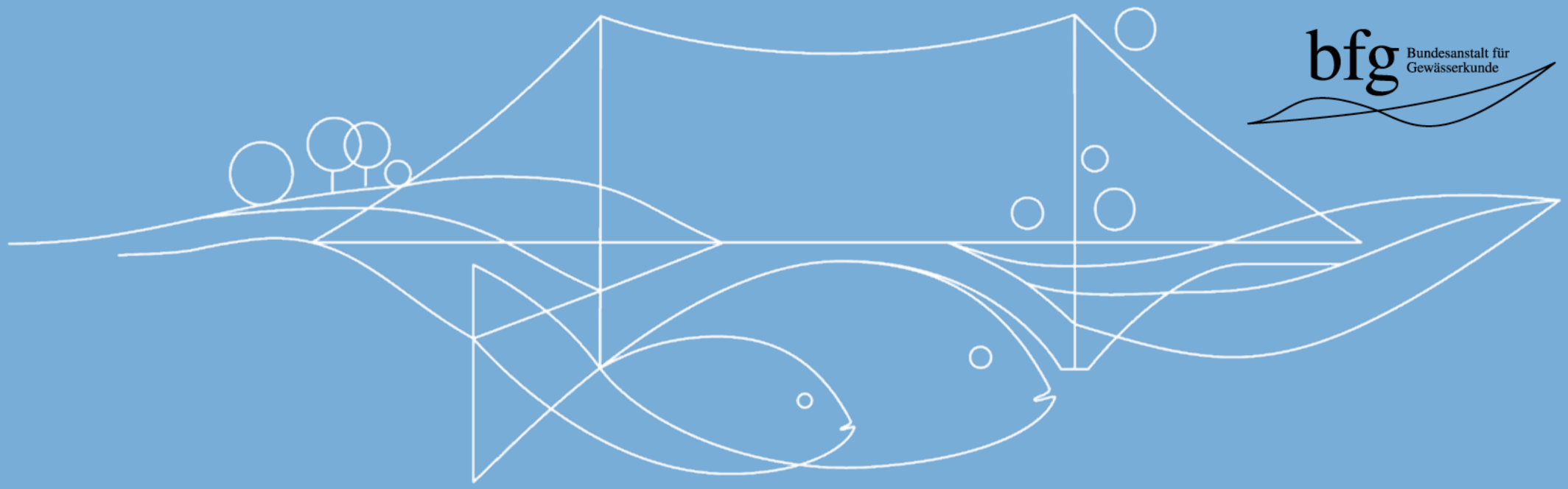


bfg Bundesanstalt für Gewässerkunde

Bienvenue!

Studies on combined technical-biological bank protection on Federal Waterways in Germany

Hubert Liebenstein
Department U3 - Vegetation Studies, Landscape Management
German Federal Institute of Hydrology (BfG)

Studies on combined technical-biological bank protection on Federal Waterways in Germany

