

# Assessing Water Quality Effects of the Taum Sauk Hydroelectric Facility Reservoir Breach and Evaluating Recovery and Restoration Efforts

---

Lynn Milberg and Dave Michaelson  
Water Quality Monitoring Section  
Environmental Services Program



AmerenUE Taum Sauk Hydroelectric Facility  
Upper Reservoir

On December 14, 2005 the largest UN-natural disaster in Missouri history occurred:

- At 5:12 a.m. gauges showed the reservoir pumped full to a depth of 90 ft.
- At 5:24 a.m. the same gauges showed a water level of 20 ft.



View from the top of the scour channel



Missouri Department of  
**Natural Resources**

*Celebrating 40 years of taking care of  
Missouri's natural  
resources.*

 **40  
years**

Missouri Department of Natural Resources



Missouri Department of  
**Natural Resources**

*Celebrating 40 years of taking care of  
Missouri's natural  
resources.*

 **40  
years**

Missouri Department of Natural Resources



2004



Map Scale = 1:11335  
0 570ft

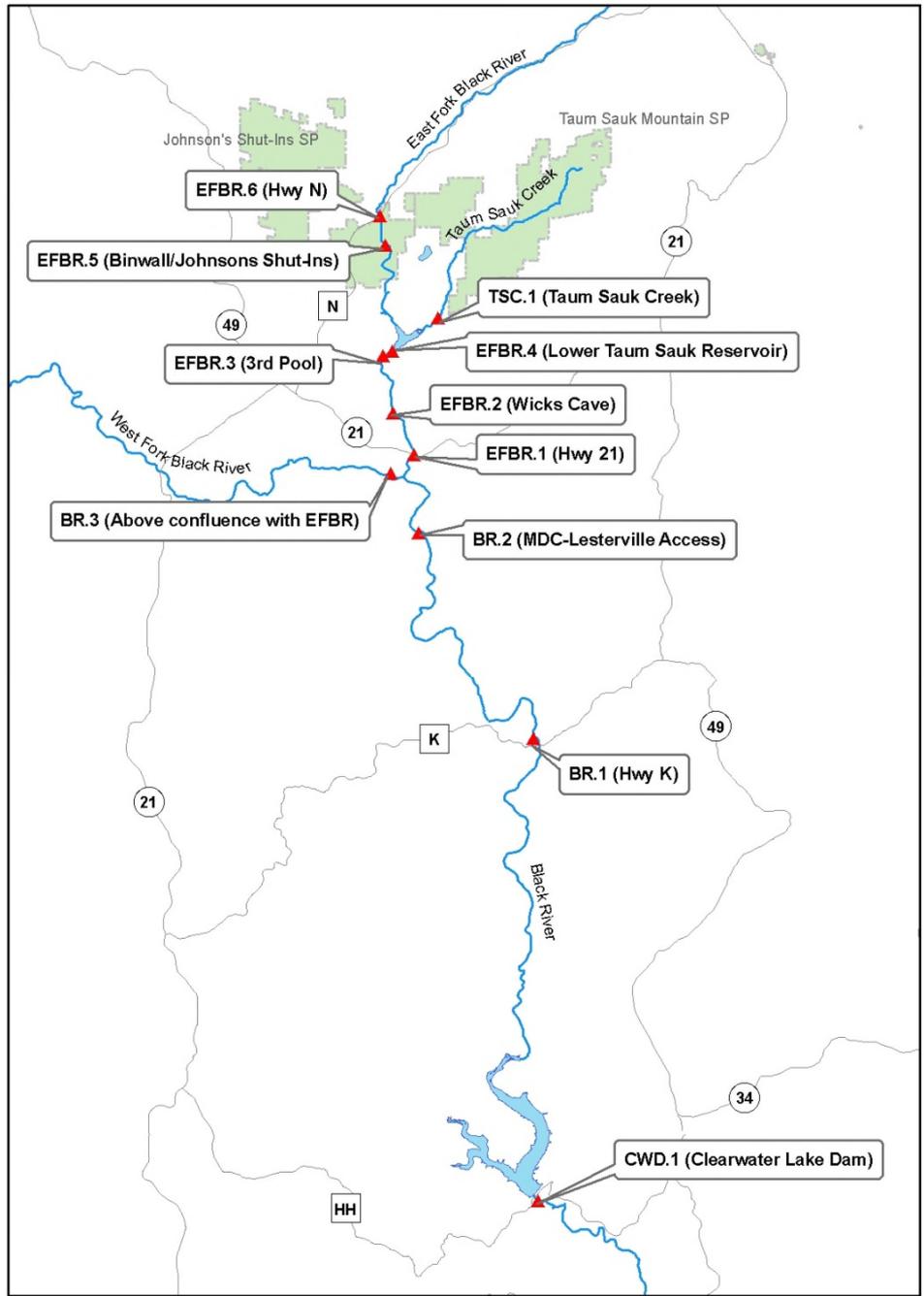
[cares.missouri.edu](http://cares.missouri.edu)

