

# River Basin Administrators and Ground Water

## Important Problems in the Ground Water Domain

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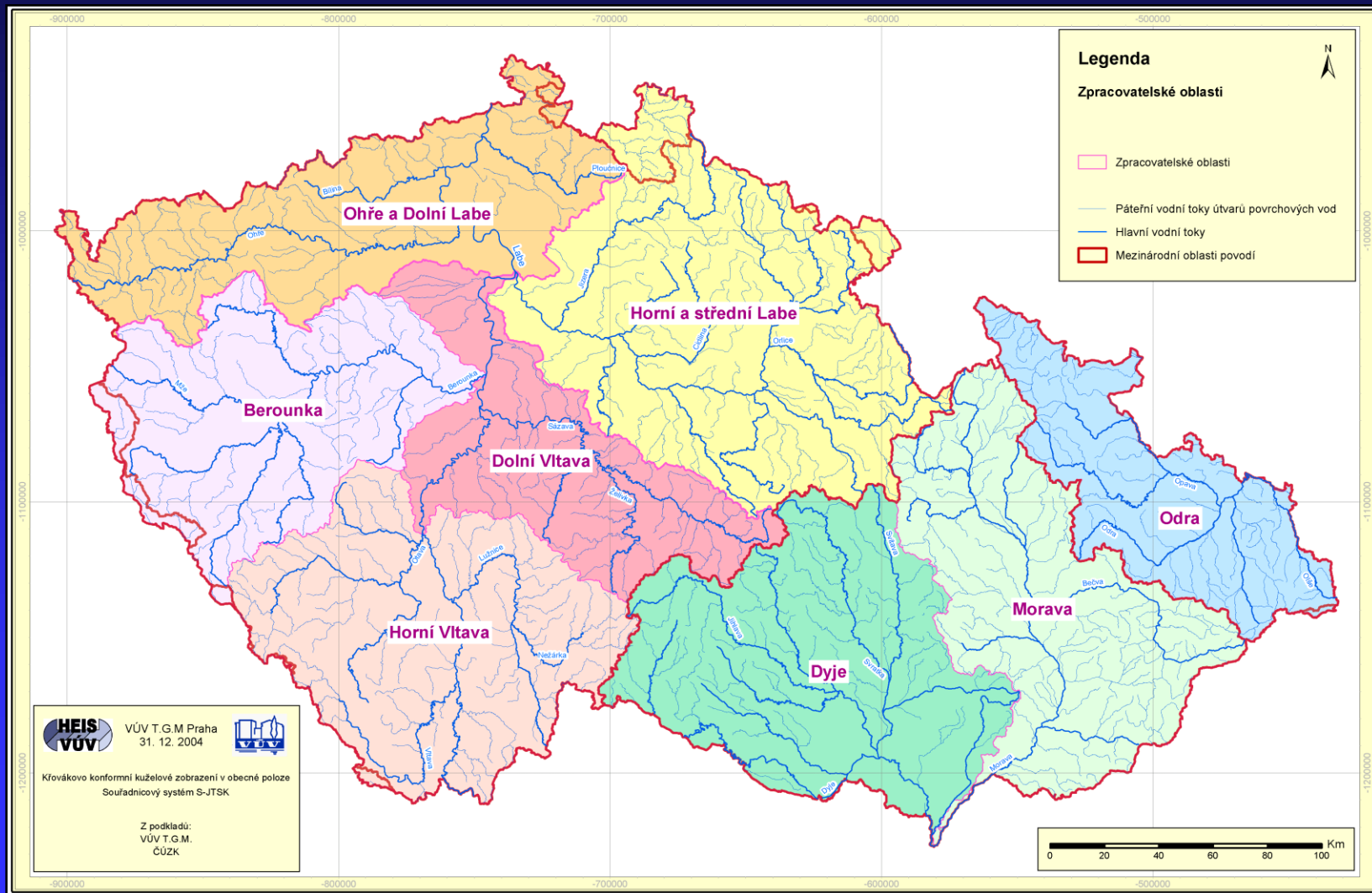
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# Main River Basins in the Czech Republic



