



KATEDRA HYDROMELIORACÍ
A KRAJINNÉHO INŽENÝRSTVÍ

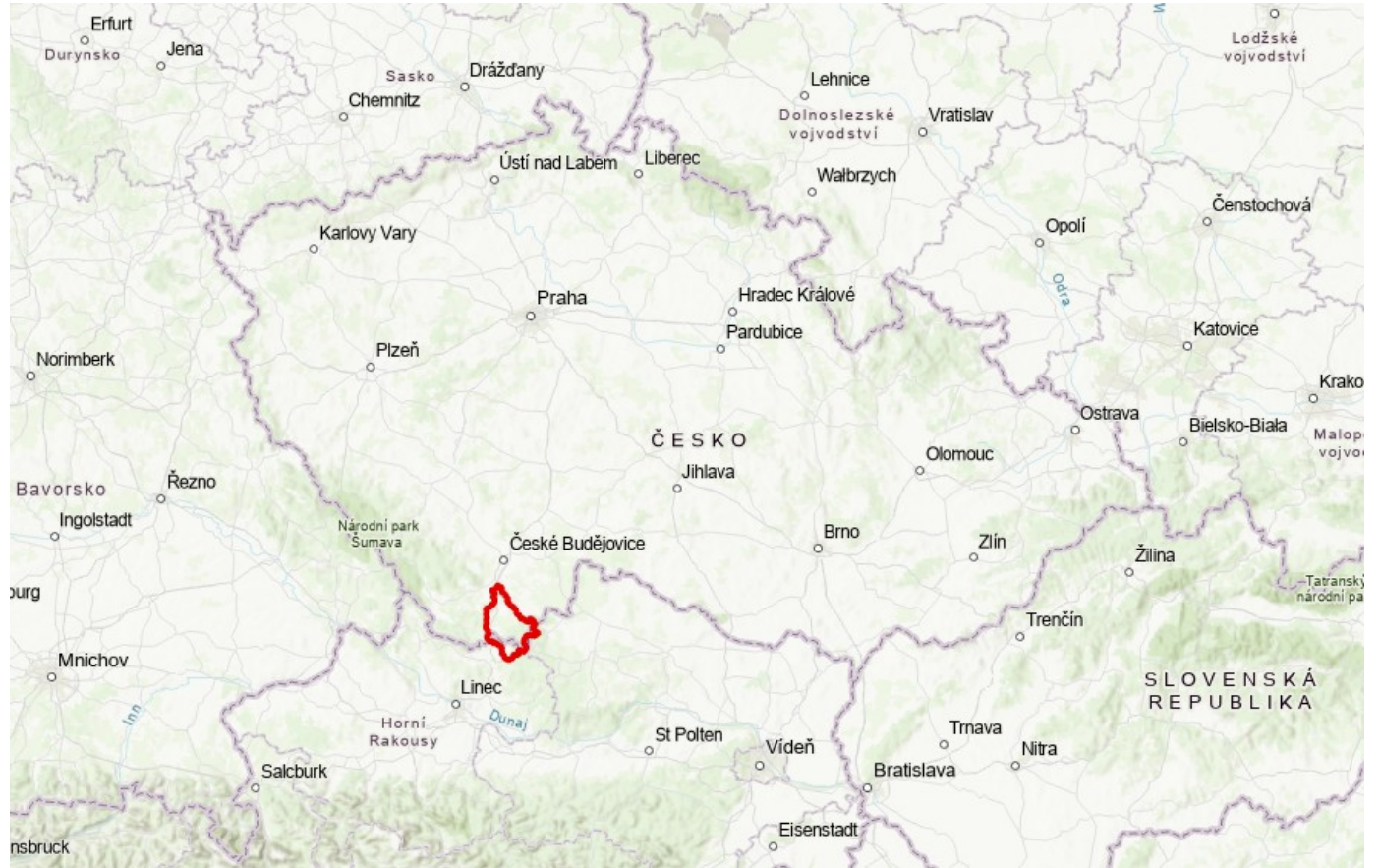


"The impact of depopulation on ecosystem services in Europe" project introduction

Adam Babuljak, Raquel Nogueira Rizzotto Falcão, Josef Krása, Tomáš Dostál

Římov catchment

- Area of 490 km²
- Southern Bohemia Region
- Czech Republic, Austria
- Main River – Malše
- Closing profile: Římov Reservoir



Historical landuse changes in Římov catchment

- Sparsely populated until 17th century
- Settled in the 17th century by Germans due to logging
- Settlement changes due to the railway at the beginning of the 20th century
- After WW II
 - Displacement of the German population
 - Abandonment of the Border zone (Reforestation)
 - Collectivisation of agricultural land (intensive farming) in the hinterland
- After 1989
 - Privatisation of agricultural land
 - Meadows and pastures instead of intensively cultivated arable land
 - Extension of existing municipalities

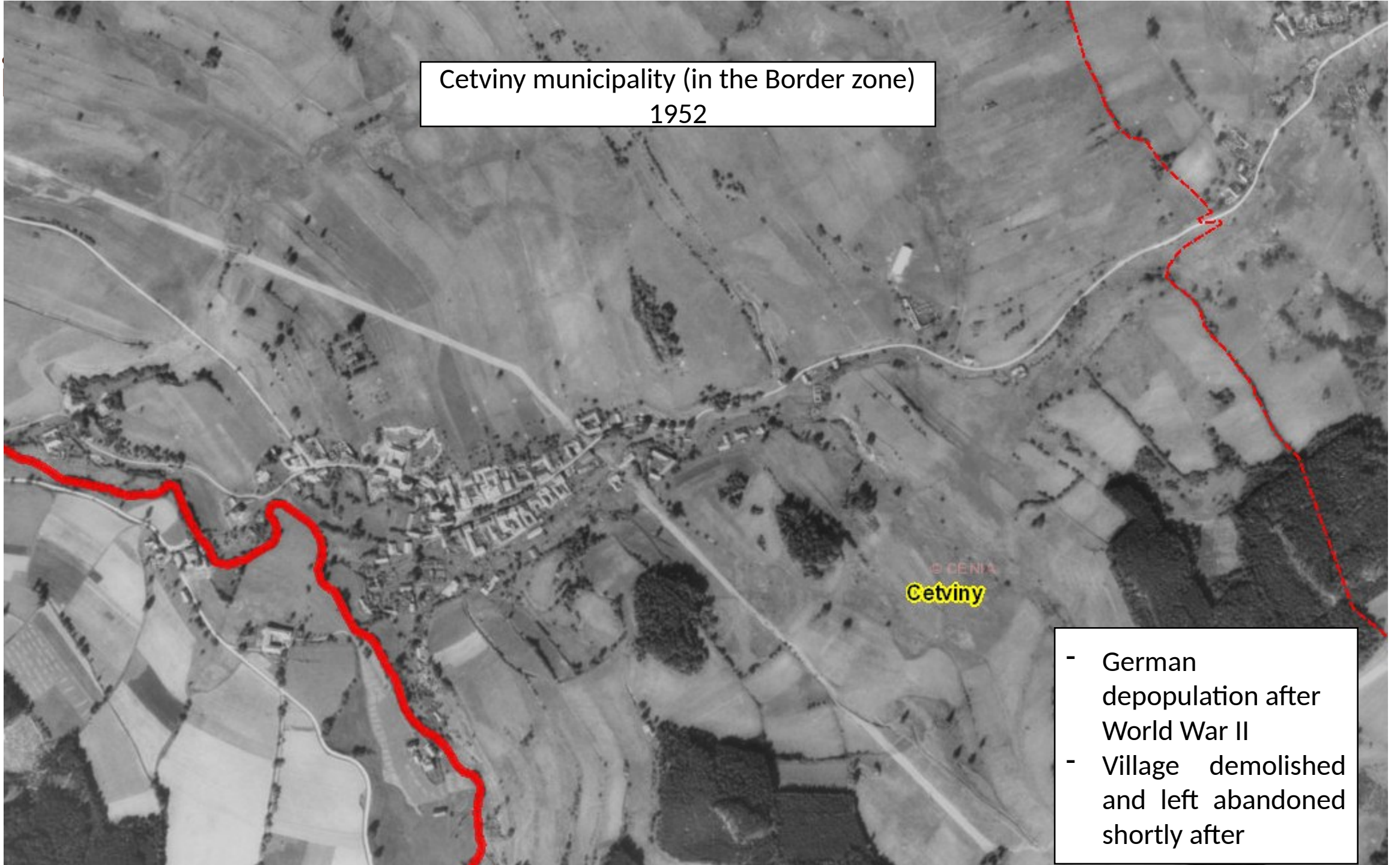
T

Cetviny municipality (in the Border zone)
1850s



T

Cetviny municipality (in the Border zone)
1952



- German depopulation after World War II
- Village demolished and left abandoned shortly after

