sup> in volume.



**CHALAVRIANOS DAM,  
ARCHANES MUNICIPALITY,  
CRETE, GREECE**

Client:  
MUNICIPALITY OF ARCHANES /  
MINISTRY OF AGRICULTURE

Geotechnical Investigation / Design and Consulting Services for the construction of the Earth Fill Dam, 31m in height, 10m wide and 644.500m<sup>3</sup> in volume.



## “ROUKOUNAS” DAM, ANAFI ISLAND, GREECE

Client:  
SOUTH AEGEAN PREFECTURE

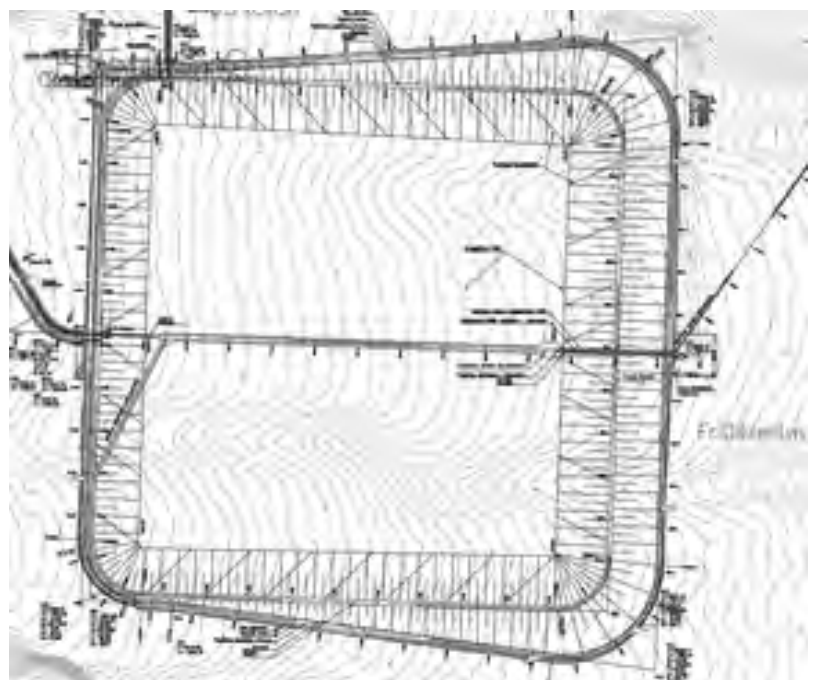
Geotechnical Investigation and Design of the masonry Dam, 25m in height, 100m long, and width 2.5m.



## “XERIAS” OFF-RIVER RESERVOIR, MAGNISIA PREFECTURE, GREECE

Client:  
MINISTRY OF AGRICULTURE /  
MUNICIPALITY OF ALMIROS

Geotechnical Investigations and Design and Consulting Services for the construction of the off-river Reservoir, 600m long, 600m wide and 4.000.000m<sup>3</sup> in volume.

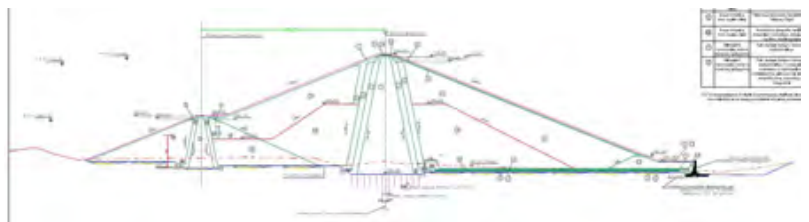
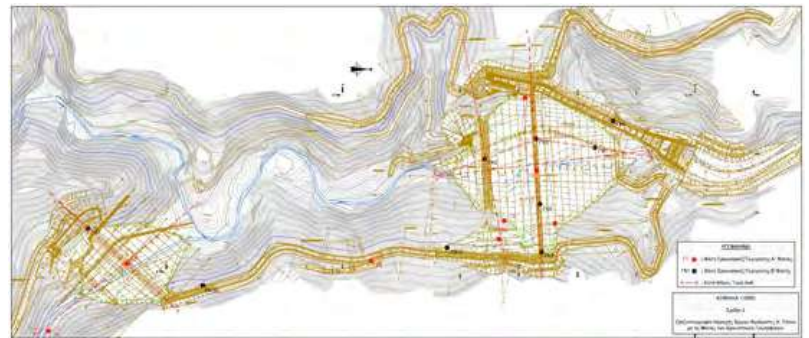
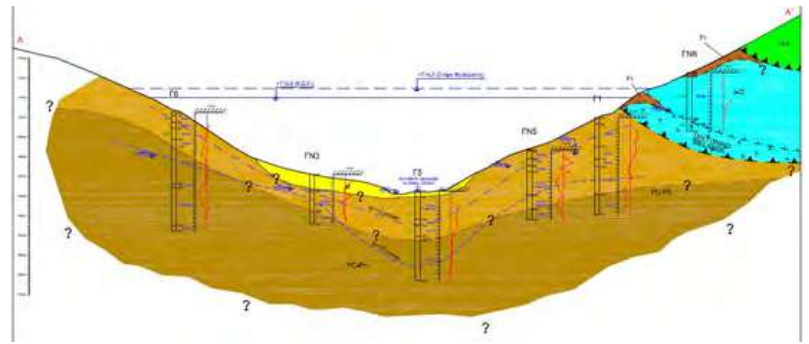