# River Basin Districts



## River Basin Districts

- ❑ River Basin Elbe - Upper and Central Elbe  
-14 735 km<sup>2</sup>
- ❑ River Basin Vltava - Upper Vltava -11 058 km<sup>2</sup>
  - Berounka - 9 270 km<sup>2</sup>
  - Lower Vltava -7 250 km<sup>2</sup>
- ❑ River Basin Ohre - Ohre and Lower Elbe  
- 9 519 km<sup>2</sup>

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CR - 79 000 km<sup>2</sup>



# Ground Water $\Leftrightarrow$ River Basin Administrators

- Reviewing activity (use of the ground waters)
- Assessment of the ground water condition  
(water management balance of amount and quality)
- Water management planning
- Other activities according to the Water Act

# Water Balance

## *Hydrological Balance*

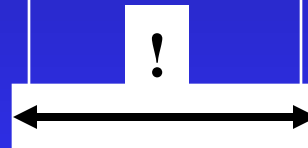
- compares changes of water storage in a hydrogeological region or in water formation
- Prepared by CHMI
- Once every year

## *Water Management Balance*

- ⇒ compares requirements for ground water withdrawals with its utilizable capacity while conserving the acceptable state

Prepared by River Basin Administrators:

1. Last year
2. Current situation
3. Future state



## Water Management Balance of the Amount and Quality of the Ground Water

### Data :

1. Reporting data on the amount and quality of ground water being withdrawn (withdrawals over 6 000 m<sup>3</sup> per year, or 500 m<sup>3</sup> per month)
  - **Registration of users** - maintained and actualized by river basin administrators
2. Outputs of the hydrological balance

### Basic balance unit:

Hydrogeological region / water bodies

## Withdrawals of the Ground Water and their Statistics:

**Amount** - m<sup>3</sup>/month

**Quality** – Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, NH<sub>4</sub><sup>+</sup>, NO<sub>3</sub><sup>-</sup>, CHSK<sub>Mn</sub>, Cu, Cd, Pb, pH

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Number of balanced withdrawals – year 2007

- River Basin Elbe: 987
- River Basin Vltava
  - Upper Vltava: 439
  - Berounka: 399
  - Lower Vltava: 361
- River Basin Ohre : 484



# Hydrogeological division of the CR

## Hydrogeologická rajonizace České republiky 2005



# Hydrogeological division of the CR

Hydrogeological regions in the CR - 152

River Basin Elbe - 45

River Basin Vltavy - 26

River Basin Ohre - 29

# Important Problems in the Ground Water Domain

## Influence of a Significant Withdrawal on the Protected Ecosystem

Protection of water ecosystems and water bound ecosystems

Conflict between nature protection and ensuring the water management services

**Area:** Region South Bohemia, district České Budějovice, Dolní Bukovsko  
„Horusice spring area“

### Geology and Hydrogeology:

HGR 2151 – Třeboňská pánev – Northern part, pan structure, Tertiary era and Cretaceous sediments up to 300 m thick, marked discontinuity - mažický shift

