

Overview of Environmental Flows

Dan Opdyke, Water Resources Branch

Presented to the Brazos Basin and Bay Area
Stakeholder Committee

April 26, 2011

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Environmental Flows

Flows that remain in the stream and provide for aquatic and riparian habitat; water quality protection; recreation; and freshwater inflows to bays and estuaries



Ecosystem Services of Environmental Flows



Commercial and Sport Fisheries



Biodiversity



Water Quality and Assimilative Capacity



Stream and Riparian Habitat for Fish and Wildlife



Recreation

Texas 2006



**Participants in
Fish & Wildlife
Recreation:
6,000,000**



**Economic Impact
\$15.8 Billion**



**Anglers, Hunters,
and Wildlife Viewers:
\$8.9 Billion in Sales
\$4.67 Billion in Salaries
139,404 jobs**



**Texas ranks 2nd nationally in angler
days and money spent on fishing**

Instream Flow

- A subset of environmental flows
- Instream flow is the amount of water running in a river
- The timing, duration, rate of change, and frequency of events are also important.



TCEQ Default Methodology for Prescribing Instream Flow Requirements for New Permits

- Modified Lyons Method
 - Oct – Feb: 40% of median monthly flows
 - Mar – Sep: 60% of median monthly flows
 - Notably: One flow value per month
 - General practice is to prescribe the maximum of Lyons and 7Q2 for each month
 - From TCEQ:

The 7Q2 is defined in the Standards as “the lowest average stream flow for seven consecutive days with a recurrence interval of two years, as statistically determined from historical data.”

State of the Science

- A healthy river depends on a range of flows that support a variety of habitat types

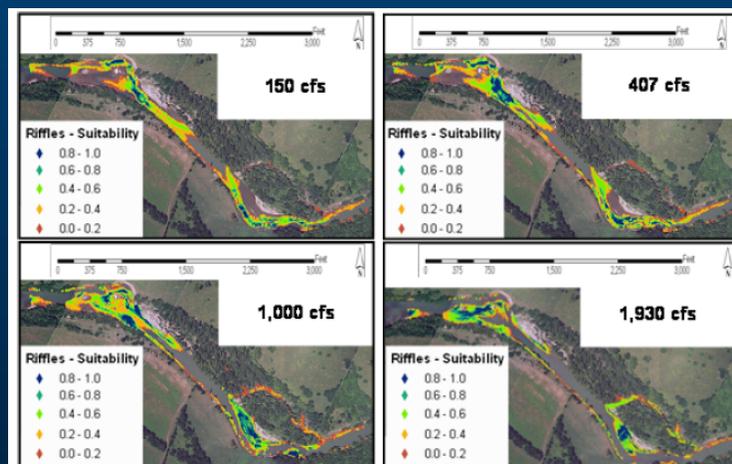
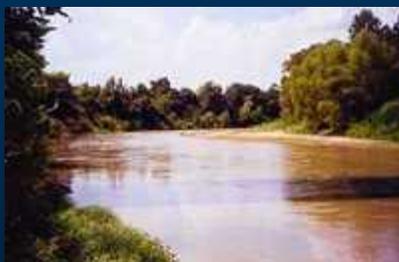
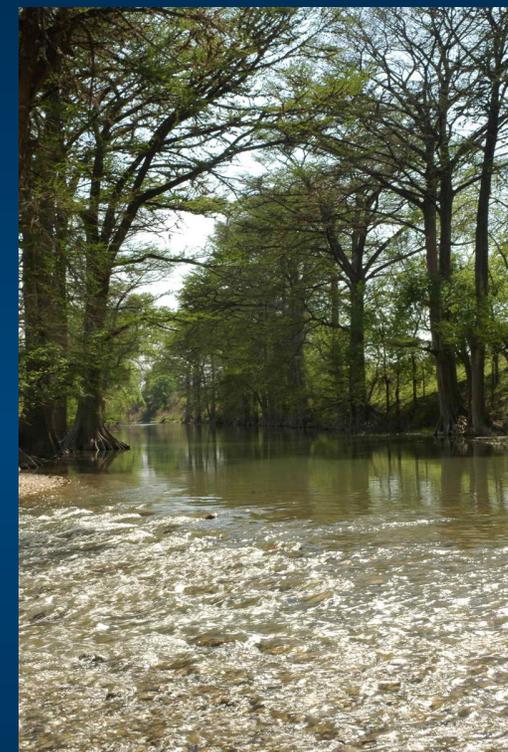


Figure 4.2. Simulated riffle habitat at Utley intensive study site (Site 2) at four modeled discharge rates.

