Instream Flow Study of the Middle and Lower Brazos River

Draft Study Design

TEXAS INSTREAM FLOW PROGRAM

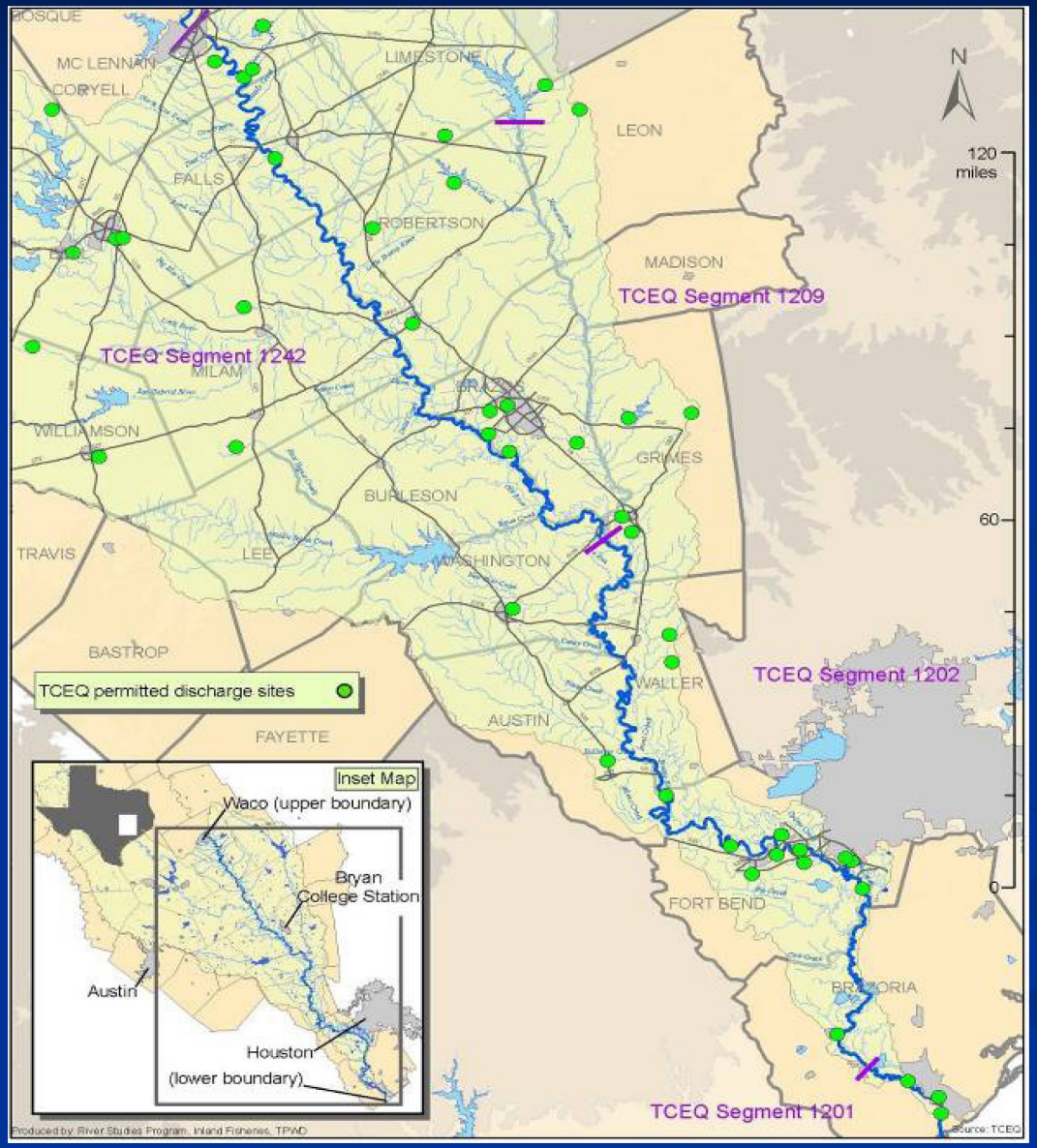
Summary of Available Water Quality Information