### Ground Water Withdrawal: 5 abstraction wells

Waterworks and Sewerage South Bohemia

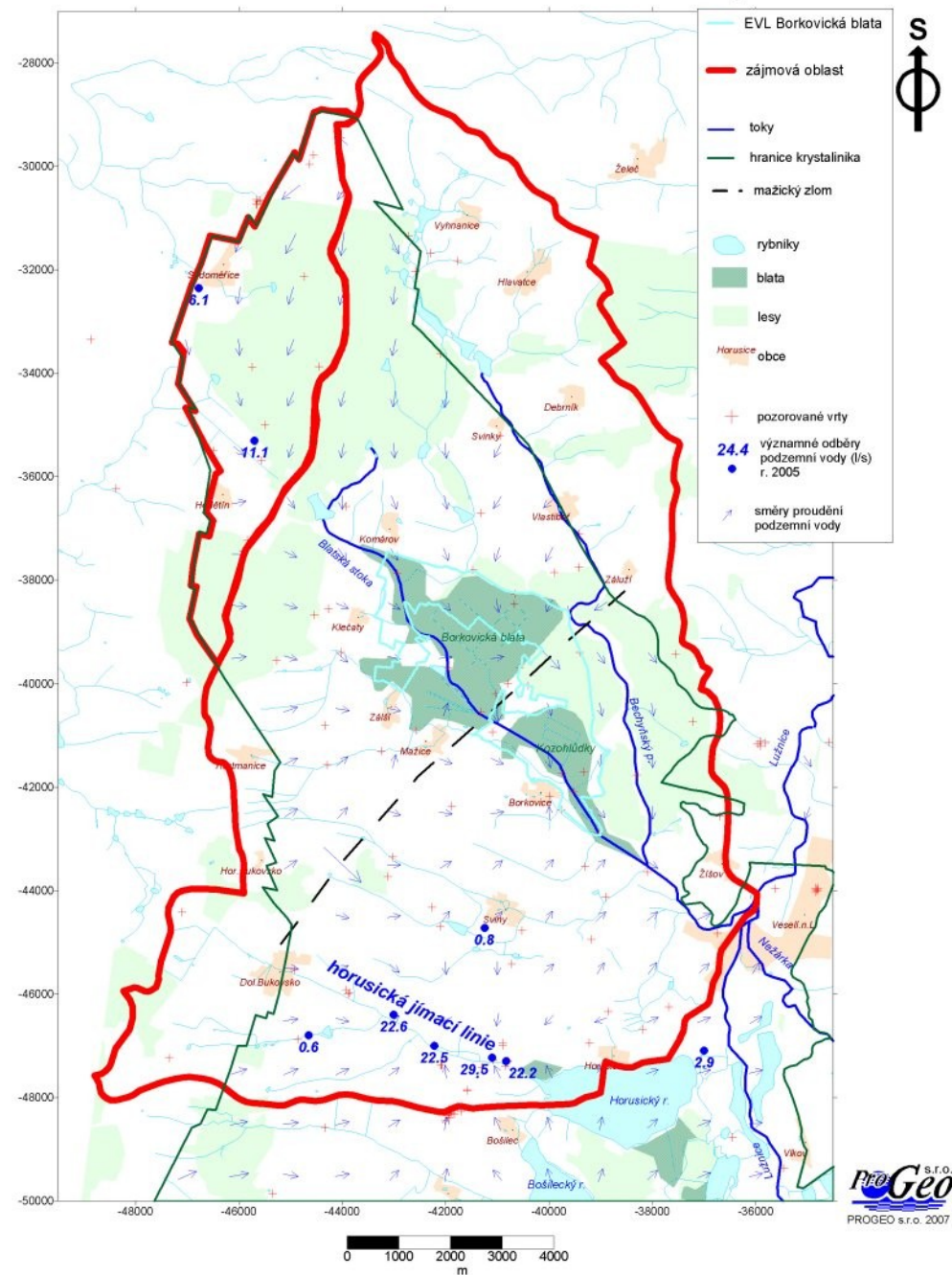
Amount : 1. constant withdrawal - 115 l/s