2006

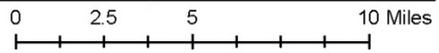


Map Scale = 1:11335  
0 580ft

[cares.missouri.edu](http://cares.missouri.edu)

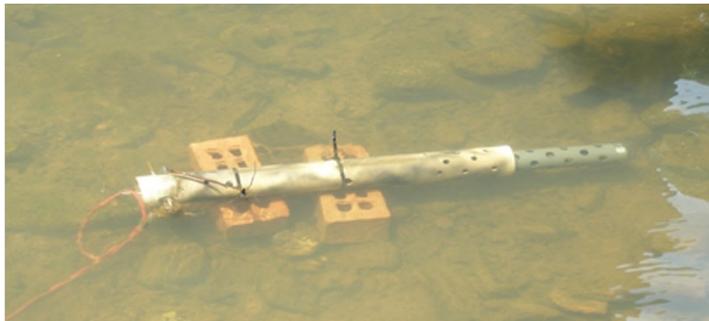


▲ Sampling Locations



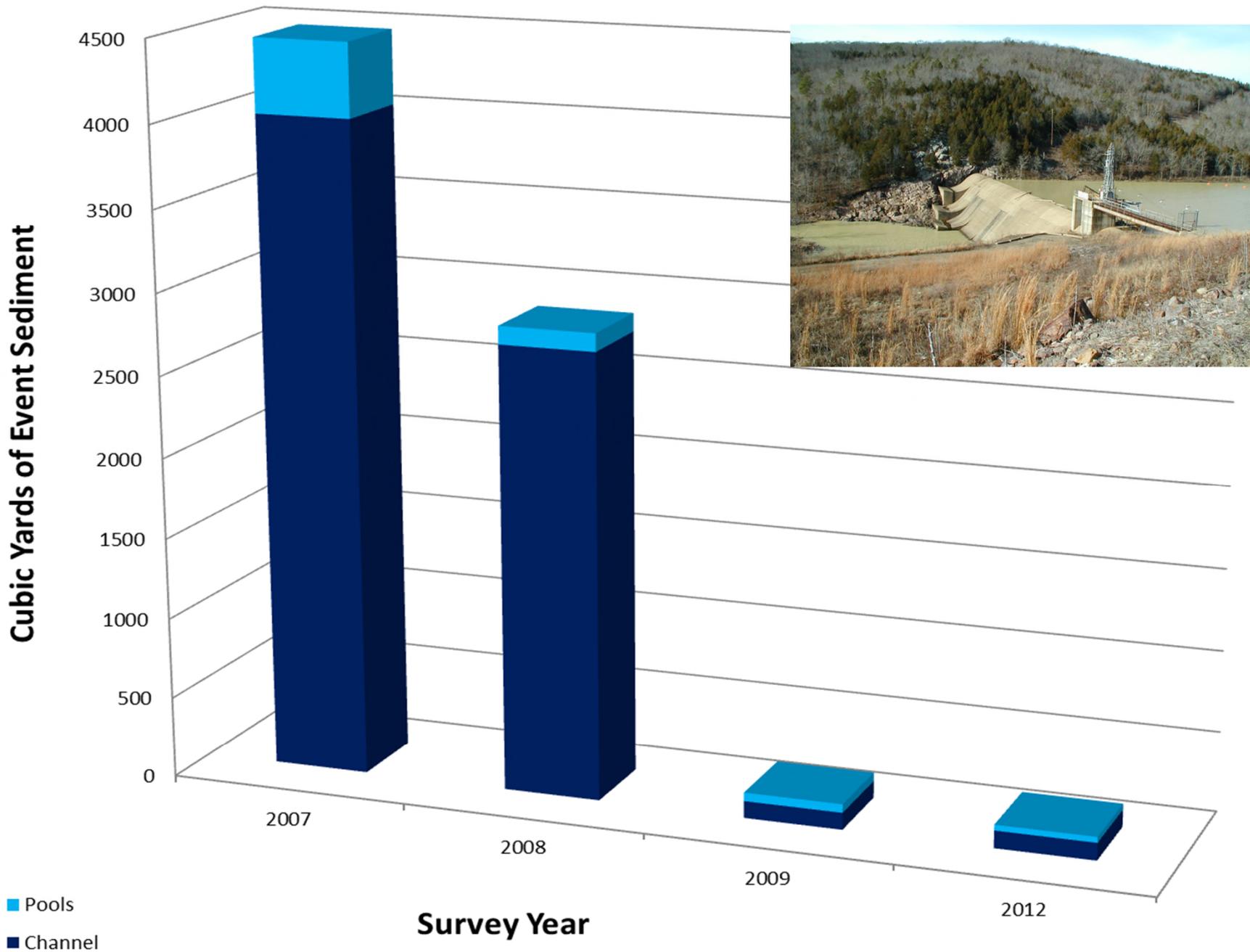
Monitoring focused on three major areas:

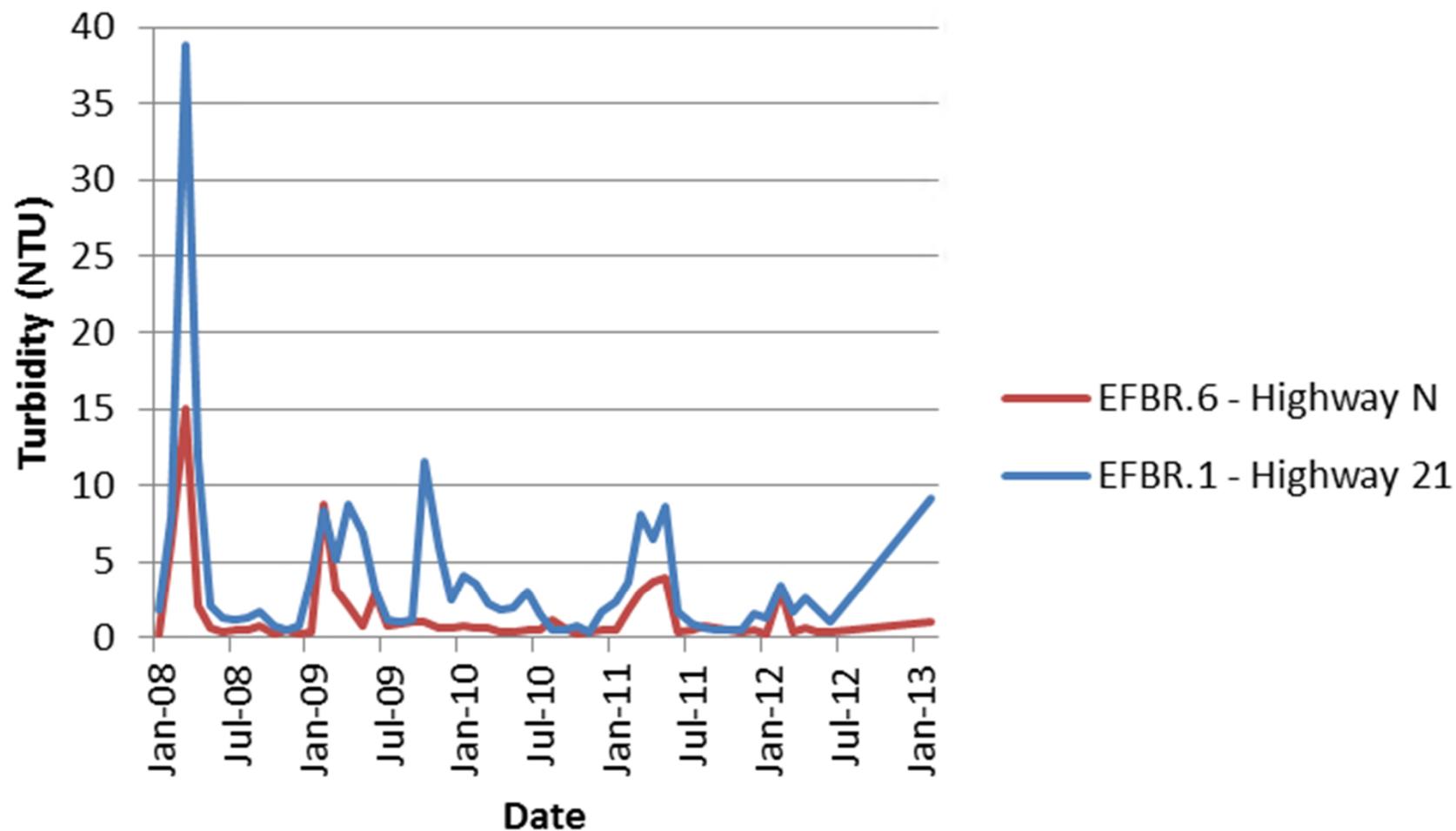
- Physicochemical
  - Monitoring of pH, conductivity, dissolved oxygen, temperature, turbidity and total suspended solids along an ~30 mile reach of river