**"TANOS" DAM, ARKADIA  
PREFECTURE, GREECE**

Client:  
MINISTRY OF AGRICULTURE

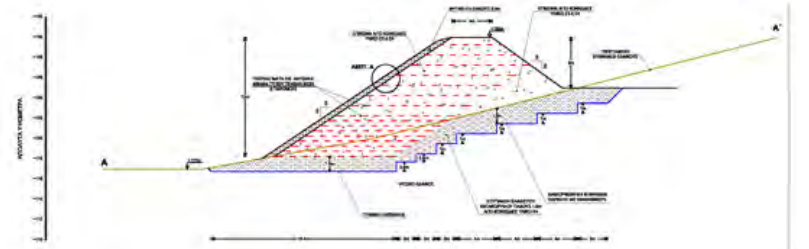
Geotechnical Investigation and Design of the Earth Fill Dam, 57.5m in height, 285m long and 1.200.000m<sup>3</sup> in volume.



**"MARGARITI" OFF-RIVER  
RESERVOIR, THESPROTIA  
PREFECTURE, GREECE**

Client:  
MINISTRY OF AGRICULTURE

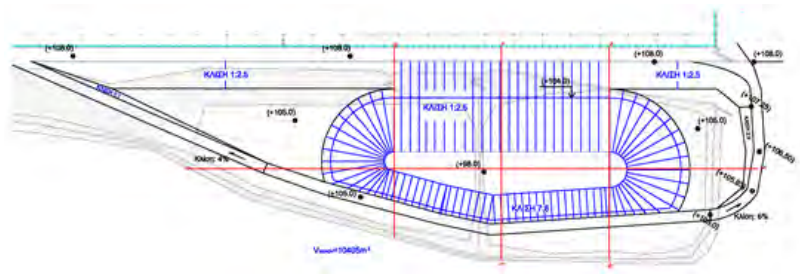
Geotechnical Investigation and Design of a Reservoir, 12m in height, 160m long, 29m wide and 24.000m<sup>3</sup> in volume.



**RESERVOIR FOR THE IRRIGATION OF AN 100 ACRE GREENHOUSE, IN DRAMA, GREECE**

Client:  
LINKCHART HELLAS A.E.

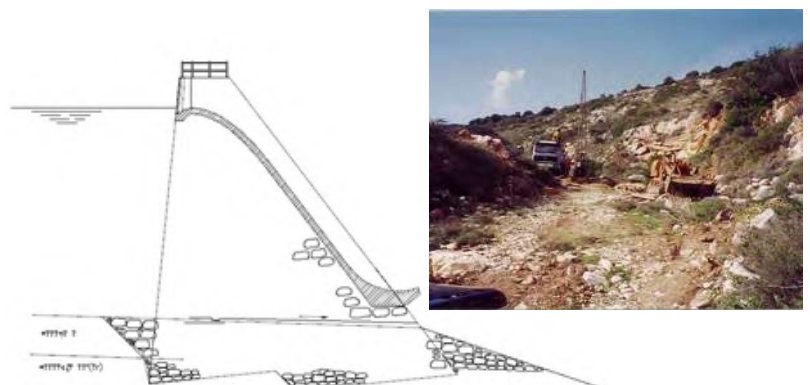
Investigations, Designs and Consulting Services for the construction of the Reservoir, with perimeter of 255m and 10,000m<sup>3</sup> in volume.



**“VRONTAS” DAM, PAROS ISLAND, GREECE**

Client:  
CYKLADES PREFECTURE

Geotechnical Investigations and Design of the Rock Fill Dam, 20m in height, 100m long and surface of 27,000m<sup>2</sup>



**"AGIOS KIRIKOS" OFF-RIVER RESERVOIR, IKARIA ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

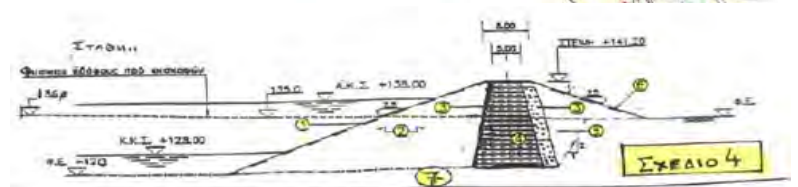
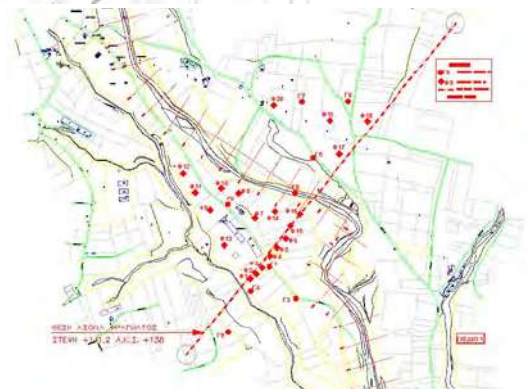
Consulting Services for the construction of a Reservoir, 11m in height, 265m long, 5m wide and 150.000m<sup>3</sup> in volume.



