ΓΕΩΤΕΧΝΙΚΟ ΕΠΙΜΕΛΗΤΗΡΙΟ ΕΛΛΑΔΑΣ
ΠΑΡΑΡΤΗΜΑ ΑΝ. ΜΑΚΕΔΟΝΙΑΣ

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RIWET

Στρατηγικό Σχέδιο ΚΑΠ 2023-2027

NATIONAL MUSEUM OF NATURAL HISTORY
GOULANDRIS
GREEK BIOTOPE WETLAND CENTRE

Good Agricultural Practices for Maintaining the Carbon Stock in the Philippi Peatlands

Exchange of Experience Workshop (EEW) in Greece on March 18 and 19, within the framework of the RIWET project

Ambelidis Theodoros Msc Hydraulic Engineering – Agronomist, Coordinator of the GEOTEE Committee of East Macedonia for the Philippi Peatlands

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Geotechnical Chamber of Greece

- The Geotechnical Chamber of Greece (GEOT.EE) is a Legal Entity of Public Law (N.P.D.D.), supervised by the Ministry of Rural Development and Food.
- **The Eastern Macedonia Branch, headquartered in Kavala and responsible for the Prefectures of Kavala, Drama and Serres**

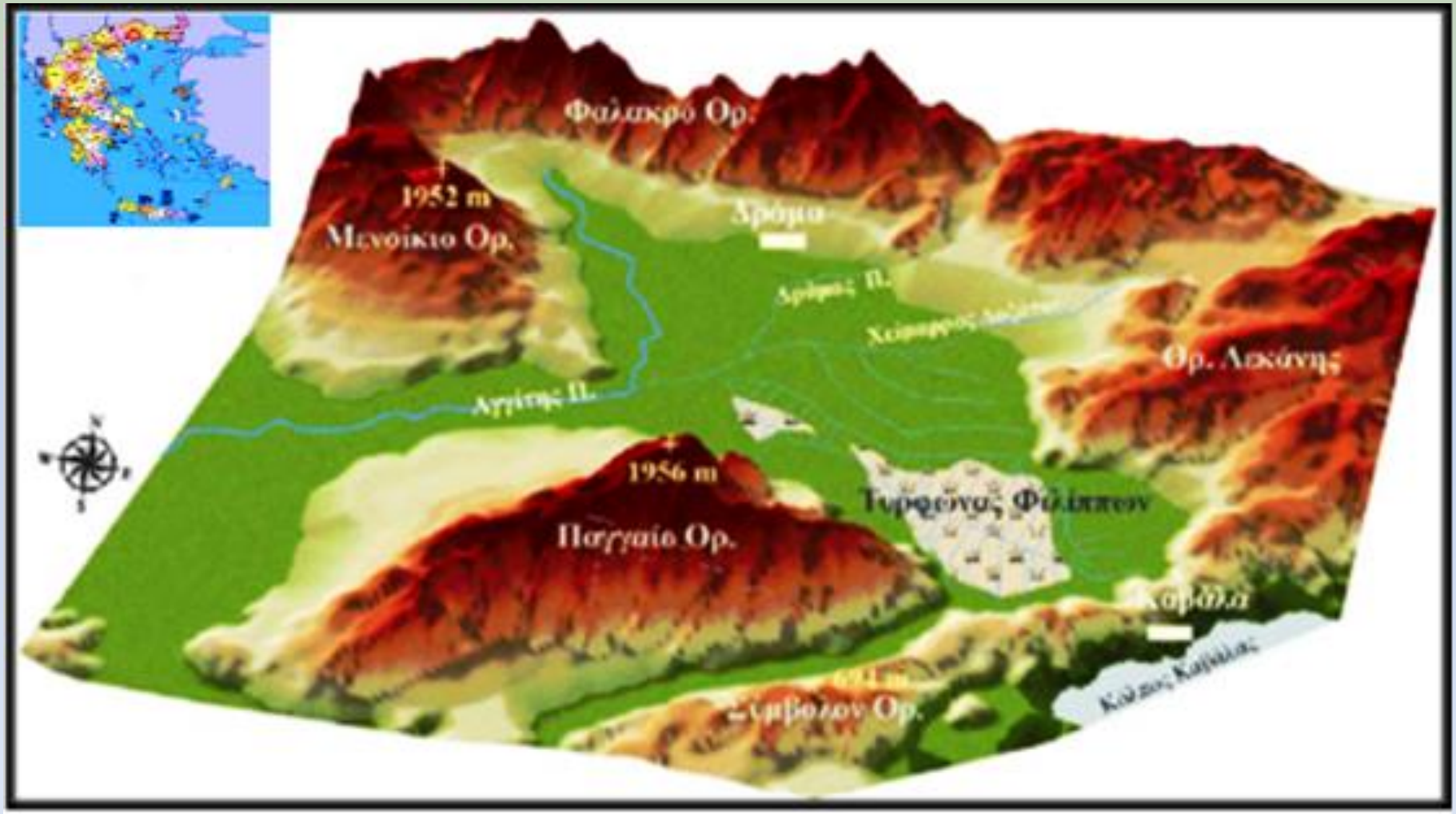
Geotechnical Chamber of Greece

- The GEOT.E.E. is the statutory advisor to the state on issues of economic and social development of the countryside (primary sector of economy) and always tries to take into account the "environment" factor, its respect and protection.
- Its members (45,232 in number - 2024) are all scientists of the specialties:
- Agriculture
- Forestry
- Geology
- Veterinary medicine
- Ichthyology (biology-ichthyology)

Philippi Peatland

- **The area of, as we call it, Tenagi of Philippi -Philippi Peatland, belongs to the wider area of the Drama Basin**, which is enclosed by the mountain ranges of Pangaio, Falakro, Symvolo, Menoikio and Lekani**.**
- They occupy areas in all three prefectures of Eastern Macedonia, namely the prefectures of Drama, Kavala and Serres

How were the Philippi Peatland created?



