The Texas Instream Flow Program was created by the Texas Legislature in 2001 to assess how much water rivers need to remain healthy. TIFP is administered by 3 agencies:

- Texas Commission on Environmental Quality
- Texas Parks and Wildlife Department
- Texas Water Development Board

Program Purpose

For the first time state agencies and the public will collaborate on scientific studies to determine how much water should flow in rivers for a healthy environment.

What is an Instream Flow?

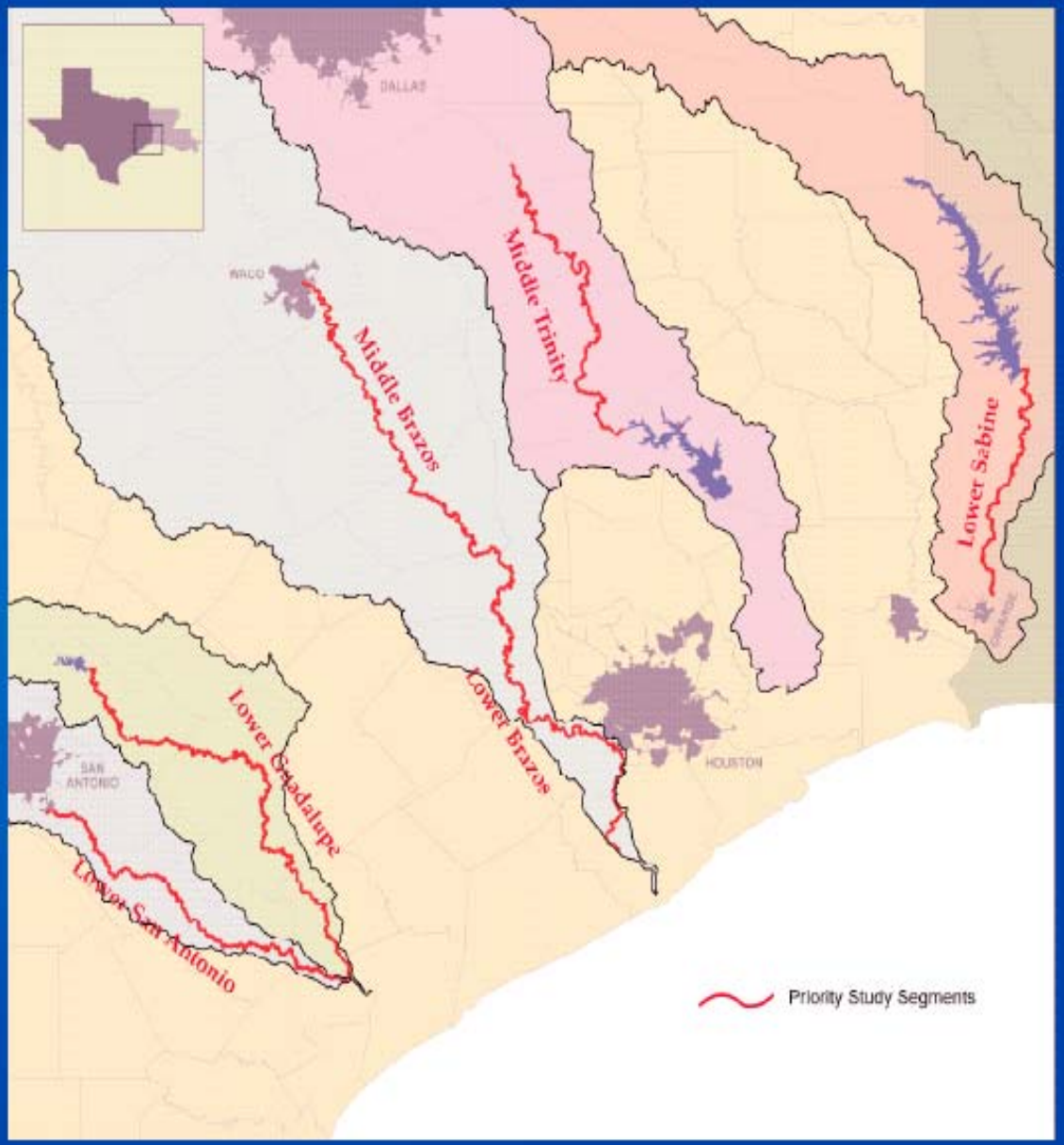
An instream flow is the amount of water running in a river, usually measured by the volume moving down the channel in a specified amount of time. A variety of instream flows are required to maintain a healthy river.

The Context of Instream Flows

- Acknowledgment of the importance of water flowing in a stream to fish, wildlife and people
- Recognition that competition for water is increasing and resulting in degraded river ecosystems

Study Areas

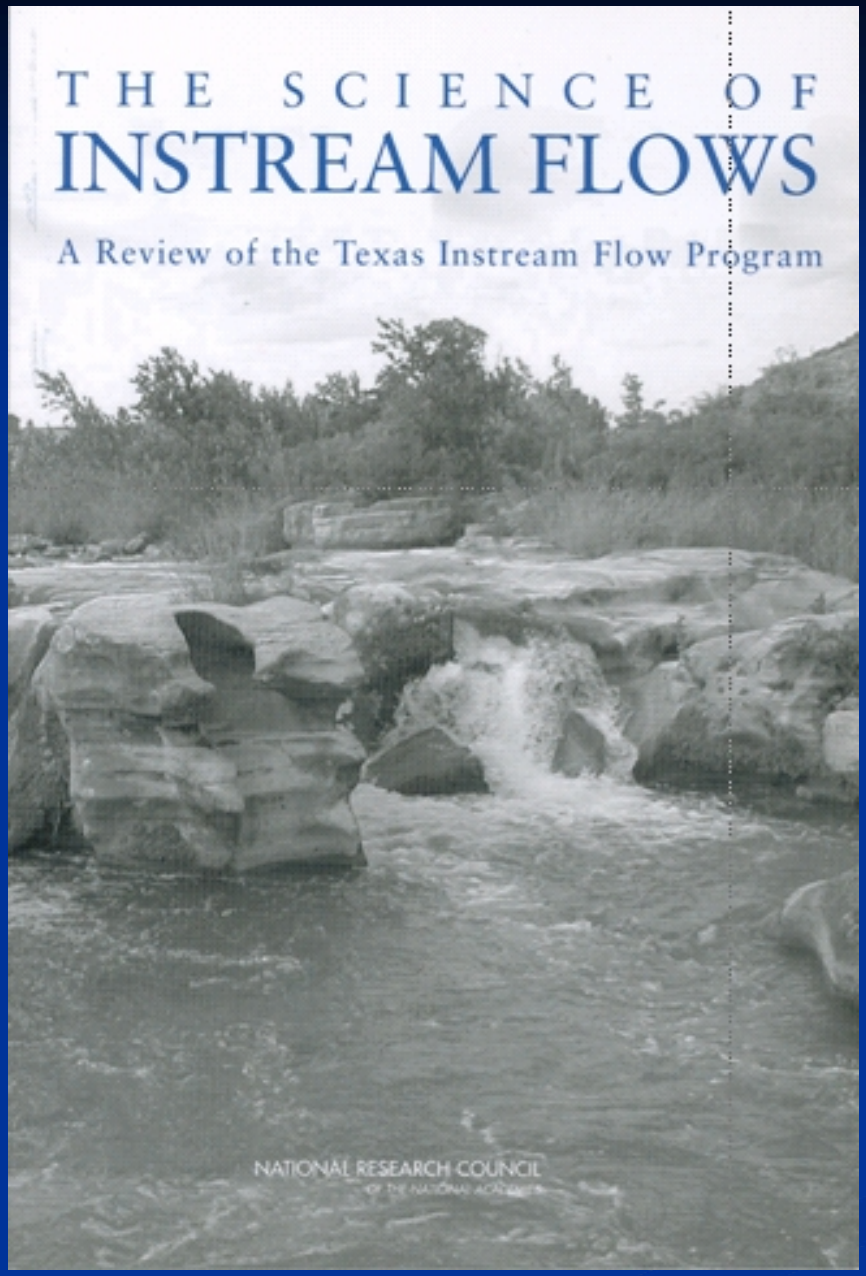
Studies will be conducted on priority river segments.