- Sediment



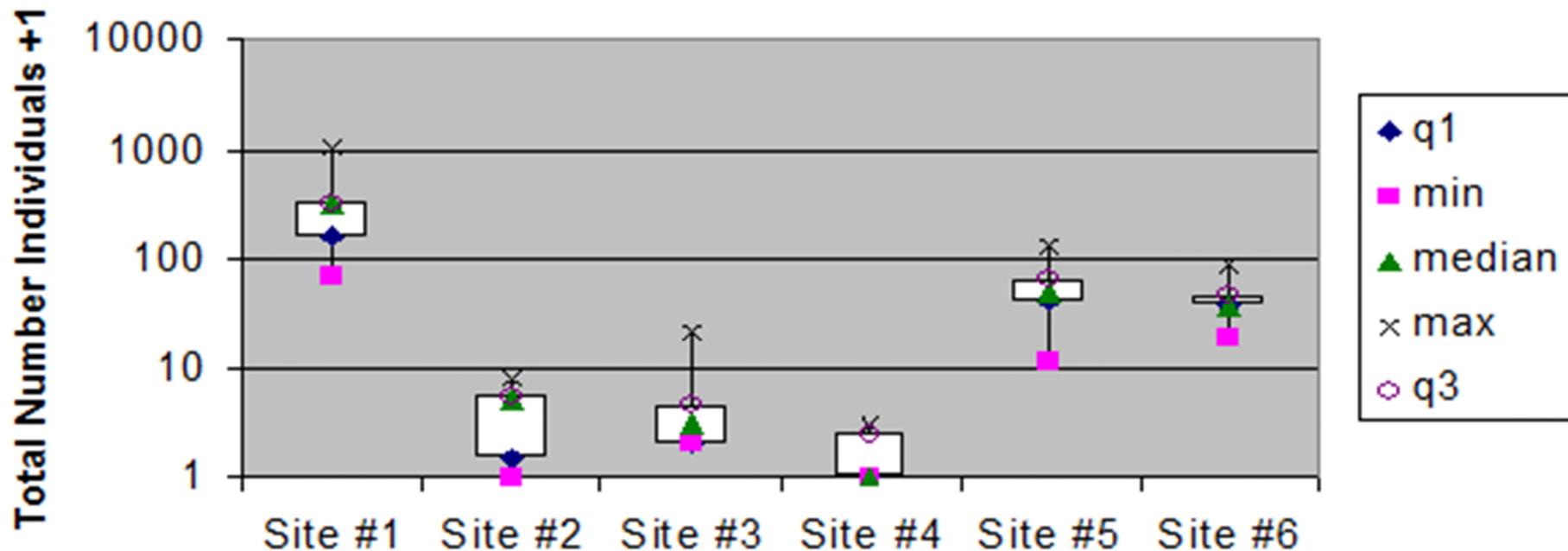




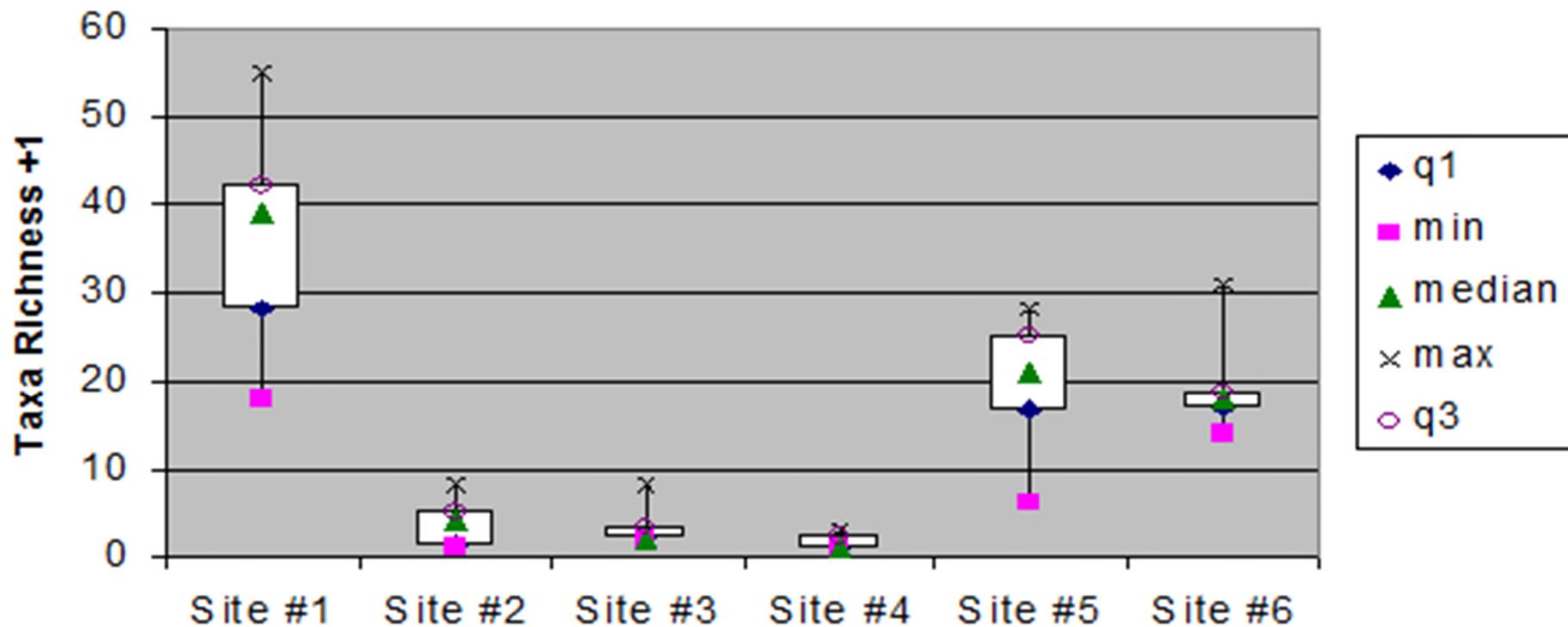
- Biological monitoring
  - Assess immediate impacts to aquatic life, specifically benthic macroinvertebrates
  - Habitat assessment
  - Assess recovery of communities as restoration efforts progress