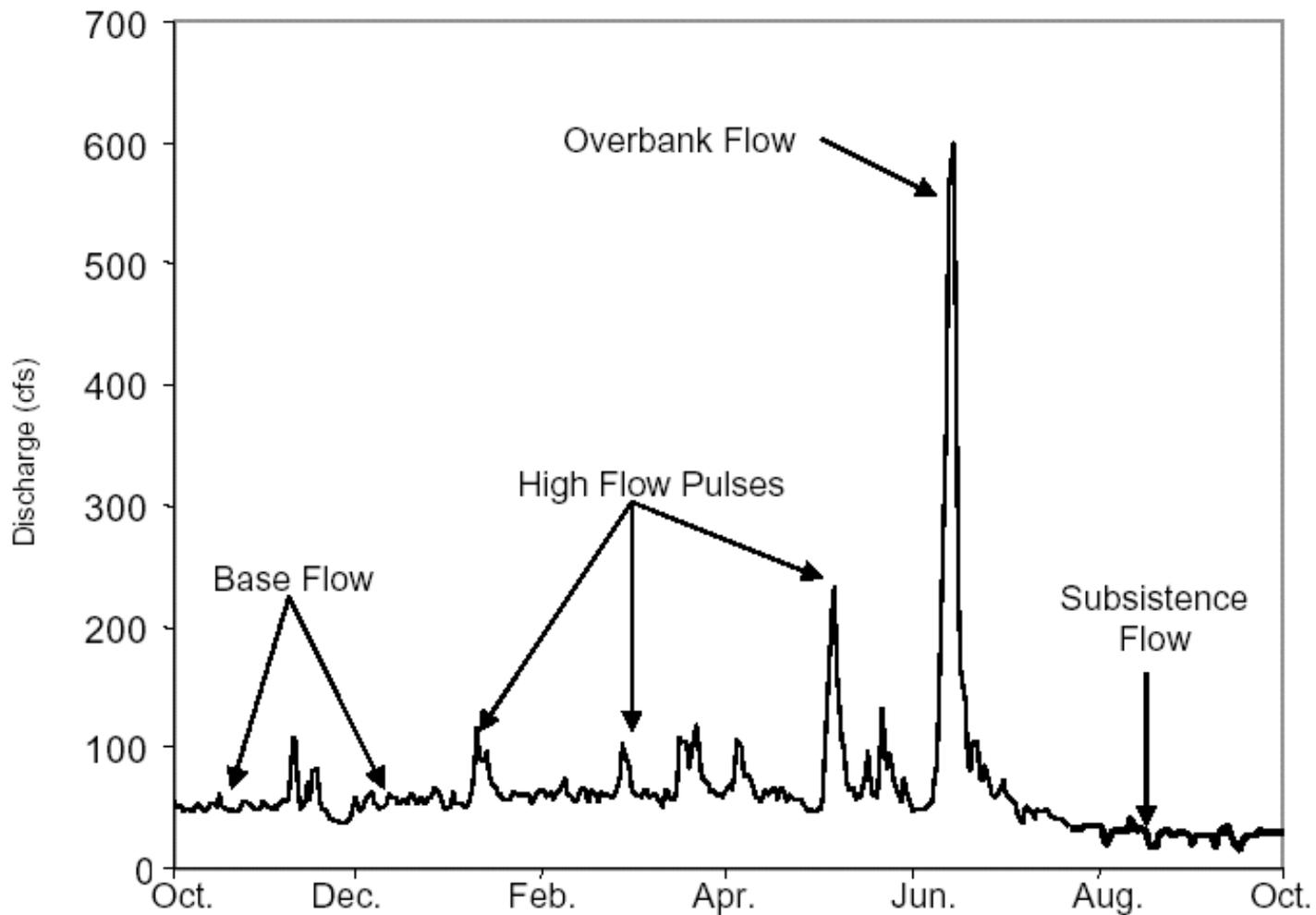


A Range of Flows

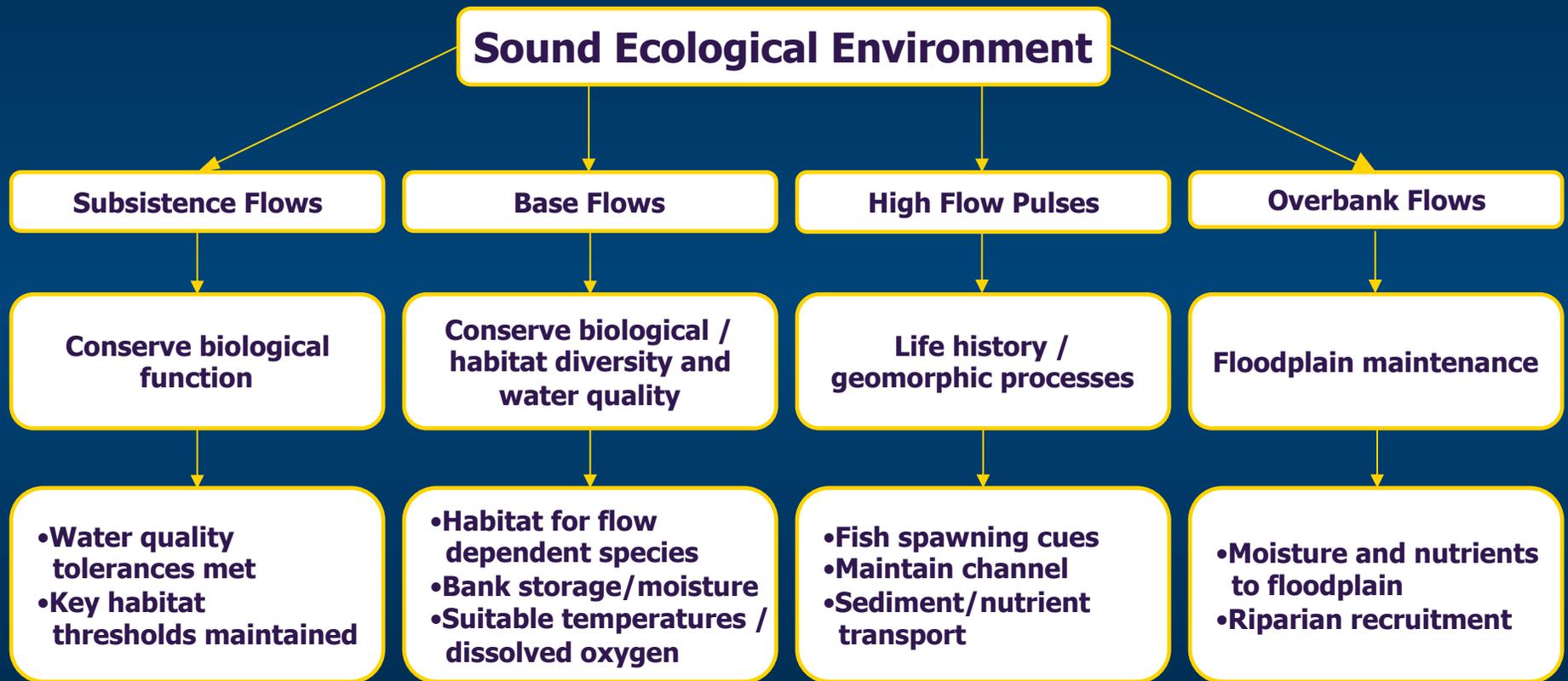
Instream Flow Components

- **Subsistence flows:** Infrequent, naturally-occurring low flows
- **Base flows:** Normal flow conditions between storm events
- **High flow pulses:** In-channel, high flow events, during and following storm events
- **Overbank flows:** Infrequent, high flow events that exceed the normal channel