Study Topics

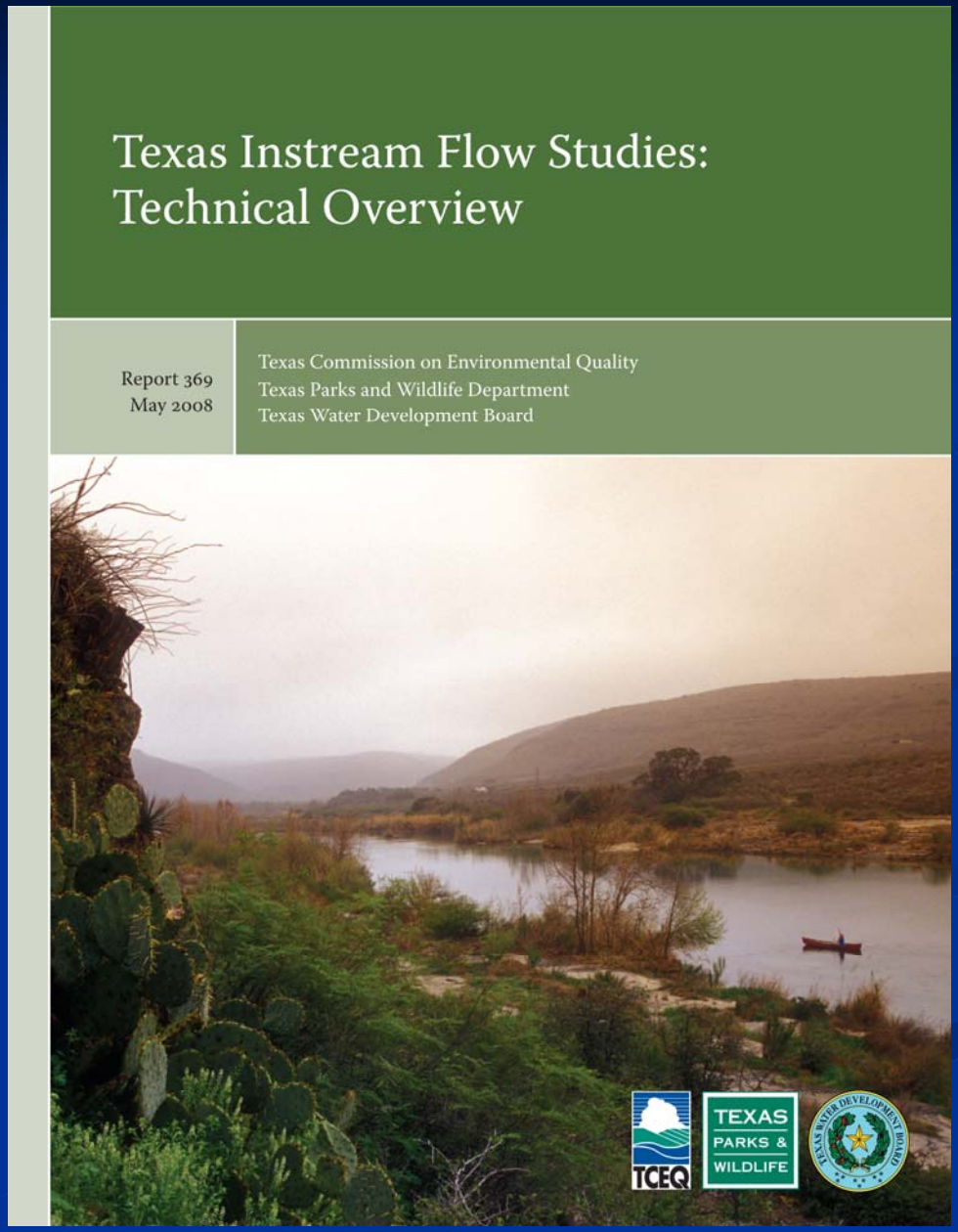
Technical studies will assess how water flow affects river characteristics, such as:

- **Aquatic life and habitat**
- **Water quality**
- **Relationships between rivers and surrounding habitats**
- **Movement of nutrients and organisms**
- **Stream channel formation**



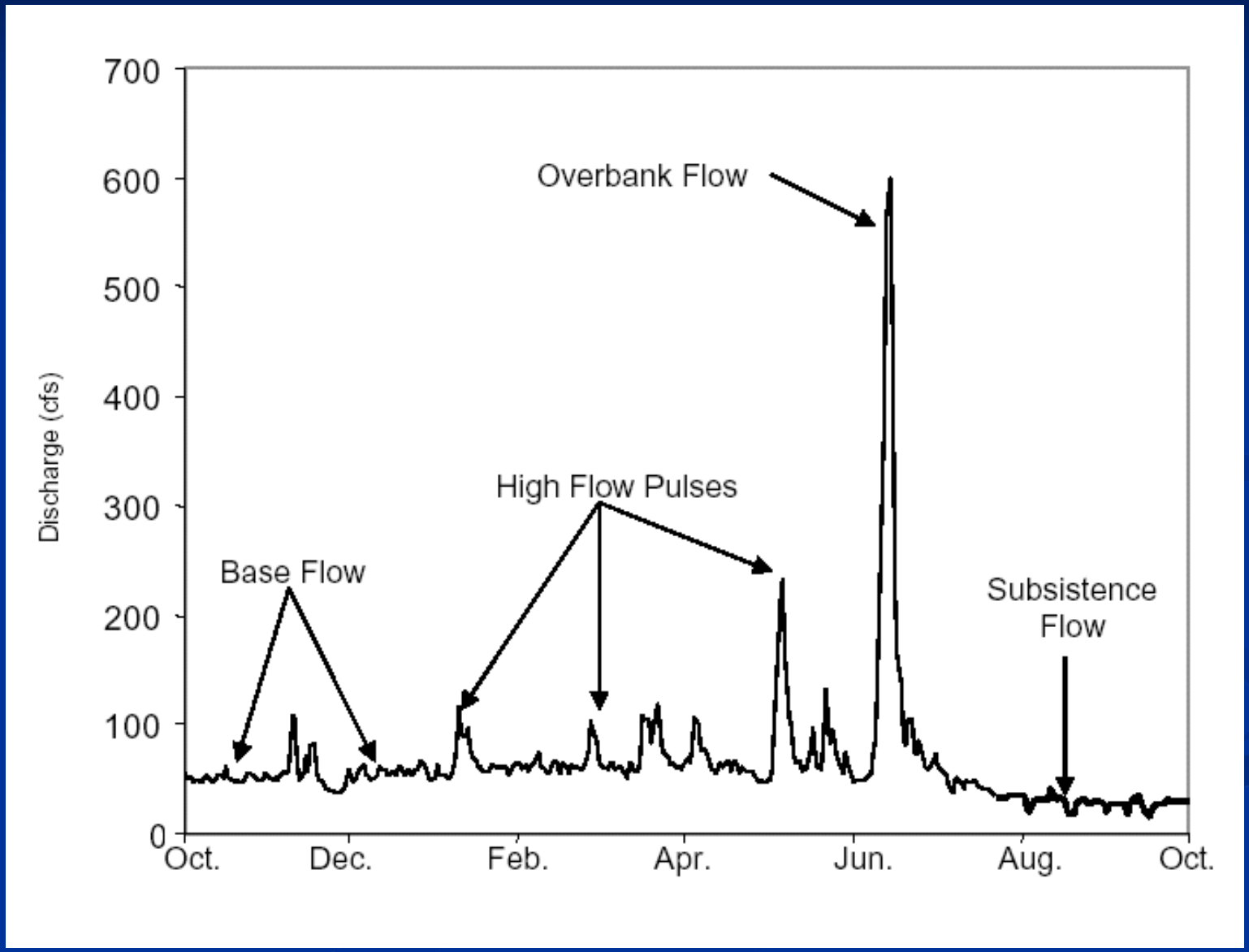
- State methodology peer reviewed by NRC panel
- Members included Texas scientists
- Favorable report published in 2005