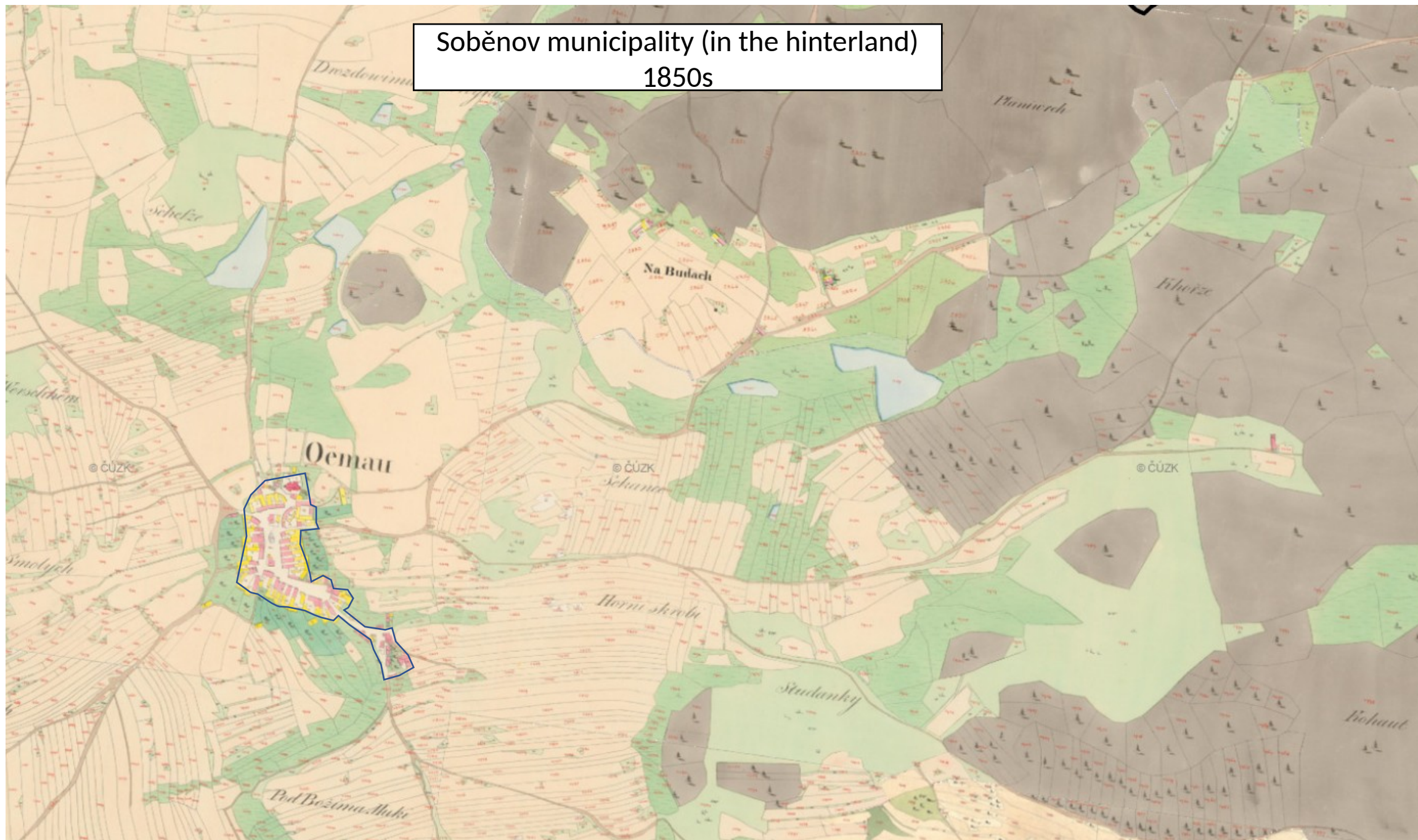
T

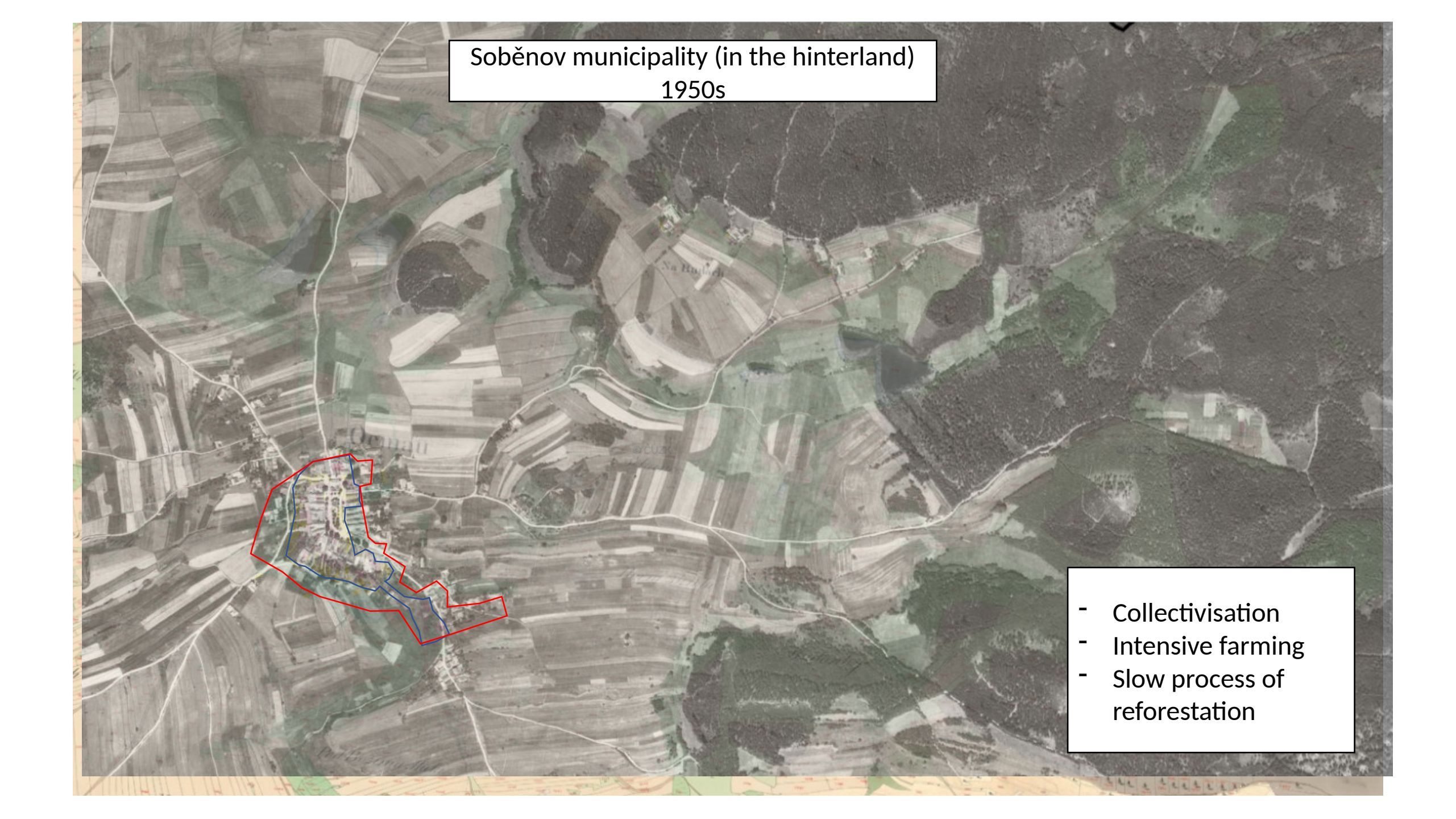
Cetviny municipality (in the Border zone)
Current time

- Cetviny village demolished
- Reforestation
- Arable land turned into forests, meadows and grasslands



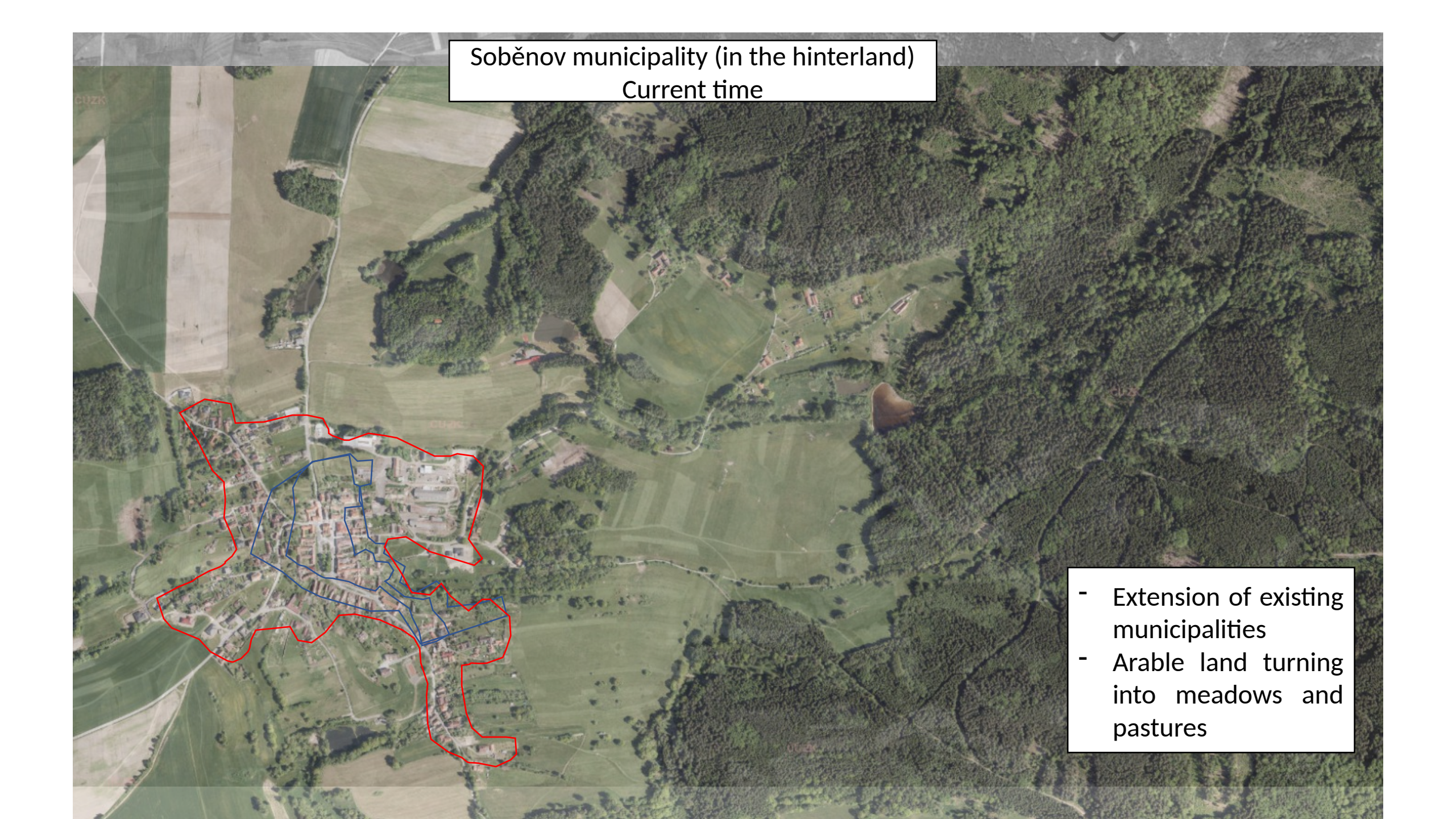
Soběnov municipality (in the hinterland)
1850s