- Clean Rivers Program – BRA/TCEQ Historical Water Quality Trends
- Other Sources of WQ Data
  - SWQM Stations
  - USGS
  - TCEQ – UAAs, RWAs, TMDL Implementation

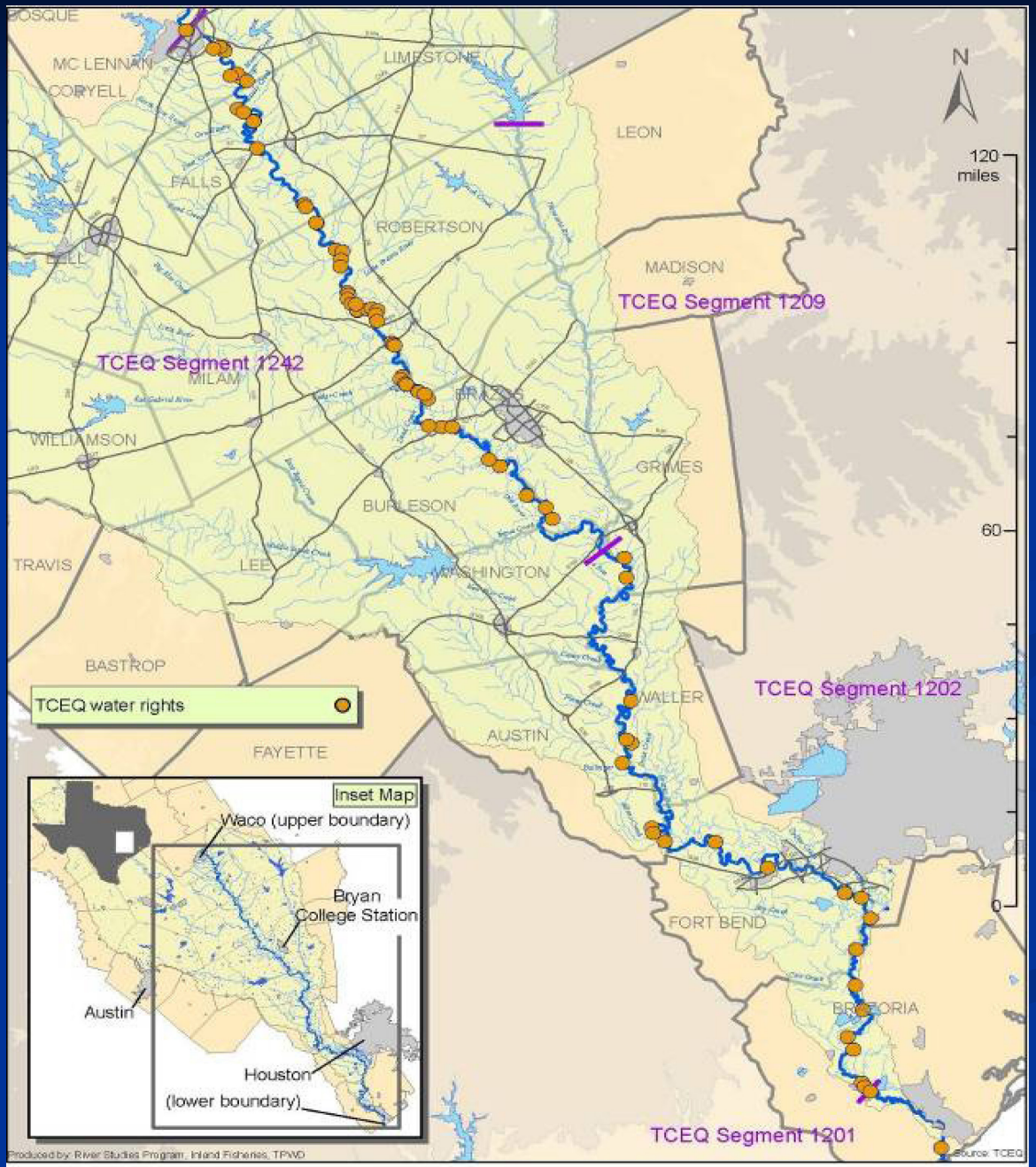
Water Quality Data Points

- Wastewater Discharge Locations – both municipal and industrial (Inputs)