Hot off the press!

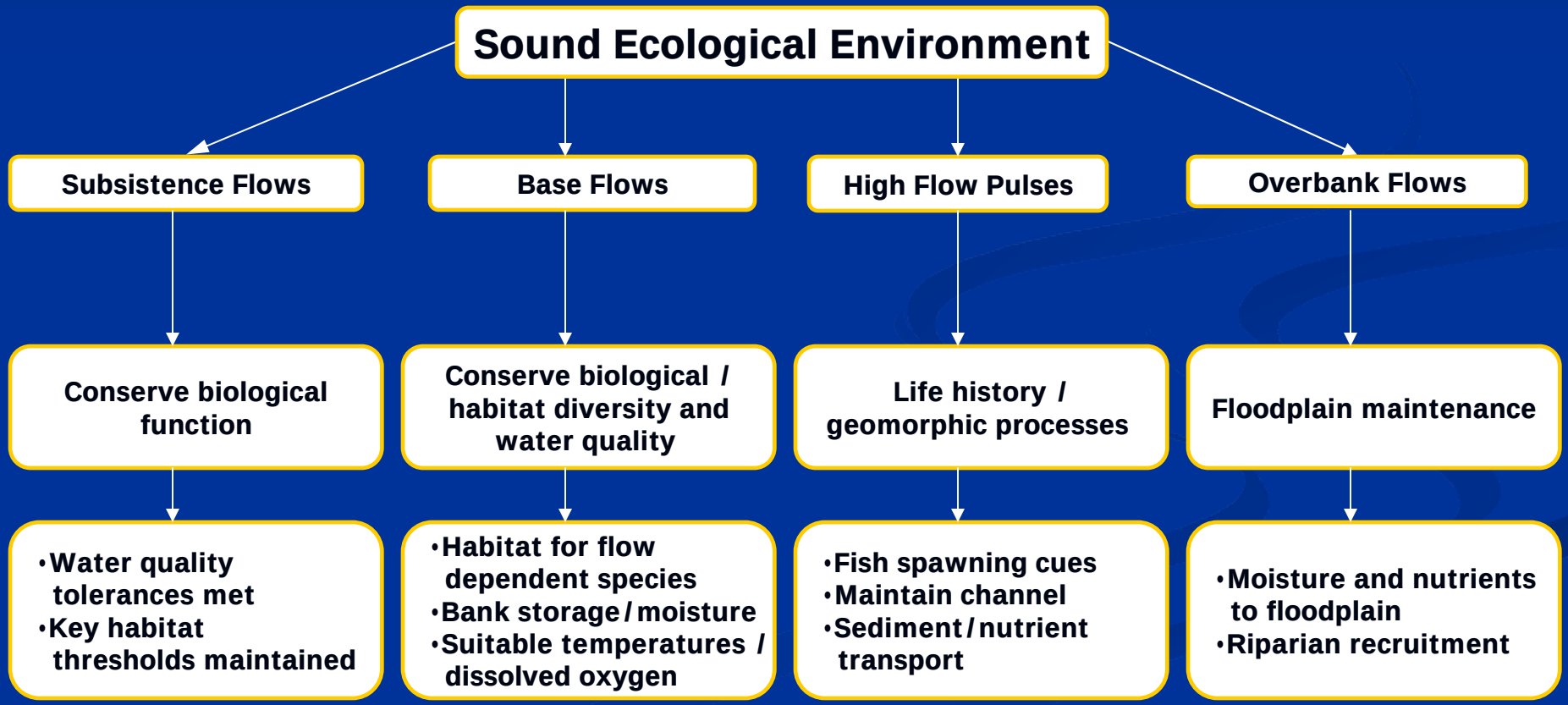


Instream Flow Components

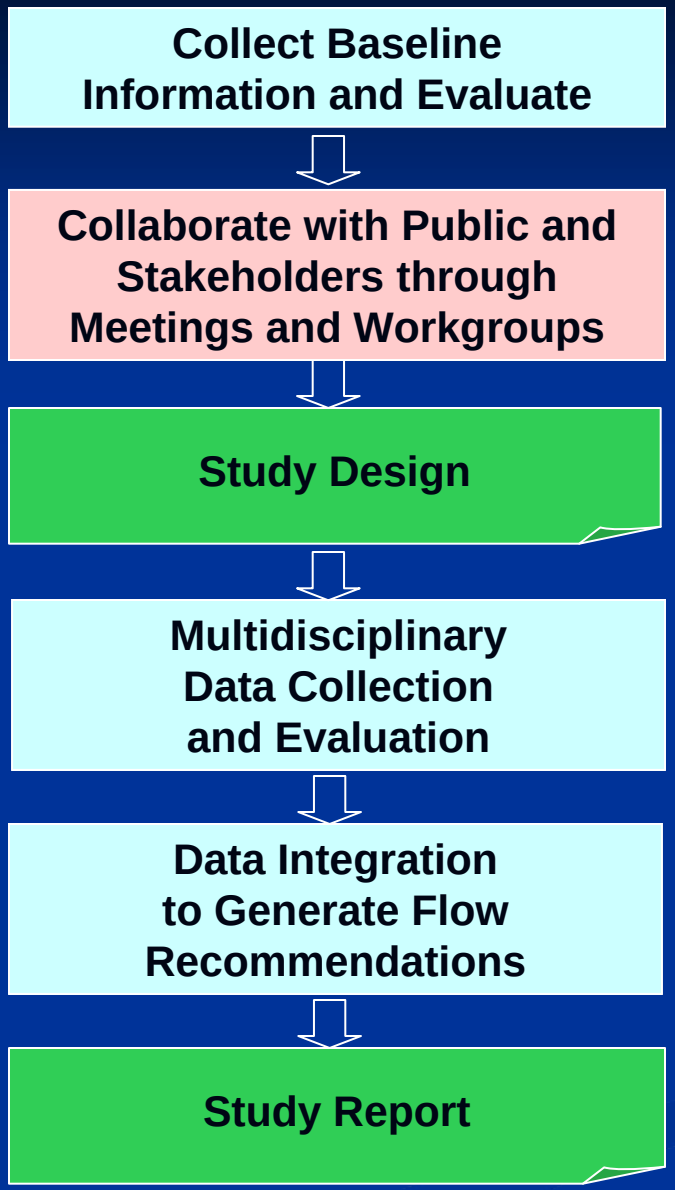
(recommended by National Research Council 2005)



