

Contact Recreation Use Attainability Analysis

A Pilot Study in Texas

Bacteria In Our Bayous
October 15-16, 2007

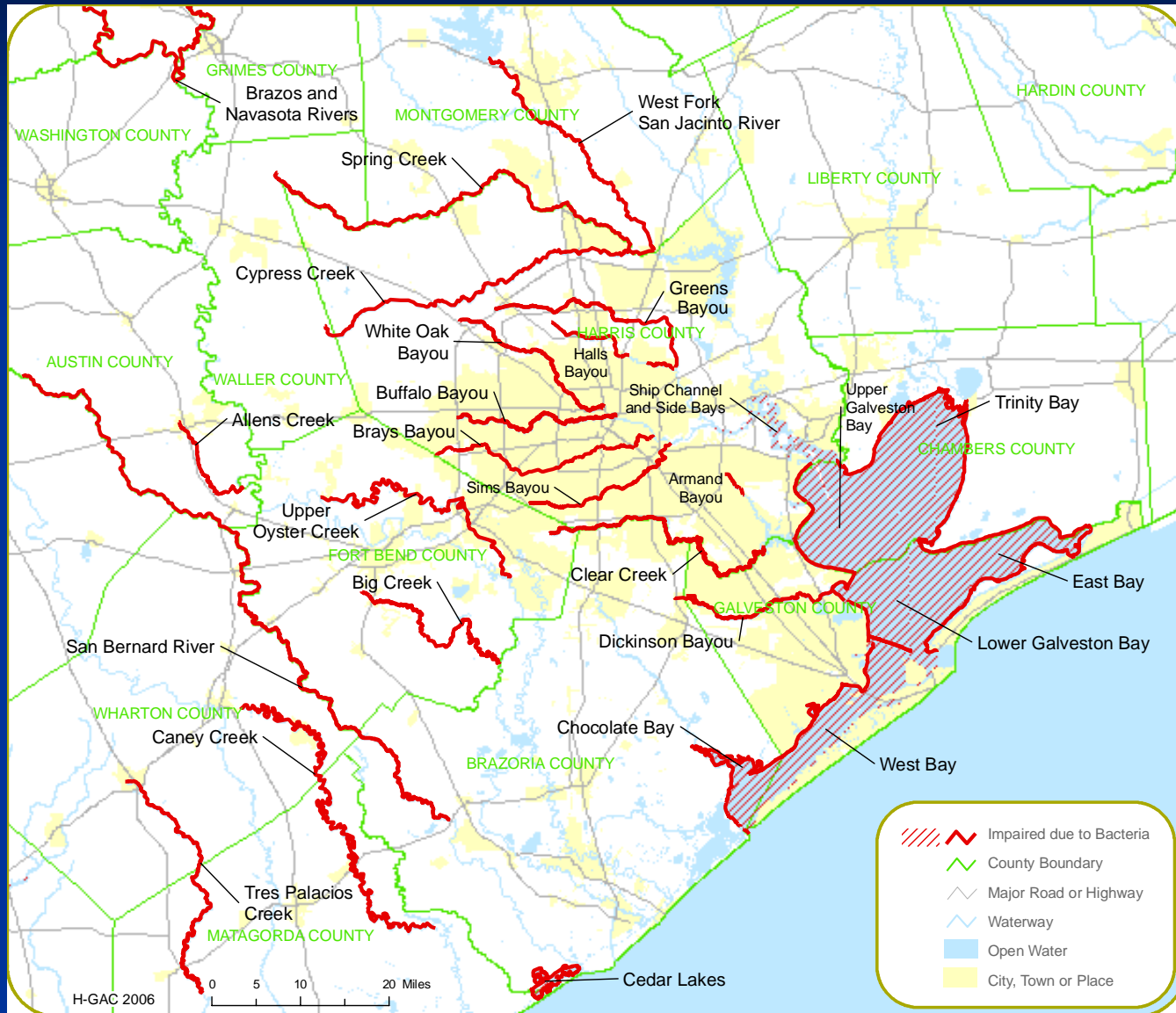
Texas Contact Recreation Standards

- *E. Coli*
 - Geometric Mean = 126/100ml
 - Single Sample = 394/100ml
- Enterococcus
 - Geometric Mean = 35/100ml
 - Single Sample = 89/100ml
- Fecal Coliform
 - Geometric Mean = 200/100ml
 - Single Sample = 400/100ml

Texas Non Contact Recreation Standards

- *E. Coli*
 - Geometric Mean = 605/100ml
- Enterococcus
 - Geometric Mean = 168/100ml
- Fecal Coliform
 - Geometric Mean = 2000/100ml
 - Single Sample = 4000/100ml

Houston Area Bayous with Bacteria Impairments



What is a UAA?

