

Miroslava Rakovská

# Comprehensive Efforts Towards Improvement of the Danube Inland Delta Water Regime

**BR6Z**





## Restoration measures

reconstruction of weirs,  
removal of barriers,  
building of fish passes,  
dredging of river  
branches, reconnection  
of side-arms

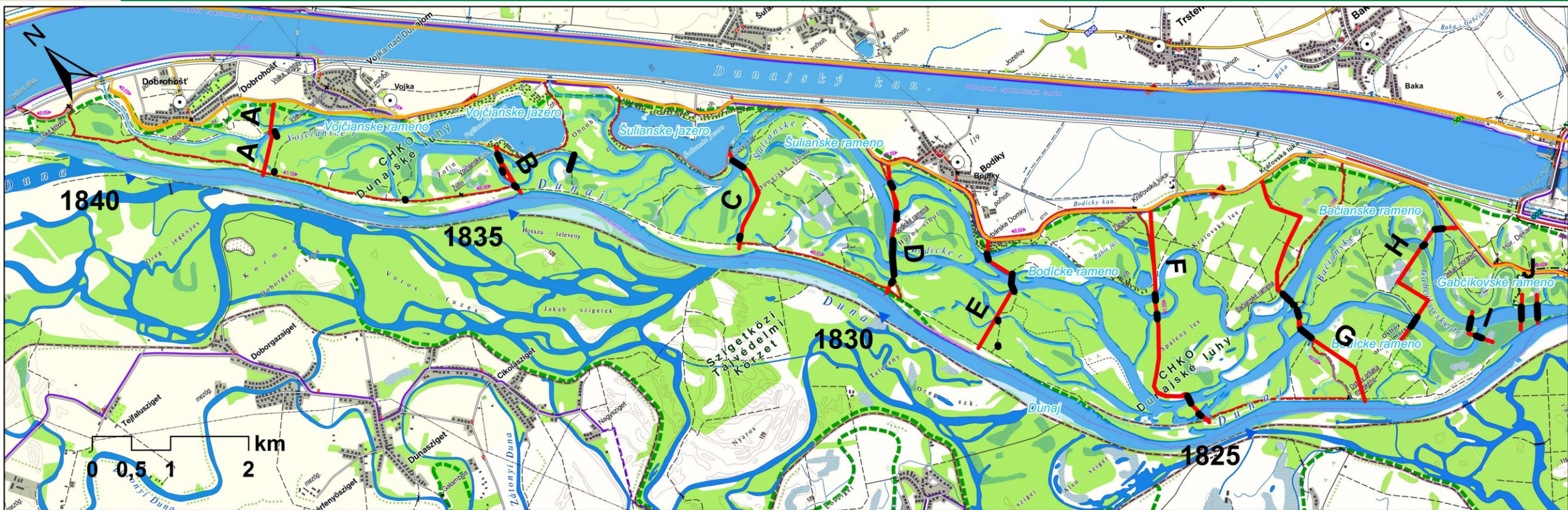
## Simulated floods

petition, negotiations  
with authorities,  
preparation of  
Operational Manual,  
monitoring

Old Danube:  $2,000 \text{ m}^3/\text{s} \rightarrow 400 \text{ m}^3/\text{s}$

River branch system in Slovakia:  $20 \text{ m}^3/\text{s}$  winter,  $30 \text{ m}^3/\text{s}$  summer

# Danube Inland Delta – River Branch System



# Restoration Measures



## Restoration Measures

# LIFE projects involved



LIFE07NAT/SK/000707 Conservation of endangered bird species populations in natural habitats of the Danube inland delta

LIFE08NAT/SK/000239 Conservation of root vole *\*Microtus oeconomus mehelyi*

LIFE10NAT/SK/000080 Restoration of NATURA 2000 sites in cross-border Bratislava capital region

LIFE12NAT/SK/001137 Restoration of nesting and feeding habitats of Sand Martin, Kingfisher and European Bee-eater in Danube-Morava region

LIFE14NAT/SK/001306 Restoration and management of Danube floodplain habitats

LIFE17NAT/SK/000621 Restoration of habitats for root vole *\*Microtus oeconomus mehelyi*