Simple Conceptual Model

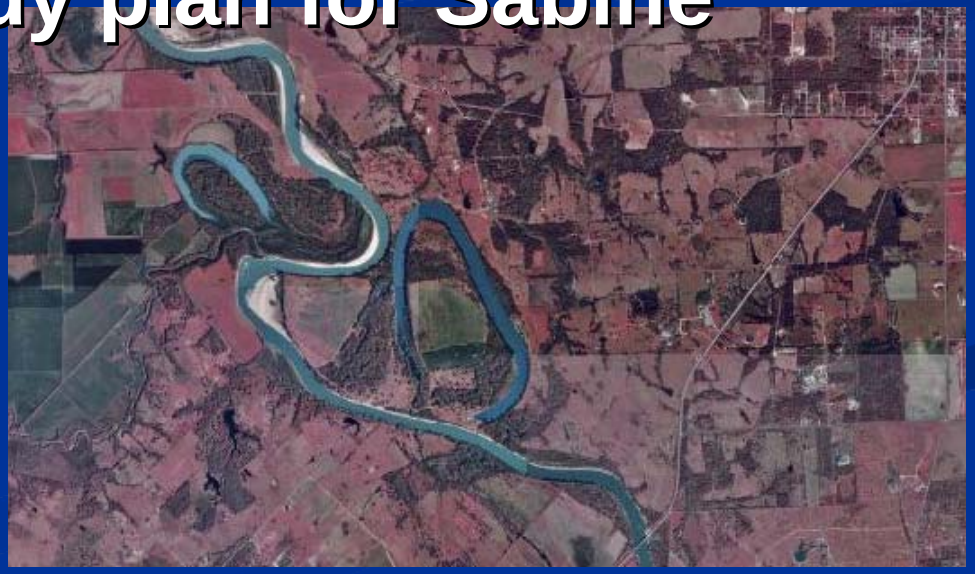


Synopsis of Study Process

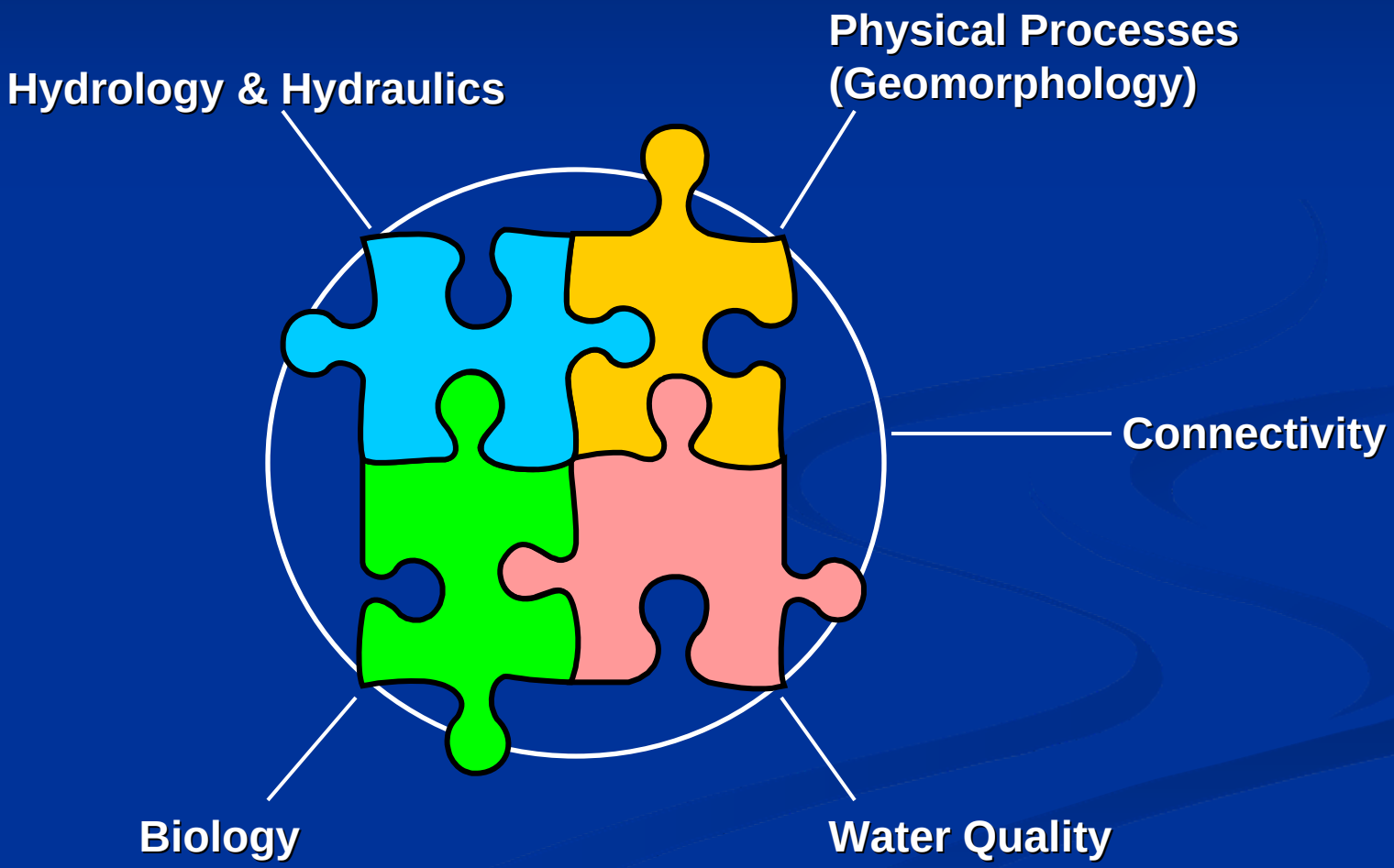


Study Design

- Develop conceptual model
- Determine geographic study boundaries
- Prioritize data needs consistent with agreed upon goals and objectives
- Develop river study plan for Sabine