Σχηματική τρισδιάστατη απεικόνιση της Λεκάνης της Δράμας

How were the Philippi Peatland created?

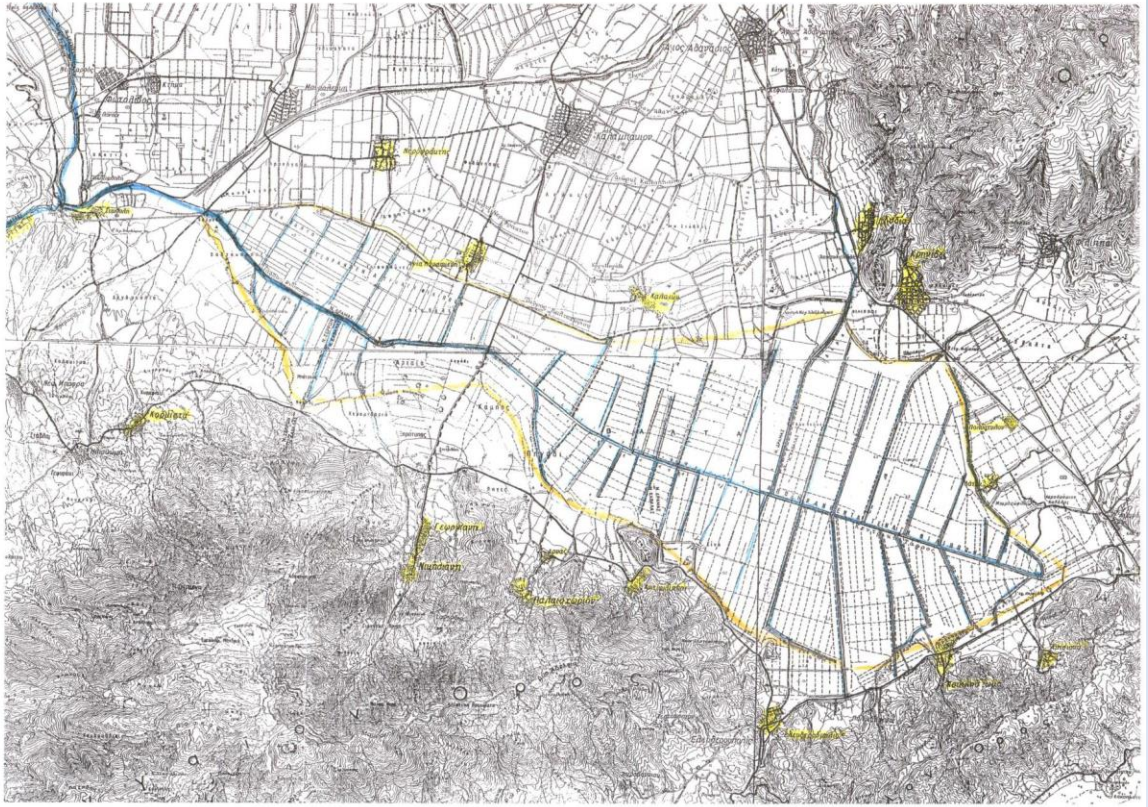
- **The natural drainage of the basin** was achieved only from the western side, with the Aggitis River as the recipient and then the Strymon River….
- Due to the topography and the slow rates of drainage reduction, **marshy conditions** prevailed with the creation **of a lake called Prasiada Lake** and the creation of a peat deposit in the lowest part of the flooded plain - a shallow lake.
- This lake has drastically determined human activity and development in the surrounding area, throughout the years until today (with a rich history).

How were the Philippi Peatland created

- Thus we arrived after the liberation and at the **Asia Minor disaster in 1922.**
- Greece had to feed 1.5 million refugees
- Many refugees. settled around Philippi Peatland (at that time it was still Prasiada lake) and were plagued by malaria.
- Thus, **plans were made to drain them, for the distribution of the lands to the landless refugees**.

From marsh to productive plain

- With the meager economic capabilities of Greece at the time (after the Asia Minor Catastrophe) and the relatively primitive machines and techniques of the time, a drainage project of pharaonic size for the Philippi Peatland (Prasiada lake) was designed and implemented in the 1930s-1940s by the American company J. MONKS - ULEN..