**FLOOD PROTECTION DAM IN MEGARA GREATER ATHENS AREA, GREECE**

Client:  
WEST ATTICA PREFECTURE

Geotechnical Investigations and Design for the construction of an Earth Dam with Clay Core, 20m in height, 8m wide, 885m long, 370,000m<sup>3</sup> in Dam Volume, basin surface of 270 acres and Slopes 1 : 2.5.



**"VAKETA" DAM,  
TINOS ISLAND**

Client:  
CYKLADES PREFECTURE

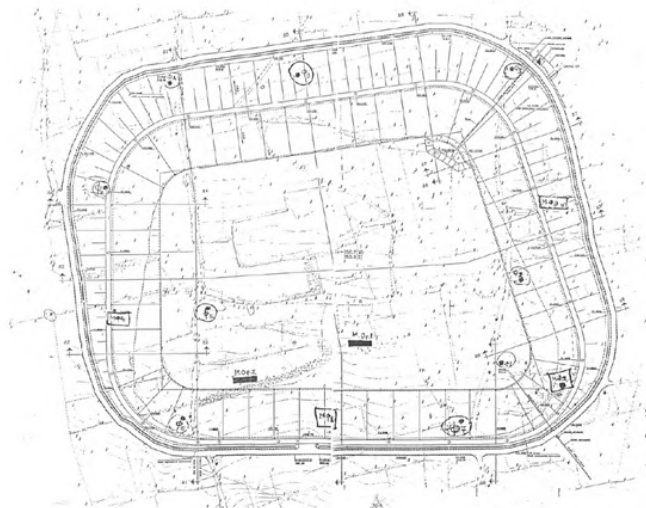
Geotechnical Investigations and Design of the masonry Dam, 20m in height and 100m long.



**"ANOZIA" RESERVOIR, LAKONIA  
PREFECTURE, GREECE**

Client:  
MINISTRY OF AGRICULTURE

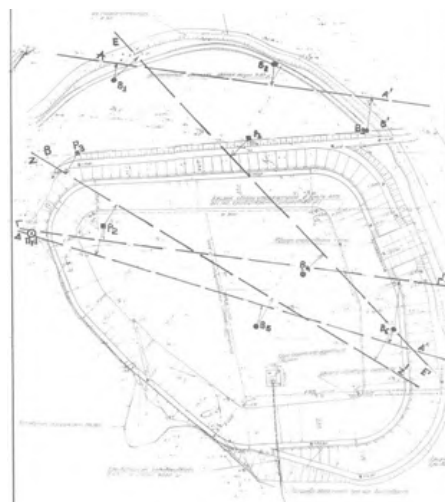
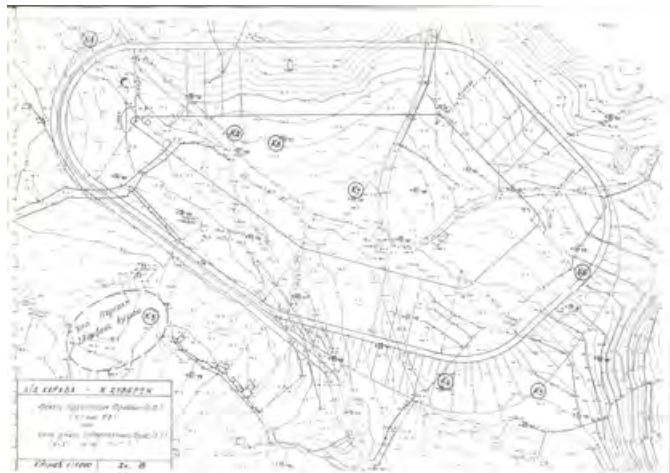
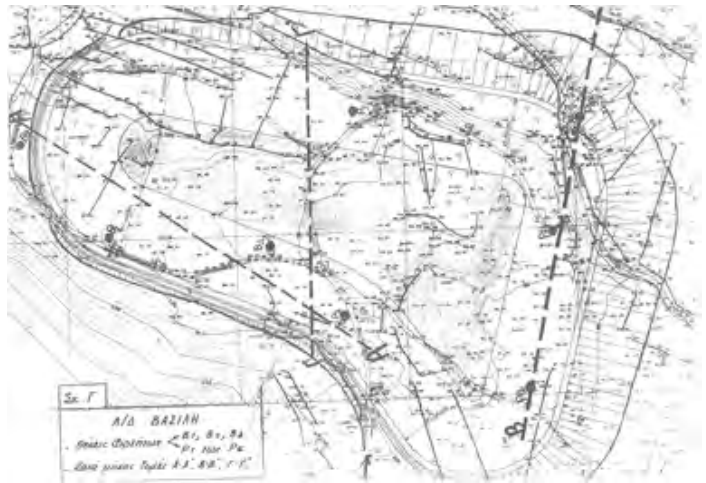
Geotechnical Investigations and Design of the Reservoir, 1,200m in perimeter and 600.000m<sup>3</sup> in volume.