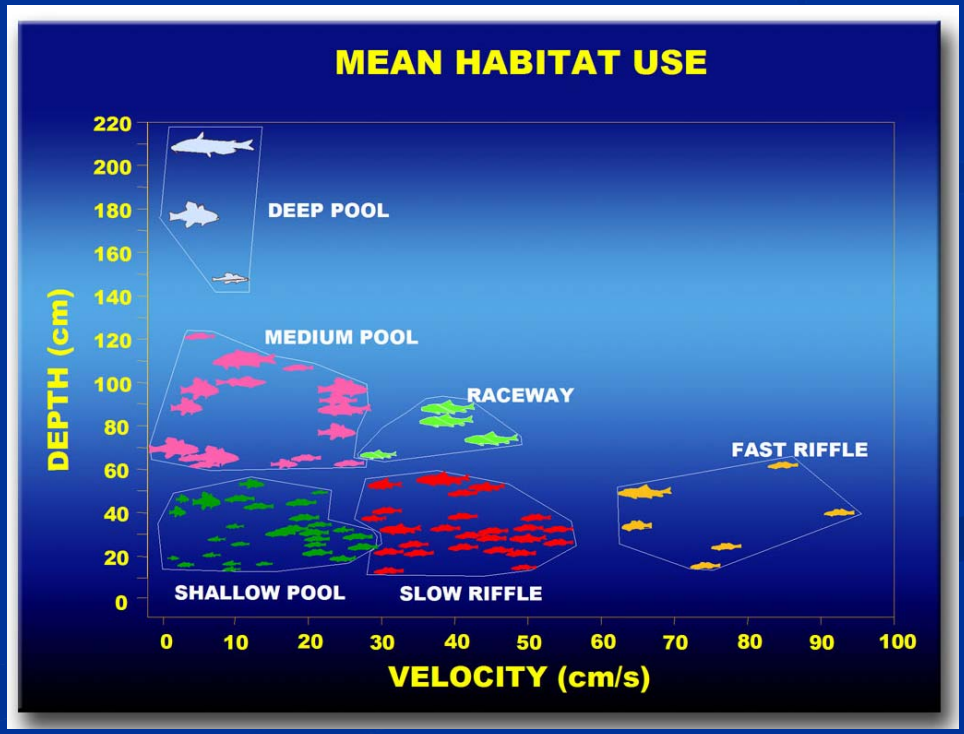
Primary Disciplines

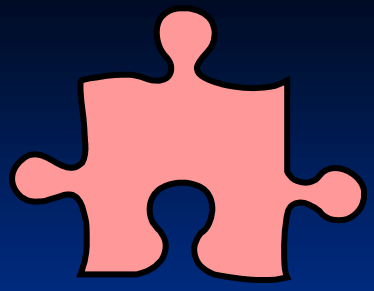


Biology

Biodiversity

Habitat Diversity

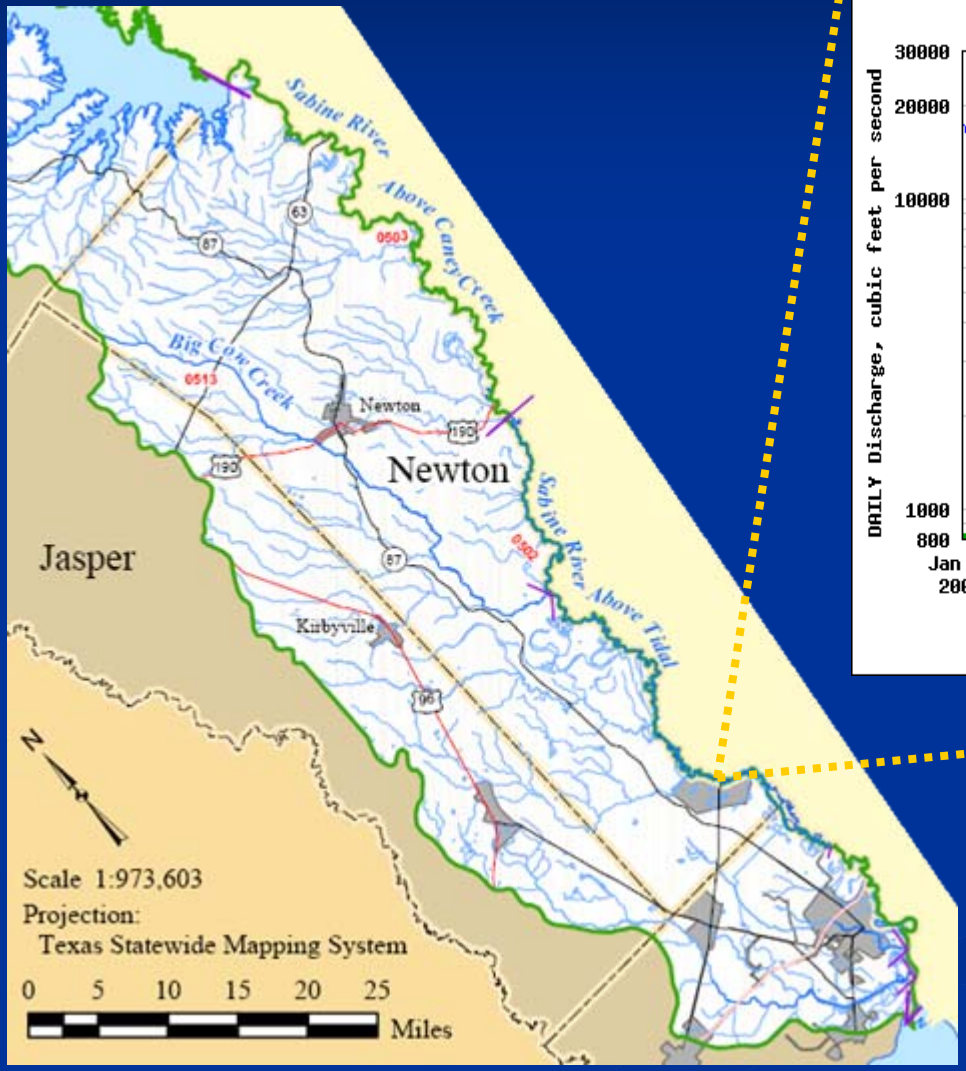


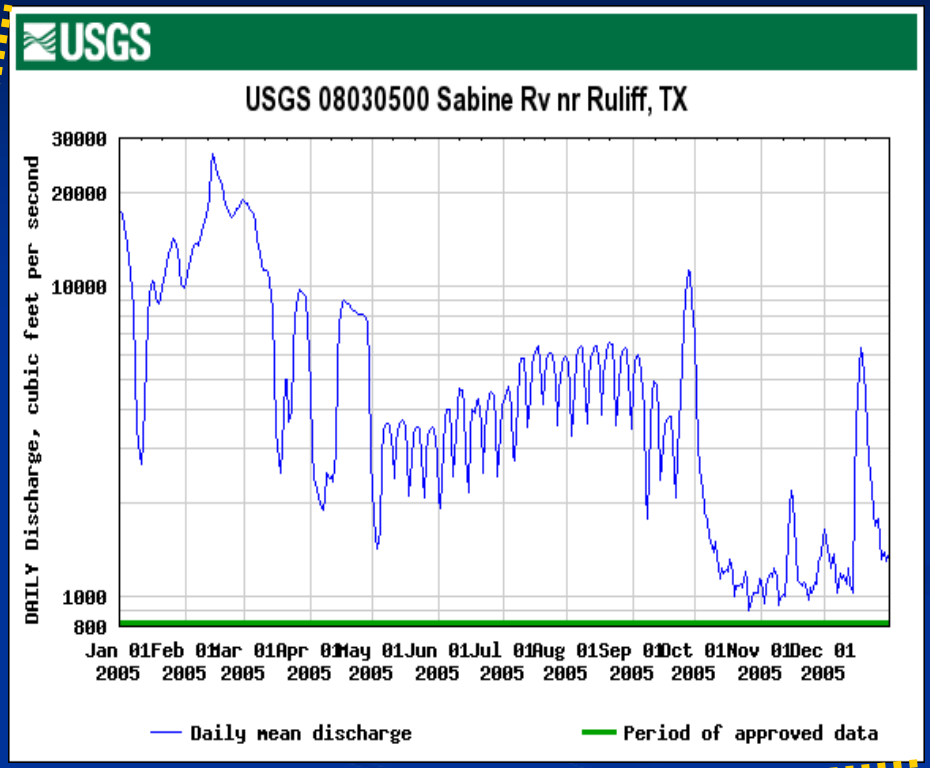


Water Quality

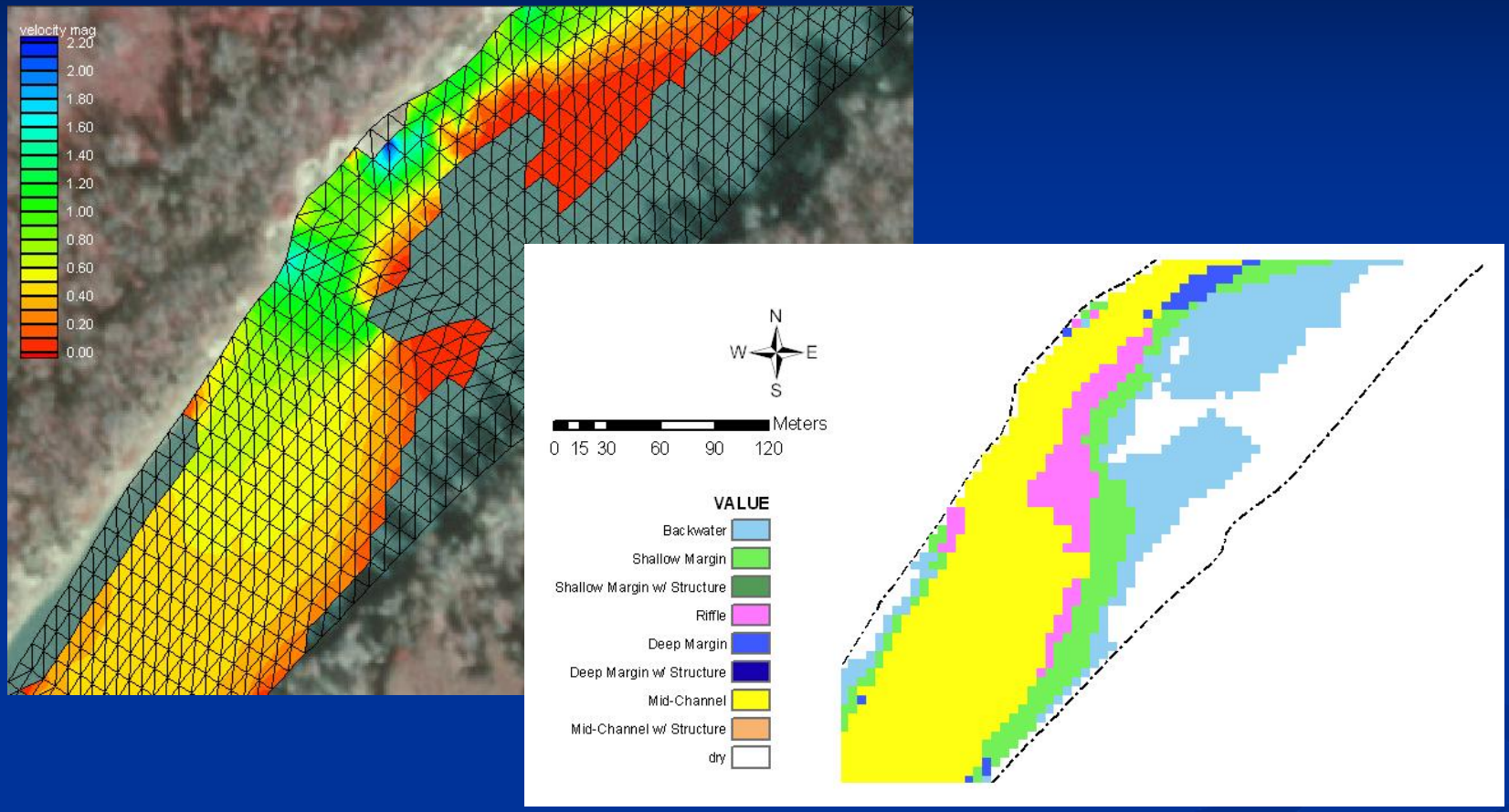
- Dissolved oxygen
- pH
- Temperature
- Total dissolved solids
- Turbidity/clarity