Agenda

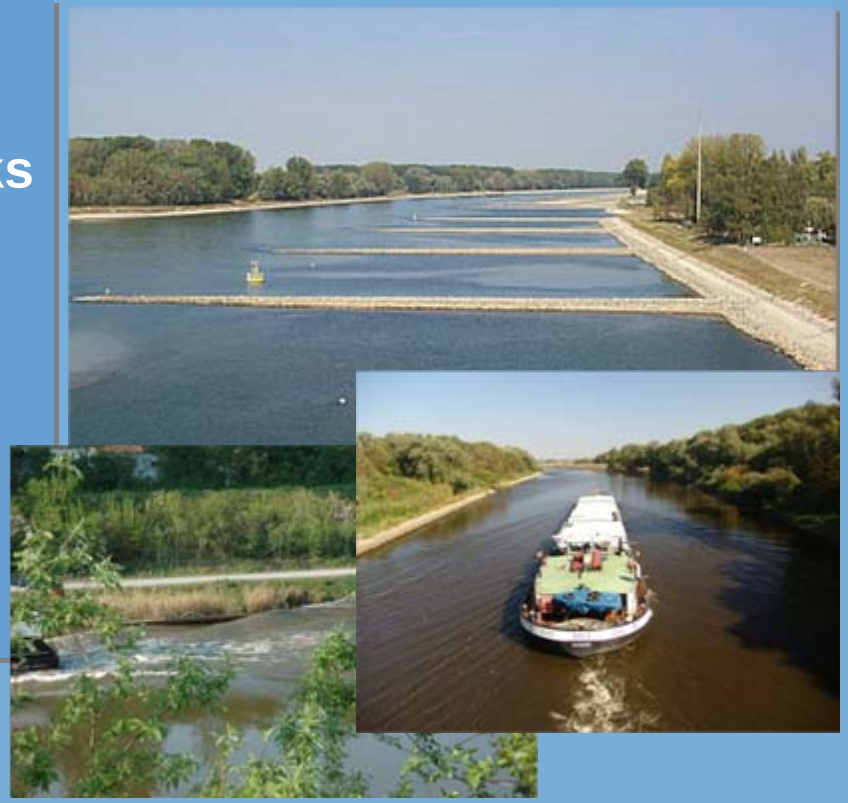
> Background

> Test reach Stolzenau (Middle River Weser)

Background

Safety of Federal Waterways

Technical requirements to stability of river banks e. g. recommendations, guidelines
(MAR – Standard constructions,
MAK – Grain filters,
MAG – Geotextiles)



Ecological aspects and laws concerning nature conservation

e. g.
WFD,
FFH-Directive,
Directive on the Conservation of Wild Birds

R&D-Project on combined technical-biological bank protection (since 2004)

Institutions involved

Federal Waterways Engineering and Research Institute

Federal Institute of Hydrology

Department – G 4
Earthworks and Bank Protection

Department – U 3
Vegetation Studies, Landscape Management

Department – W 4
Interaction Ship/ Waterway Field Investigations

Department - U 4
Fauna and Ecology

Waterways and Shipping Offices (WSÄ)