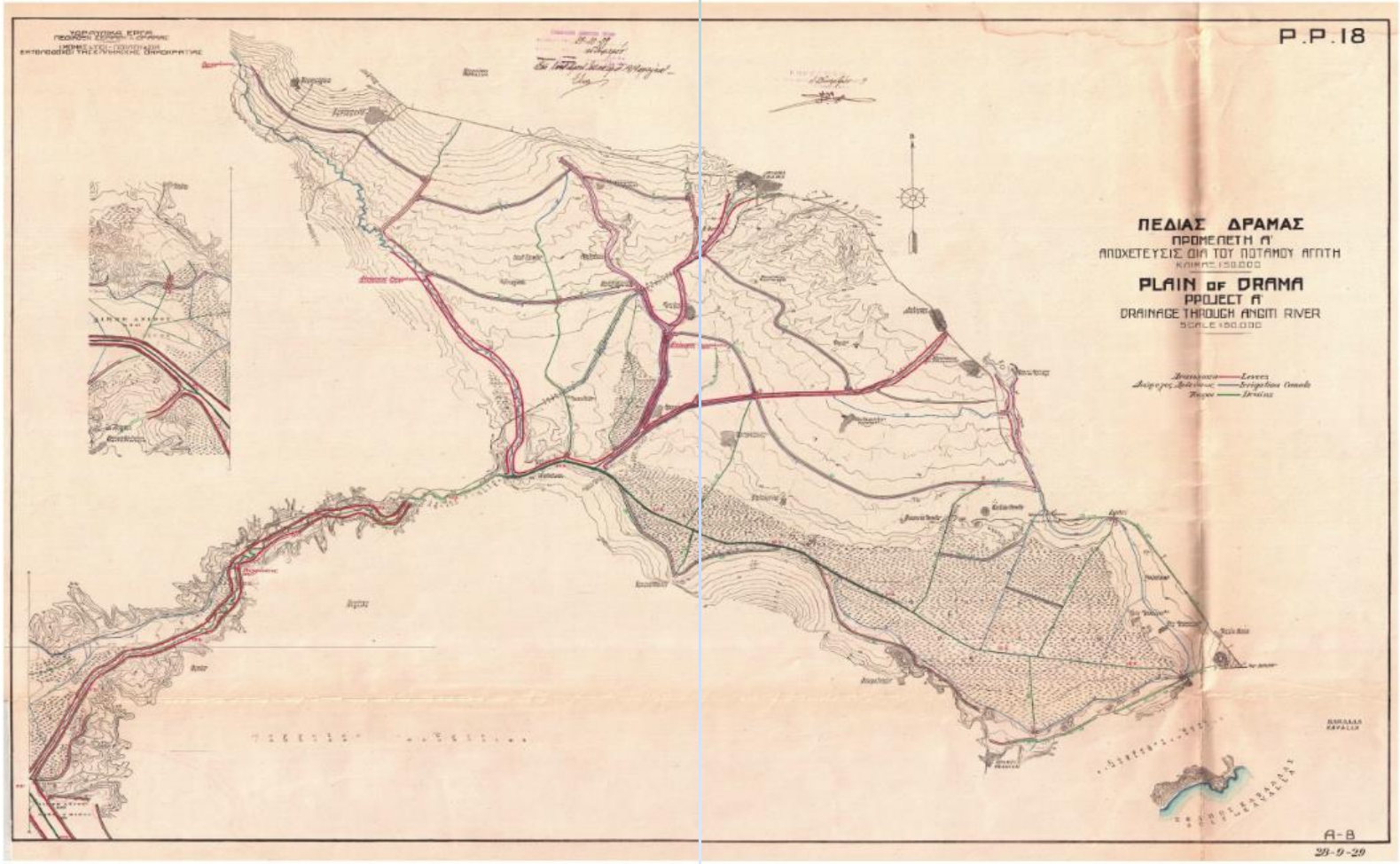


This project as a whole included the creation of Lake Kerkini, the arrangement of the bed of the Strymons river and the draining of the Tenago Philippi

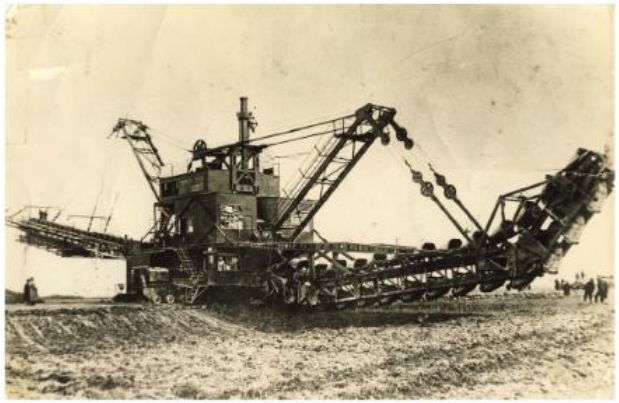
The hydrographic network of Philippi Peatland after the drainage

Land improvement projects - preliminary study A

P.P. 18 - ΠΕΔΙΑΣ ΔΡΑΜΑΣ ΠΡΟΜΕΛΕΤΗ Α΄ ΑΠΟΧΕΤΕΥΣΙΣ ΔΙΑ ΤΟΥ ΠΟΤΑΜΟΥ ΑΓΓΙΤΗ



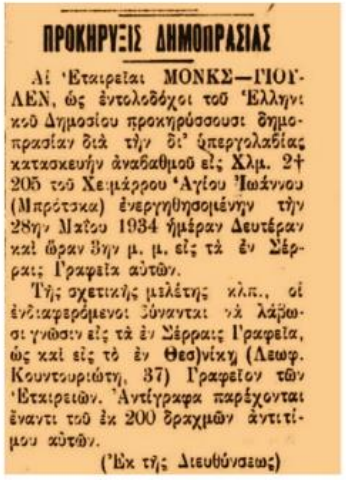
Land improvement projects



Εικ. 3. Γ.Α.Κ.- Αρχεία Ν. Σερρών. Εκσκαφέας καδοφόρος με βραχίονες. Δωρεά οικογένειας Παρατσουκίδη, Άνω Μητρούσι.