- Nutrients

Hydrology and Hydraulics

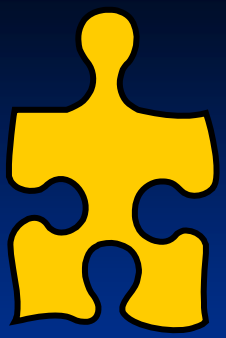




Habitat Modeling



Habitat changes with flow



Physical Processes (Geomorphology)

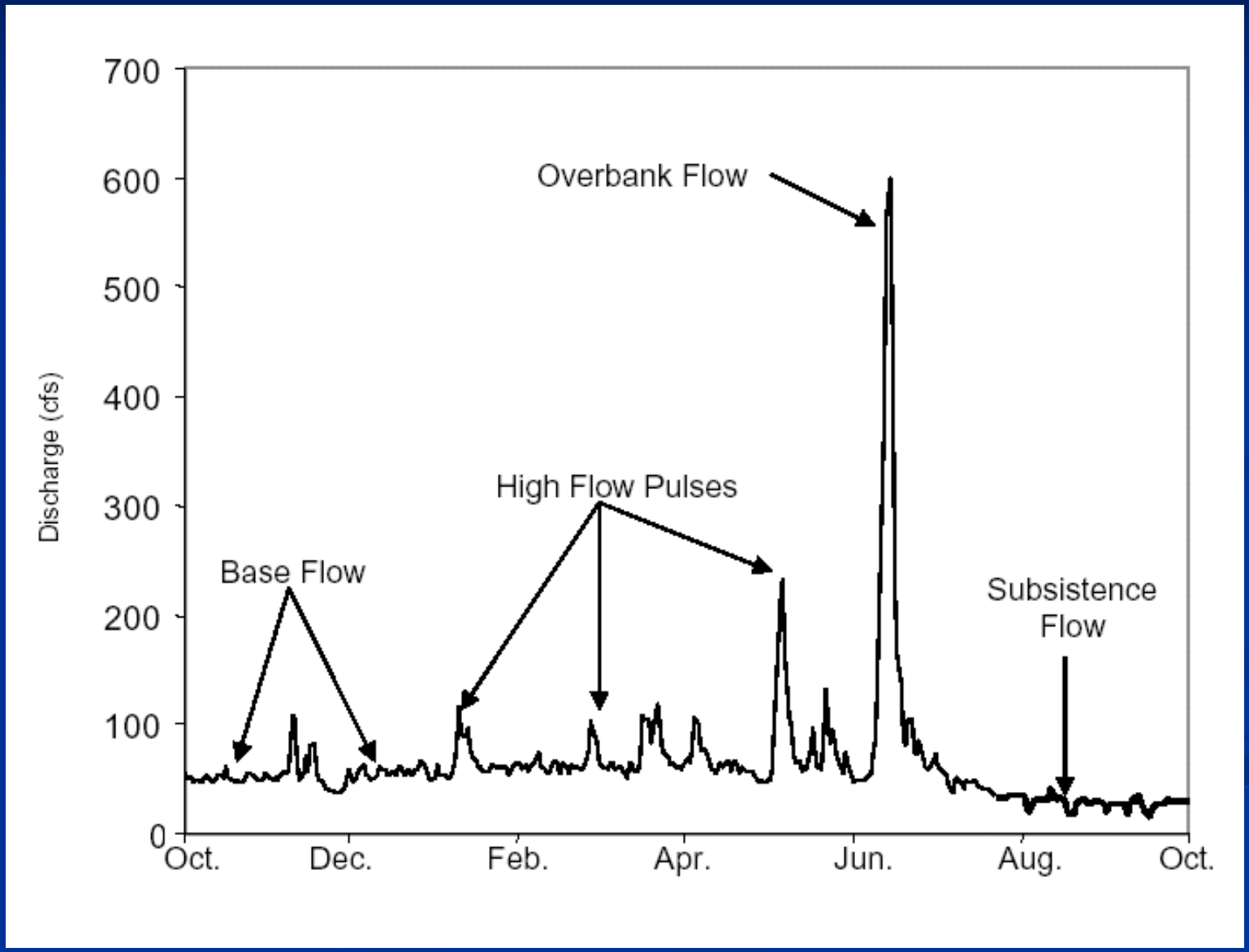
- Examine bed, banks, and floodplains
- Assess channel adjusting and overbank flow behavior
- Develop sediment budgets
- Identify habitat features