Restoration Measures

# Results Achieved

**155.95 ha wetlands**

**24.788 km river  
branches**

**255 m steep banks**

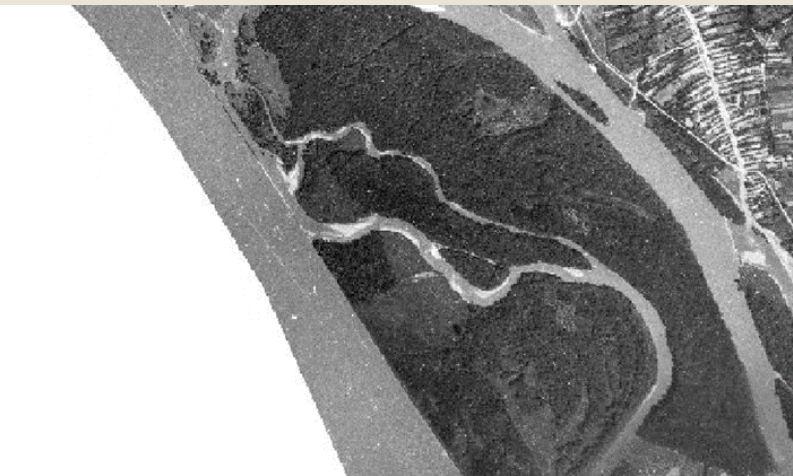


# C2 weir



- pilot measure
- removal of the non-functioning weir C2 on line C
- reconstruction of culverts
- construction of a fish pass





## Vojčianske side arm



Before restoration:

- dried sections
- lack of water
- weak flow
- insufficient pipe culverts



- 3.7 km restored
- 2 culverts replaced
- two sections widened to 10 m
- ford built
- 12,000 m<sup>3</sup> substrate