- *“...a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological and economic factors as described in § 131.10(g).”*

Six Criteria for Changing a Water Body's Designated Use

- *States may remove a designated use which is not an existing use, as defined in § 131.3, or establish sub-categories of a use if the State can demonstrate that attaining the designated use is not feasible because:*
 - *1. Naturally occurring pollutant concentrations prevent the attainment of the use, or*
 - *2. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met, or*
 - *3. Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place, or*

Six Criteria for Changing a Water Body's Designated Use (cont.)

- 4. *Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modifications in a way that would result in the attainment of the use, or.*
- 5. *Physical conditions related to the natural features of the water body, such as lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses,¹ or*
- 6. *Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.*

What is a Contact Recreation UAA?

- Determine if a water body can support contact recreation
- Determine if a water body is currently being used for contact recreation
- Determine if a water body has been used for contact recreation in the past
- If so, what type?
- Determine if it is desirable for a water body to be used for contact recreation in the future

Primary Standard

- Protects people from illness due to activities involving the ingestion of, or immersion in, water.
 - Swimming
 - Water Skiing
 - Skin Diving
 - Surfing
 - Wading by Children

Secondary Standard

- Protective when immersion is unlikely
 - Boating
 - Wading
 - Rowing
 - Fishing
 - Canoeing

Why Conduct a Contact Recreation UAA?

- Determine if bacteria standards are appropriate for Houston area bayous
- Determine possibility of adopting secondary standards for some bayous
- Develop methods and protocols for bacteria sample collection

Tasks

- Administration
- Standards Review
- **Development of UAA Protocols**
 - **Pilot Study to test protocols**
- Epidemiological Feasibility Study

Standards Review

- Evaluation of Texas' and other states existing WQ standards and assessment procedures
- Review the Beach Act
- Evaluate EPA and other states' secondary contact recreation criteria
- Evaluate appropriate Contact Recreation use Criteria for Texas
- Recommend Appropriate illness rate/risk level for secondary Contact Recreation
- Evaluate high flow exclusions, single samples, averaging periods, geometric means, etc.
- Document the results of evaluations and recommendations in a report

Epidemiological Feasibility Study

- Assemble a workgroup of local stakeholders to assist in the completion of this task
- Conduct literature review of similar studies and incorporate into new study design
- Determine if an epidemiological study can be successfully completed for Houston's urban bayous

Development of UAA Protocols

- Assemble a workgroup of local stakeholders to assist in the completion of this task
- Develop a methodology to conduct a recreational UAA
 - Review methods utilized by other states for recreational UAAs
 - Develop detailed methods for conducting site-specific evaluations
 - Evaluation of regulatory constraints that may prohibit the results of a Contact Recreation UAA from being used to adjust stream standards
- Conduct Pilot study on a least impacted stream
 - Provide reference conditions for future UAAs
 - Allow sampling teams to compare methods and protocols
 - Provide an opportunity to see if least impacted streams can meet contact recreation standards

States That Received Detailed Reviews of Their Contact Recreation UAA Protocols

- Missouri
- Kansas
- Washington
- Oklahoma
- Colorado
- Utah
- Iowa
- Chicago

Elements of Contact Recreation UAAs found to be important for Texas

- Establish base flow conditions
- Depth of stream
- Water Quality data collection
- Accessibility of stream
- Determining use of stream

Developed Four Data Sheets in Protocol

- Data Sheet A – Water Body Information
- Data Sheet B – Site Characterization
- Data Sheet C – Water Quality Information and depth measurements
- Data Sheet D – Recreational Use Interview

