

**Identification of Pressures
and
Assessment of Impact**

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Outline

- WFD (demands and guidance)
- Types and Identification of Pressures
- Assessment of Impact
- Recent Developments of criteria
- Conclusions and Perspectives



Demands of the WFD

- Identification and Assessment of significant impacts (Article 5; Annex II; No. 1.4 and 1.5)
- for a series of impact groups
- for substances listed in Annex VIII
- for streams/rivers $A_{E0} > 10 \text{ km}^2$ and Lakes $> 0.5 \text{ km}^2$
- by the end of 2004



Pressures

- Significant point source and diffuse source pollution from urban, industrial, agricultural and other installations and activities.
- Significant water abstraction for urban, industrial, agricultural and other uses, including seasonal variation and annual demand.
- Significant loss of water in distribution systems for urban, industrial, agricultural and other uses.



Pressures

- The impact of **significant water flow regulation**, including water transfers and diversion, on overall flow characteristics and water balances.
- **Significant morphological alterations** to water bodies.
- **Other significant anthropogenic impacts** on the status of surface waters.
- **Land use patterns**, including identification of the main urban, industrial and agricultural areas and, where relevant, fisheries and forests.



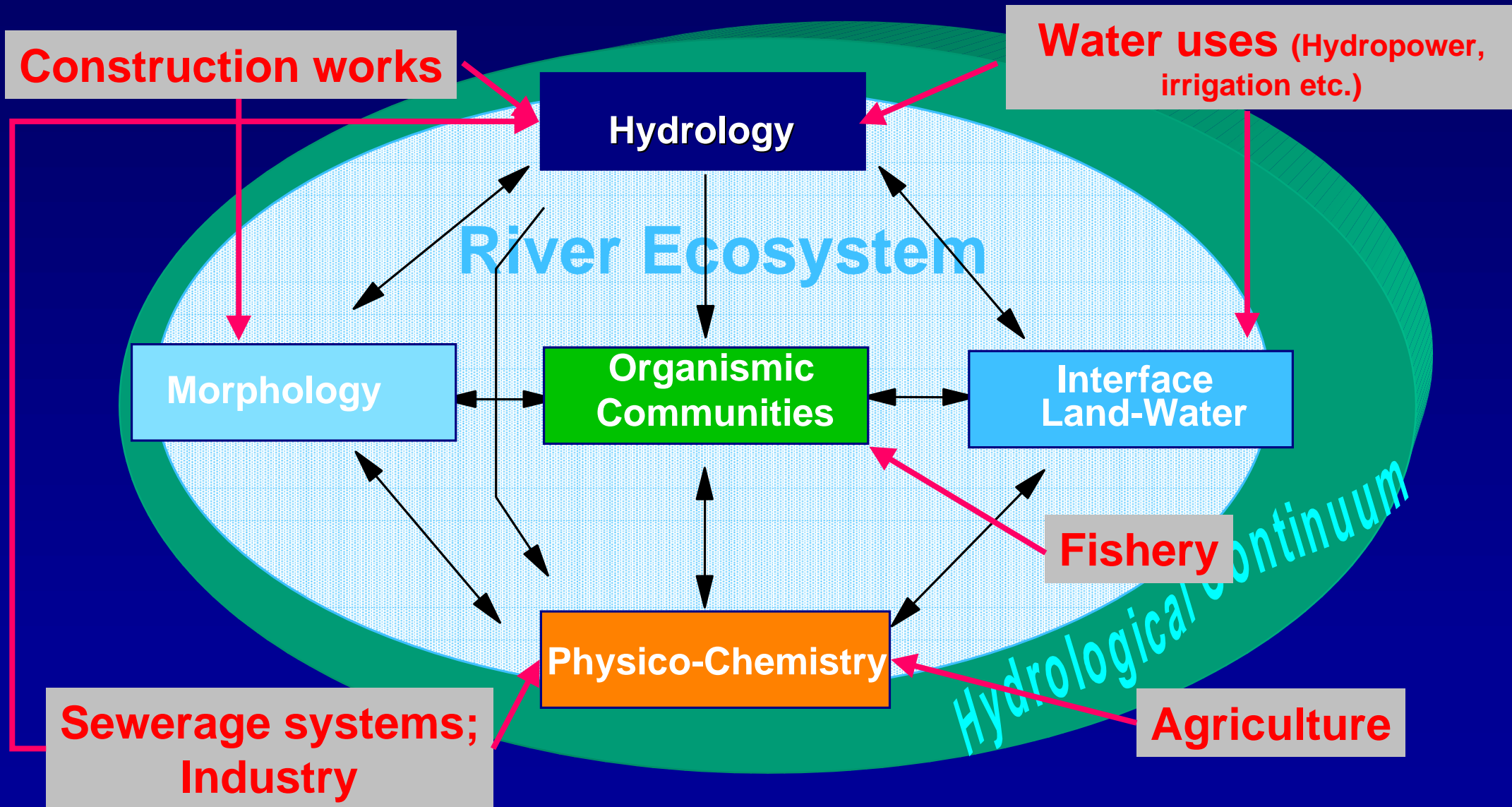
Ecological Status of Surface Waters (Annex V)