Εικ. 4. Γ.Α.Κ.- Αρχεία Ν. Σερρών. Συλλογή φωτογραφιών παραγωγικών έργων πεδιάδων Σερρών–Δράμας. «Εκσκαφεύς Δράγκλαϊν «Σέρραι» εμφράσσων την παλαιάν κοίτην του Στρυμόνος δια την εκτροπήν Ρούπελ-Κερκίνης, Φεβρουαρίου 27, 1933».

Εικ. 12. Υπόμνημα στο γενικό τοπογραφικό διάγραμμα. Διευκρινίζει ότι τα ακίνητο με τίτλο «Υδραυλικά έργα πεδιάδων Σερρών-Δράμας Κτίριον Γραφείων εν Σέρραις» αποτελεί ιδιοκτησία της Τράπεζας Αθηνών.

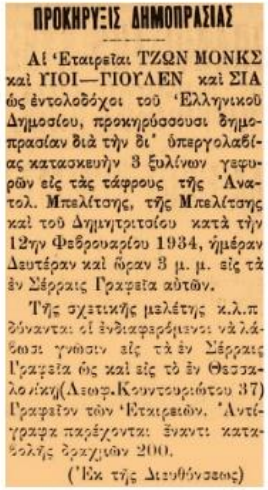


ΠΡΟΚΗΡΥΞΙΣ ΔΗΜΟΠΡΑΣΙΑΣ

Αἱ Ἑταιρεῖαι ΜΟΝΚΣ—ΓΙΟΓ-ΛΕΝ, ὡς ἐντολοδόχοι τοῦ Ἑλληνικοῦ Δημοσίου προκηρύσσουσι δημοπρασίαν διὰ τὴν δι' ὑπεργολαβίας κατασκευὴν ἀναβαθμοῦ εἰς Χλμ. 2+205 τοῦ Χειμάρρου Ἁγίου Ἰωάννου (Μπρότσκα) ἐνεργηθησομένην τὴν 28ην Μαΐου 1934 ἡμέραν Δευτέραν καὶ ὥραν 3ην μ. μ. εἰς τὰ ἐν Σέρραις Γραφεῖα αὐτῶν.

Τῆς σχετικῆς μελέτης κλπ., οἱ ἐνδιαφερόμενοι δύνανται νὰ λάβωσι γνῶσιν εἰς τὰ ἐν Σέρραις Γραφεῖα, ὡς καὶ εἰς τὸ ἐν Θεσ)νίκῃ (Λεωφ. Κουντουριώτη, 37) Γραφεῖον τῶν Ἑταιρειῶν. Ἀντίγραφα παρέχονται ἔναντι τοῦ ἐκ 200 δραχμῶν ἀντιτίμου αὐτῶν.

(Ἐκ τῆς Διευθύνσεως)



ΠΡΟΚΗΡΥΞΙΣ ΔΗΜΟΠΡΑΣΙΑΣ

Αἱ Ἑταιρεῖαι ΤΖΩΝ ΜΟΝΚΣ καὶ ΓΙΟΙ—ΓΙΟΓΛΕΝ καὶ ΣΙΑ ὡς ἐντολοδόχοι τοῦ Ἑλληνικοῦ Δημοσίου, προκηρύσσουσι δημοπρασίαν διὰ τὴν δι' ὑπεργολαβίας κατασκευὴν 3 ξυλίνων γεφυρῶν εἰς τὰς τάφρους τῆς Ἀνατολ. Μπελίτσης, τῆς Μπελίτσης καὶ τοῦ Δημητριτσίου κατὰ τὴν 12ην Φεβρουαρίου 1934, ἡμέραν Δευτέραν καὶ ὥραν 3 μ. μ. εἰς τὰ ἐν Σέρραις Γραφεῖα αὐτῶν.

Τῆς σχετικῆς μελέτης κ.λ.π δύνανται οἱ ἐνδιαφερόμενοι νὰ λάβωσι γνῶσιν εἰς τὰ ἐν Σέρραις Γραφεῖα ὡς καὶ εἰς τὸ ἐν Θεσσαλονίκῃ(Λεωφ.Κουντουριώτου 37) Γραφεῖον τῶν Ἑταιρειῶν. Ἀντίγραφα παρέχονται ἔναντι καταβολῆς δραχμῶν 200.

(Ἐκ τῆς Διευθύνσεως)

Εικ. 13. Προκηρύξεις υπεργολαβιών που δημοσιεύτηκαν στην εφημ. Η Πρόοδος. Αναφέρουν ότι οι ενδιαφερόμενοι μπορούν να λάβουν γνώση της σχετικής μελέτης στα «εν Σέρραις γραφεία» και στο γραφείο των εταιρειών στη Θεσσαλονίκη (Λεωφόρος Κουντουριώτη 37).

Land improvement projects

Βυθοκόρος κοχλιάρα στα στενά της Αμφίπολης.