Instream Flow Components

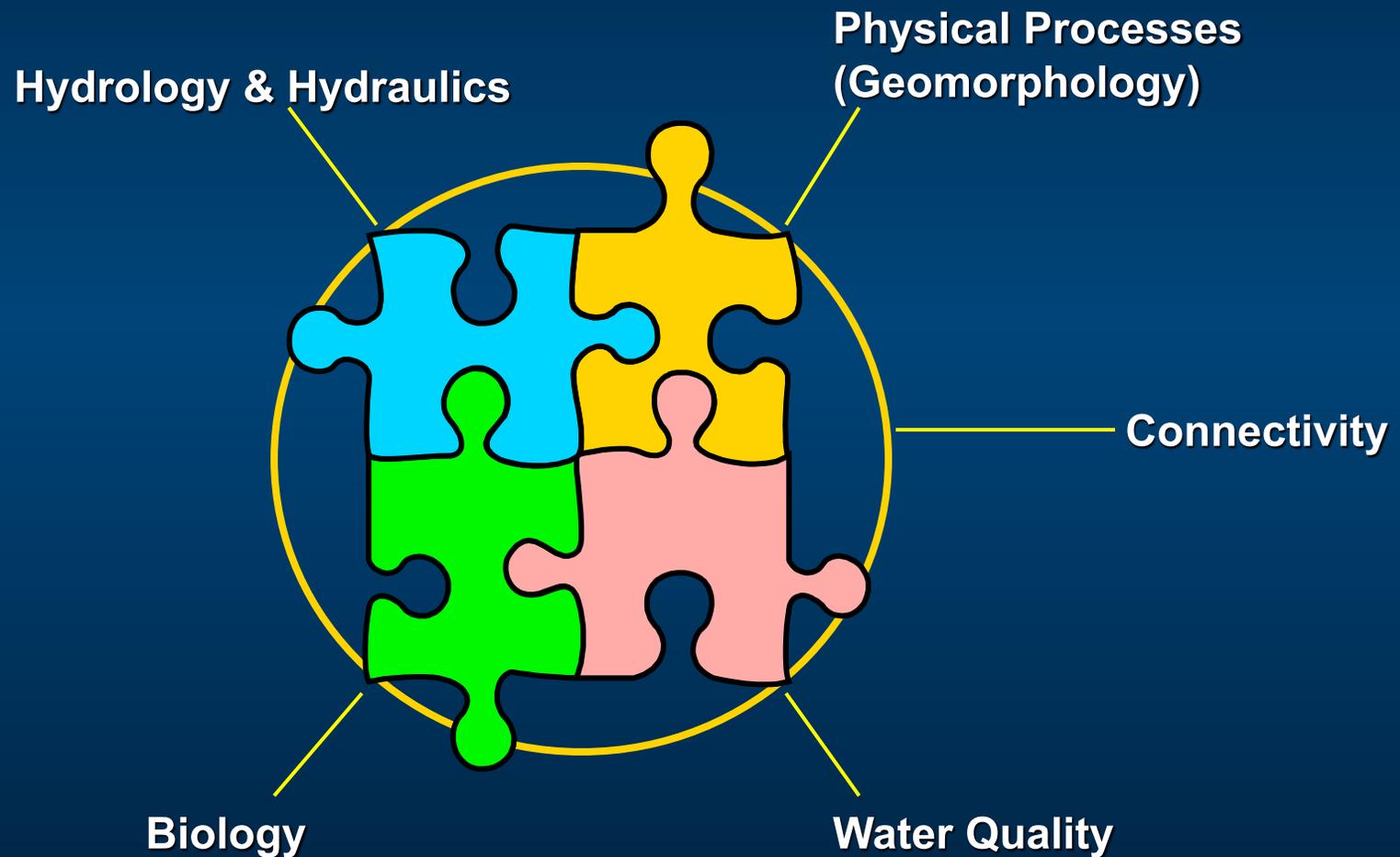


Flow Components and Ecosystem Functions



How do we quantify these?

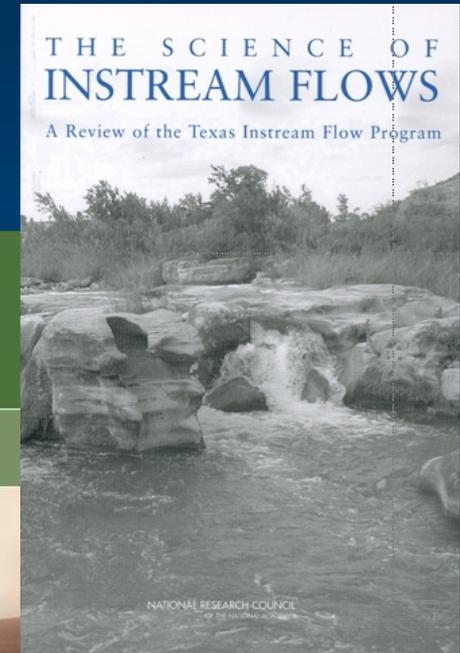
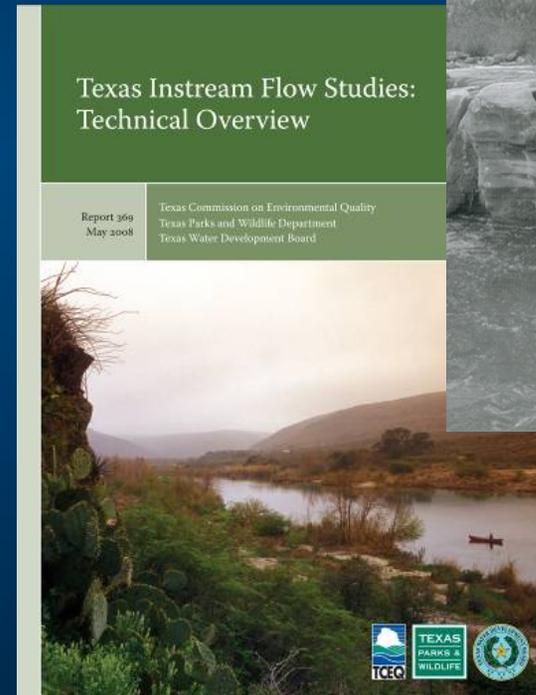
Primary Disciplines



Senate Bill 2 (2001)

Texas Instream Flow Program

- Data collection and detailed scientific studies to quantify instream flow needs
- Reviewed by NAS
- Multi-year effort on priority basins and reaches
- In the near term, reasonable values are desired throughout Texas to allow permitting to continue...enter SB 3



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