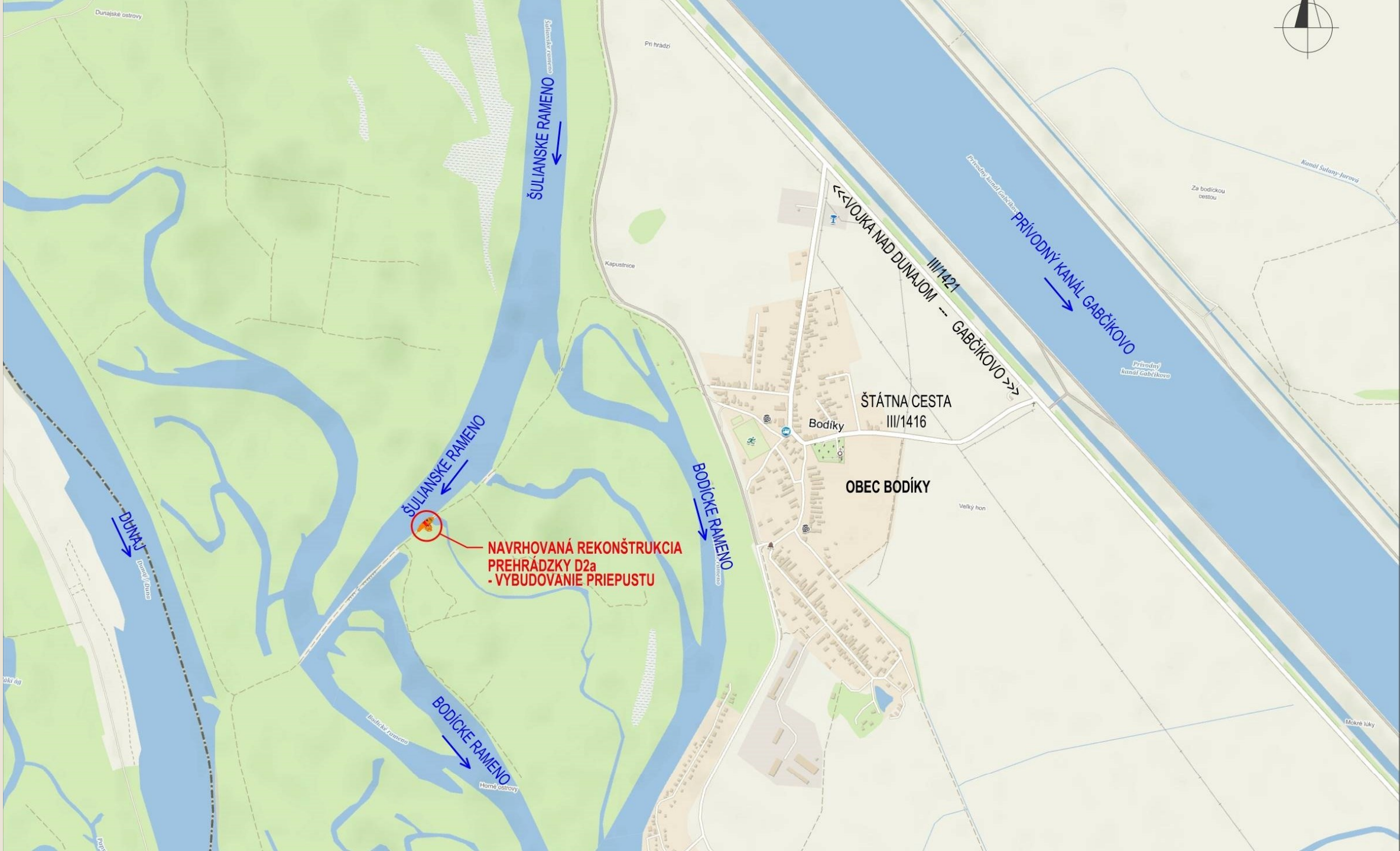


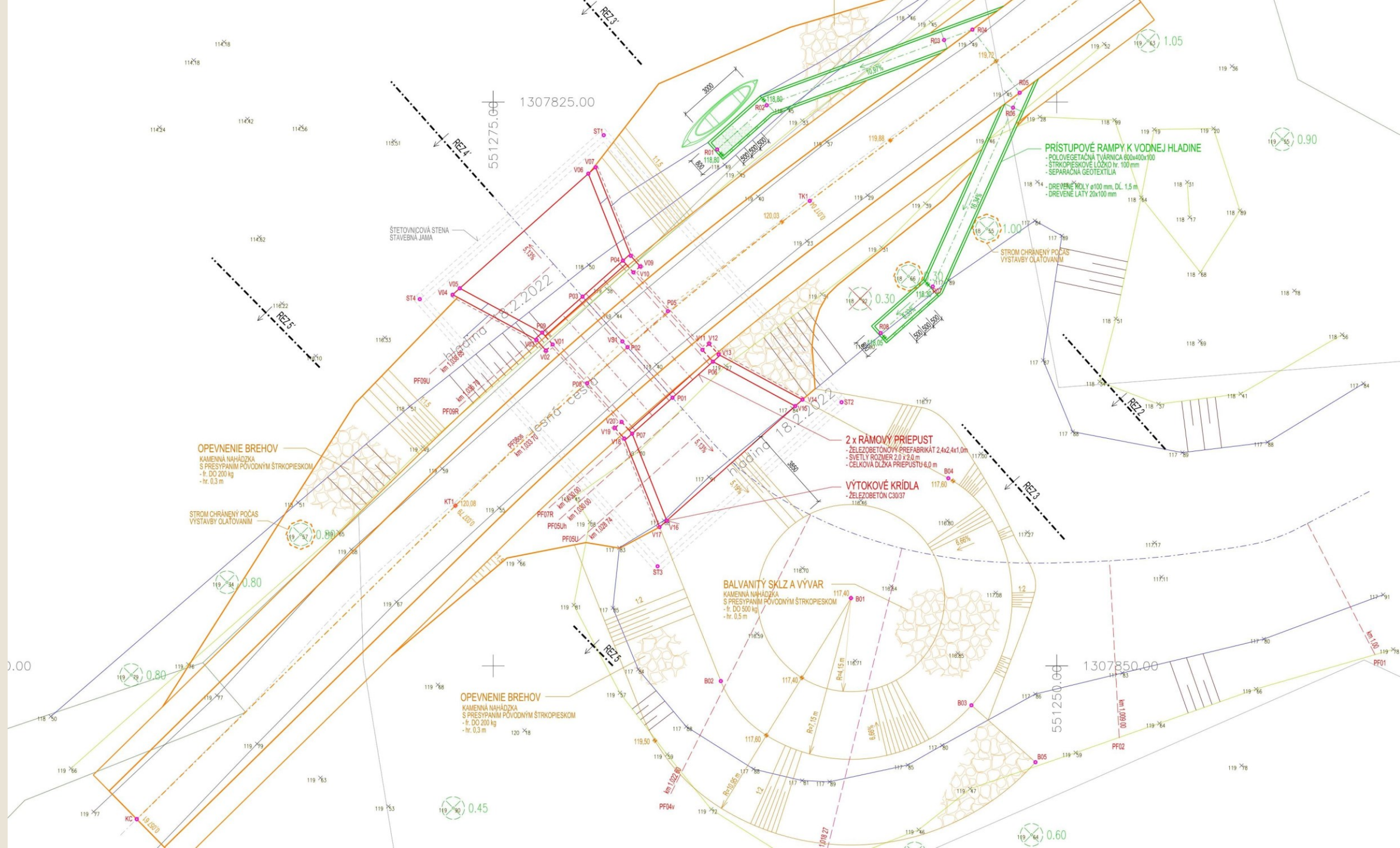


## D2a weir

- removal of barrier
- installation of frame culverts
- reconnection of branches
- 1100 m of dried side arm restored







1307825.00  
551275.00

1307850.00  
551250.00

**OPEVNENIE BREHOV**  
KAMENNÁ NAHÁDZKA  
S PRESYPANÍM PŮVODNÝM ŠTRKOPIESKOM  
- fr. DO 200 kg  
- hr. 0,3 m

**OPEVNENIE BREHOV**  
KAMENNÁ NAHÁDZKA  
S PRESYPANÍM PŮVODNÝM ŠTRKOPIESKOM  
- fr. DO 200 kg  
- hr. 0,3 m

**BALVANITÝ SKLZ A VÝVAR**  
KAMENNÁ NAHÁDZKA  
S PRESYPANÍM PŮVODNÝM ŠTRKOPIESKOM  
- fr. DO 500 kg  
- hr. 0,5 m

**2 x RÁMOVÝ PRIEPUST**  
- ŽELEZOBETONOVÝ PREFABRIKÁT 2,4x2,4x1,0m  
- SVETLY ROZMĚR 2,0 x 2,0 m  
- CELKOVÁ DĹŽKA PRIEPUSTU 6,0 m

**VÝTOKOVÉ KRIDLÁ**  
- ŽELEZOBETON C30/37  
11836

**PRÍSTUPOVÉ RAMPY K VODNEJ HLADINE**  
- POLOVEGETAČNÁ TVÁRNICA 800x400x100  
- ŠTRKOPIESKOVÉ LŮŽKO hr. 100 mm  
- SEPARAČNÁ GEOTEXTILIA  
- DREVENÉ HOLY ø100 mm, DĹ. 1,5 m  
- DREVENÉ LATY 20x100 mm

STROM CHRÁNENÝ POČAS  
VYSTAVBY OĽAVOVANÍ

ŠTĚTOVNICOVÁ STĚNA  
STAVEBNÁ JAMA

# E3 weir

## Before restoration:

- non-functional water sports slide
- lack of water dynamics
- during floods velocities inappropriate for fish