**SARONIKOS OFF-RIVER RESERVOIRS:  
"METOCHI" IN HYDRA ISLAND,  
"VASILI - KARAVA - PERISTERIONA" IN KITHIRA ISLAND  
"LAKA" IN AEGINA ISLAND,  
GREECE**

Client:  
MINISTRY OF AGRICULTURE

Geotechnical Investigations and Design of 5 off-river Reservoirs in Saronikos area with the following characteristics:  
"Metochi" - 800.000m<sup>3</sup> in volume.  
"Vasili" - 900m in perimeter and 400.000m<sup>3</sup>, in volume  
"Karava" - 890m in perimeter and 360.000m<sup>3</sup>, in volume  
"Peristeriona" - 700m in perimeter and 25.000m<sup>3</sup> in volume  
"Laka" - 200.000m<sup>3</sup> in volume.



**RESERVOIRS: "PYRGOULIA", "LAGADIA", NEVROPOLI", ARTA PREFECTURE, GREECE**

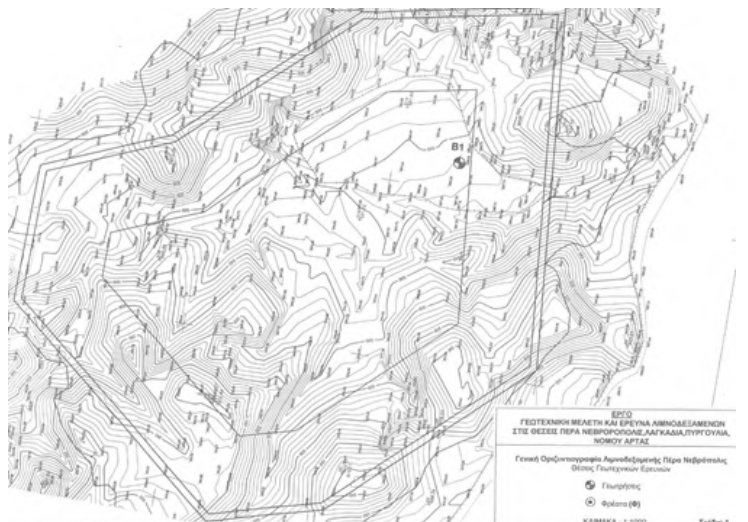
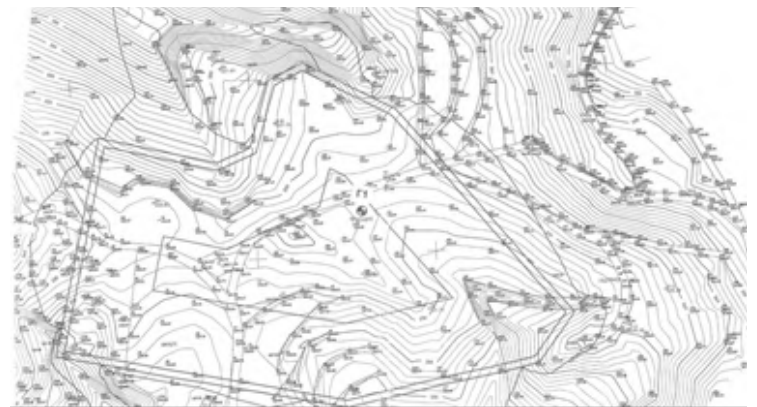
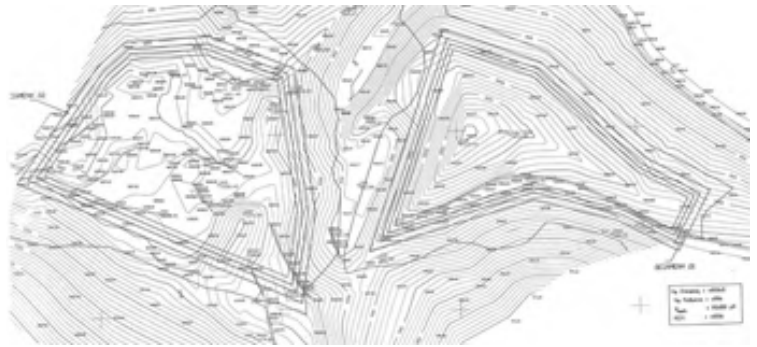
Client:  
MINISTRY OF AGRICULTURE

Geotechnical Investigations and Design of 3 Reservoirs in Arta Prefecture with the following characteristics:

"Lagadia"  
300.000m<sup>3</sup> in volume.