- Diversion Locations (Outputs)
- Monitoring Sites – Surface Water Quality Monitoring Program (SWQM) and Clean Rivers Program Basin Summary Report

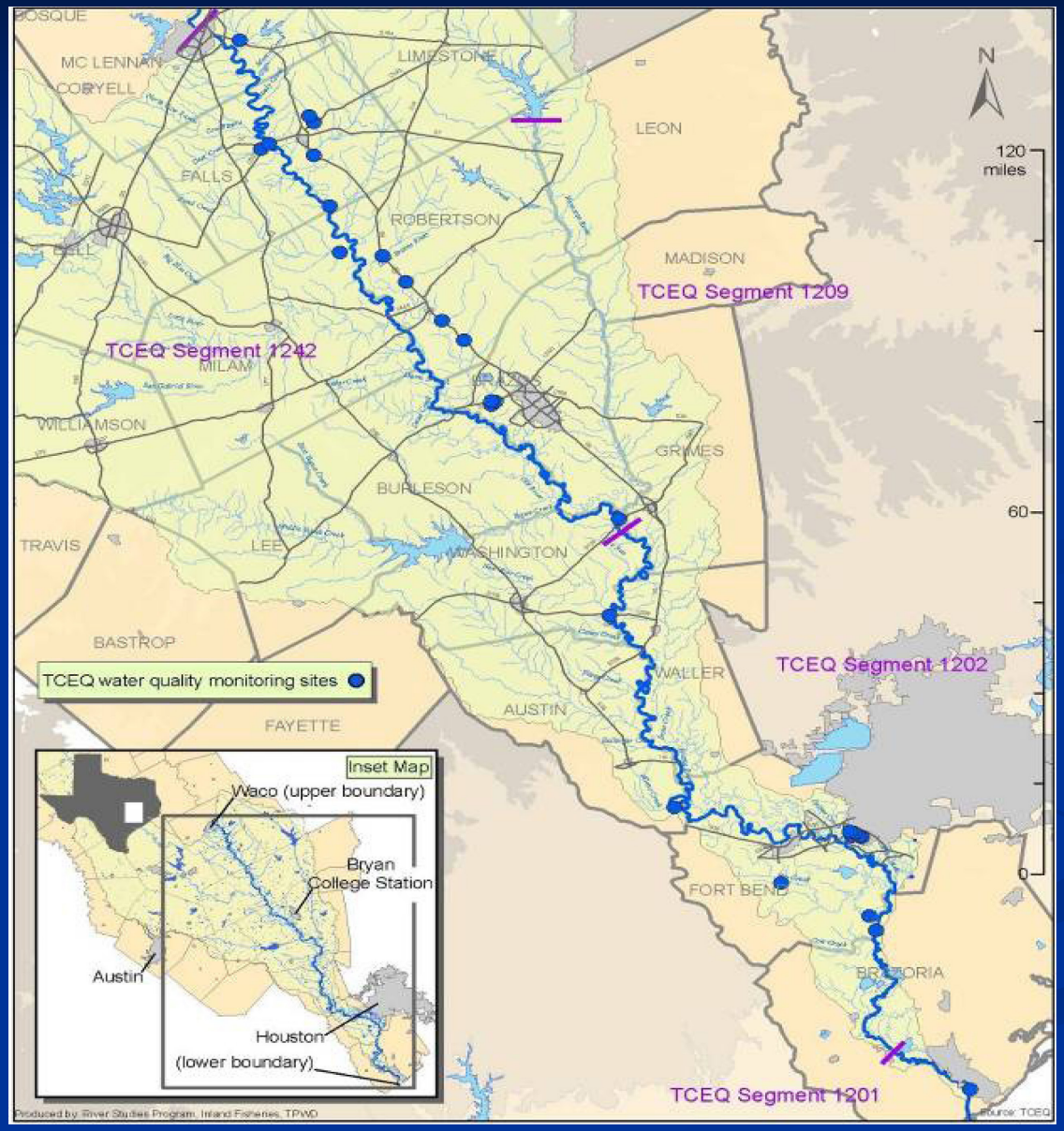
Major Wastewater Discharge Locations in the Middle and Lower Brazos River