Technical consultants

Biological consultants

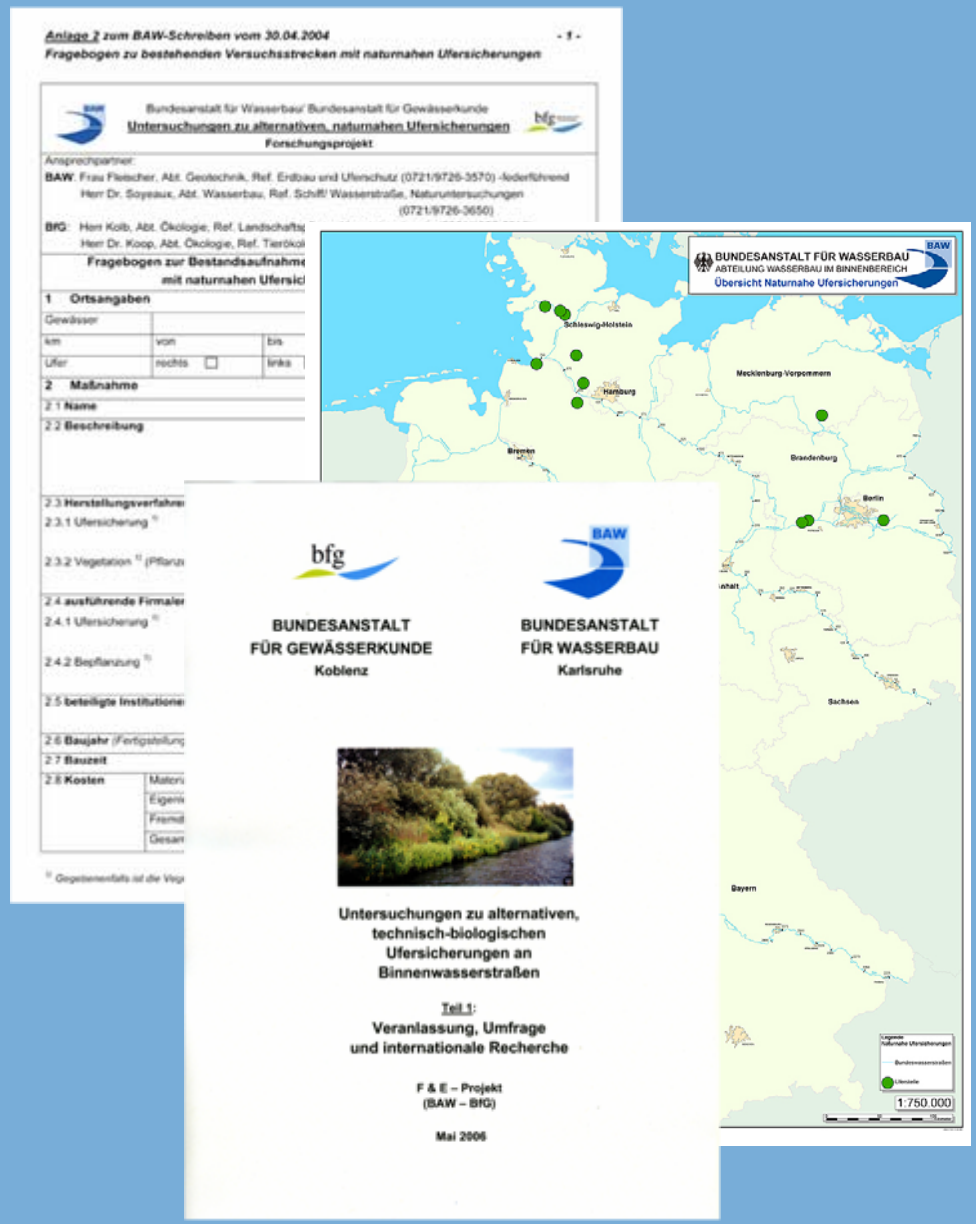
Previous activities

1. International literature research