Land improvement projects (Kerkini, Strymon, Philippi Peatlands - Thessaloniki International Exhibition

Land improvement projects

Therefore, within the framework of the drainage works, **the following land improvement works are being carried out that still exist today and generally include:**

a) The excavation of the **Central Drainage Ditch of Philippi**, 29 km long, which crosses Tenagi, and constitutes the heart of the project and is also used for the **subsurface irrigation of crops**.

b) The excavation of **secondary ditches** per kilometer that flow into the central Ditch of Philippi

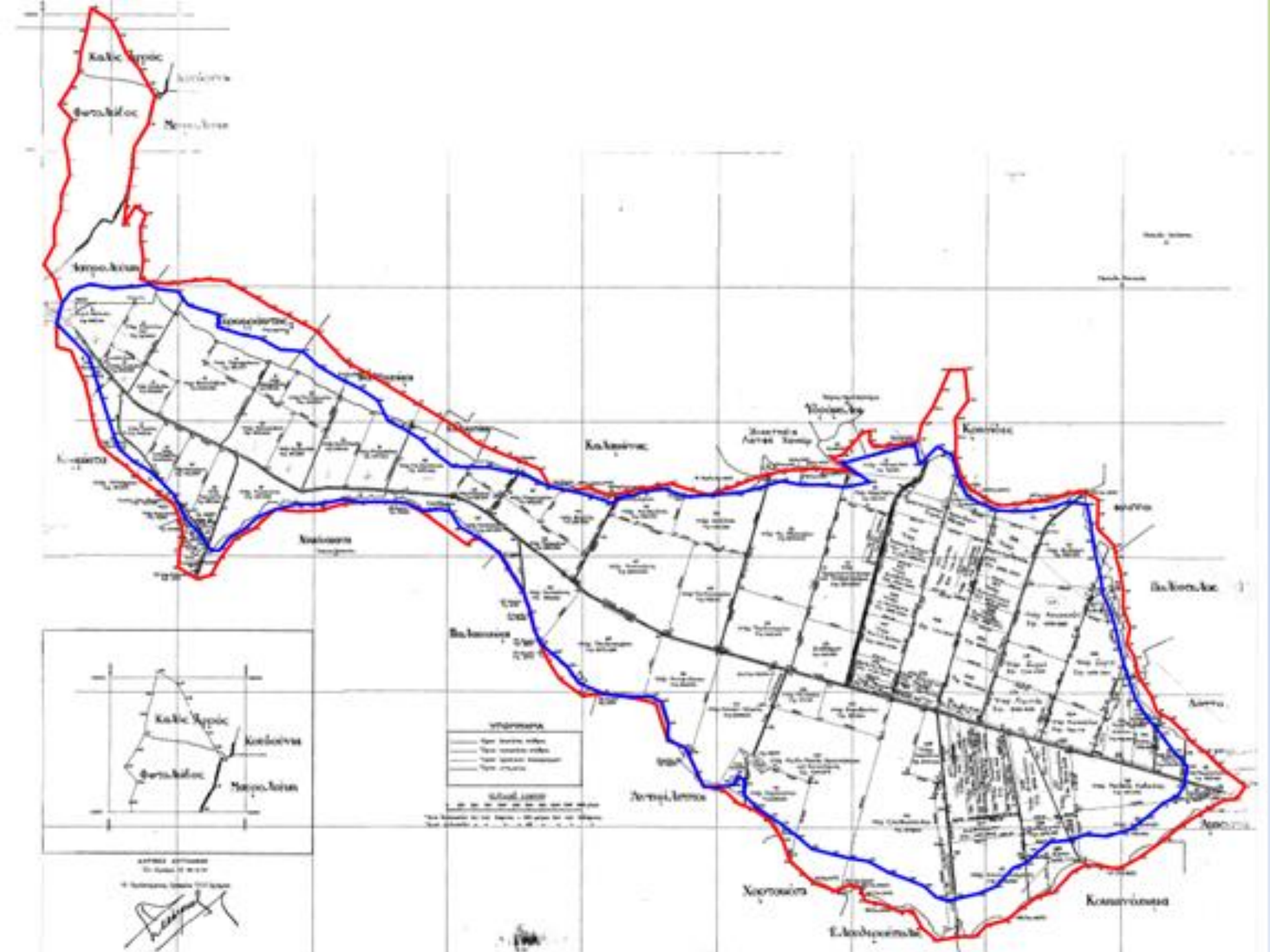
c) The construction of **Roufraktis** in the Community of Symboli with 6 large floodgates to regulate the flow.

d) The further deepening of the bed of the **Aggitis River** for the drainage of Tenagi.

Τάφρος Φιλίππων

Distribution Maps – Peatland boundaries and organic matter

- The **limit of the maximum water level** in the peat – lake determines the limits of peat formation in the area and prevents any other agricultural use of this area as it floods seasonally.
- The maximum level (red line) is the one that determines the limit of the peat bog at the time of its drainage in 1934. Since after the drainage, peat formation had stopped.
- The defined limits of the peat land from the 1947 map were initially recorded in the plans of the study of the hydraulic works of the Serres and Drama plains in 1929



Philippi Peatland boundaries

The Peatlands of Tenagi Philippi

- The Philippi peat land **is one of the deepest peat deposits in the world**, with an average depth of 75 m, while in the center of the peat bog the depth reaches 300 m, when in the rest of the world peat bogs have an average depth of 4-17 meters.
- Together with the adjacent semi – peatlands areas , **we have a total surface area of 103 km2** that was influenced - created by the marshy conditions in recent few hundrents millennia.
- The largest cultivated peat bog in the country, in such an area and uniqueness (**it is a slightly alkaline peat bog, all the others peatlands are highly acidic**).
- In this it differs from the peat bogs of Northern Europe that are not cultivated and remain as pastures.
- These soils have proven to be particularly productive and do not have high cultivation costs since a large part of them is subsurface irrigated