Water Diversions on the Middle and Lower Brazos River

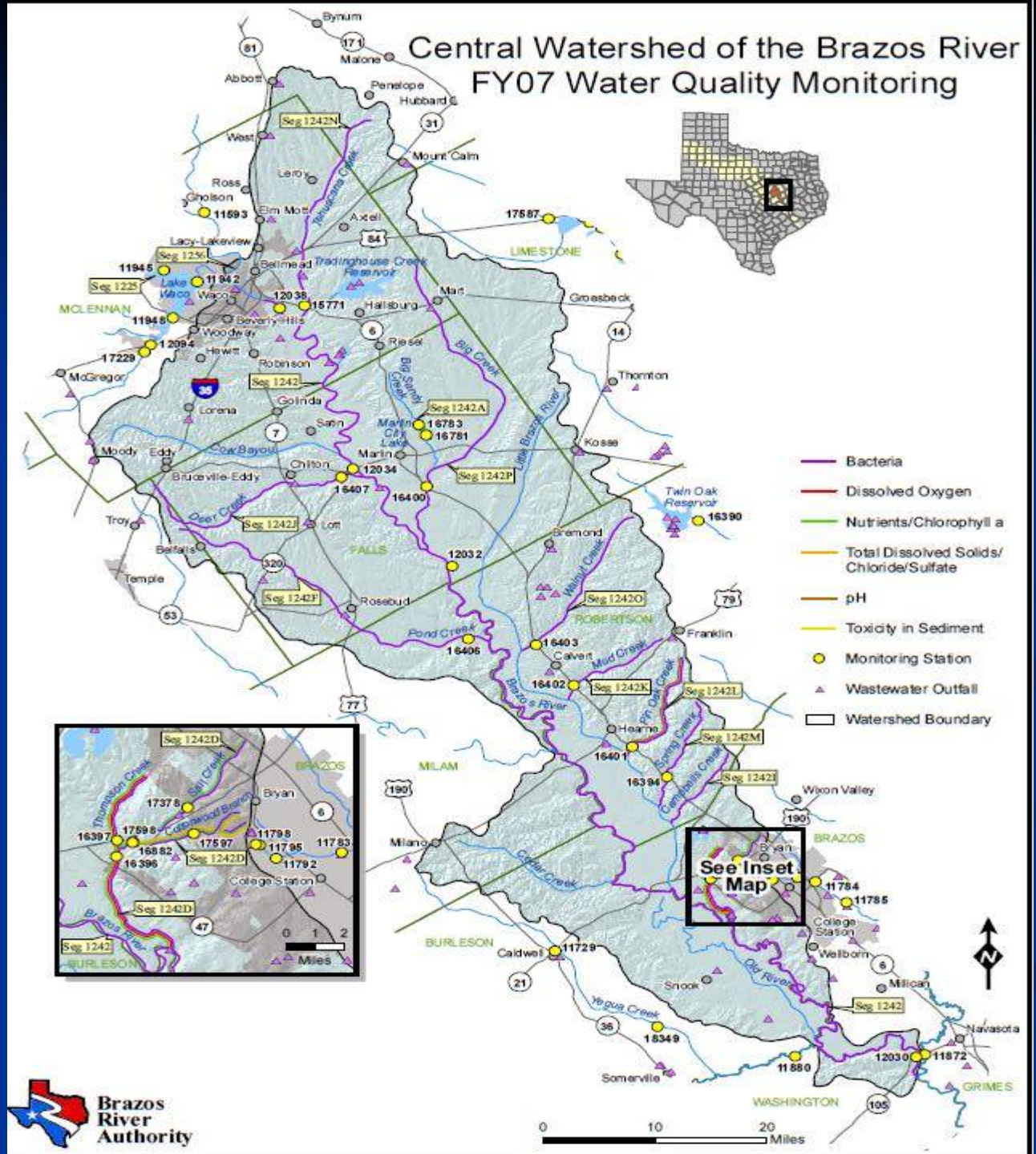