Classification

Biotic Indicators	Flora	Benthic Diatoms; Makrophytes
	Fauna	Makroinvertebrates; Fish (incl. Age structure)
Abiotic Indicators	Hydro-Morphology	Hydrology; Continuum; Morphology
	Physico-chemical Parameters	Temperature; Oxygen; pH Nutrients; Salt Spec. Substances



River Ecology and Anthropogenic Impact

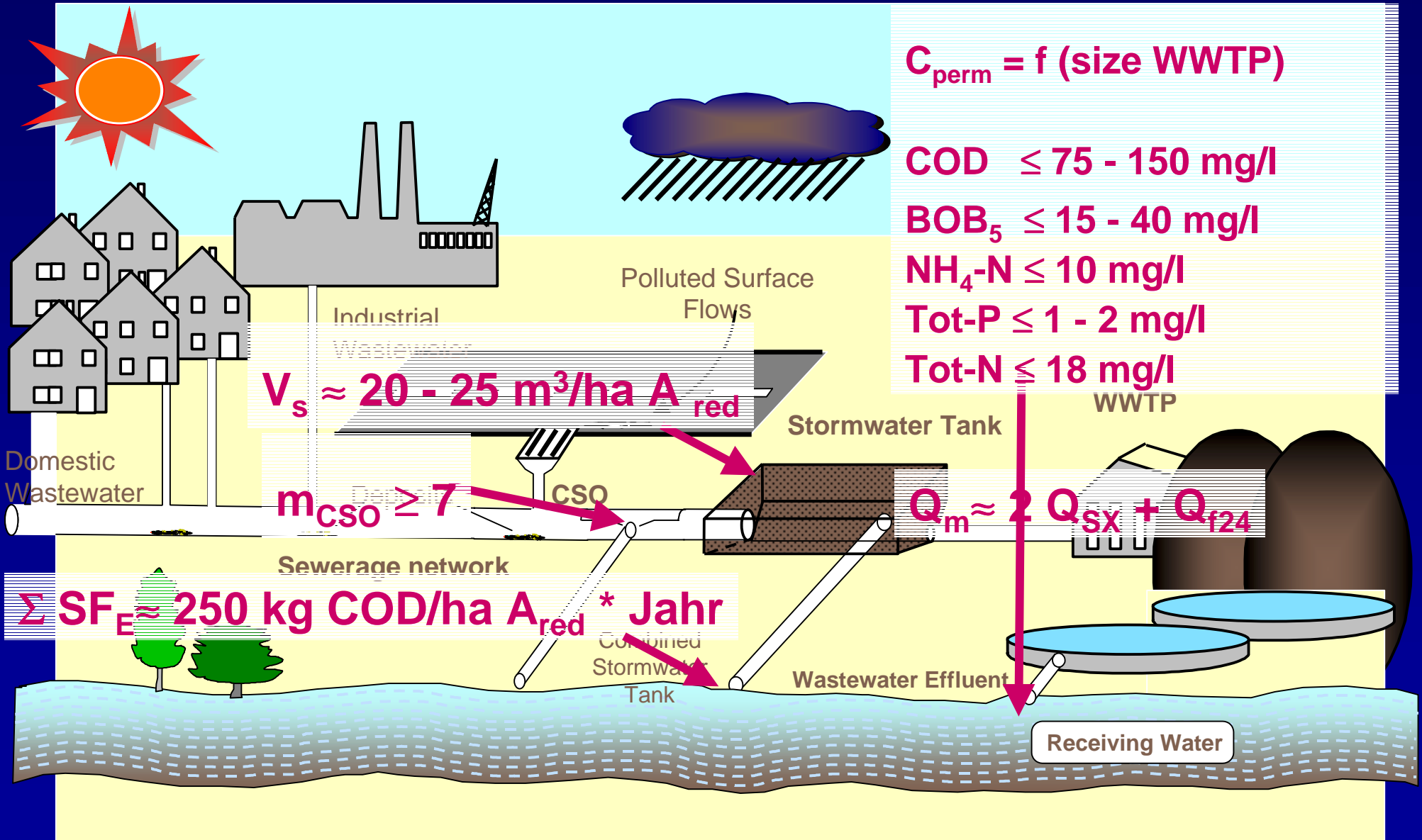


Indicators and Strategy

- Pressure \neq Impact
- Broad sectoral indicators for identification of endangered waters based on potential impact (simple, data available, existing EU- Directives).