### AmerenUE - East Fork Black River December 19-21, 2005

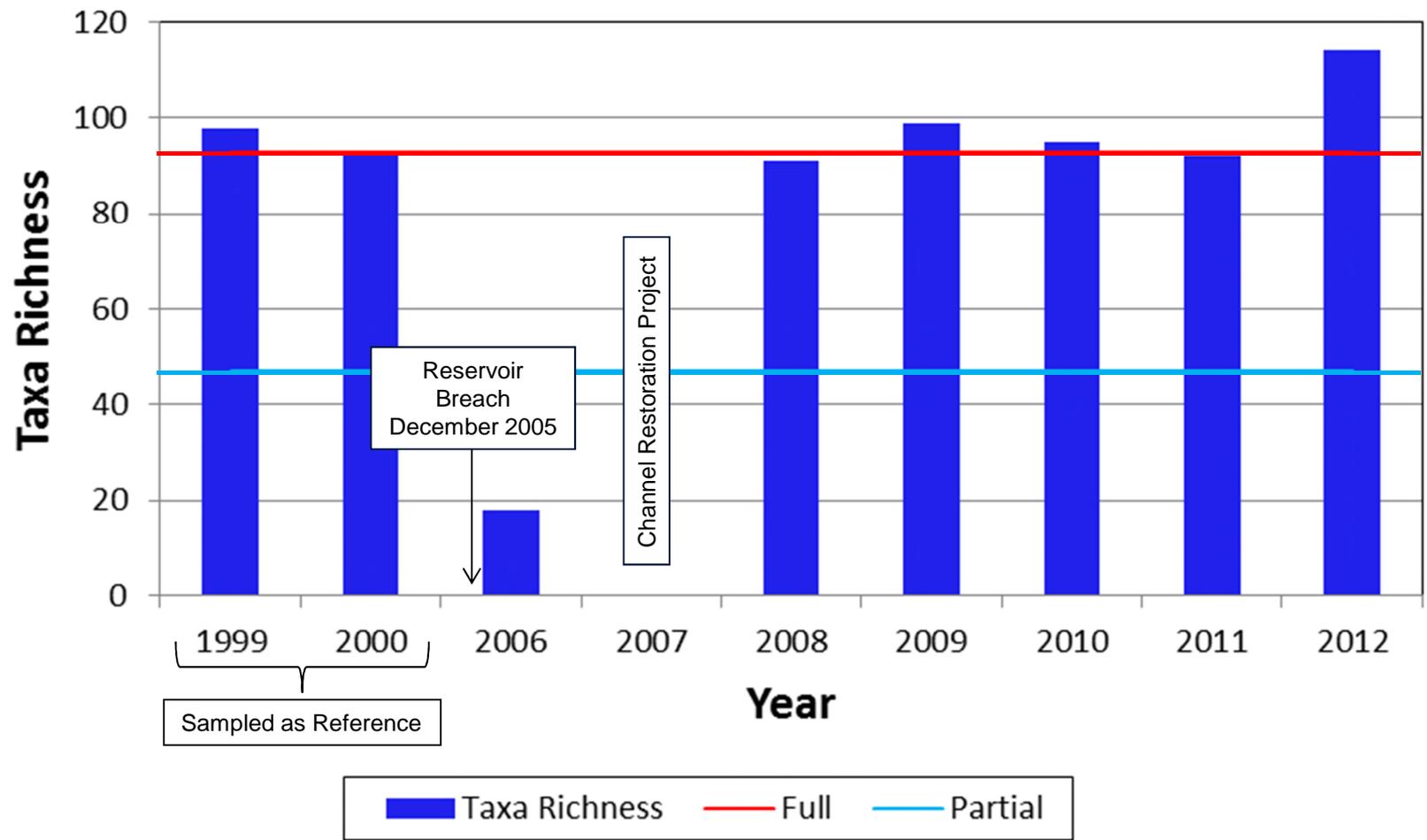


**AmerenUE - East Fork Black River**  
**December 19-21, 2005**



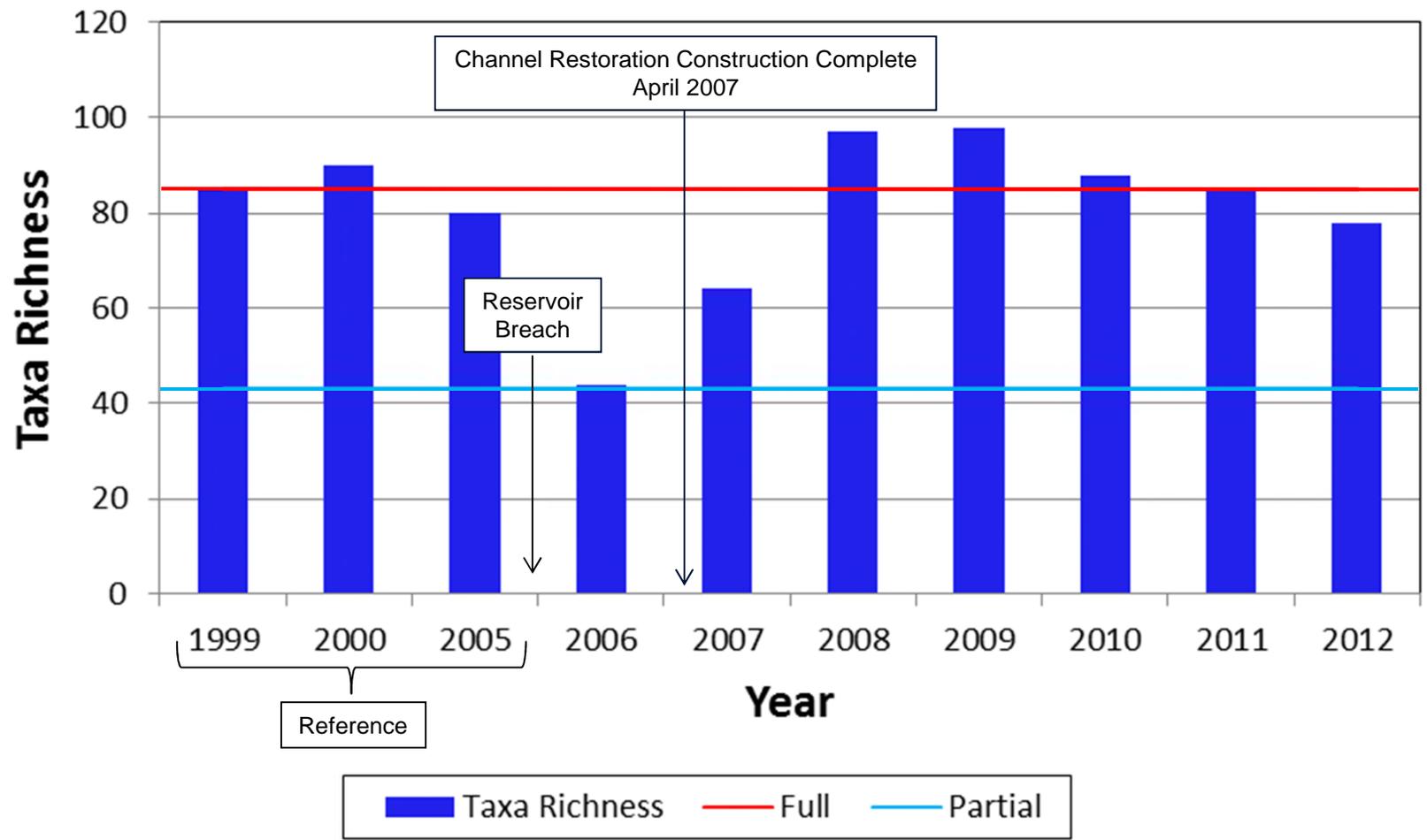


## EF Black River Spring Taxa Richness





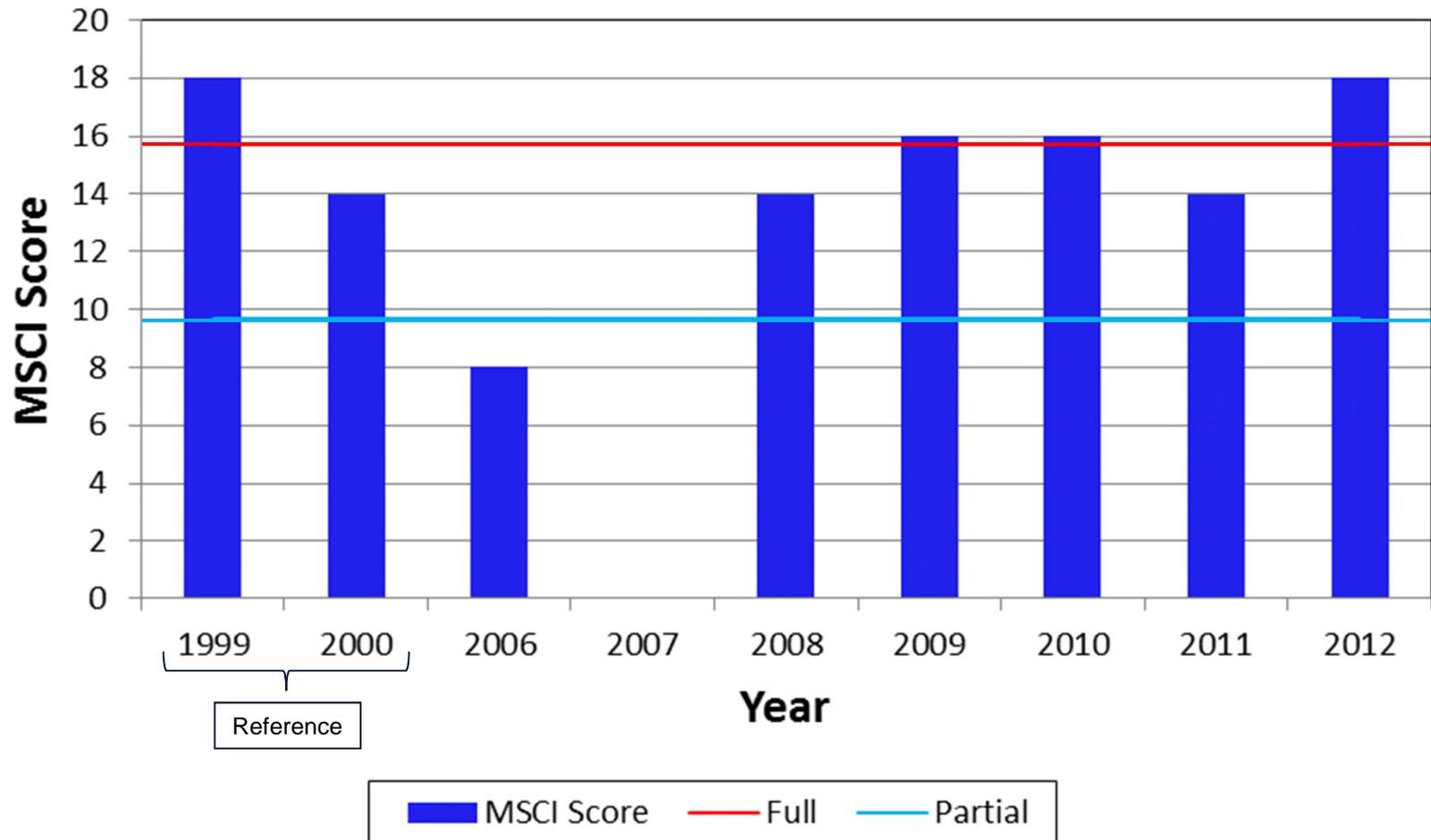
## EF Black River Fall Taxa Richness



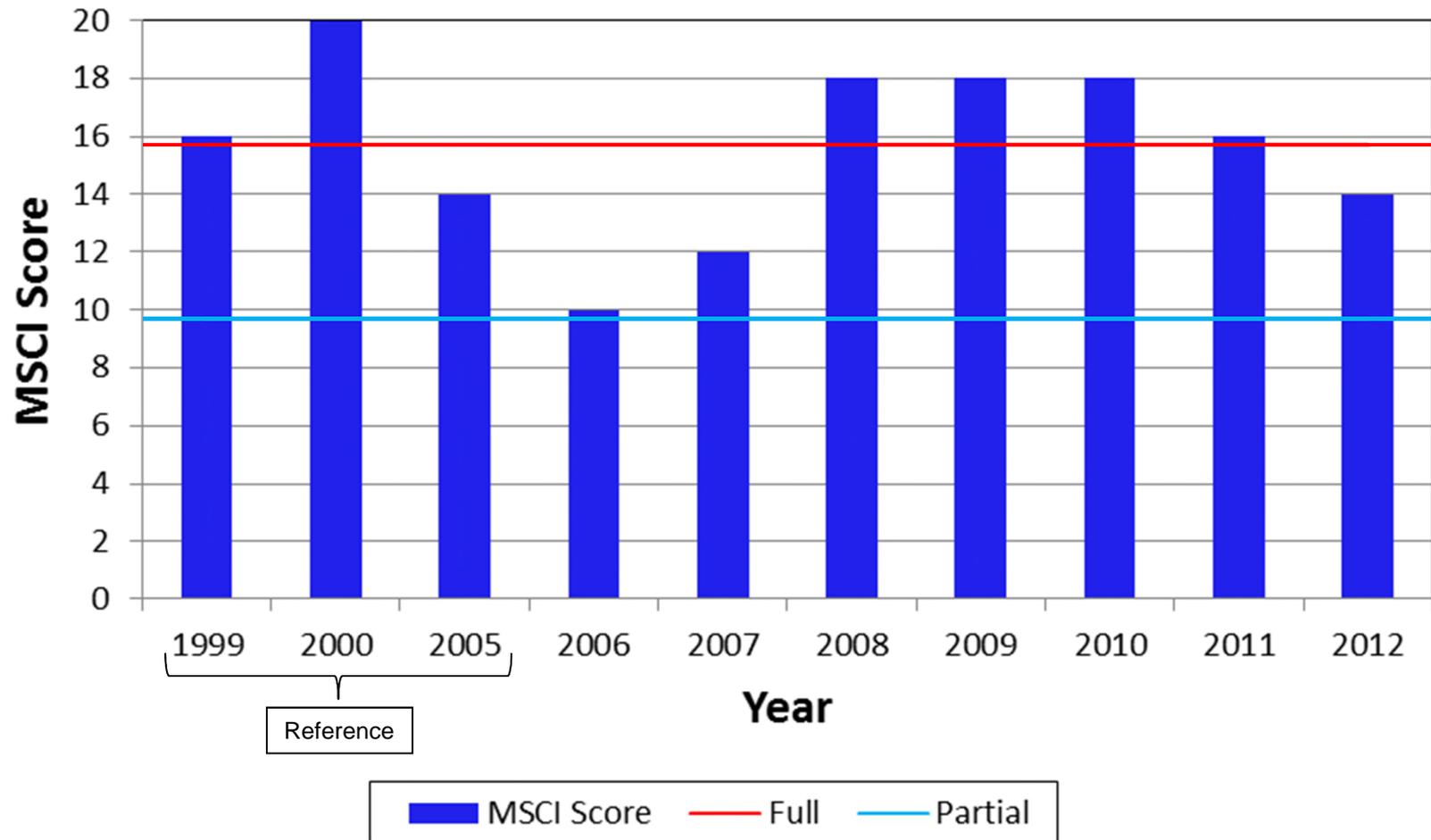
## Macroinvertebrate Stream Condition Index

- An aggregation of the four primary metrics
  - Taxa Richness, EPT Taxa, Biotic Index, Shannon Diversity Index
- MSCI scores range from 4 to 20
- Based on comparison with the Reference Condition
- Assessment of supportability of aquatic life

## EF Black River Spring MSCI Scores



## EF Black River Fall MSCI Scores



2006



Map Scale = 1:11335  
0 580ft

[cares.missouri.edu](http://cares.missouri.edu)

2014



Missouri Department of  
**Natural Resources**

*Celebrating 40 years of taking care of  
Missouri's natural  
resources.*

 **40  
years**

Missouri Department of Natural Resources



Missouri Department of  
**Natural Resources**

*Celebrating 40 years of taking care of  
Missouri's natural  
resources.*

 **40  
years**

Missouri Department of Natural Resources



Division of Environmental Quality Director: Leanne Tippett Mosby

Date: April 2014

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated by rule under chapter 536 or authorized by statute.