

## **JBS Wetland Center Research Topics**

Guided by Dr. Bryan Brooks of Baylor University, our board of directors, advisory committee and staff, along with Alan Plummer Associated completed a unique research horizon planning process in late January 2015 to identify and establish the top research topics for the Center. After discussing 51 individual topics, the team selected 10 wetland, 5 educational and 2 community outreach research topics to pursue. We are now seeking collaborative partnerships from individuals, universities and organizations to full our research mission. Our research topics, ranked by order of importance, will address these questions:

### **Wetland Research**

1. Which specific processes would optimize removal of phosphorous and inform nutrient management decisions at the East Fork Wetland?
2. How do changes in flow regimes (e.g., new main stem water supply, drought) influence water quality treatment performance of the East Fork Wetland?
3. How can wetland management decisions be optimized to avoid impacts by invasive species (e.g., carp, nutria) on water quality treatment performance of the East Fork Wetland?
4. Compared to equivalent reaches of river systems (e.g., East Fork of the Trinity), what economic values are derived from ecosystem services (e.g., water quality, habitat, carbon sequestration) of the East Fork Wetland?
5. How can surrogate indicators (e.g., TOC fingerprinting) provide diagnostic information for water quality treatment performance of the East Fork Wetland, including application to trace organic chemicals?
6. Does the East Fork Wetland provide important carbon sequestration benefits in a rapidly urbanizing region?
7. What habitat improvements to the East Fork Wetland and surrounding areas would increase wildlife benefits (e.g., bald eagles, small mammals) while optimizing water supply objectives?
8. How does temporal and spatial variability in macrophyte structure (e.g., lotus expansion) influence ecosystem services and water supply objectives at the East Fork Wetland?
9. What opportunities exist for elemental recovery and recycling (e.g., phosphorus, endangered elements) without influencing water quality treatment performance of the East Fork Wetland?
10. What is the rate of bioaccumulation of heavy metals in the East Fork Wetland, and what remediation might be required in the future?

### **Education Research**

1. Are the Wetland Center educational programs providing a measurable benefit for the students performance for specific TEKS objectives and STARR testing?
2. What are some methods to measure the effectiveness of the educational programs of the Wetland Center utilizing partnerships with universities?
3. How can the effects on conservation behavior and attitudes of students be measured?
4. How are science and math abilities improved for local school children by education programs at the Wetland Center?
5. What is the effectiveness of education programs on water conservation literacy to the 13 member cities, 30 customers, general public, and elected officials?

### **Community Outreach Research**

1. What measurable benefits does the East Fork Wetland bring to neighboring communities in increasing the interest in science and water conservation?
2. How can we evaluate public programs to measure their choices and decisions impacting water conservation and the environment?