"Nevropoli"  
440,000m<sup>3</sup> in volume.

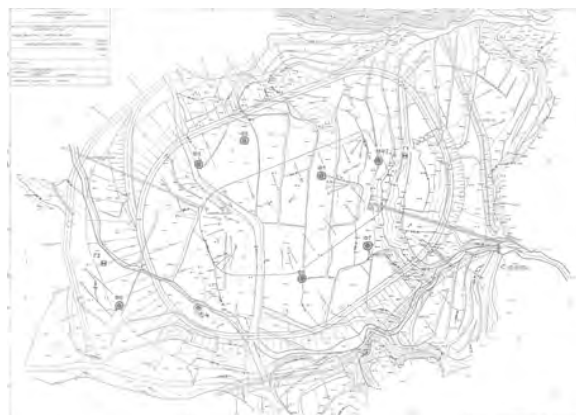
"Pyrgoulia"  
180.000m<sup>3</sup> in volume.



**"PLAKA - LIVADIA", RESERVOIRS  
ARTA PREFECTURE, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Geotechnical Investigations and Design  
of 2 Reservoirs in Arta Prefecture  
330.000m<sup>3</sup> in total volume



**LISSOS DAM,  
THRACE PREFECTURE**

Client:  
THRACE PREFECTURE

Geotechnical Design of Dam, 20m in  
height, 150m long and 500.000m<sup>3</sup> in  
volume.



**"SEDOUNTAS" DAM LESVOS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Special Geotechnical Design of the Earth Fill Dam, 20m in height and 300.000m<sup>3</sup> in volume.



**"MITHIMNA" OFF-RIVER RESERVOIR, LESVOS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Consulting Services for the Construction of the Reservoir, 13m in height, 280m long, 4m wide and 580.000m<sup>3</sup> in volume.





**"KERAMI" OFF-RIVER RESERVOIR,  
LESVOS ISLAND, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Consulting Services for the construction of the off-river Reservoir, 13m in height, 450m long, 4m wide and 560.000m<sup>3</sup> in volume.



**"KARATZAS" OFF-RIVER  
RESERVOIR, TROIZINIA,  
PELOPONNESE PREFECTURE,  
GREECE**

Client:  
MUNICIPALITY OF PIRAEUS

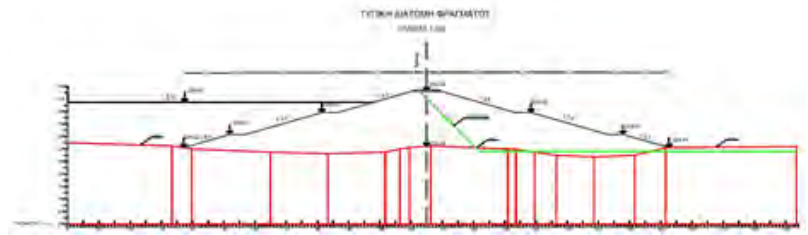
Geotechnical Investigations, Design and Monitoring for the construction of the Reservoir, 12m in height, 875m long and 440.000m<sup>3</sup> in volume.



**"BADIA" DAM, ARKALOCHORI, KRETE ISLAND, GREECE**

Client:  
MUNICIPALITY OF ARKALOCHORI

Geotechnical Investigations and Design for the construction of the Earth Dam, 18m in height, 310m long, 155m wide and 275.000m<sup>3</sup> in volume.



**"VORVAS" DAM, LAKONIA PREFECTURE, GREECE**

Client:  
MINISTRY OF AGRICULTURE

Full Geotechnical Investigations and Design for the construction of the Earth Dam.



EXPERIENCE IN

# GEOTECHNICAL INVESTIGATIONS



More than 50,000m of coring boreholes, both on-shore and off-shore with laboratory and in-situ testing, for more than 500 different projects.



Our company has the capability and experience to execute a wide range of field and laboratory testing / investigations.

Our experience includes execution of more than 50,000m of coring boreholes, both on-shore and off-shore, for more than 500 different projects, with corresponding laboratory testing and evaluation of their results. For these projects programming and inspection of the works were included in our scope.