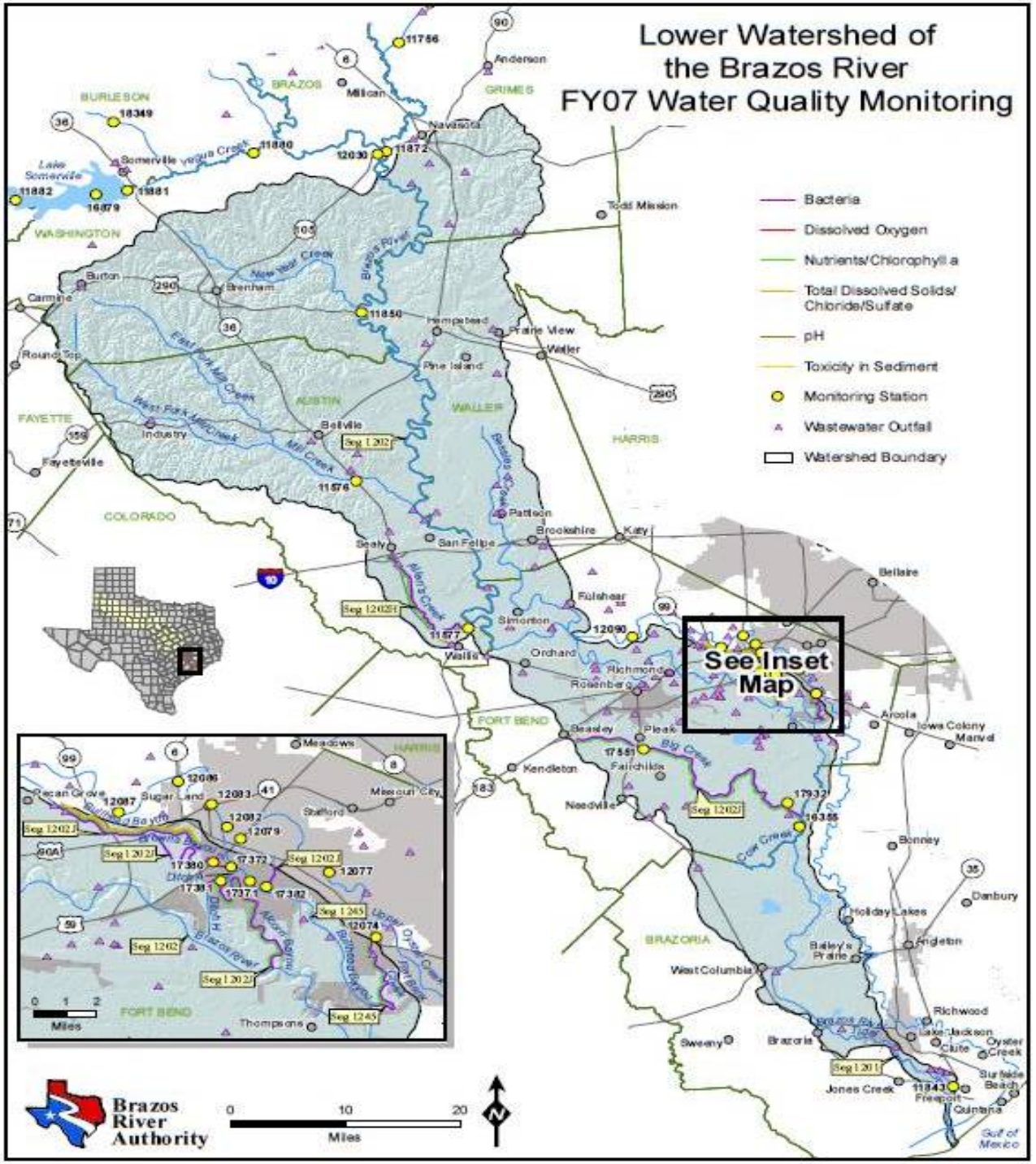
SWQM Monitoring Sites on the Middle and Lower Brazos River