## After reconstruction:

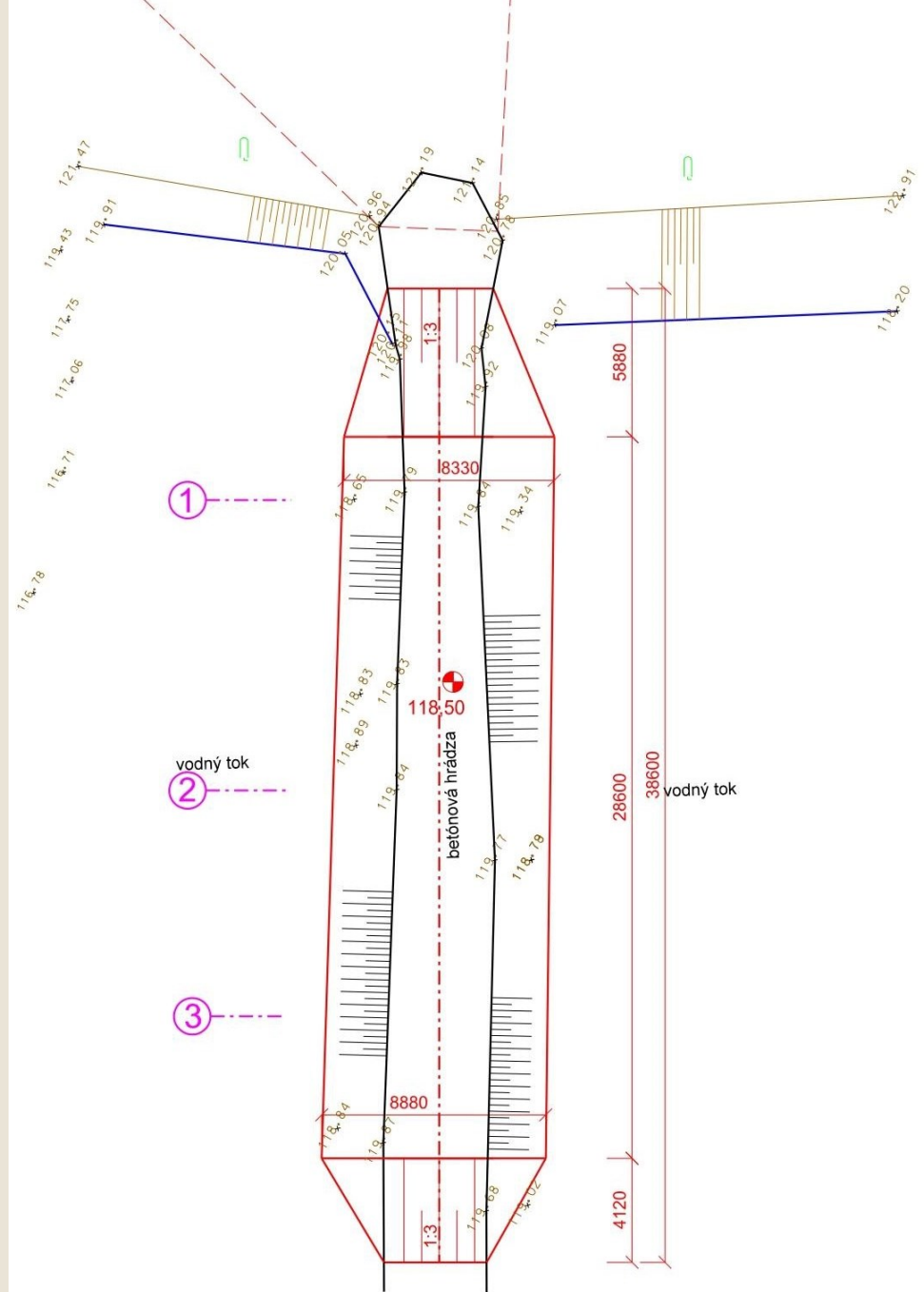
- construction of frame culverts functioning as fish pass
- safety structures for water sports





## Old B weir

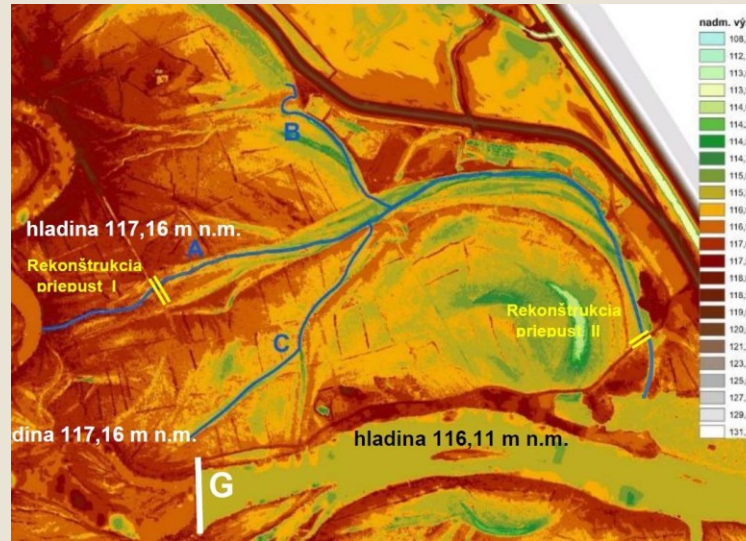
- 28.6 m (out of 130 m)
- decrease by -1.3 m





# Kráľovská lúka

- currently dried
- not connected to the source
- barriers in the river bed
- crossings with forestry roads with insufficient pipe culverts