- Aggregation of sectoral pressure indicators for impact assessments.
- Identification of specific pressures and impacts being responsible for failing good status (more detailed).



Point Sources



$$C_{\text{perm}} = f(\text{size WWTP})$$

$$\text{COD} \leq 75 - 150 \text{ mg/l}$$

$$\text{BOB}_5 \leq 15 - 40 \text{ mg/l}$$

$$\text{NH}_4\text{-N} \leq 10 \text{ mg/l}$$

$$\text{Tot-P} \leq 1 - 2 \text{ mg/l}$$

$$\text{Tot-N} \leq 18 \text{ mg/l}$$



Point Sources

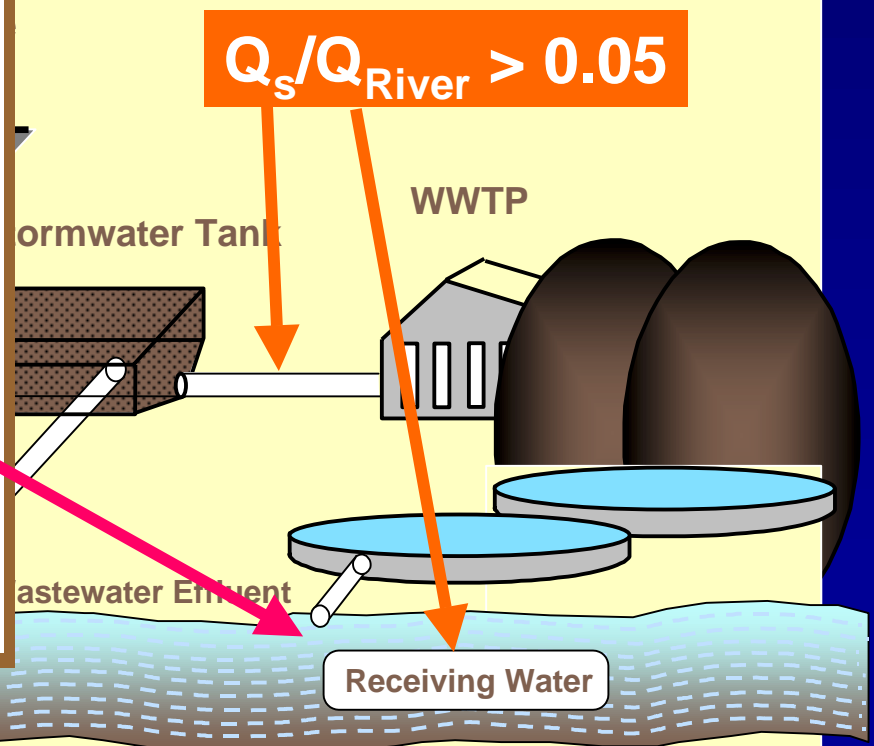
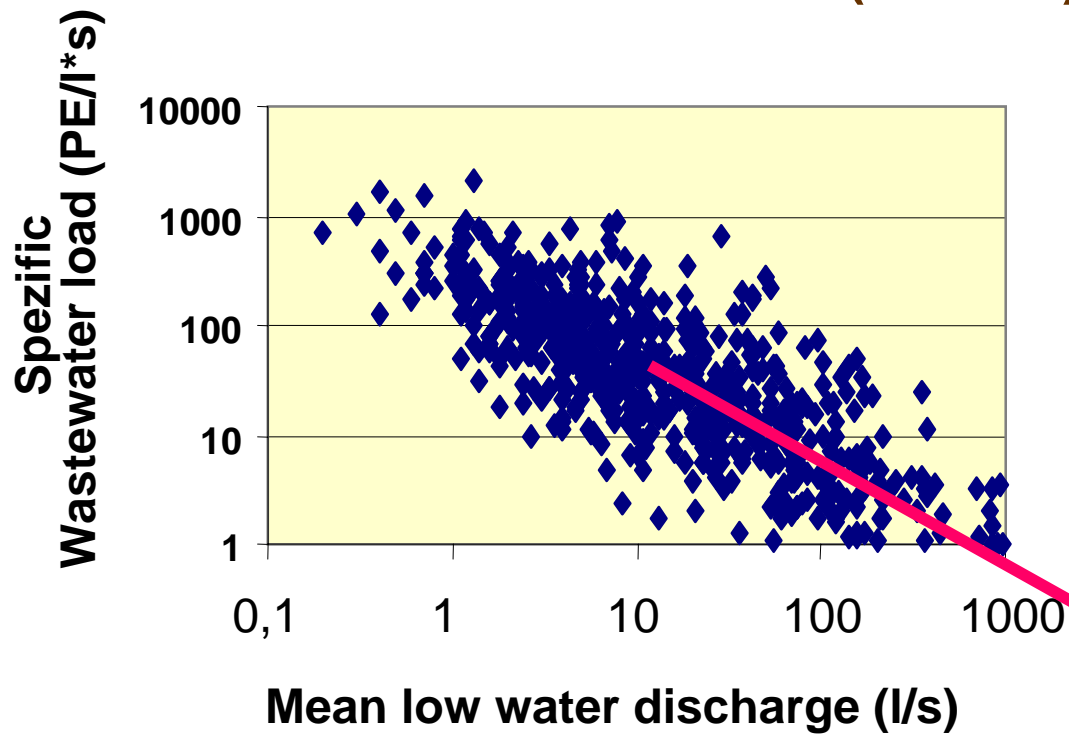
EU-Directives:

- **Wastewater Treatment**
- **Integrated Pollution Prevention**
-



Point Sources

Specific load of Wastewater Treatment Plants in Hessen (N= 956)



Point Sources

Criteria for potential risks:

- **> 15 - 40 PE/l*s mean low water flow**
- **$Q_s/\text{mean low water flow} > 0.05$**
- **Discharge from stormwater overflows**
 $Q_D < HQ_n$
- **Frequency n of critical discharges $0.5 < n < 2$**
- **.....**



Diffuse Sources

EU-Directives:

- Nitrate
- Biozides
- Dangerous Substances
- Drinking Water
- Bathing Waters
- Fish Waters
- Shellfish Waters
- ...



Diffuse Sources

Criteria for potential risks:

- > 50 % of tillage
- > 1 - 1.5 cattle units/ha
- > 2 - 5% of specific cultures (wine, fruits, vegetables....)
- 10-15 % of urban areas
- xy PE/km² or m³/s discharge
- ...



Morphology

Criteria for potential risks:

- > 50 % bank fixation
- poor development of floodplain
- poor development of riparian vegetation
- > 10 % of river length with impoundments
- 10-15 % of urban areas
- > 50 % tillage
- ...



Abstraction and Flow Regulation

Criteria for potential risks:

- **Abstraction $> x$ MLWF**
- **Peak Flows $< x$ MF**
- **Height of impoundments
 $0.1 < x < 0.7$ m**
- **Up- and downstream migration possible**
- **channel profile depth**
- **Bank fixation**
- **Longitudinal profile**
- **...**



Conclusions and Perspectives

- Pressure \neq Impact
- Relatively little guidance in Annex II of WFD for conducting the analysis of pressures and impacts required by Article 5
- Development of guidance and criteria under work
 - **Project 2.1 Guidance on the analysis of pressures and impacts with UK and D as lead countries**
 - **Initial Workshop in Belfast 18./19.06.2001**
 - **to be finished by the end of 2002**



Indicators and Strategy

- Staged procedure:
 - Based on available data simple and broad indicators for different pressures (Annex II, 1.4).
 - Identification of potential impact (Annex II, 1.5).
 - After identification of significant impacts
 - » specific analysis
 - » operational monitoring
 - » adoption of measures