Soběnov municipality (in the hinterland)
1950s

- Collectivisation
- Intensive farming
- Slow process of reforestation



Soběnov municipality (in the hinterland)
Current time

- Extension of existing municipalities
- Arable land turning into meadows and pastures

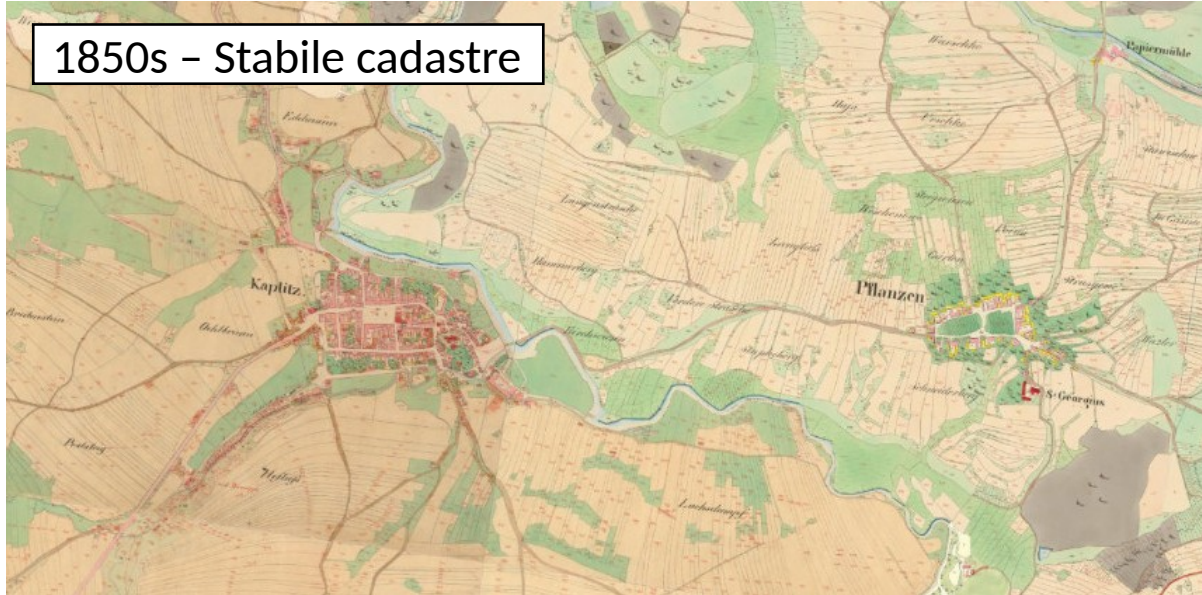
Landuse change in example municipalities

Cetviny landuse (ha)	1845	1948	1990	2000
Arable land	337.7	344.9	74.5	7.5
Meadows	118.7	138.6	98.5	132.7
Pastures	57.1	32.6	185.9	211
Agricultural land	515.8	518.3	358.9	351.2
Forests	87.5	94.8	204	205.3
Built-up areas	6.5	5.7	0.3	0.3

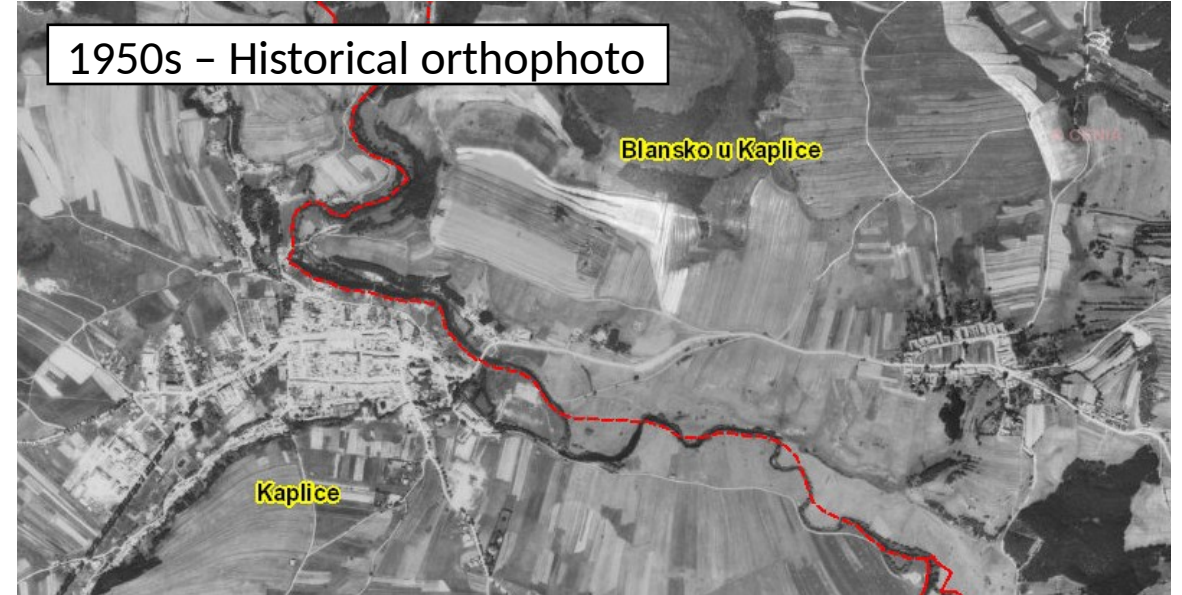
Soběnov landuse (ha)	1845	1948	1990	2000
Arable land	423.8	416	330.1	251.7
Meadows	140.1	121.9	51.2	139.3
Pastures	143	78.3	58.7	48.9
Agricultural land	709.2	619.2	449.9	449.8
Forests	510.7	598.2	701.9	702
Built-up areas	5.4	6.1	6.6	7.5