*On-Shore Boreholes*



*Off-Shore Boreholes*



*Wagon-Drilling*



Laboratory Testing



*Trial Excavation*



*Static Plate Load Test Equipment*



*Dynamic Plate Load Test Equipment*



*Dynamic Cone Penetrometer Equipment*



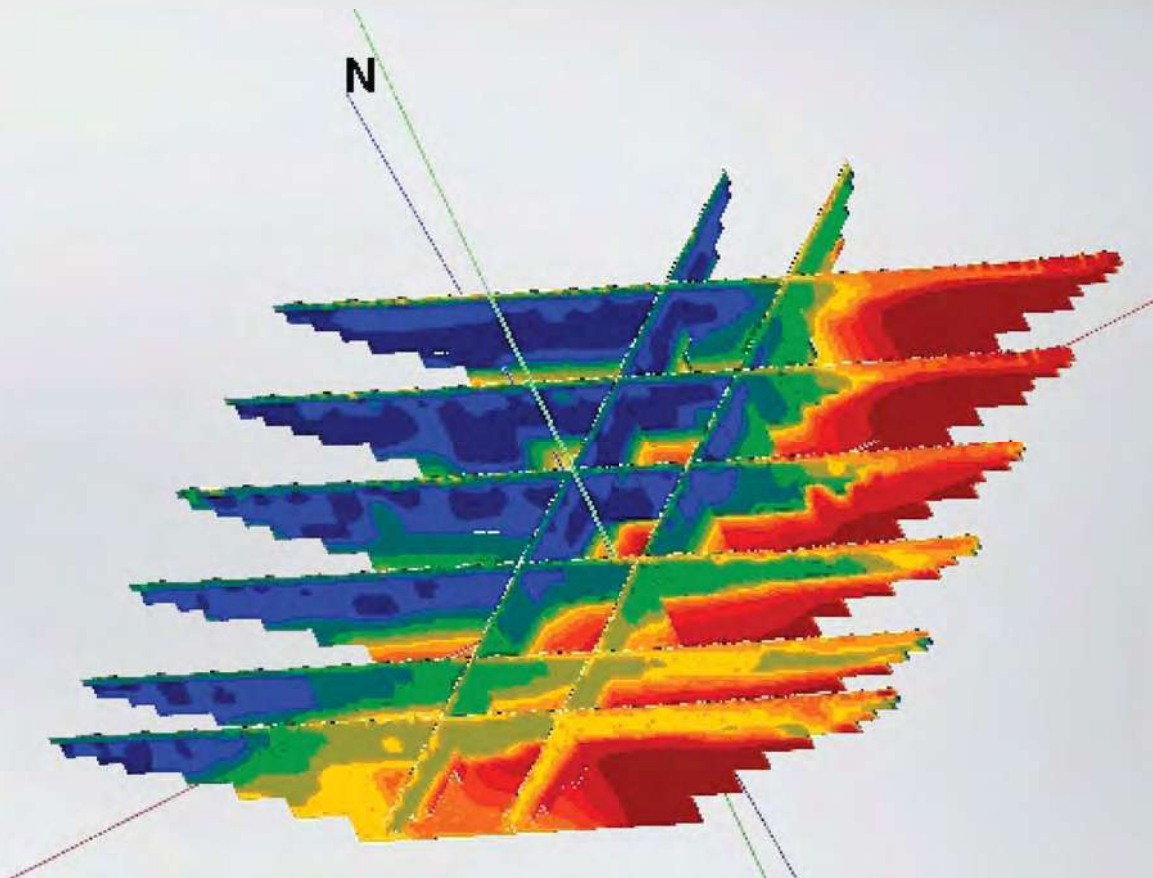
*Soil Sampling*

EXPERIENCE IN

# G E O P H Y S I C A L I N V E S T I G A T I O N S



Karsts - Cavities - Sinkholes - Fracture Zones,  
Utilities - Buried Structures,  
Reinforcement - Voids of Concrete,  
Seismic/Dynamic Properties of Subgrade Materials,  
Unexploded Ordnances (UXO's), Marine - Hydrographic Services  
Environmental Applications, Parameters for Grounding Design



## KARSTS - CAVITIES - SINKHOLES - GROUND WATER TABLE - FRACTURE ZONES

Project:  
"KTENIAS", TRIPOLIS GREATER AREA,  
PELOPONNESSE, GREECE

### Scope:

- Detection of cavities-karsts, sinkholes and fracture zones with non-destructive geophysical methods

### Geophysical Methods:

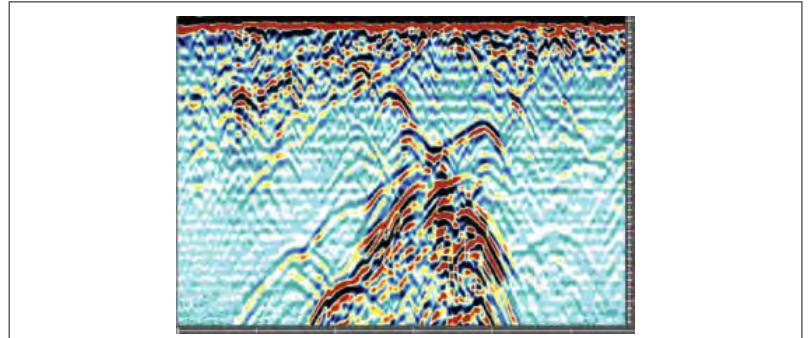
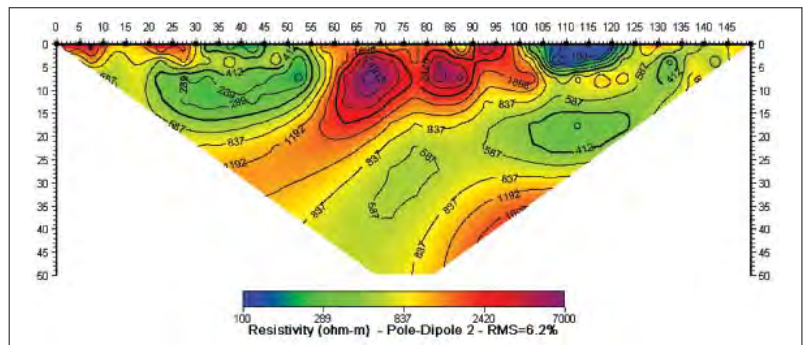
- Ground Penetrating Radar (GPR)
- Electrical Resistivity Tomography (ERT)