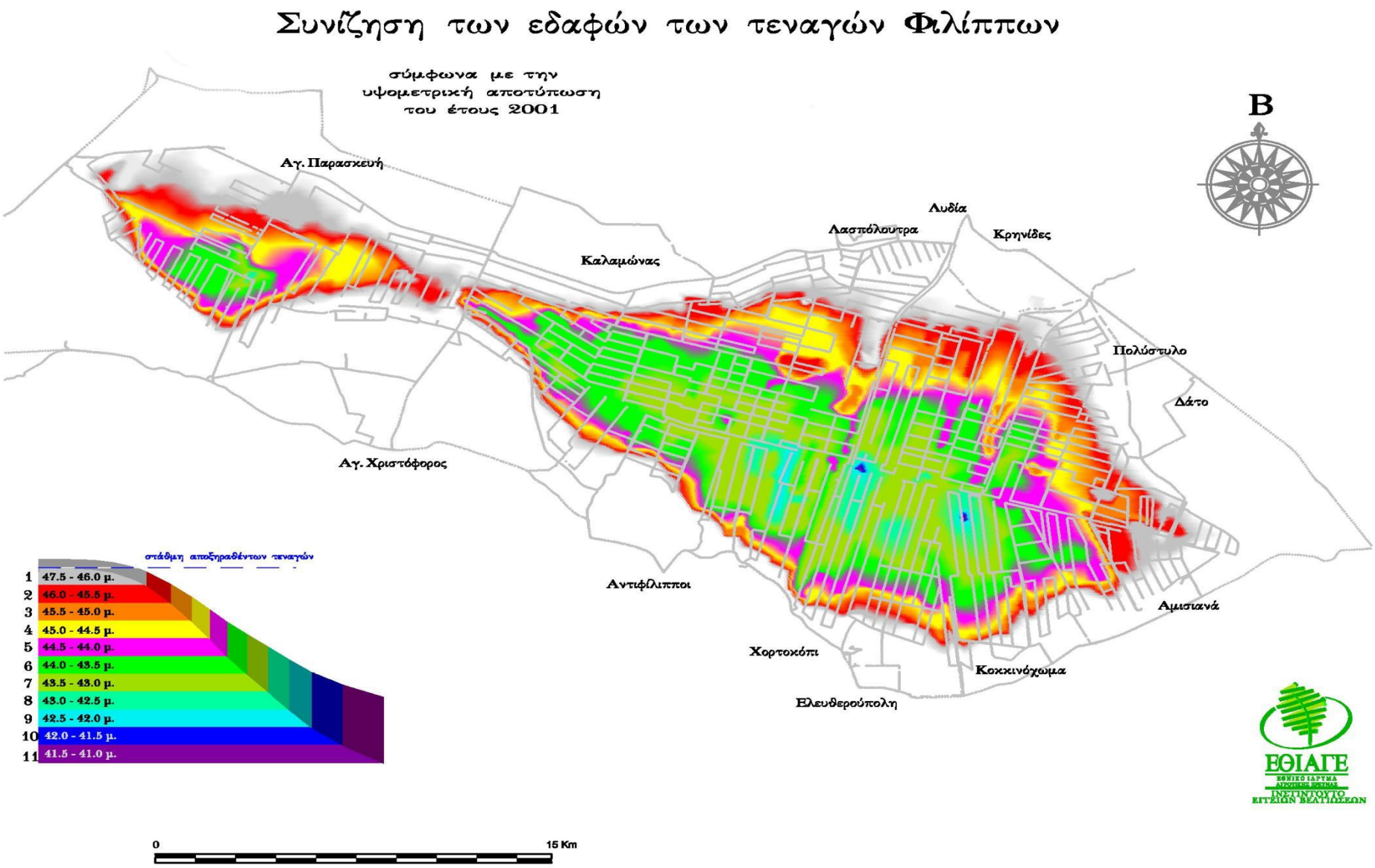
Advantages of Philippi Peatland

- **Rich organic matter** --> favors crop growth and retention of nutrients and added fertilizers.
- Unique system of crop **sub-surface irrigation**.
- These advantages were not maintained for long and problems arose, because the coexistence of man with this drained wetland over the years was not the most ideal.

The Peatlands of Tenagi Philippi

- After the distribution of land for cultivation, these soils proved to be particularly fertile and productive.
- **But something was going wrong over the time…**
- From the first years, the first problems began to appear that affected the functionality of the peat bog as a cultivated land.
- These concerned the **co-sedimentation**, **oxidation and subsidence of the soil**, throughout the entire area of the peat bog to a different extent, however.
- Increase in salinity due to poor drainage.
- After all, the peat bog was a dried wetland, a lake bottom, an organic cultivated land, which was irrigated underground **and yet was managed conventionally like all soils of the time (plowing, burning of residues, etc.)**

Precipitation or Co-Sedimentation in 2001



What is the cause of the soil subsidence, Precipitation or Co-Sedimentation ?