Assessment of Current WQ Conditions

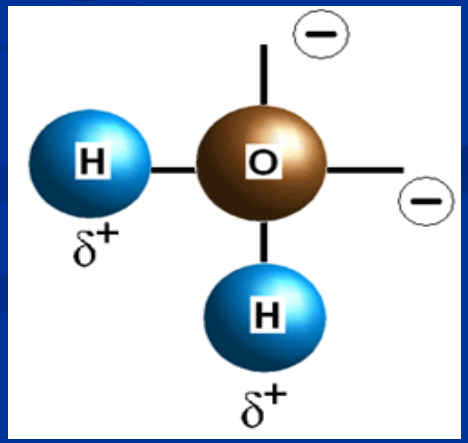
- WQ in the Brazos River Basin continues to improve, but concerns still exist (BRA 2007)
- Concerns
  - Nutrient Enrichment
    - Seg. 1242 Brazos River Above Navasota River
    - Seg. 1202 Brazos River Below Navasota River
  - Bacteria
    - Seg. 1242 Several Tribs listed on 2008 303(d) list
    - Seg. 1202 Two Tribs listed on 2008 303 (d) list


Central Watershed of the Brazos River
FY07 Water Quality Monitoring
Bacteria
Dissolved Oxygen
Nutrients/Chlorophyll a
Total Dissolved Solids/ Chloride/Sulfate
pH
Toxicity in Sediment
Monitoring Station
Wastewater Outfall
Watershed Boundary
See Inset Map
Brazos River Authority
0 10 20 Miles
0 1 2 Miles


Lower Watershed of
the Brazos River
FY07 Water Quality Monitoring
Bacteria
Dissolved Oxygen
Nutrients/Chlorophyll a
Total Dissolved Solids/
Chloride/Sulfate
pH
Toxicity in Sediment
Monitoring Station
Wastewater Outfall
Watershed Boundary
See Inset
Map
Brazos
River
Authority
0
10
20
Miles
N
Gulf of
Mexico

Stakeholder Involvement
Goals, Objectives, and Indicators

- The goal for the Middle and Lower Brazos is a middle and lower Brazos River that provides for sustainable environmental, economic, and social uses.
- The Water Quality Objective is to identify flow related water quality in the four flow regime components.



Water Quality Indicators

- Nutrients – Nitrogen and Phosphorus Spp. Promote Growth of plants and algae in water.
- Dissolved Oxygen – Most important factor of water's ability to support aquatic life
- Temperature – Controls biological activities and chemical processes
- Bacteria – *E. coli*. Indicator of recreational health
- Total Suspended Solids – Indicator of water clarity
- Salinity – Amount of dissolved salts in water

WQ Related Technical Studies

- Water Quality Evaluation from existing programs, e.g. CRP, TPDES, TMDL
- Extended deployment of WQ data sondes
- Use of existing WQ models, i.e. QualTX – Steady State Surface Water Quality Model
- Development of a Statewide WQ modeling approach
  - Ability to model WQ parameters under a range of flow conditions at Control points or study sites along a river basin.
  - A contract is currently underway with SARA to develop such a model

Questions???

P. Dakus Geeslin

pgeeslin@tceq.state.tx.us

512-239-0058