Objectives for Pilot Study

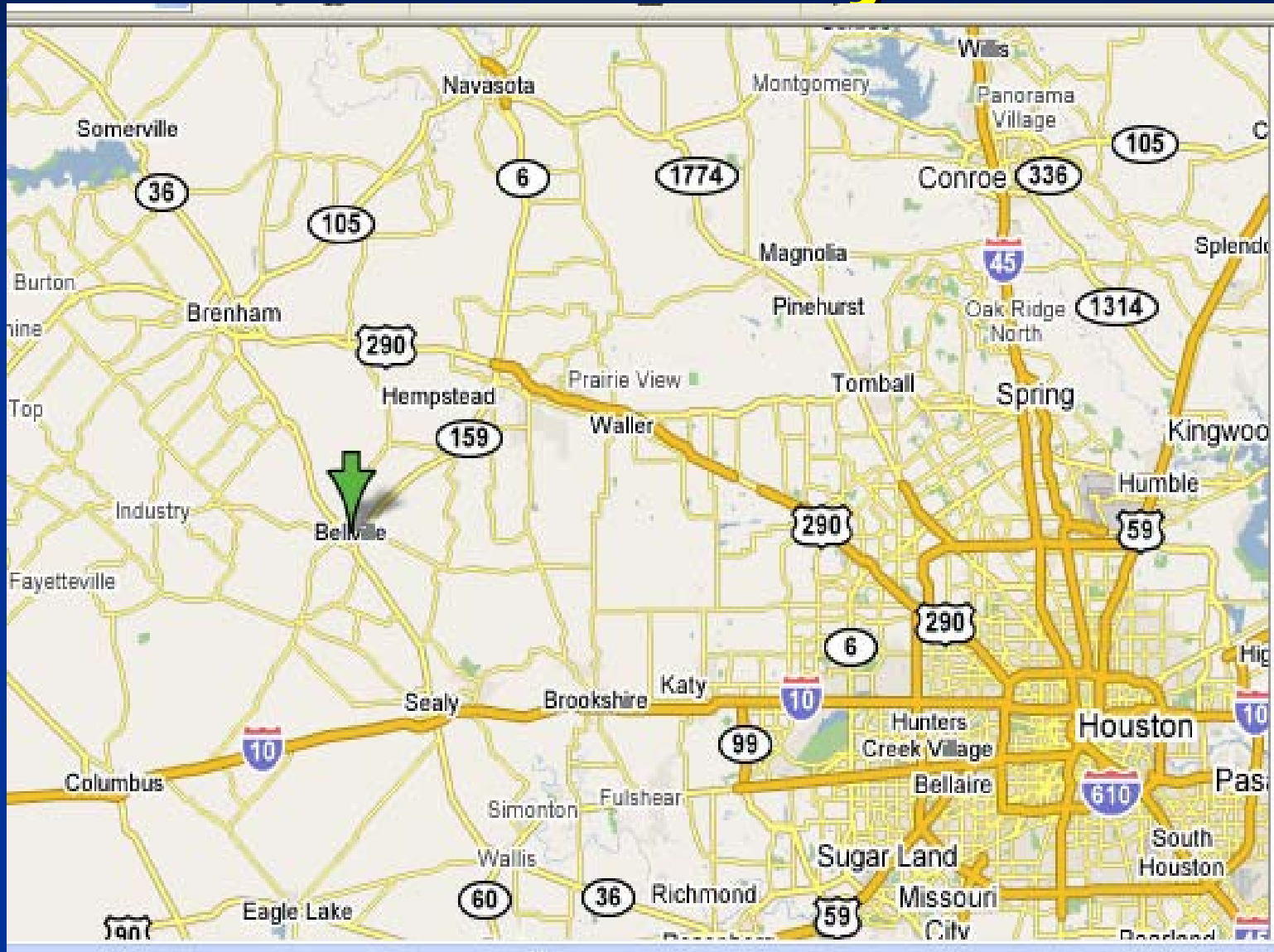
- Test Contact Recreation UAA protocol developed for project
- Make adjustments or revisions to protocols
- Determine if current sampling protocols are appropriate
- Determine if least impacted streams can meet contact recreation standards

Why Mill Creek?