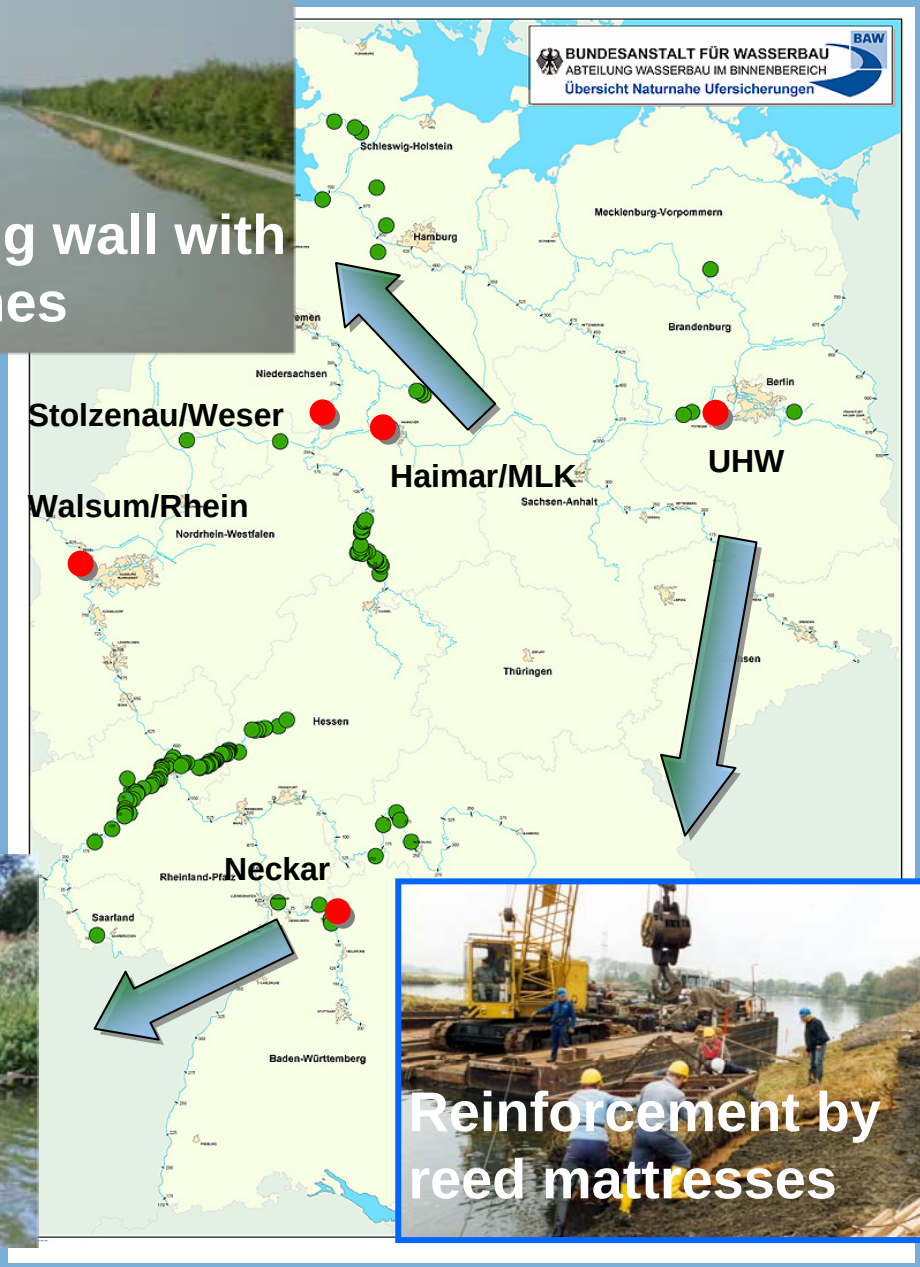
2. Inquiry about test reaches of the WSV (BAW / BfG - questionnaire)