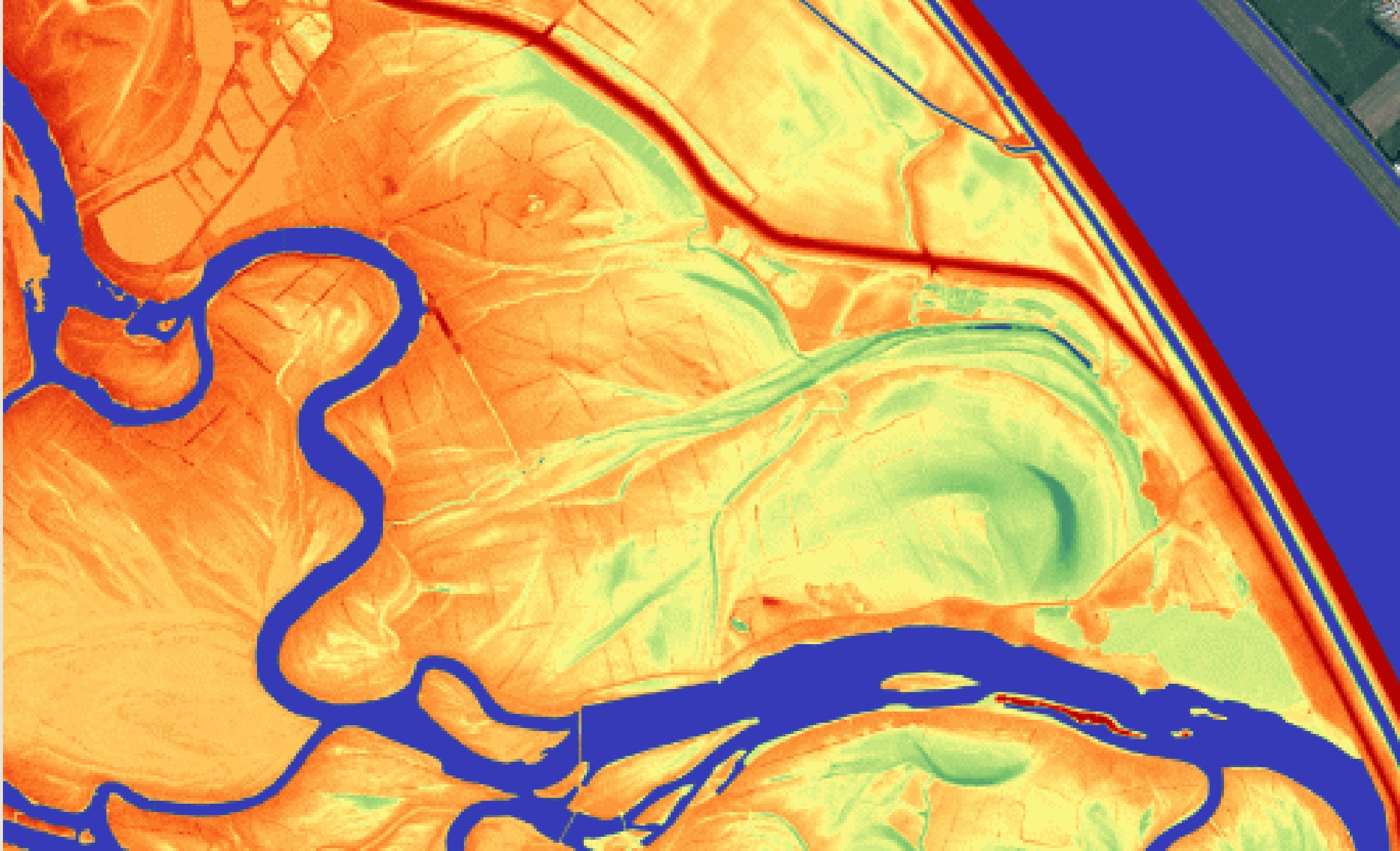








- zaústenie ramena B
- zaústenie ramena C
- priepust na C dole
- úprava ramena C stred
- priepust C hore
- priepust hore
- prehlbenie vtoku do ramena A
- priepust dole
- prehlbenie zaústenia



# Simulated Floods





11.603  
signatures



**BROZ - ochrannárske združenie**  
17. jún 2020 · 🌐

Zdravé lužné lesy sú nesmierne dôležité v boji s klimatickou zmenou! A na to, aby boli zdravé, sa musia lúhovať vo vode (od toho ten prívlastok lužné) 🥹💧🌿  
Podpíšte preto petíciu za to, aby tieto lesy každú jar zaplavovala voda.  
Podpíšte petíciu za viac vody vo vnútrozemskej delte Dunaja!  
👉 <https://tinyurl.com/deltadunaja> 👉👉