Basis for LU determination

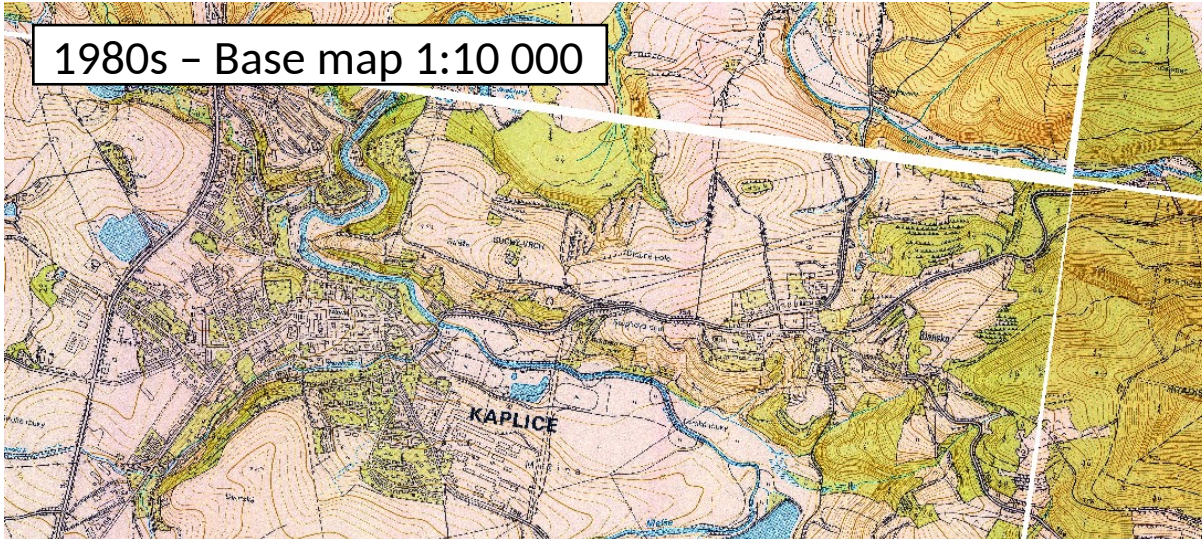
1850s - Stabile cadastre



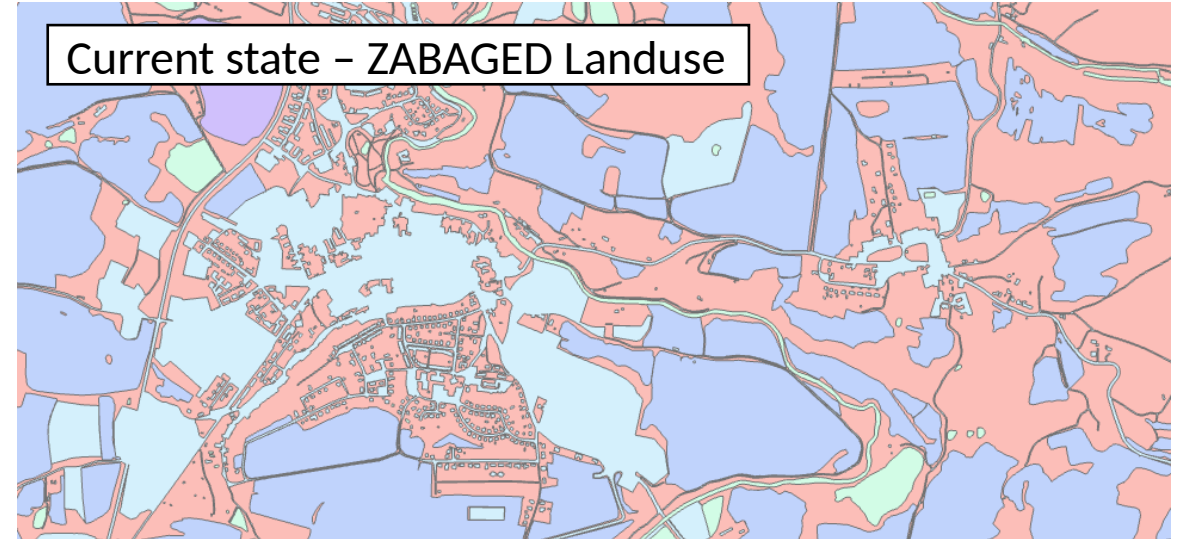
1950s - Historical orthophoto



1980s - Base map 1:10 000



Current state - ZABAGED Landuse

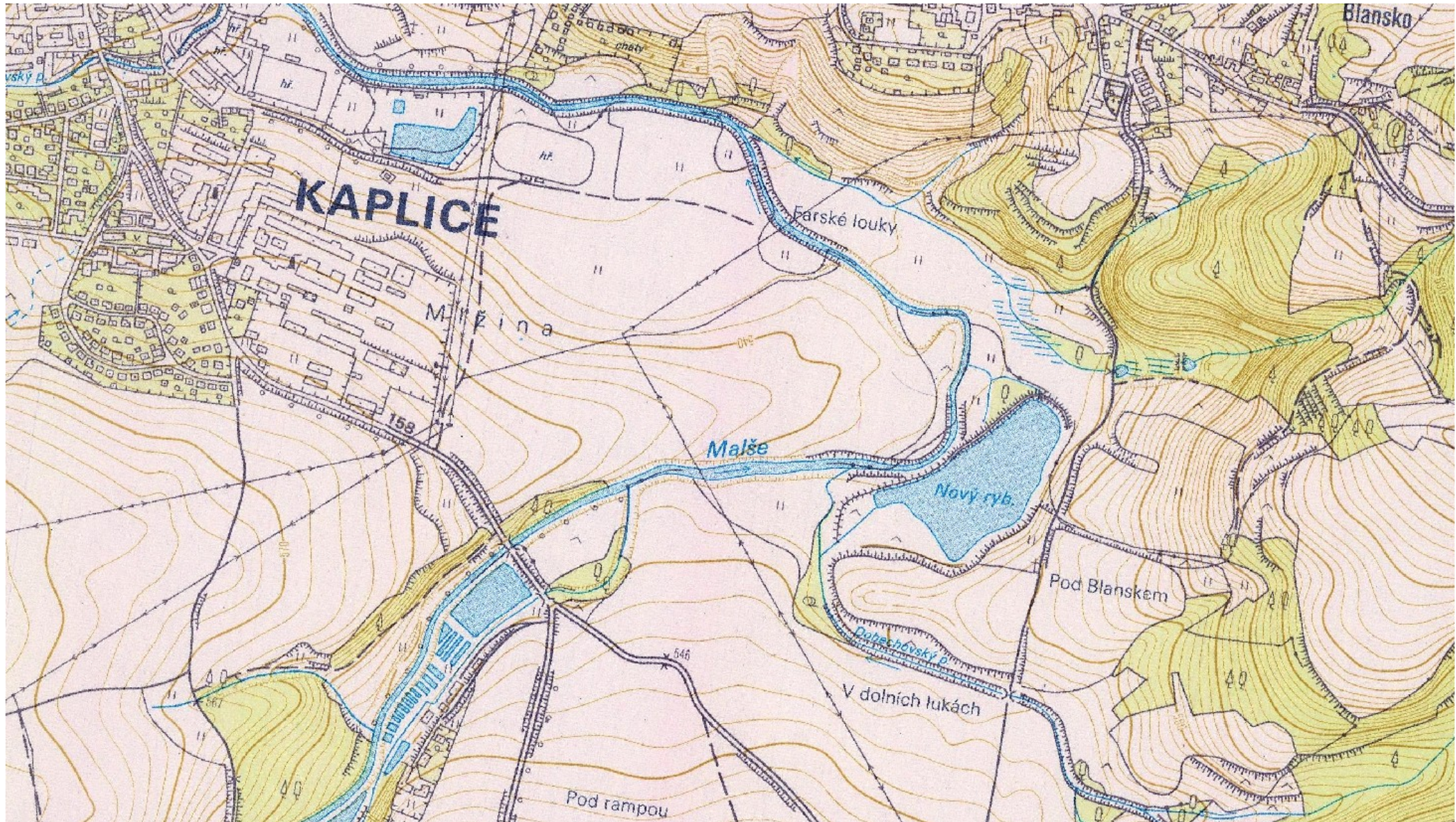


LU Determination

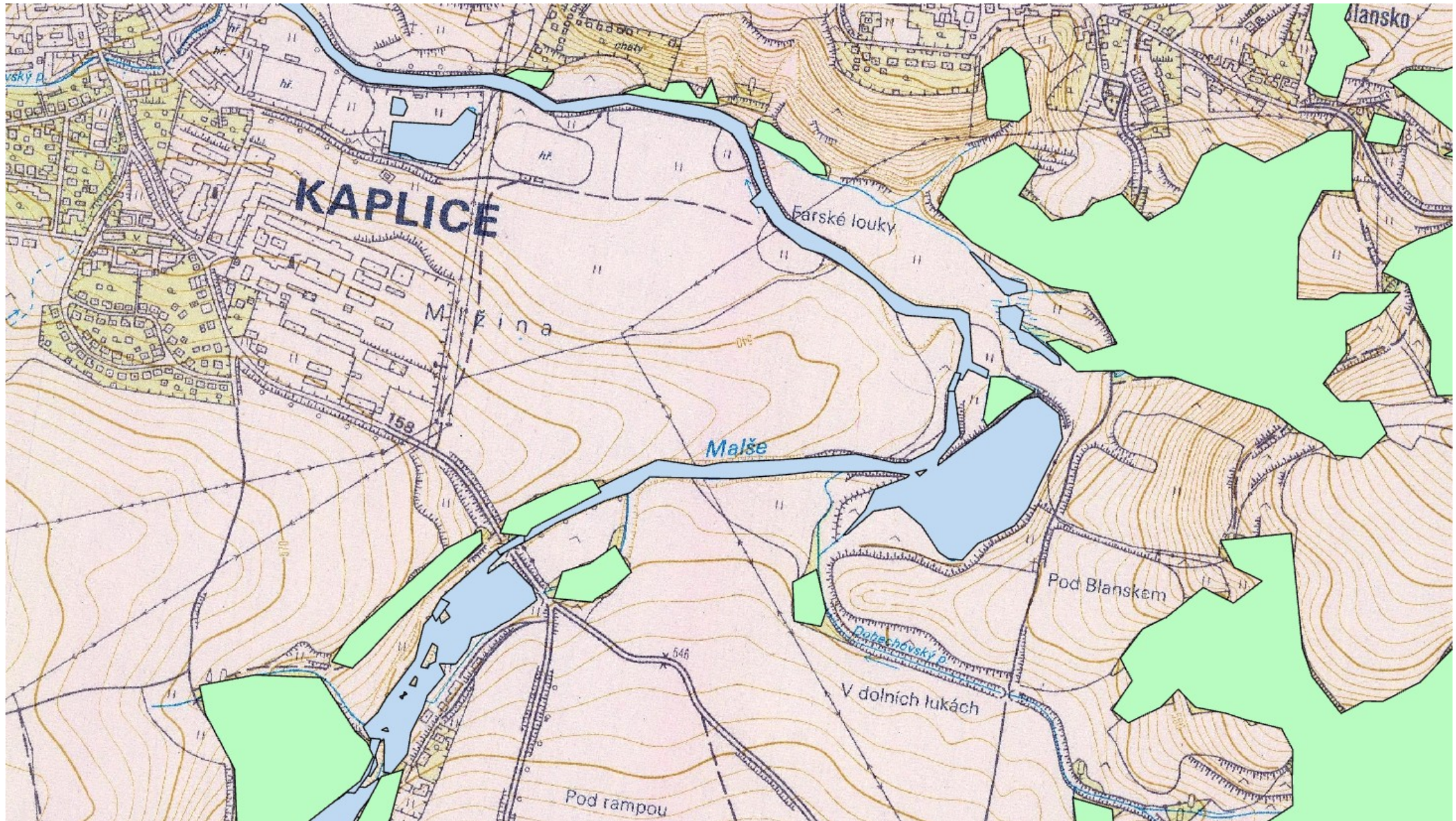
- The main challenge at this point
- LU – parameter that describes the change we observe – needs to be accurate

- 1850s – Combination of LU performed by Belgian students and Adam T. machine learning
- 1950s – Manual correction of Belgian students dataset
- 1980s – Whole new dataset preparation
- Current LU – complete