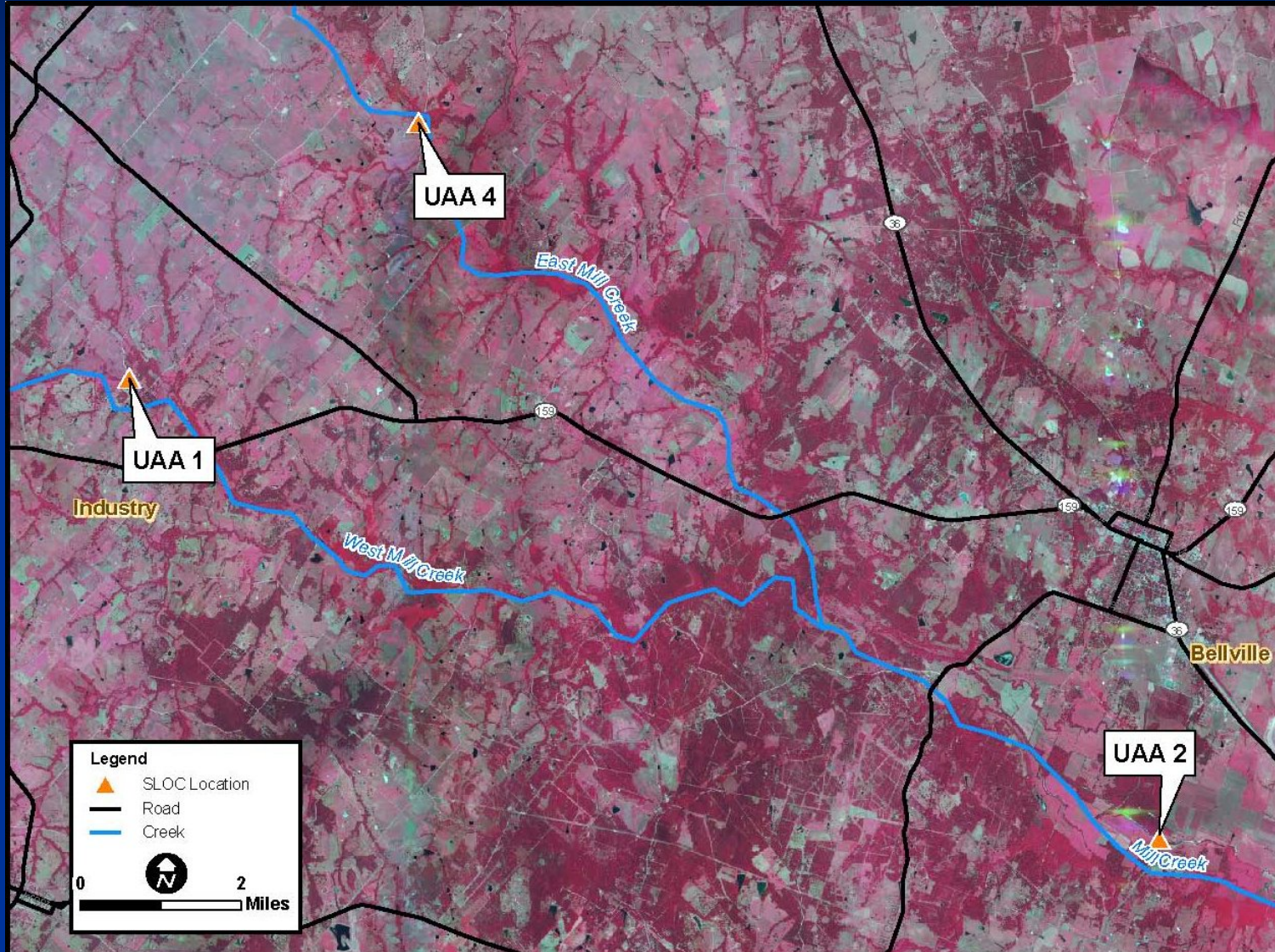
- The only reference stream remaining in the H-GAC region that does not have an impairment for bacteria
- Only three WWTPs in watershed



Mill Creek Study Area



Mill Creek Sites



Site Locations

- E. Fork Mill Creek (UAA 4)
 - Unclassified natural stream and tributary of Mill Creek
- W. Fork Mill Creek at Bluehole and Industry Rd. (UAA 1)
 - Unclassified natural stream and tributary of Mill Creek
- Mill Creek at FM 2429 (UAA 2)
 - Unclassified natural stream and tributary of Brazos River

Major Components of Pilot Study

- Six sampling events at each of the three sites utilizing developed protocols
- Bacteria data collection methods tested
 - Time Series (2)
 - Cross Section (1)
 - Longitudinal (1)
 - Depth (2)

Results of Pilot Study

- Bacteria collection protocols currently in place appear to be appropriate
- Protocols developed are appropriate
- Difficult to interview sufficient numbers of people at sampling sites
- Difficult for a least impacted stream to meet current bacteria standards

Recommendations for Future Contact Recreation UAAs

- Collection of data only during low flow periods may be problematic
- Utilize ruggedized laptops for field data collection
- Cannot rely only on interviews in the field at sampling sites to establish use.
 - Randomized telephone interviews of watershed residents can be conducted
 - Use of surveillance cameras to take still pictures at regular intervals over time would be very valuable

Recommendations for Future UAA Activities in Houston Area Bayous

- Develop Contact Recreation UAAs in Buffalo and White Oak Bayous
 - 5 mile segments
 - At least 3 sampling sites per segment
 - Conduct interviews beyond those at sampling sites to establish contact recreation use
 - Utilize remote cameras to record stream use

For More Information

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