Connectivity

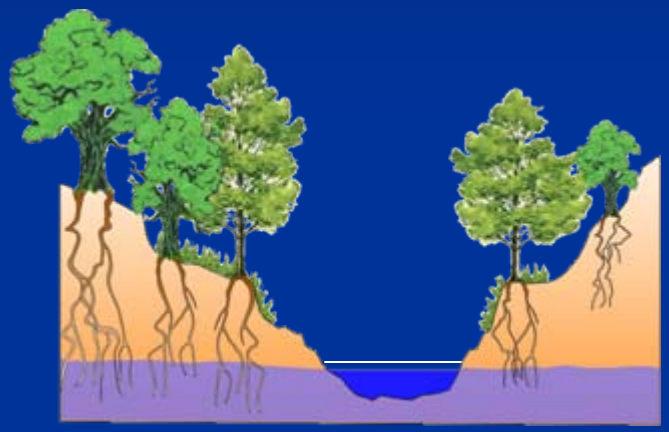
- Hydrologic connectivity
  - Upstream to down
  - Channel to floodplain
- Groundwater/surface water interactions

Instream Flow Components

(recommended by National Research Council 2005)



Subsistence Flows



Identify Biological Considerations

Identify Water Quality Constituents of Concern

Calculate Low Flow Statistics

Conduct Water Quality Modeling Studies

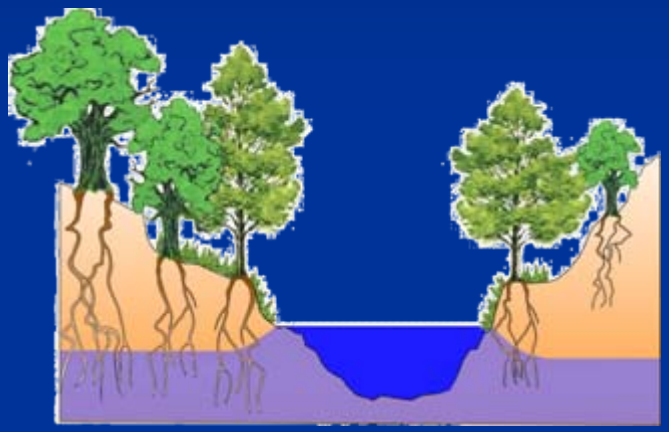
Assess Low Flow - Water Quality Relationship

Other Biological Considerations

Subsistence Flows

Primary Discipline
- Hydrology/Hydraulics
- Biology
- Geomorphology
- Water Quality

Base Flows



Assess Bedform and Banks

Identify Biological Issues and Key Species

Calculate Base Flow Statistics

Collect Biological Data

Model Hydraulic Characteristics in Relation to Flow

Determine Habitat Criteria

Assess Habitat-Flow Relationships, including Diversity

Describe Wet, Normal, and Dry Years

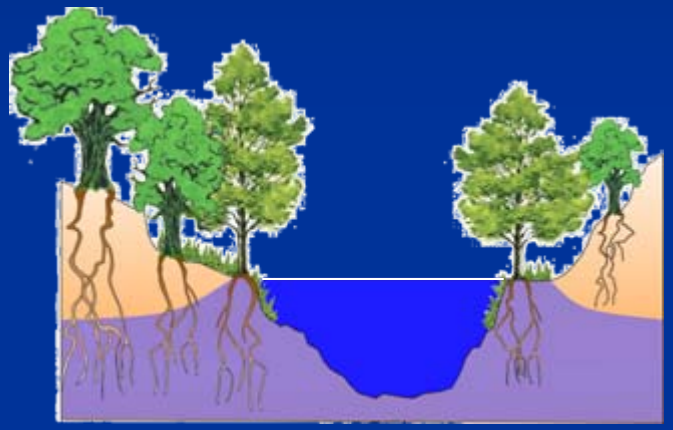
Consider Biological and Riparian Issues

Consider Water Quality Issues

Base Flows

Primary Discipline
- Hydrology/Hydraulics
- Biology
- Geomorphology
- Water Quality