**Lužné lesy sú jednotkou boji s klimatickou zmenou**

Prehrat  
0:01 / 0:33

PETICIE.COM

Simulated Floods

**Petition**



Simulated Floods

# Operational Manual

Simulated Floods

# Flood Course

- 2020-2024
- yearly
- spring and summer

year	date	max discharge
2020	15.5.-17.6.	90 m3/s
2021	8.4. - 11.5.	90 m3/s
	21.5. - 4.6.	90 m3/s
2022	13.5.-28.6.	90 m3/s
2023	26.3-28.4.	90 m3/s
	15.7.-1.8.	120 m3/s
2024	2.3.-28.3.	120 m3/s
	17.6.-7.7.	60 m3/s



Nominated Finalist

# Natura 2000 Award 2024

- Conservation on land
- Marine conservation
- Communication
- **Working together for nature**
- Cross-border cooperation
  
- **Citizens' Award**

FACTSHEET | 14 March 2024 | Directorate-General for Environment

## Restoring the Danube floodplain, the largest wetland area in Slovakia, through conflict resolution

This initiative brought government agencies, water management companies, nature conservation NGOs and water sports associations together to ensure decision-making that respects the Natura 2000 values of the Danube floodplains.

[Vote for this finalist!](#) 





# Monitoring



# Hydro-monitoring

- **monitoring**
- expert studies
- hydrodynamic modeling
- online app for tracking water levels of the line weirs

(Water Research Institute)

Vúvnh



Monitoring

# Amphibian monitoring

recommendations:

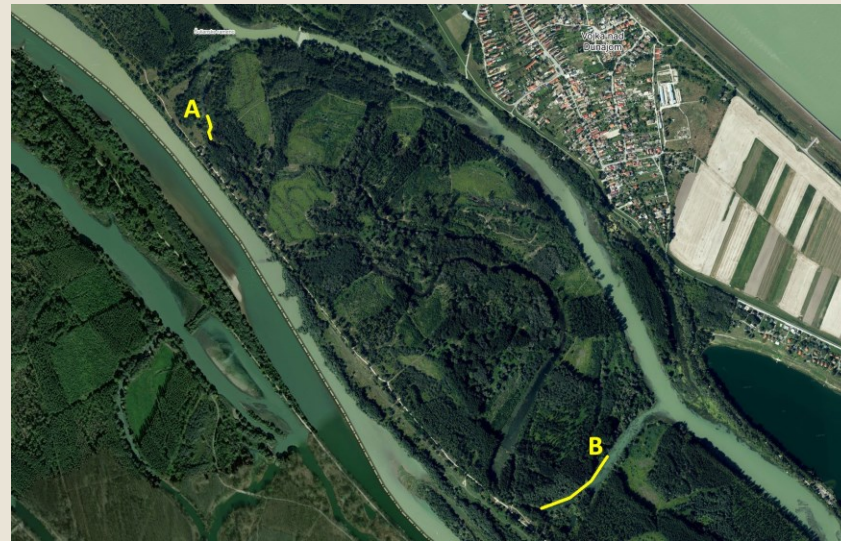
- earlier onset of spring simulated flood
- longer culmination of the higher discharge
- longer persistence of the flood water in the area



Monitoring

# Ichthyo monitoring

- resolving of long-standing mass mortality
- creation of suitable habitats for rheophilic and lithophilic species
- creation of spawning sites for phytophilic species



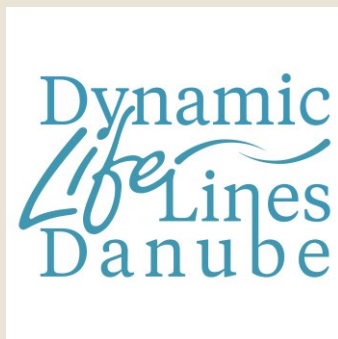
# Future Plans



LIFE18 NAT/AT/000733 Dynamic LIFE Lines Danube

LIFE20 NAT/AT/000063 Danube Wild Island Habitat Corridor

101069837 LIFE21-IPE-SK Implementation of the river basin management plan in selected river sub-basins in Slovakia



Living  
Rivers



THANK YOU  
FOR ATTENTION