- Shrinkage due to peat drying
- Physiological oxidation of organic material - contribution to the greenhouse effect
- Deliberate or unintentional burning of peat (spontaneous ignition) and of crop residues and wild fires
- Compression of subsoil, e.g. by agricultural machinery
- Release of trapped gases

Co-Sedimentation Results on rainy years in winter

Co-Sedimentation Results

Model GAEC 2 – CAP Strategic Plan (2023–2027) for the Philippi Peatland

- According to the S.S. CAP, within 2023 the peatlands had to be demarcated and by 2025 the **Guides to Good Agricultural Practices for the Peatlands should be ready.**
- The Branch of Eastern Macedonia of GEOT.E.E. participated in the relevant consultation (YPAAT, EKBY, RIWET program, etc.) of the K.O.G.P. (Good Agriculture Practice) in Tenagi, having rich experience and archival material on the Philippi Peatland.
- Because we wanted to contribute with our experience and knowledge to the management of the Peatland, our Branch came to the following proposals

Model GAEC 2 – CAP Strategic Plan (2023–2027) for the Philippi Peatland

- **Our suggestions**

1. Prohibition of deep plowing of more than 30 centimeters
2. The burning of crop residues is prohibited in all cases, including for plant protection purposes. Any infringement of this rule shall be considered an intentional violation and shall be penalised accordingly.
3. The use of non-agricultural machinery, such as excavators, graders, and other construction machinery, is prohibited.
4. The extraction of soil within the boundaries of the peatland for any purpose is prohibited. Any infringement of this rule shall be considered an intentional violation and shall be penalised accordingly.

The measures proposed by GEOTEE East Macedonia Branch, have been recorded in the published Ministerial Decision (03.12.2025) called 2nd amendment to decision no. 1313/178948/09.06.2023 on the implementation of the regime of conditionality(https://www.agrotikianaptixi.gr/parembaseis-sskap-pa/airesimotita/).

Model GAEC 2– Proposals

Prohibition of deep plowing of more than 30 centimeters

It is recommended so that a large part of the soil does not come into contact with the air and oxidize.

Prohibition of burning crop residues and any kind of fire.

It is proposed, in addition to other environmental impacts, to avoid the destruction of the surface dry peat of 15-20 cm, resulting in an increase in the phenomenon of subsidence.

The use of non-agricultural machinery, such as excavators, graders, and other construction machinery, is prohibited

Recommended to avoid soil compaction and further degradation of the Peat

The extraction of soil within the boundaries of the peatland for any purpose is prohibited

It is Recommended to avoid further soil degradation and protect peat.

Extra Necessity

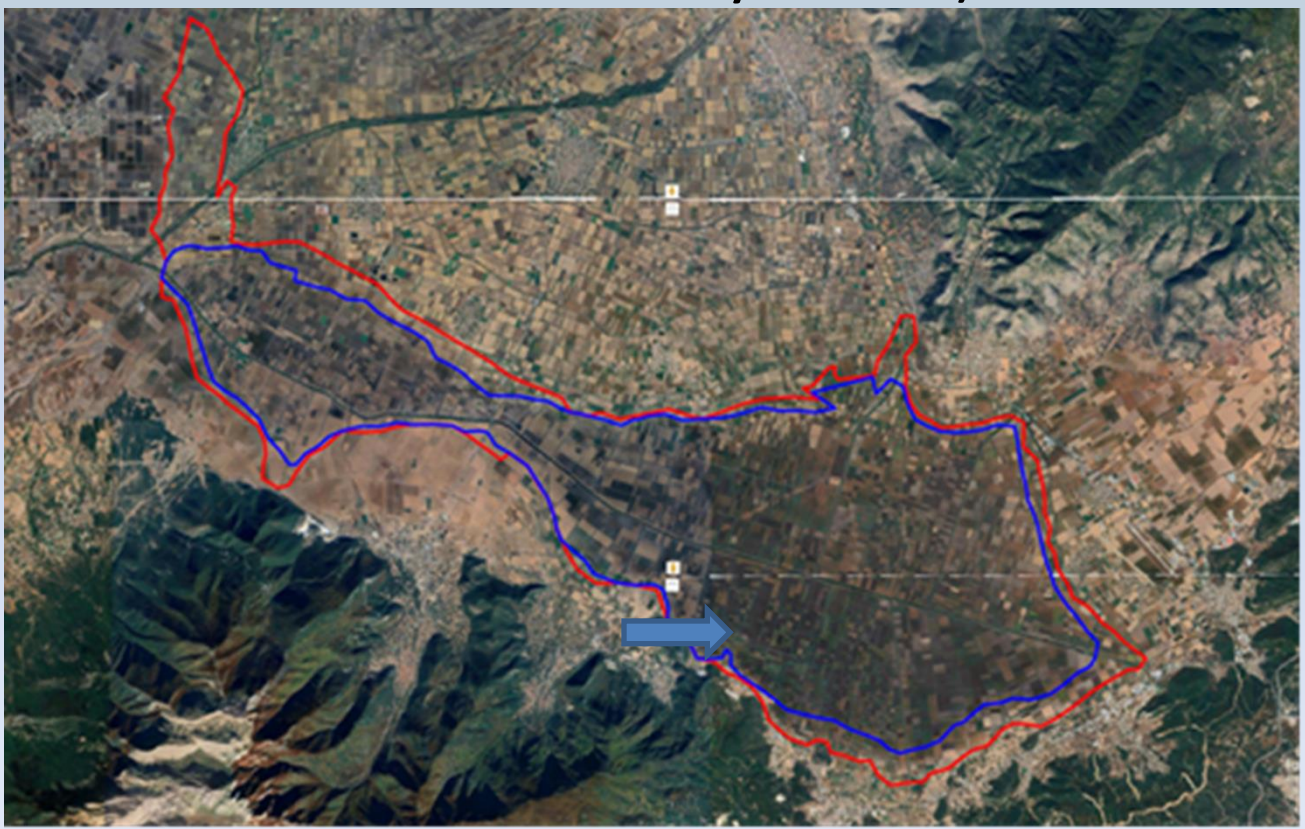
- In order to maintain the sustainability and productivity of the peatland of Tenagi Philippon, as agricultural land, it is necessary to **adopt, through the CAP, a new Agri-Environmental Program entitled**:

"Protection of the Philippi Peatlands"

- In this context, farmers will undertake additional obligations, for which they will bear costs or loss of production.
- However, these obligations will contribute greatly to maintaining the productivity of the peatland but at the same time to maintaining it as a large carbon reservoir.
- For these losses, farmers will be subsidized through the agri-environmental system.