### Geophysical Equipment:

- Mala Geoscience GPR (ProEx Control Unit, shielded antennas of 500, 250 MHz and unshielded of 100, 50 & 25 MHz central frequency, XV11 monitor, Trimble RTK GPS)
- Terrameter LS 16 channel resistivity meter, multicore cables, electrodes

### Depth Range:

- 0 - 15m (GPR Method)
- 0 - 80m (ERT Method)



## THESSALONIKI METRO, GREECE

Project:  
THESSALONIKI METRO, GREECE

### Scope:

- Detection of buried structures (water pipes, cables, sewer pipes, ancient remains, etc.), along the Metro Alignment using non-destructive methods

### Geophysical Methods:

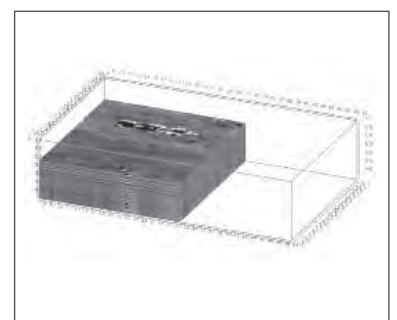
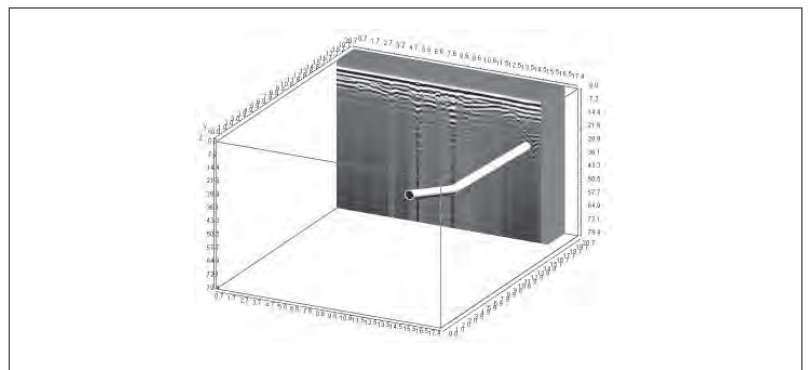
- Ground Penetrating Radar (GPR)

### Geophysical Equipment:

- Mala Geoscience GPR (ProEx Control Unit, shielded antennas of 500, 250 MHz, 1.6 GHz central frequency, XV11 monitor, Trimble RTK GPS)

### Depth Range:

- 0 - 6m





## SEISMIC/DYNAMIC PROPERTIES OF SUBGRADE MATERIAL

Project:  
DESIGN OF "ASOPOS" EARTH DAM,  
GREECE

### Scope:

- Detection of the dynamic elastic parameters of the subgrade materials in the foundation area for the a-seismic design of the dam (80m high)