   Sub-Report Part 1 (2006): background, questionnaire and international research

3. Detailed investigations of selected test reaches of the WSÄ



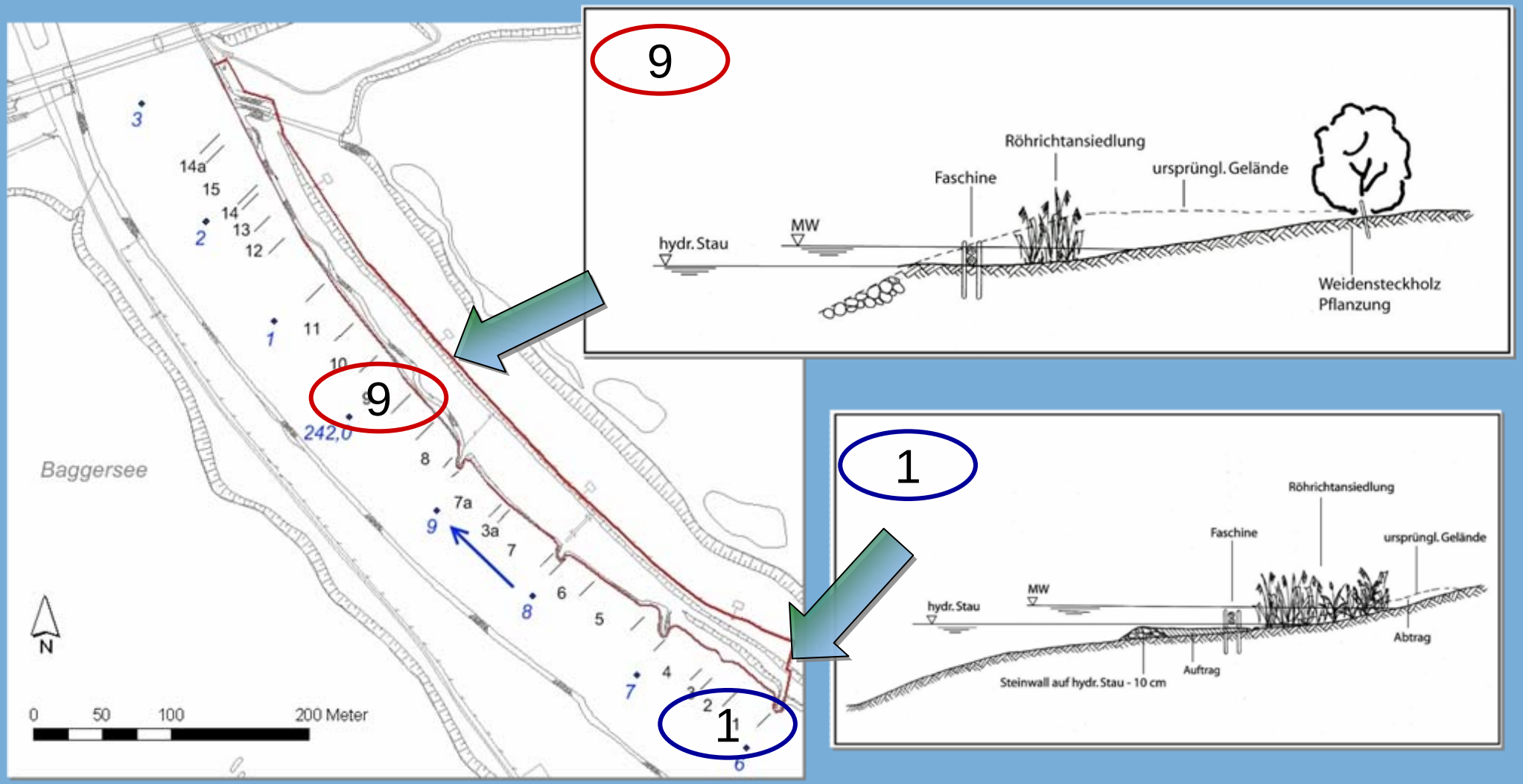
Selected test reaches of the WSV



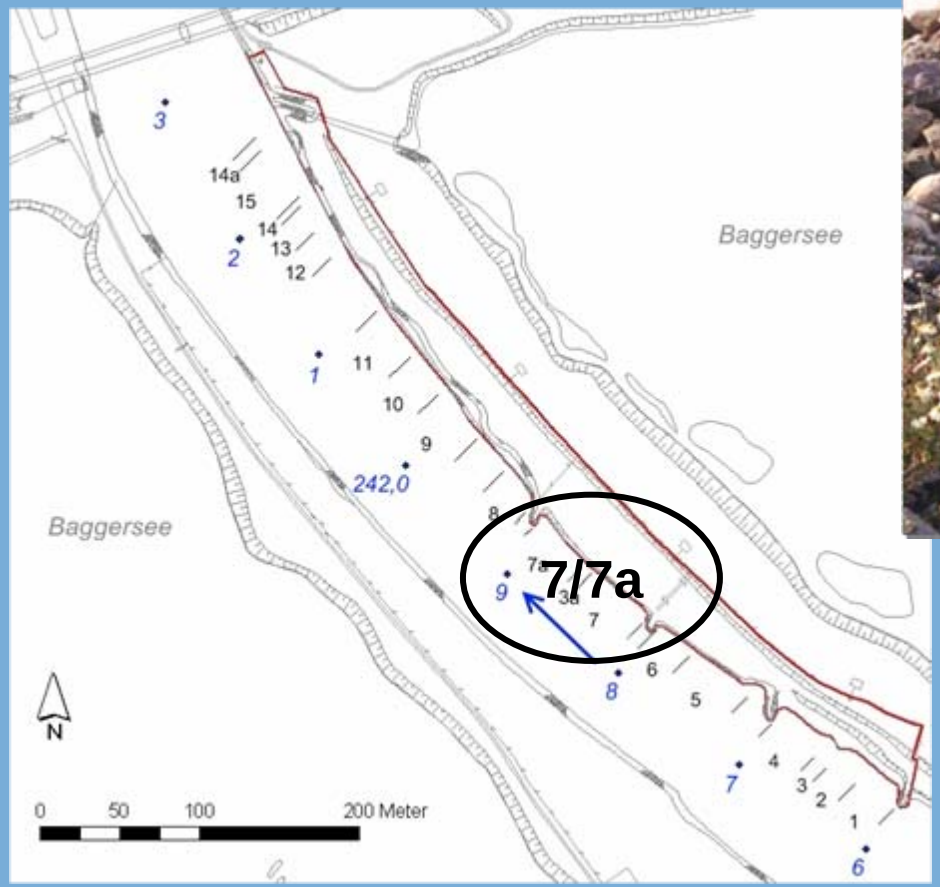
Test reach Stolzenau – Middle River Weser