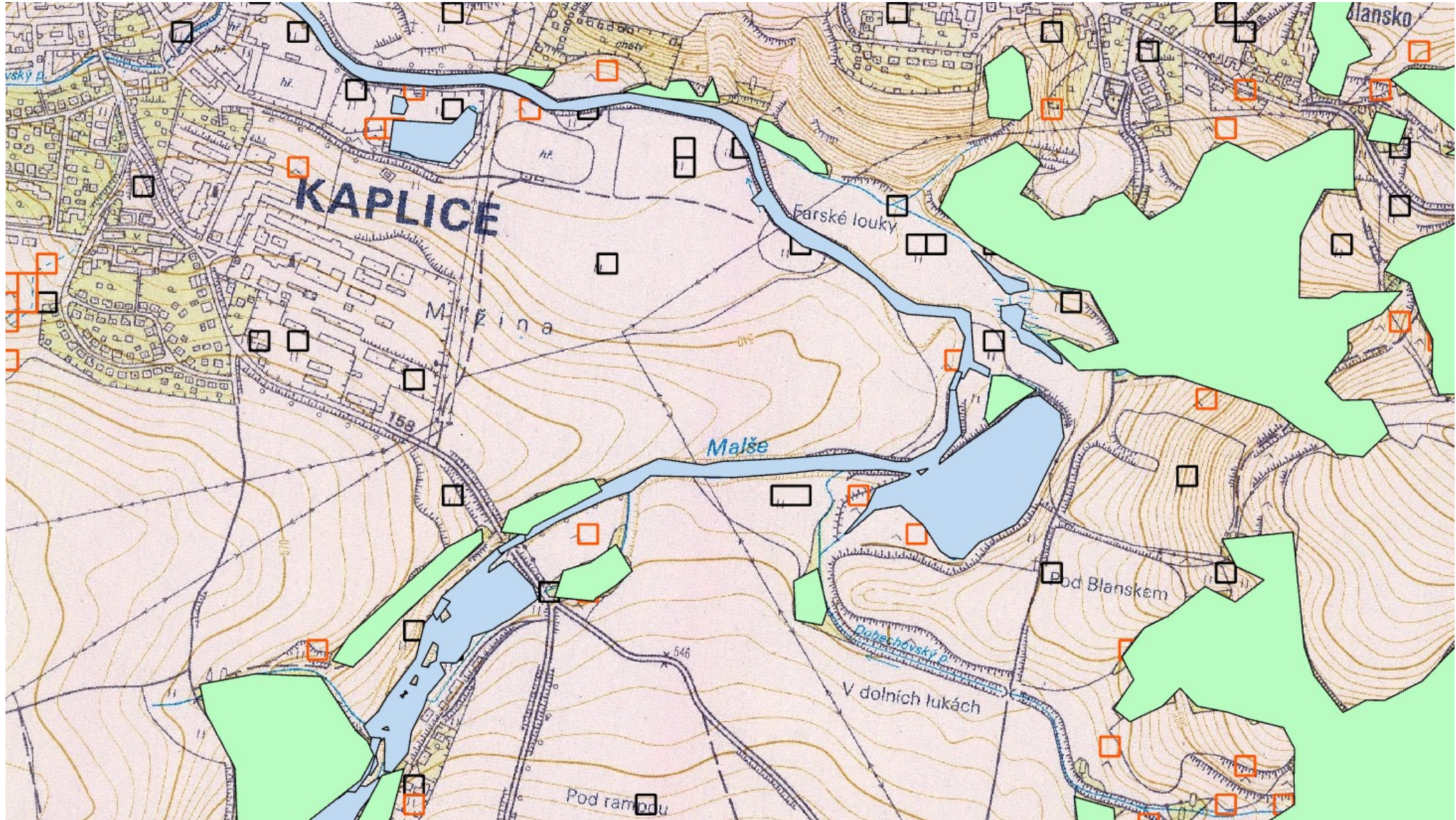
1980s LU Digitalization process



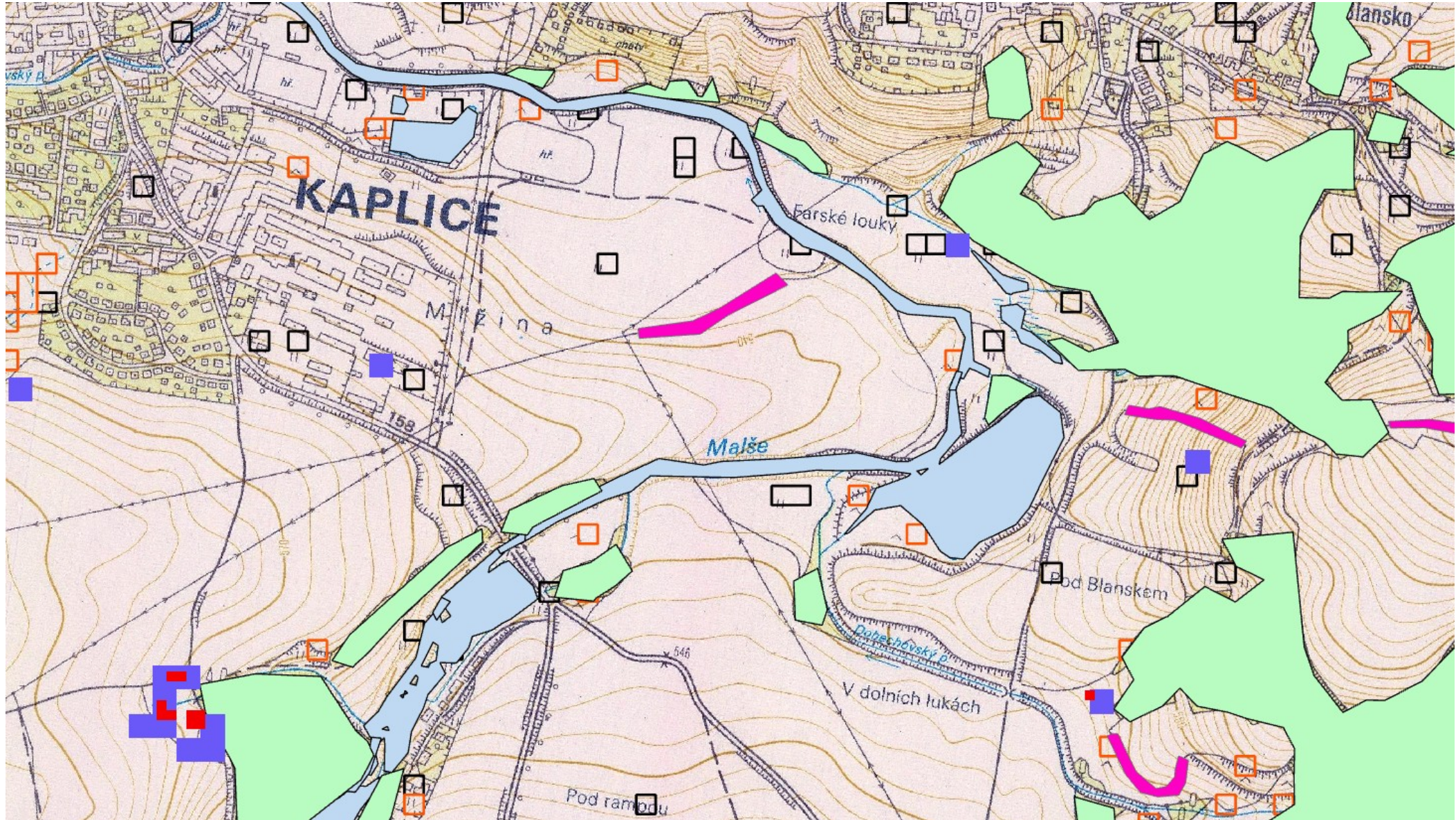
1980s LU Digitalization process



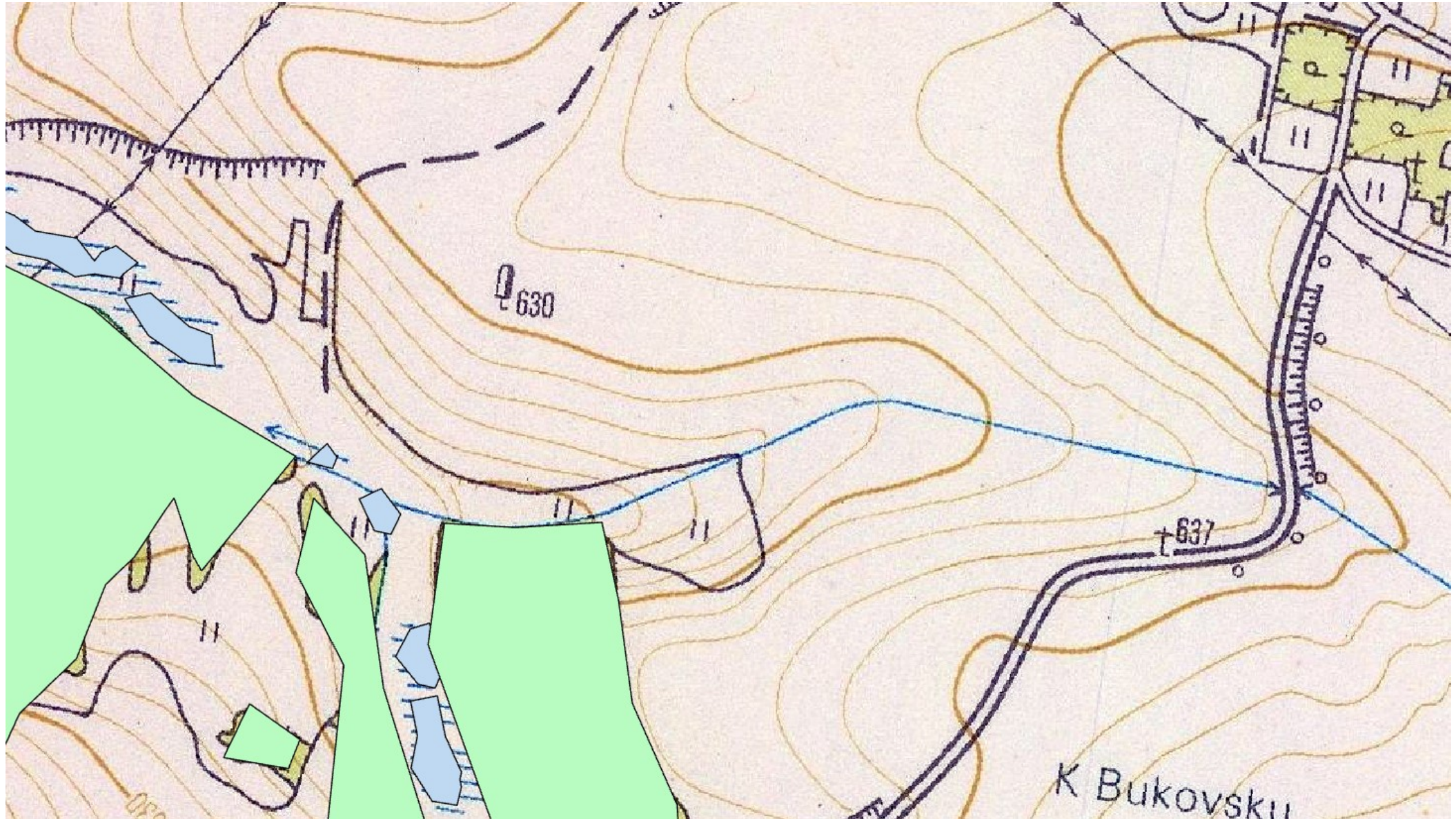
1980s LU Digitalization process



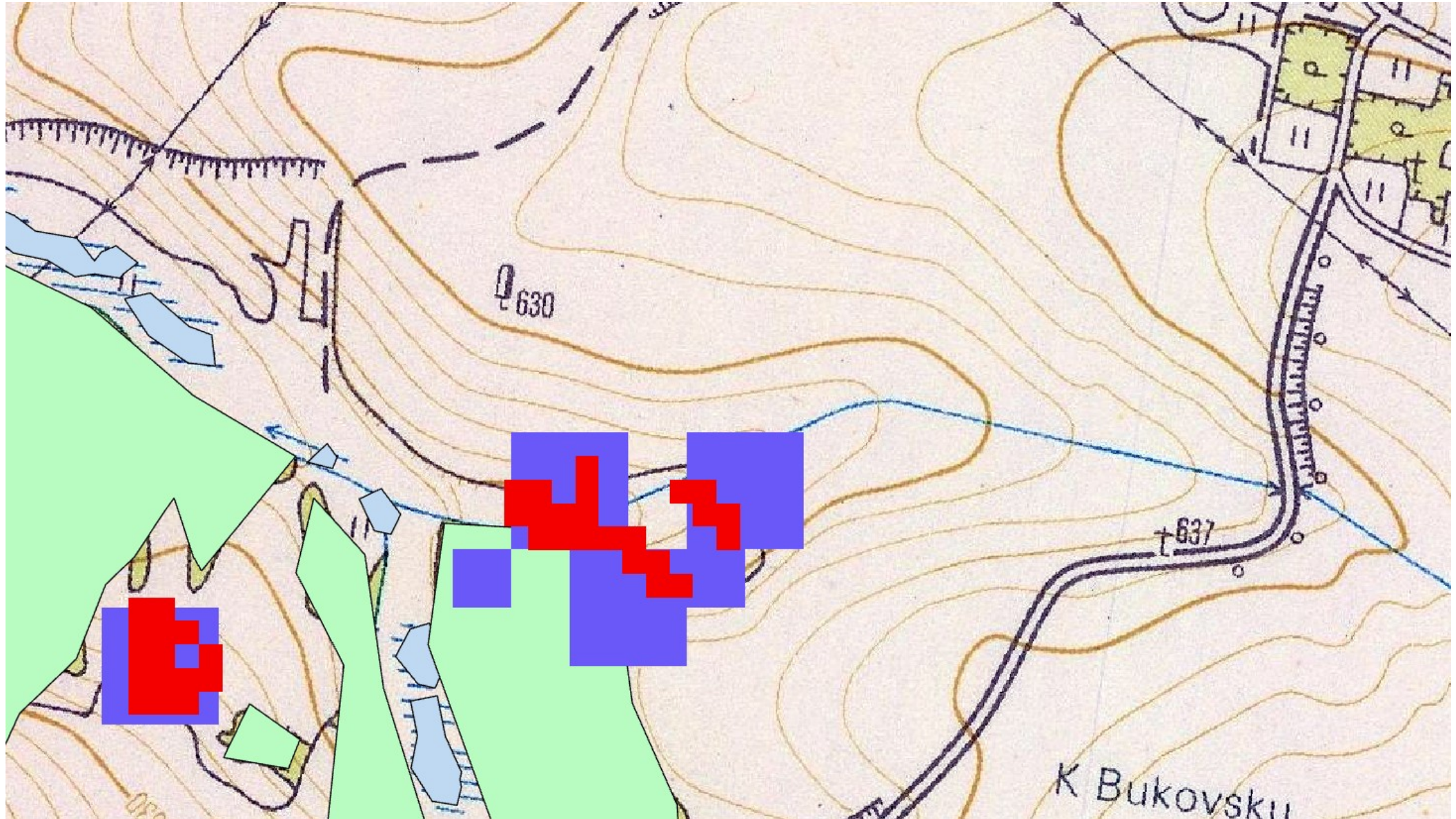
1980s LU Digitalization process



