Houston: a soils and watershed story

“The soil is the great connector of lives, the source and destination of all. It is the healer and restorer and resurrector, by which disease passes into health, age into youth, death into life. Without proper care for it we can have no community, because without proper care for it we can have no life.” – Wendell Berry
Regional Context

- Coastal plain deposits and sediments transported and reworked and during periods of lower sea level
- Younger sediments deposited further out into Gulf
- Ancient, sediment-filled channels once formed delta and floodplain; now areas of wetlands
- Further, wind action formed landscape – dunes and isolated prairie potholes
- Bayou soils associated with fine grained, low permeability sand, silts and clays of Beaumont Formation
Regional Geology

- **Willis Fm**
  - Pliocene (5.3 - 2.6 Mya)
  - Clay, silt, sand, pebble gravel, some petrified wood with iron oxide concretions
- **Lissie Fm**
  - Mid Pleistocene (0.8 - 0.1 Mya)
  - Sand, silt, clay, minor gravel; deltaic plain deposits, entrenched by streams
  - Dispersive clays present
- **Beaumont Fm**
  - Late Pleistocene (0.1 - 0.012 Mya)
  - Clay and mud, low permeability
  - Lenses of fine sand, decayed organic matter
Regional Eco-Types

- Big Thicket
- Bottom-land
- Pineywoods
- Coastal Prairie
- Savanna
- Marsh
A river that is able to maintain its
  – dimension,
  – pattern, and
  – profile
without aggrading or degrading its channel bed
Watershed Challenges

Soils
- Native soil conditions
- Agriculture practices
- Lawn practices
- Subsidence – compaction
- Construction impacts
- Pollutant loading

Hydrology
- Urbanization
- Detention releases
- Channelization
- Direct soil impacts
- Increased erosion
- Sedimentation
- Pollutant loading

Vegetation
- Riparian constraints
- Grazing/haying practices
- Fire release
- Invasive species
- Impervious cover
Watershed Opportunities

Resiliency
- Soil Health
- Promote infiltration
- Natural Stable Channels
- Riparian health
- Native vegetation

Sustainability
- Green Stormwater Infrastructure
- Erosion control
- Native vegetation
- Reduce urban sprawl

Research & Education
- Highlight great projects
- Gather data
- Publish data
- Soil Health Assessments
- Multi-agency task force