Today in Philippi Peatland

- We have floodings after the last rains and snow on a land over 28,000 acres.
- Let's see some photos taken on 28/2/2026 near Antiphilippous village, going down into the Peatland... (we also have an extra video taken by drone)



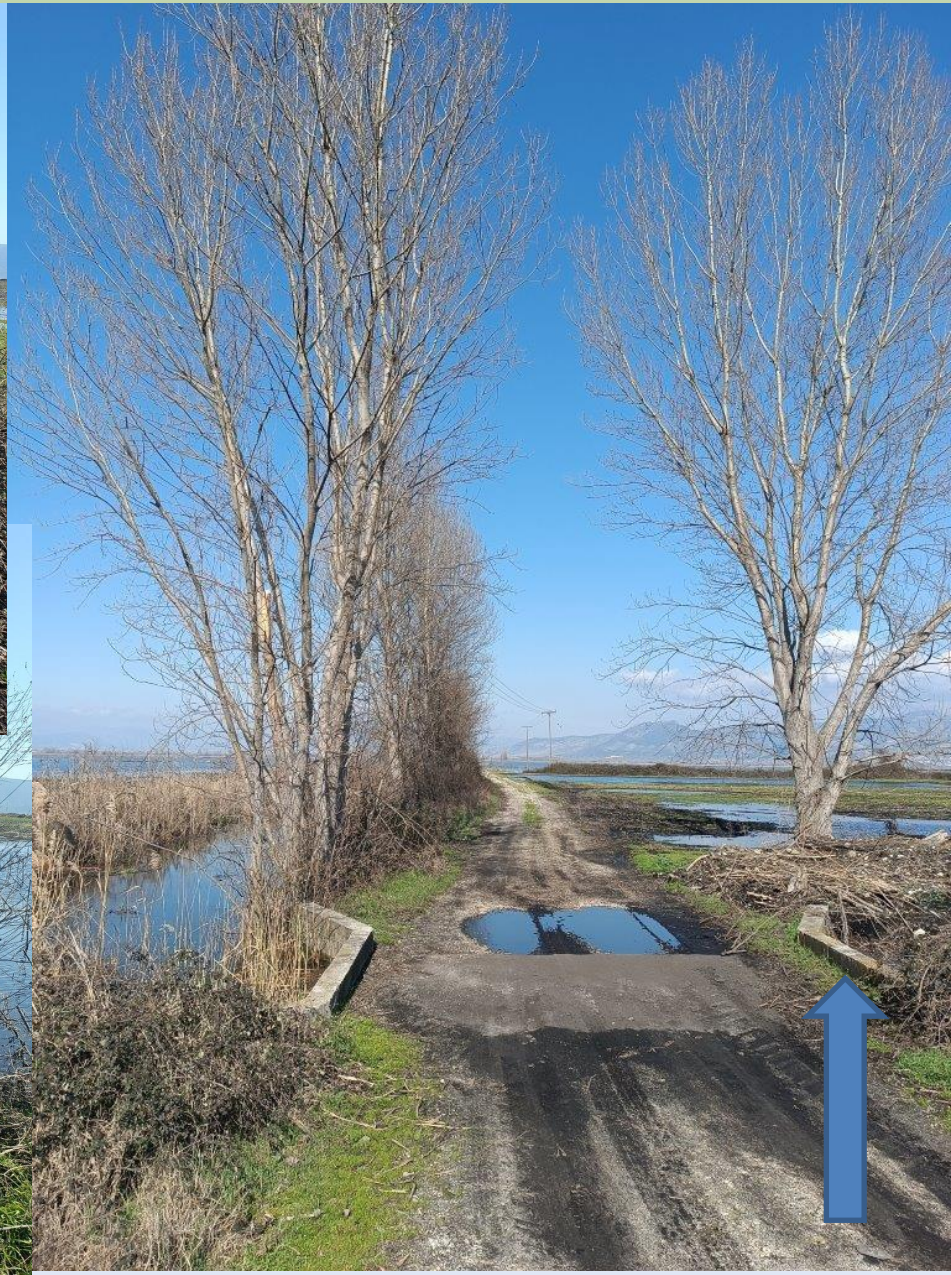
Current floods

Current floods

Current floods

Current floods

Current floods



Current floods

Here we see a stand of poplar artificially planted along a secondary drainage ditch. She survived and will survive despite flooding to her right and left in fields that had corn crops last year. We don’t know when the farmers will be able to sow their next crop

Water depth in the fields at the edge of Peatlands is 0.5 meters. The size of the temporary lake is beyond our field of vision

Many Thanks

- To the executives of the Ministry of Rural Development and Food and the Greek Biotopes - Wetlands Center for the good cooperation we have had all this time
- As well as the partners of RIWET
- And all of you for your patience…

QUESTIONS

Thank you very much

Ambelidis Theodoros Msc Hydraulic Engineering – Agronomist,
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Timosidis Grigorios Msc Agronomist – General Secretary of GEOT.EE. Branch of Eastern Macedonia