We-km 241,550 - 242,300

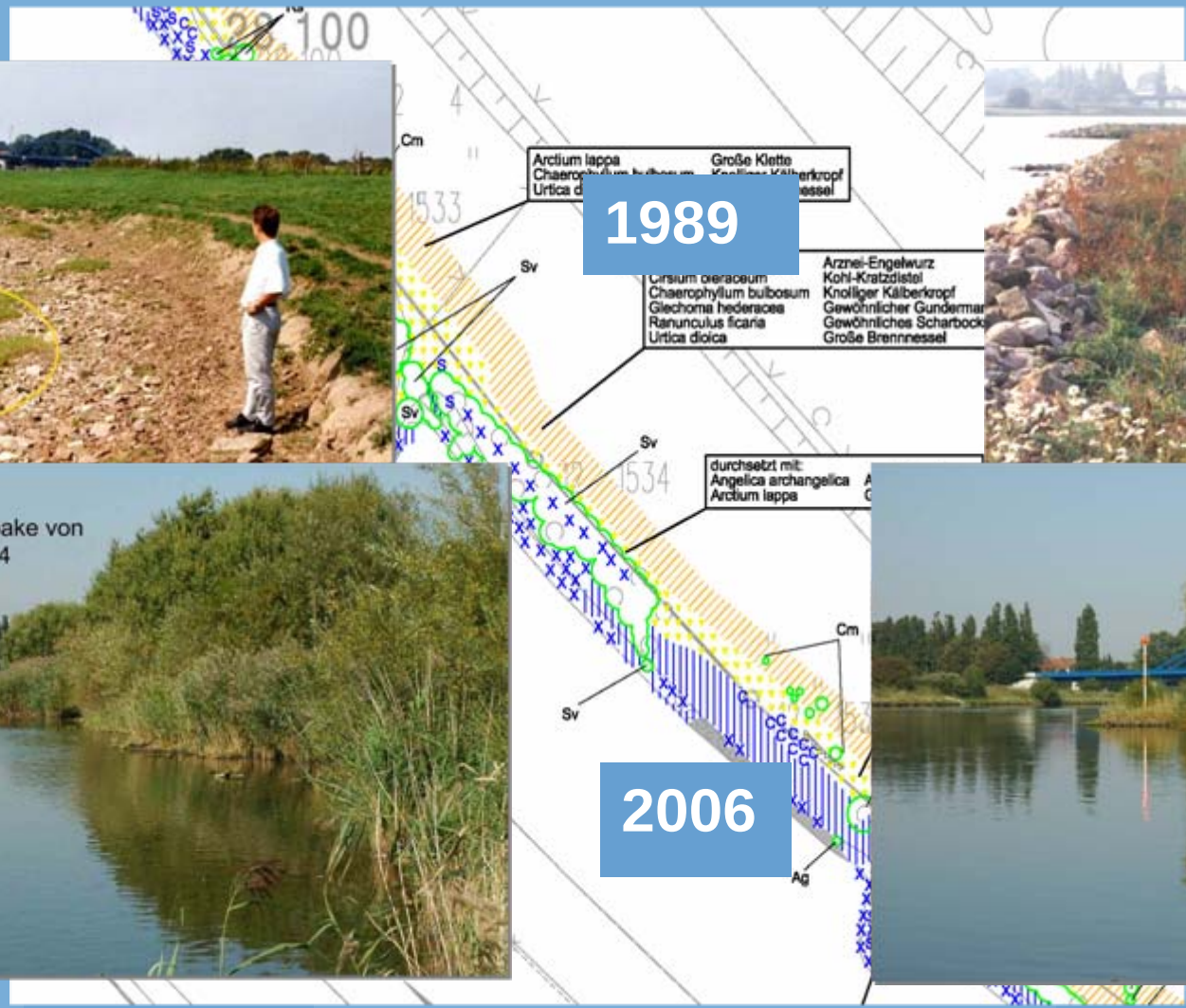
New profils of the river bank (1988)



Section 7/7a - planting of reed and willows (1989)



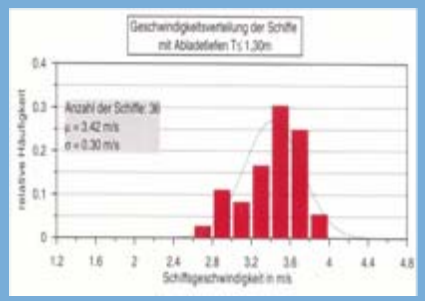
Vegetation development



Section 2

Section 7, 7a

Investigations



Geometry
(slope inclination, water depth, peculiarities,…)

Geotechnical boundary conditions
(soil, compactness, consistency, groundwater,...)