High Flow Pulses



Assess Active Channel Processes

Develop Sediment Budgets

Assess Channel Adjusting Flow Behavior

Describe Significant Habitat Conditions

Consider Biological Issues

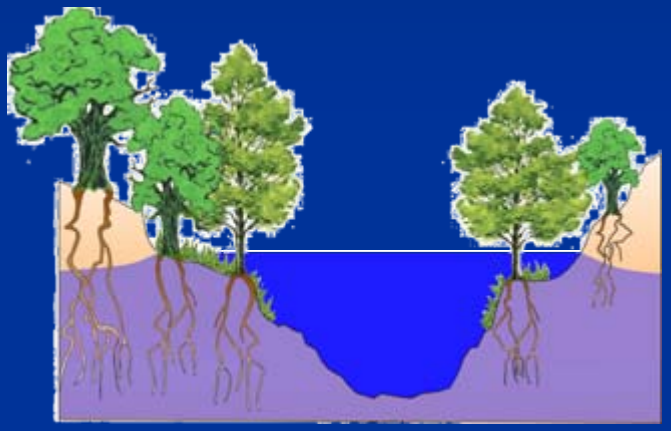
Calculate High Flow Statistics

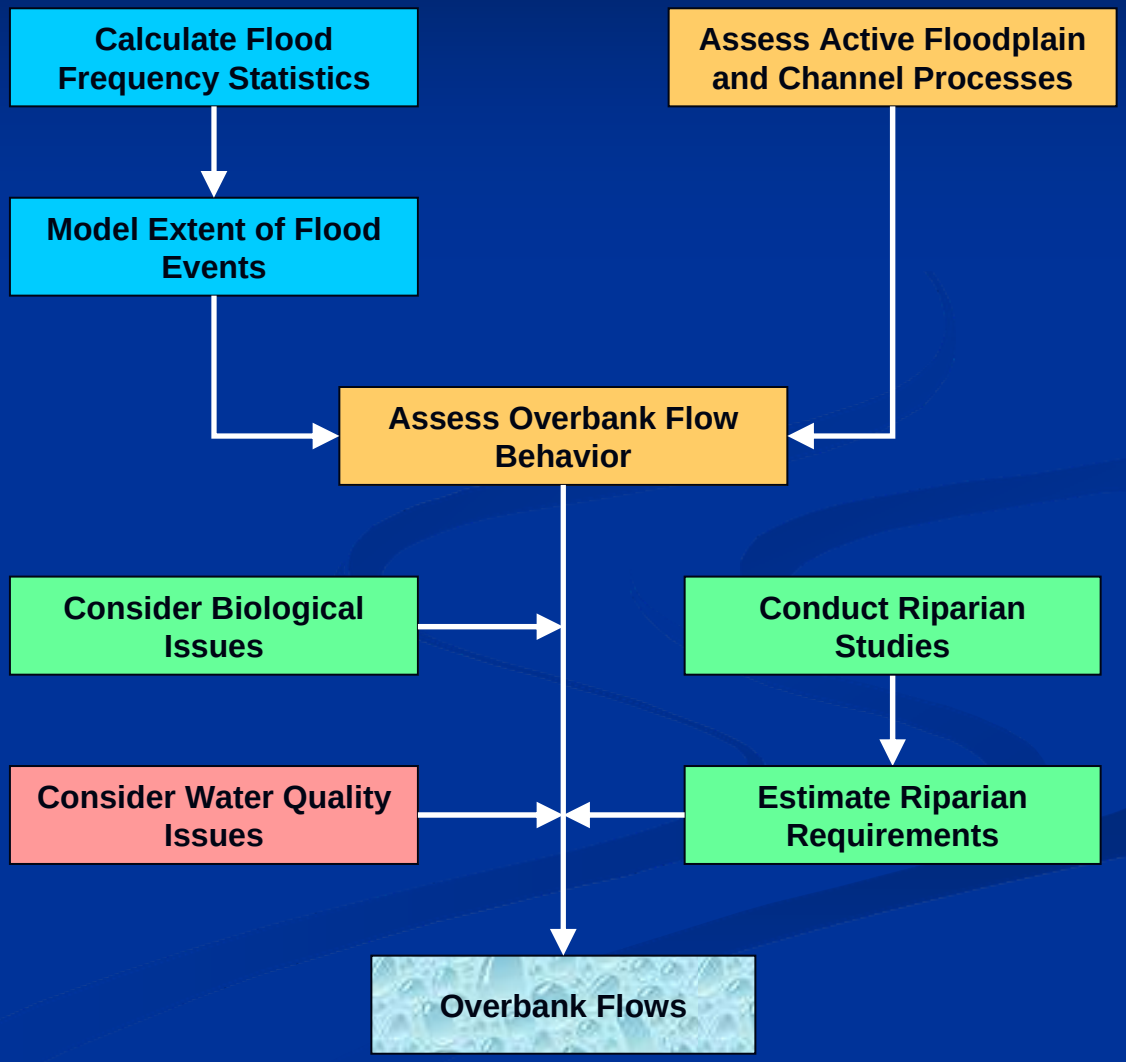
Consider Water Quality Issues

High Flow Pulses

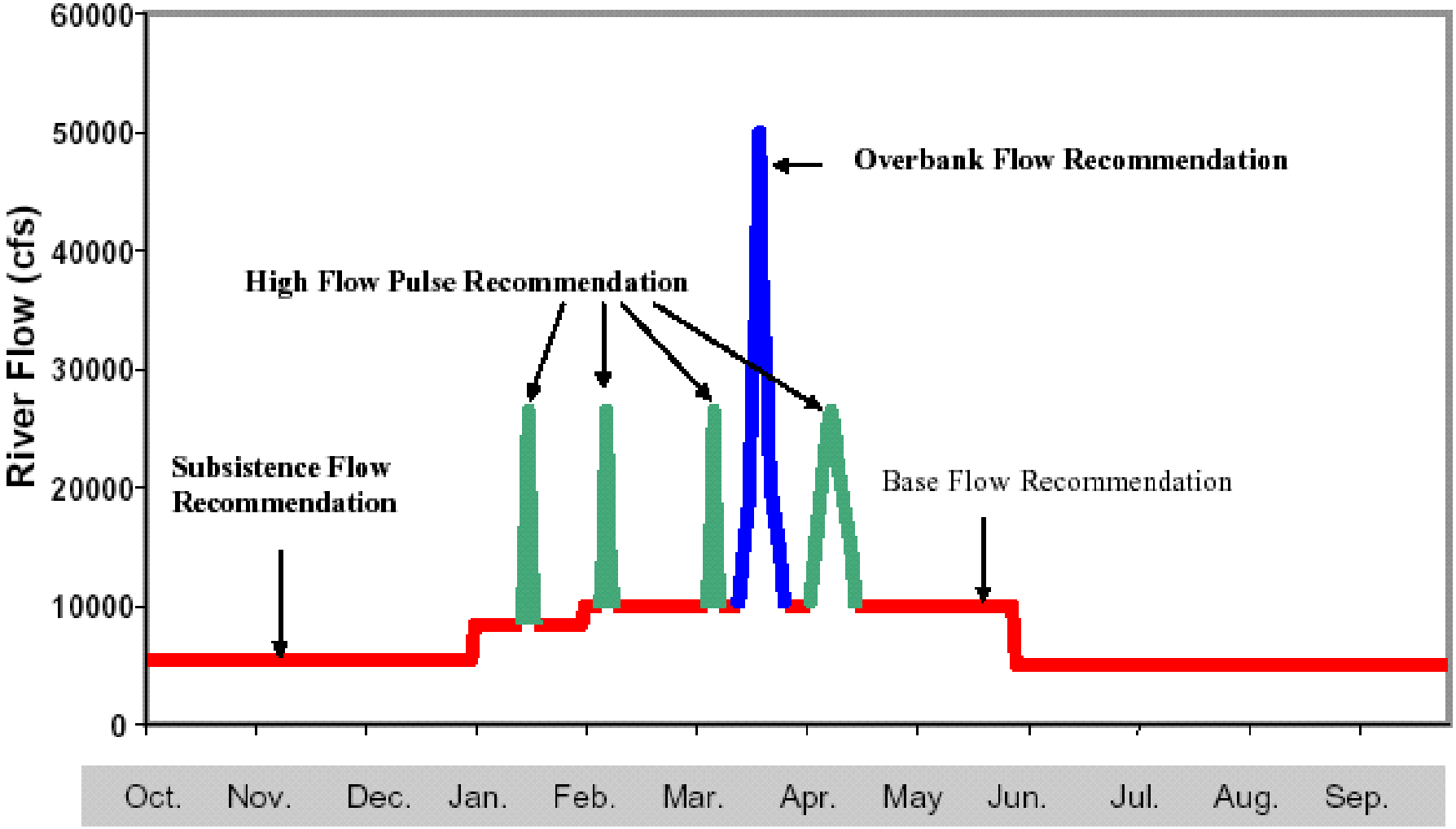
Primary Discipline
- Hydrology/Hydraulics
- Biology
- Geomorphology
- Water Quality

Overbank Flows





Integration to Generate a Flow Regime



Integration of Flow Components