2. substitute withdrawal – 120 l/s

**Protected Ecosystem :** mažická and borkovická blata – extensive  
peat-bogs = Important European Area

# Situace zájmové oblasti

třeboňská pánev - severní část



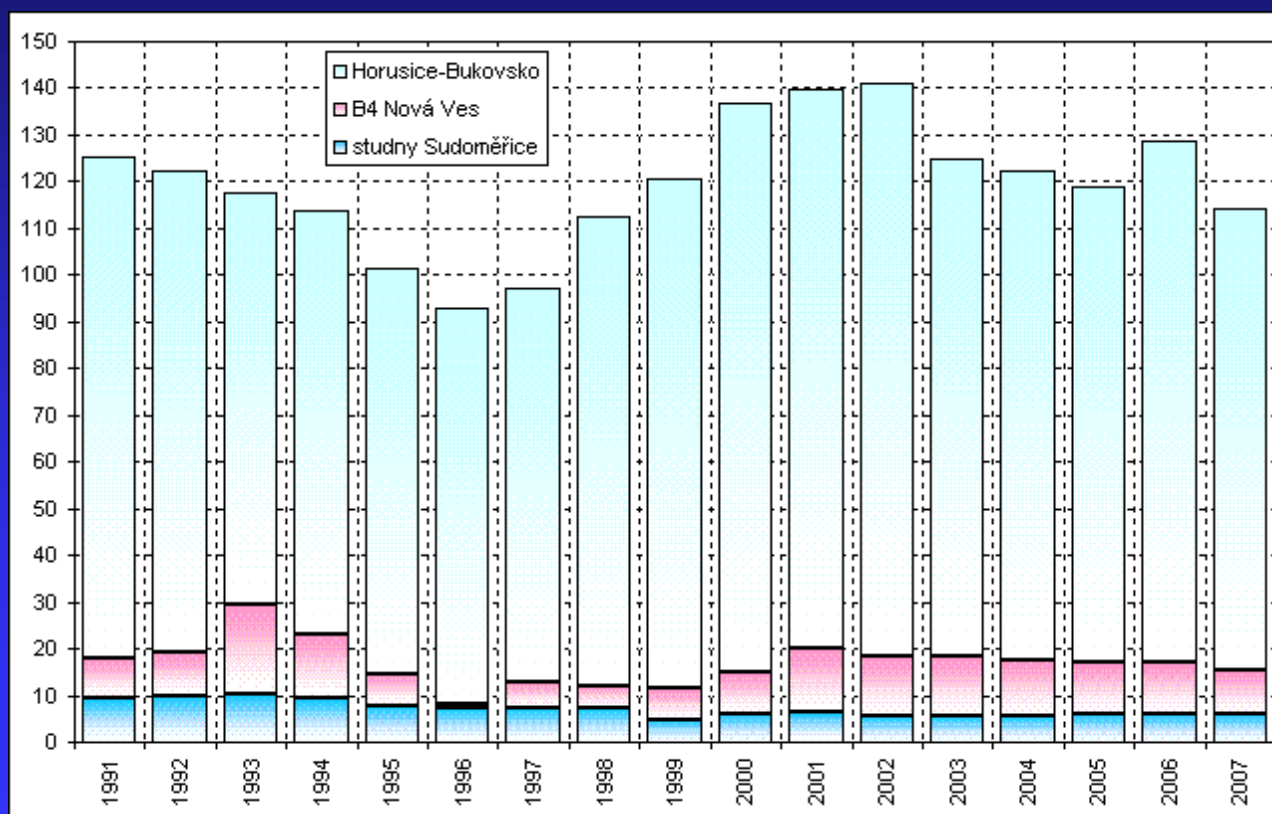
## **Influence of a Significant Withdrawal on the Protected Ecosystem**

### *Measures for Withdrawal Regulation:*

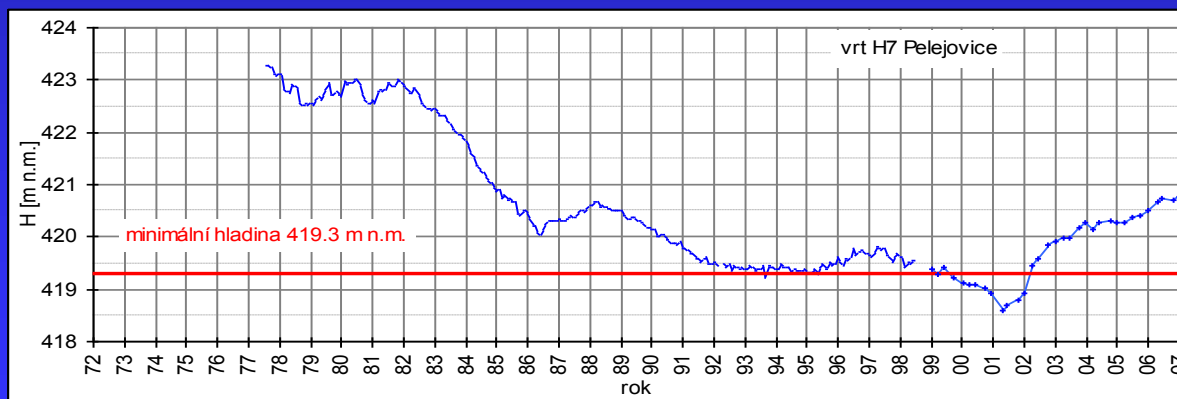
- Decreasing the pumped amount
- Determination of the minimal level of the ground water
- Determination of the minimal residual flow
- Monitoring of the water levels and quality, flows
- Results assessment using a mathematical model
- Water rights permission for withdrawing for a short time (about 3-5 years).



## Average Annual Withdrawal of Ground Water between 1991 – 2007 (l/s)



# Minimal Ground Water Levels for Withdrawal of Ground Water from the Horusice Spring Area



**Thank you for your attention**