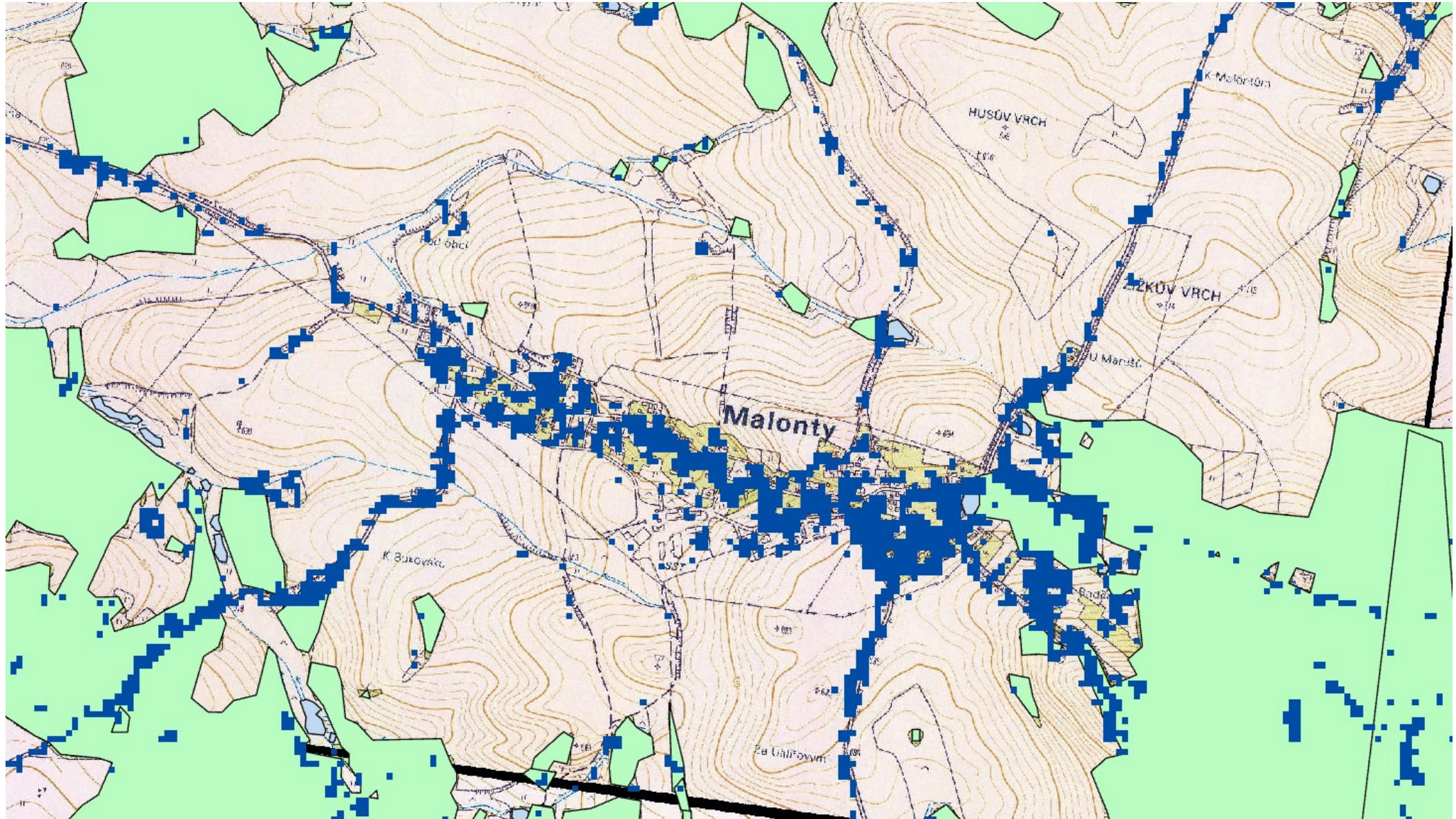
1980s LU Digitalization process



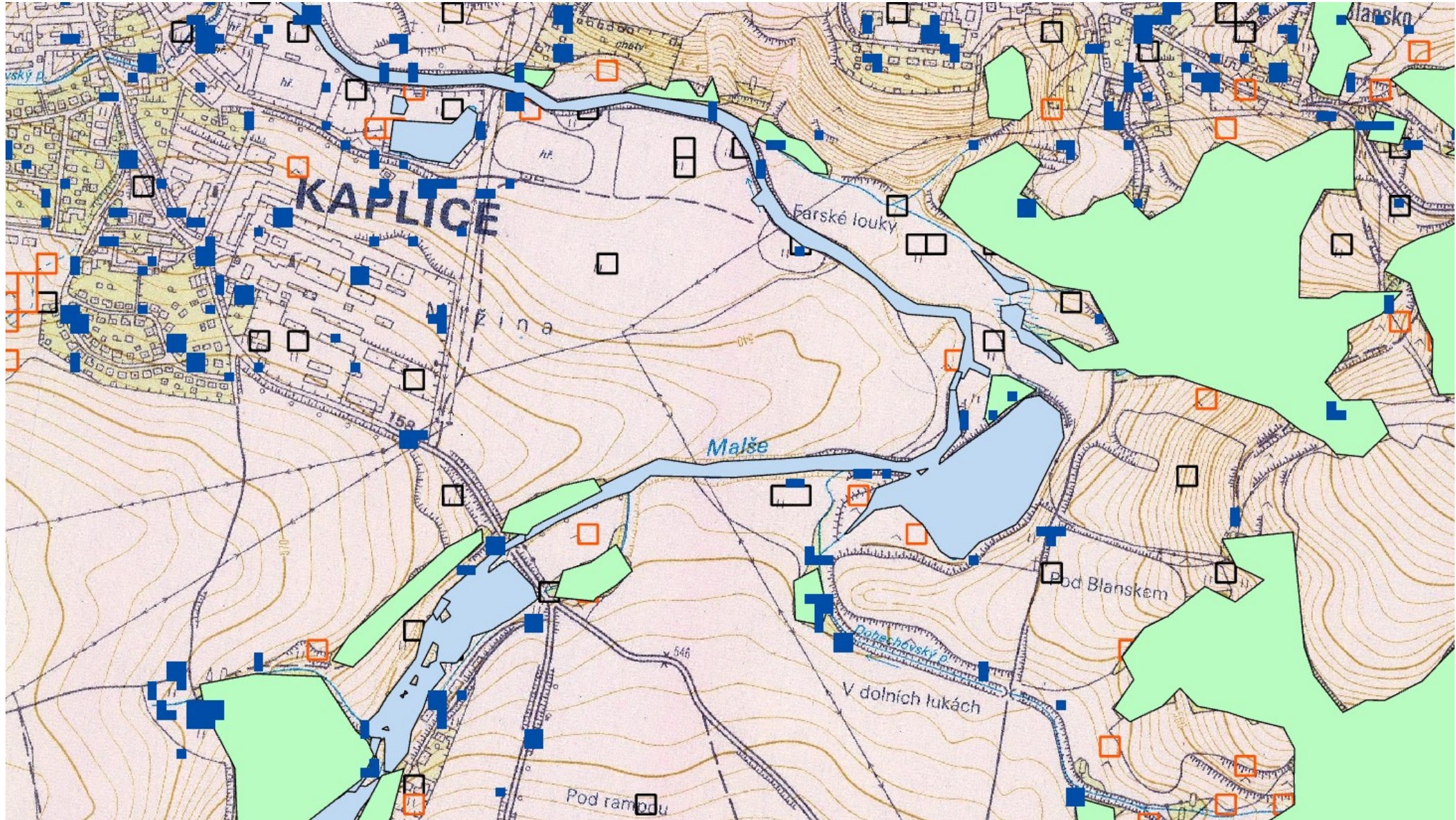
1980s LU Digitalization process



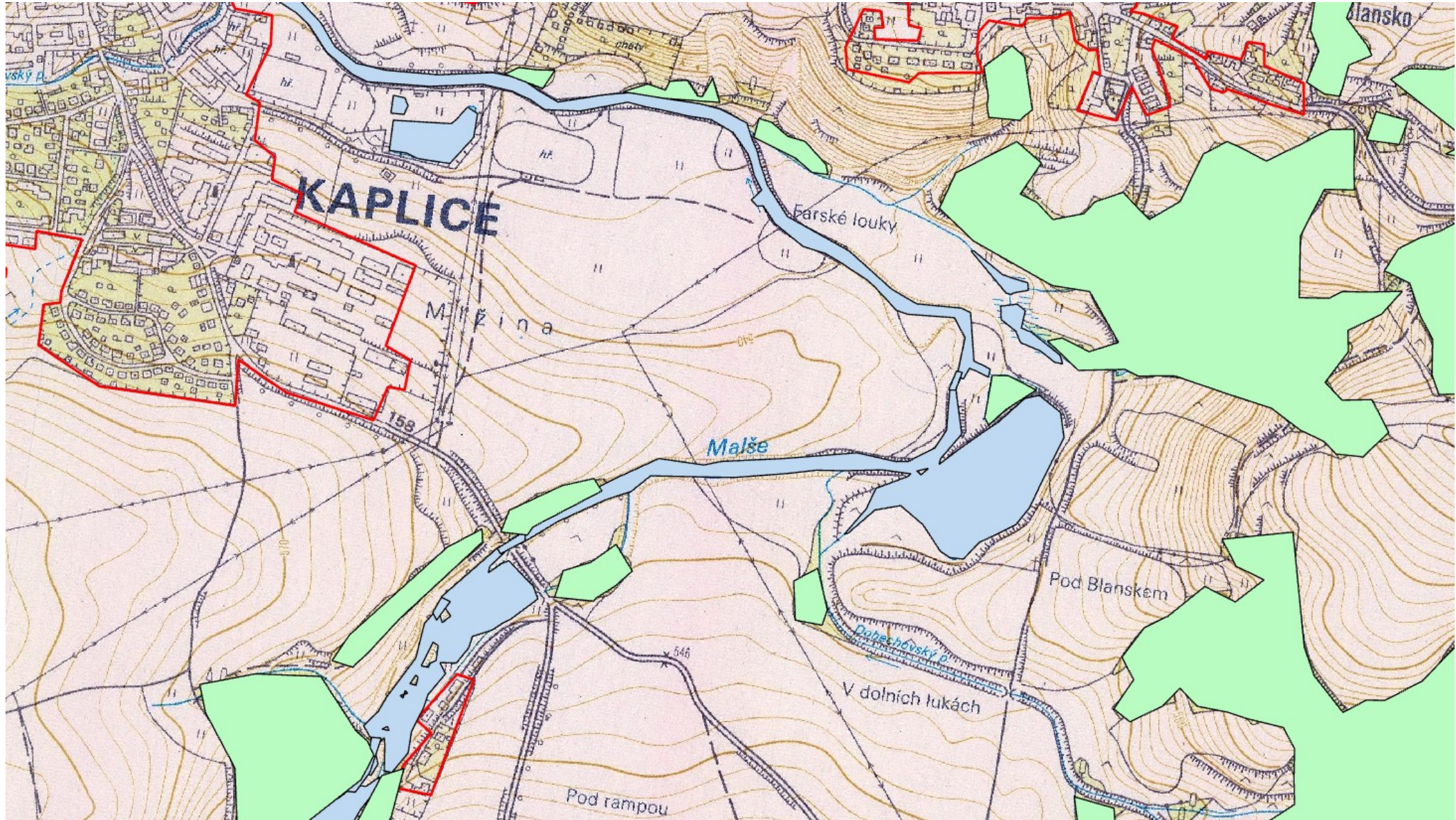
1980s LU Digitalization process



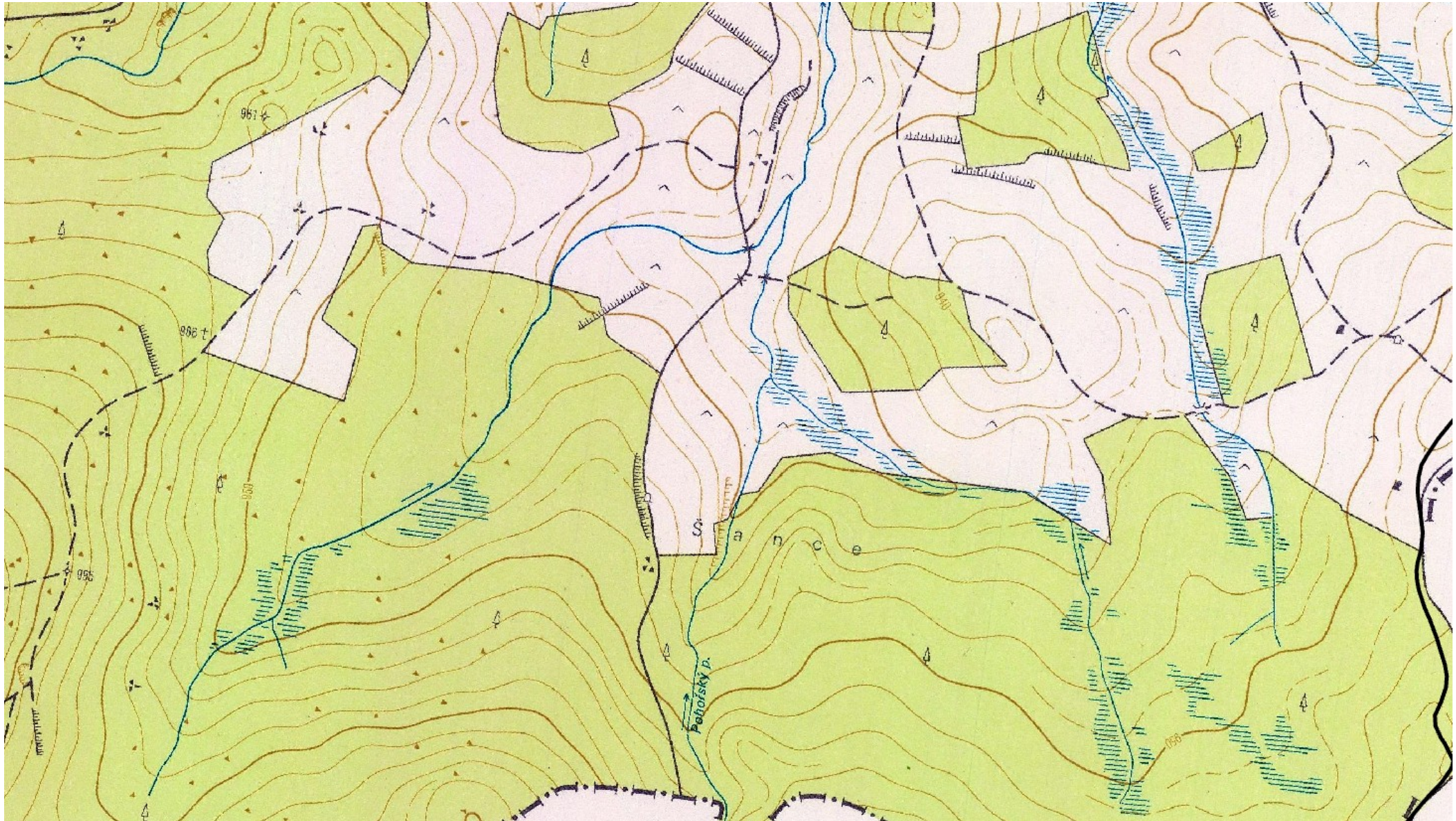
1980s LU Digitalization process



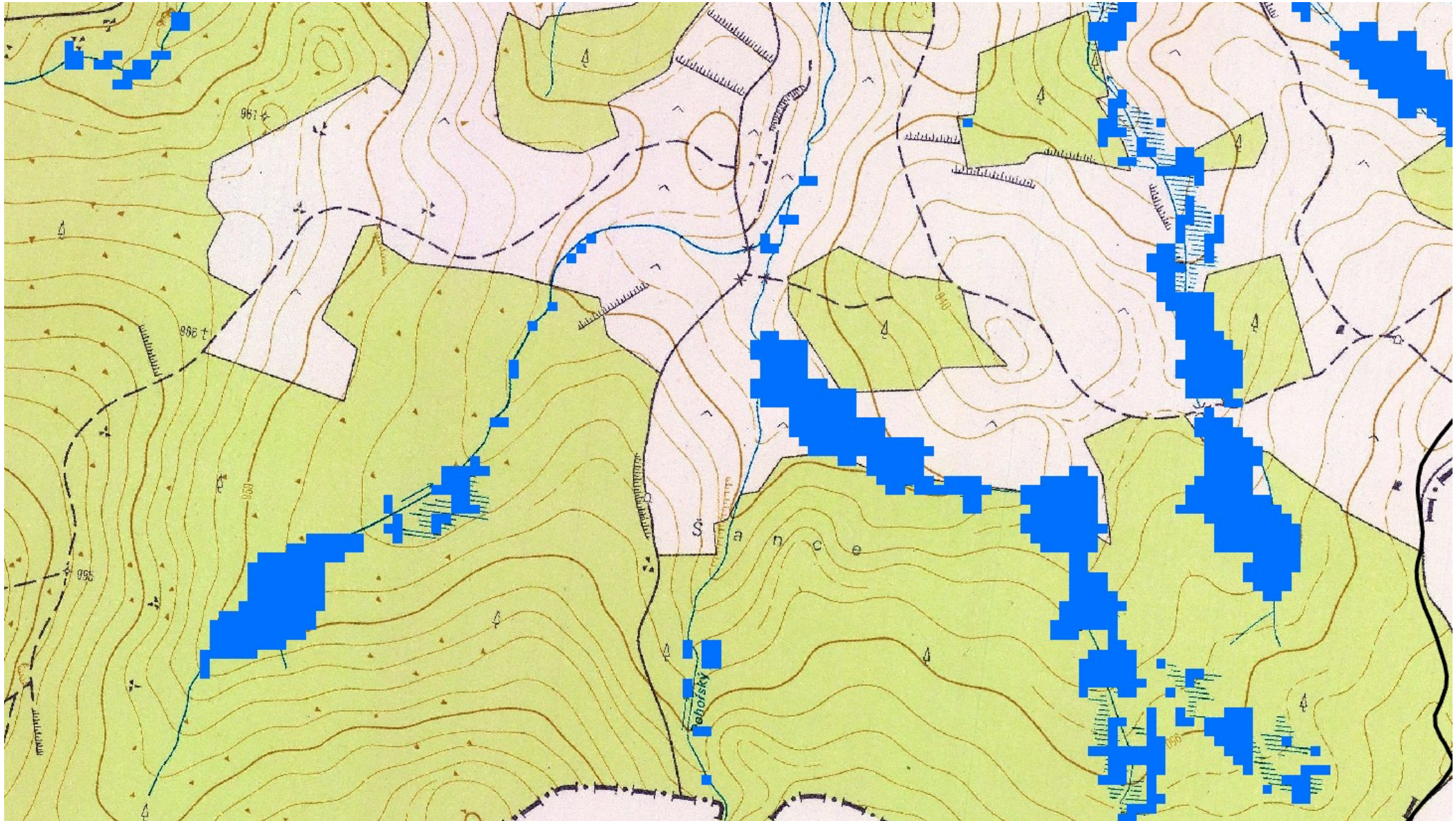