Hydraulic influences
(height of waves, flow velocities,…)

Influences of shipping
(numbers of ships, velocities, distance from banks…)

WSA

consultants

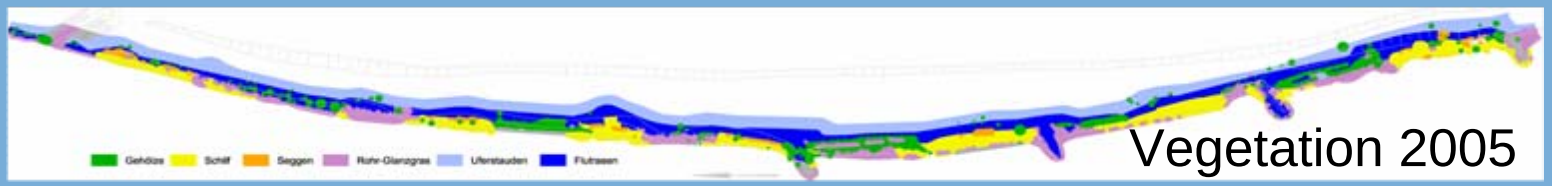
Vegetation
(vegetation development, zonation depending on the water levels, ..)

Target and result scores
(species diversity, habitat diversity, zonation depending on the water levels, ..)

Fauna
(birds, fish, macrozoobenthos)

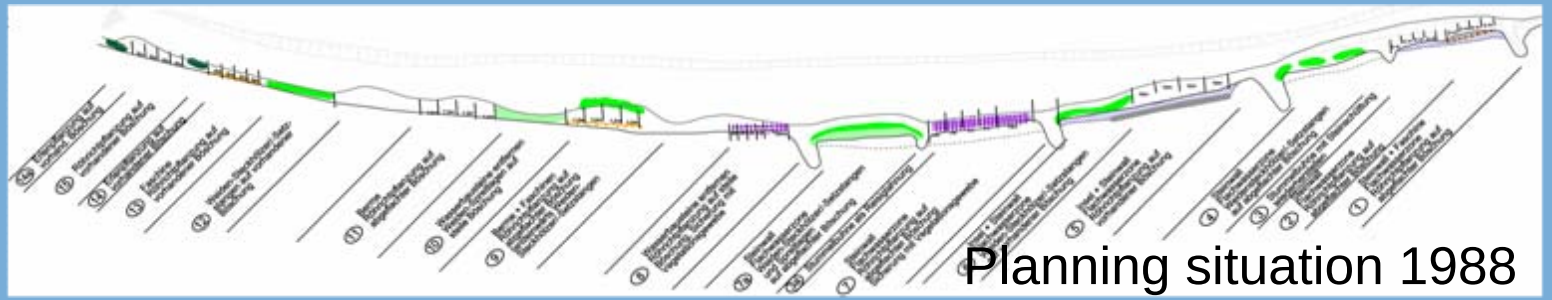
Assessment (technical / ecological aspects)

Assessment 2006



Vegetation 2005

Vegetation 1989



Planning situation 1988

Assessment:

Bank stabilisation: high

Ecology: high

Results from the test reach Stolzenau

The different planting methods have stood the test almost everywhere;

Reed stands expand better on gently inclined slopes than on steeper bank slopes;

Stone barriers and fascines accelerate the reed development;

Typical bank vegetation developed also in sections which had been left to succession.

Outlook

- Finishing Sub-Report Part 2 (06/2008): Test reach Stolzenau
- Investigations on further test reaches (>further Sub-Reports)
- Setting up new test reaches
- Recommendations for the application of technical-biological bank protection methods on navigable waterways

Je vous remercie de votre attention

Hubert Liebenstein
German Federal Institute of Hydrology (BfG)
Am Mainzer Tor 1
56068 Koblenz

Phone: ++49 (0)261/1306-5445
e-mail: Liebenstein@bafg.de

Dr.-Ing. Renald Soyeaux
Federal Waterways Engineering and Research Institute (BAW)
Kußmaulstr. 17
76187 Karlsruhe

Phone: ++49 (0)721/9726-3650
e-mail: renald.soyeaux@baw.de