### Geophysical Methods:

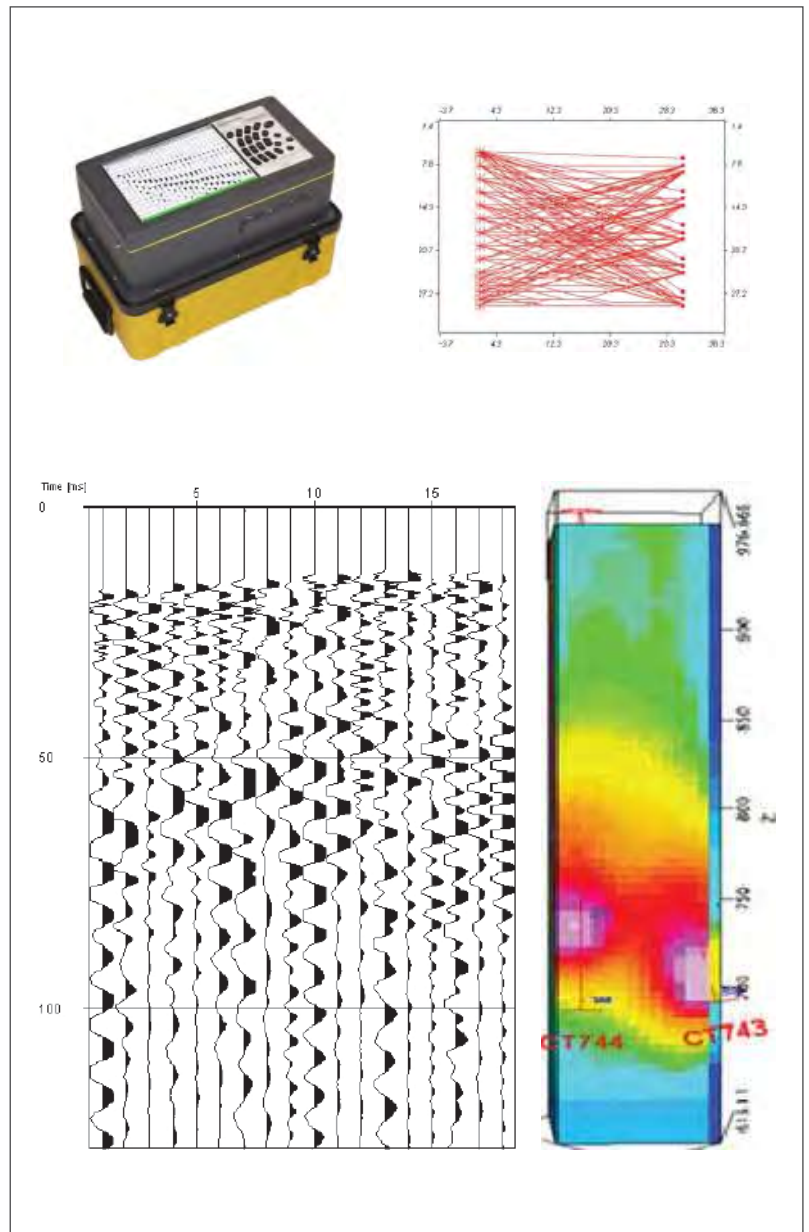
- Seismic Tomography (CSL Method)

### Geophysical Equipment:

- Digital Seismic recorder with 24 channels of GEOMETRICS Company, model SMARTSEIS, with sampling ability of 32 ms.
- Mechanical seismic source, automatic, with applicability within the borehole. Type MH 60 of company VIBROMETRIC OY.
- Wooden beam for the production of S-waves in the multi-offset VSP method.
- Chain of eight (8) tri-axial geophones, with 5 meters spacing between geophones and ability to attach them to the walls of the borehole.
- Control Box for controlling the seismic source. Control Box for controlling the geophones. Laptop to control the data quality and their preliminary processing.

### Depth Range:

- 0 - 100m



## ENVIRONMENTAL APPLICATIONS - GROUNDING DESIGN

Project:  
PETROLINA FACILITIES, CYPRUS

### Scope:

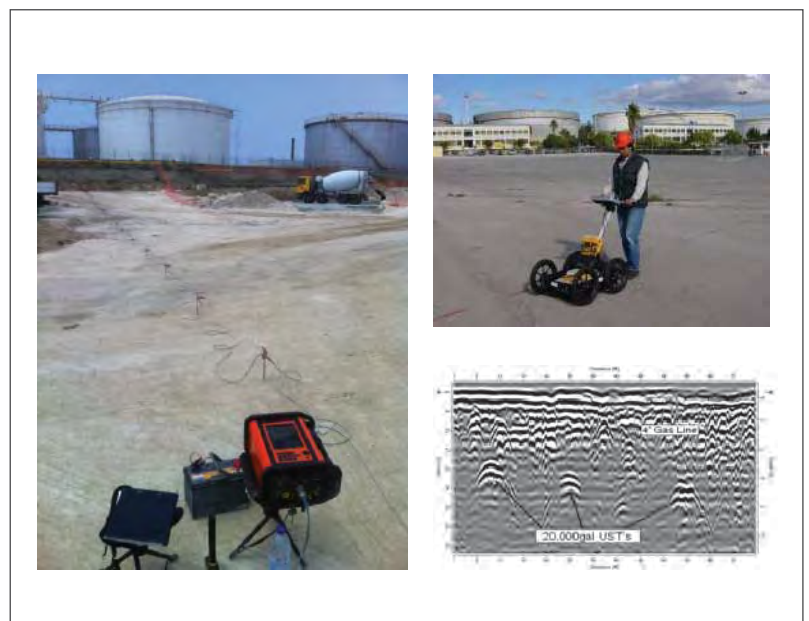
- Hazardous waste mapping, underground storage tanks (UST), Resistivity definition for Grounding Design

### Geophysical Methods:

- GPR
- ERT

### Geophysical Equipment:

- Mala Geoscience GPR
- Terrameter LS 16 channel resistivity meter, multicore cables, electrodes



EXPERIENCE IN

# CONSULTING SERVICES



Checking of Design, Expert Evaluation, Value Engineering, Tender Documents, Risk Assessment, Independent Engineer Services.