1980s LU Digitalization process



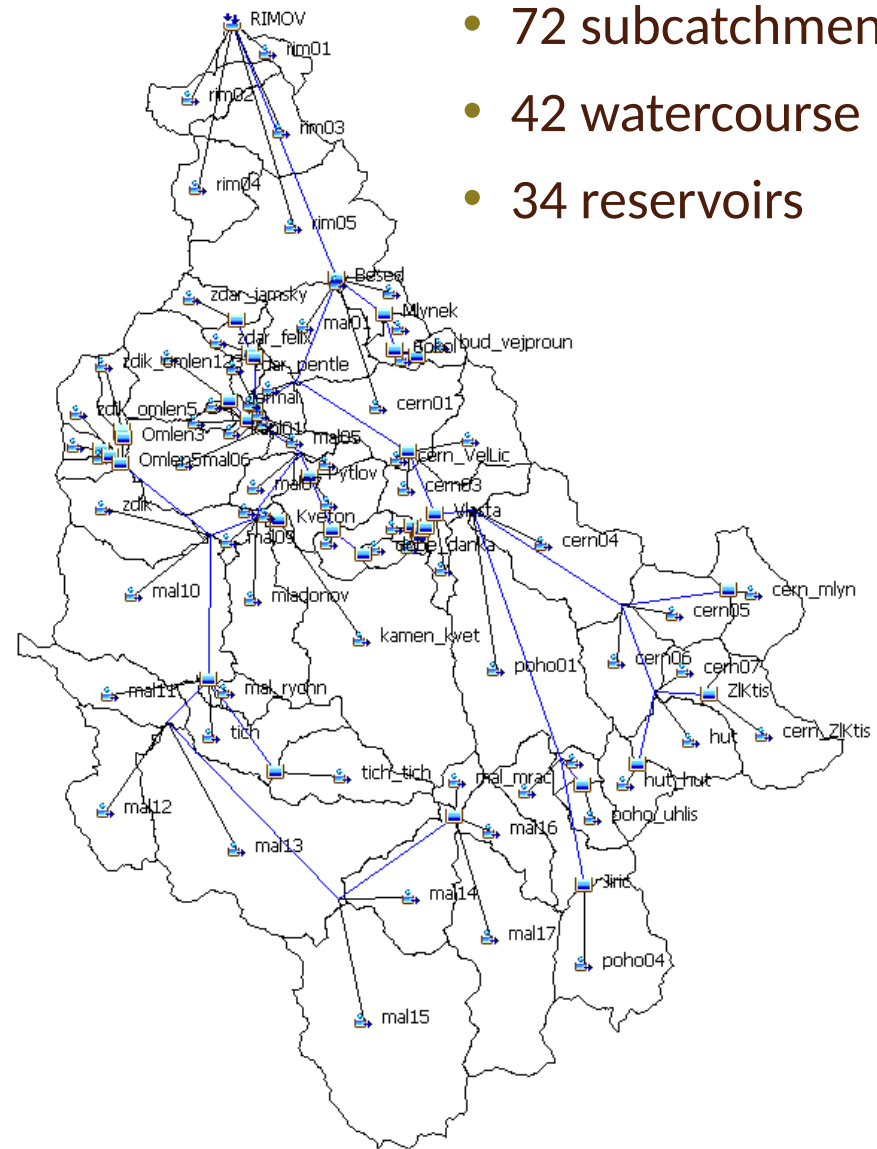
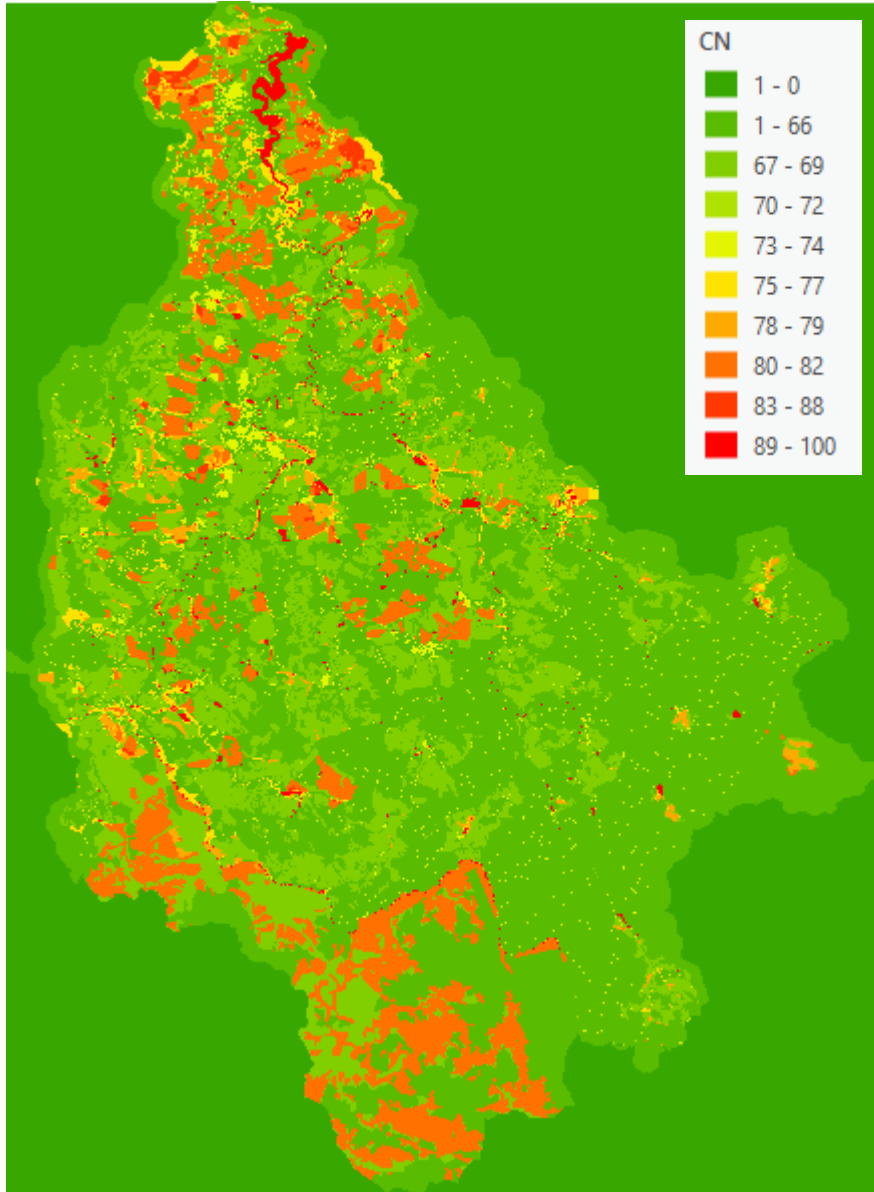
1980s LU Digitalization process



1980s LU Digitalization process



Runoff modelling



Future plans

- LU dataset finalisation
- Model calibration
- Surface runoff analysis for different time periods
- Sediment transport analysis
- Perform modelling for French and Polish catchment
- Interpretation and comparison of results
- linking with the results of biological and socio-demographic analysis
- Preparation of an international project of broader range and greater ambition

Thank you for attention