ACTIVITIES

Meeting Products

Do you have a great idea for a synthesis paper on wicked urban stream problems? Do you have a paper on urban stream ecology close to ready for submission? Did you come up with an exciting and novel idea in your working sessions that could become a paper?

We invite all participants of SUSE5 to contribute to one or more journal articles that will be submitted for publication as special series in one or more journals (e.g., Freshwater Science, Urban Ecosystems, ASCE Journal of Sustainable Water in the Built Environment). Past SUSE meetings have resulted in special series of papers in the Journal of the North American Benthological Society (24:3 in September 2005, 28:4 in December 2009) and Freshwater Science (35:1 in March 2016) that have been highly cited and have greatly enhanced the field of urban stream ecology and restoration. With the growing interest and research in urban stream ecology, we anticipate that this year's meeting will result in similar, high-quality papers and special issues.

All article ideas from SUSE5 participants are welcomed for consideration in a special issue. Possible types of papers include:

Contributed Papers

- Urban restoration lessons learned
- Empirical monitoring studies
- Synthesis studies

SUSE5 Case Study Products

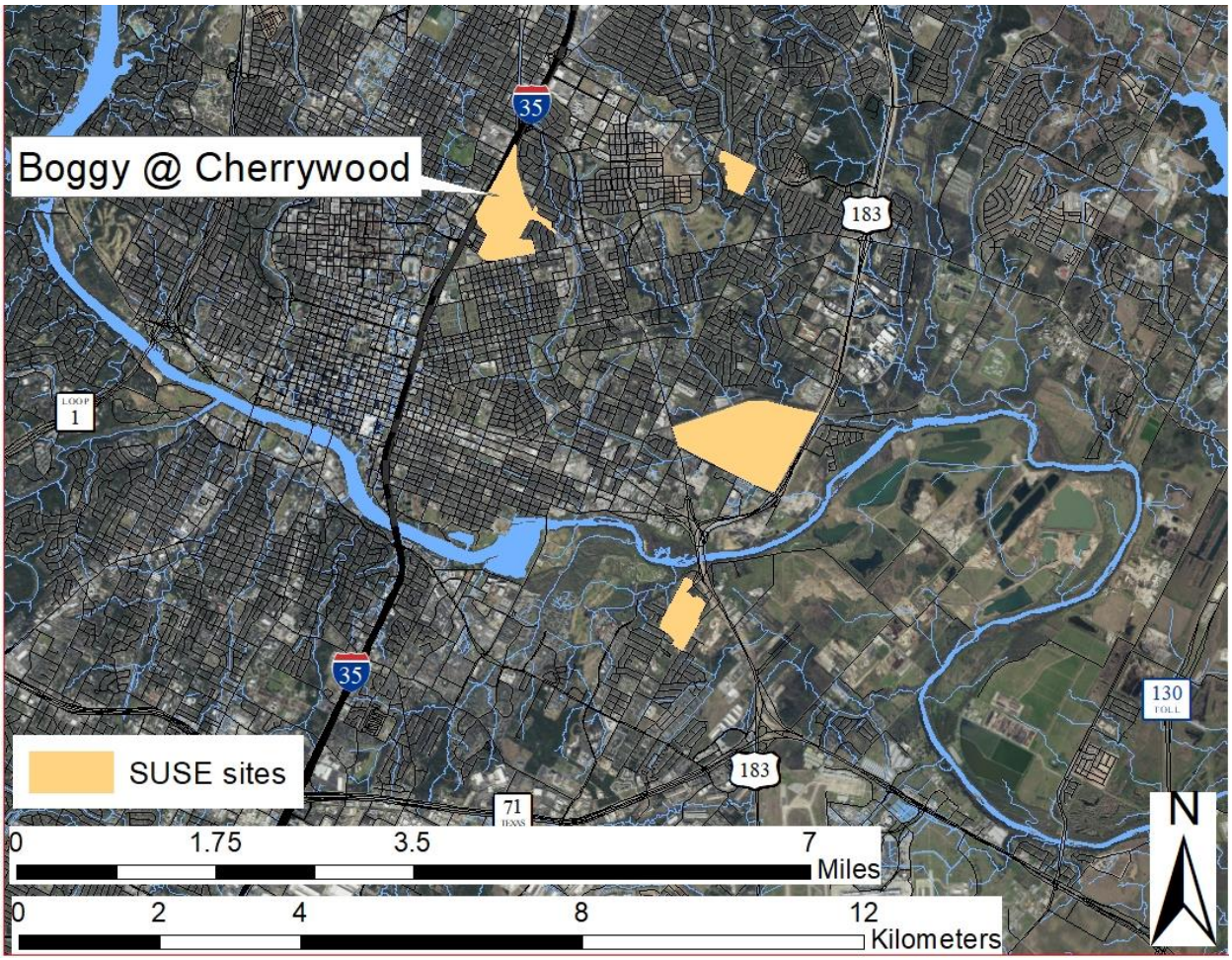
- Wicked problem toolbox
- Solutions/approaches to each of the 4 case studies
- Social experiment results

After the meeting, you will receive an email with a link to submit paper ideas. Ideas must include a tentative title, authors, abstract or brief description, and an anticipated timeline for submission (e.g., 6 months, up to 1 year). The deadline for submitting article ideas for consideration will be mid to late March, 2020.

Feel free to talk to any of the SUSE5 product planning sub-committee (Megan Fork, Bob Hawley, Krissy Hopkins, Sujay Kaushal, and Blanca Rios-Touma, Allison Roy) during or after the meeting if you have any thoughts, questions, or ideas about journal articles or other possible meeting products.

Restoration Case Studies

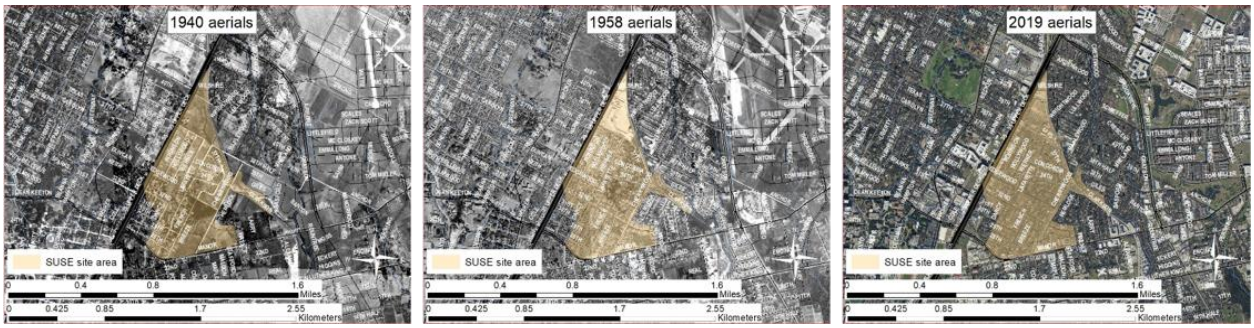
SUSE5 Case I: Boggy Creek @ Cherrywood



Use street view to get a sense of the site: https://goo.gl/maps/xx8icgm93VhS8XP39

What's the history of the area and its community?

This area is located within the Cherrywood neighborhood. By the 1940's most of this neighborhood area was already developed with streets and residential areas; density has increased modestly since then. Development similar to current conditions (with the large commercial areas and parking lots) was completed by 1960 prior to the modern regulations regarding water quality, creek buffers, floodplain and erosion risk. The ~206 acres (0.84 Km^2) in this vicinity has ~25% impervious cover, however the total drainage area of ~357 acres (1.44 Km^2) has ~60% impervious cover according to 2017 data.



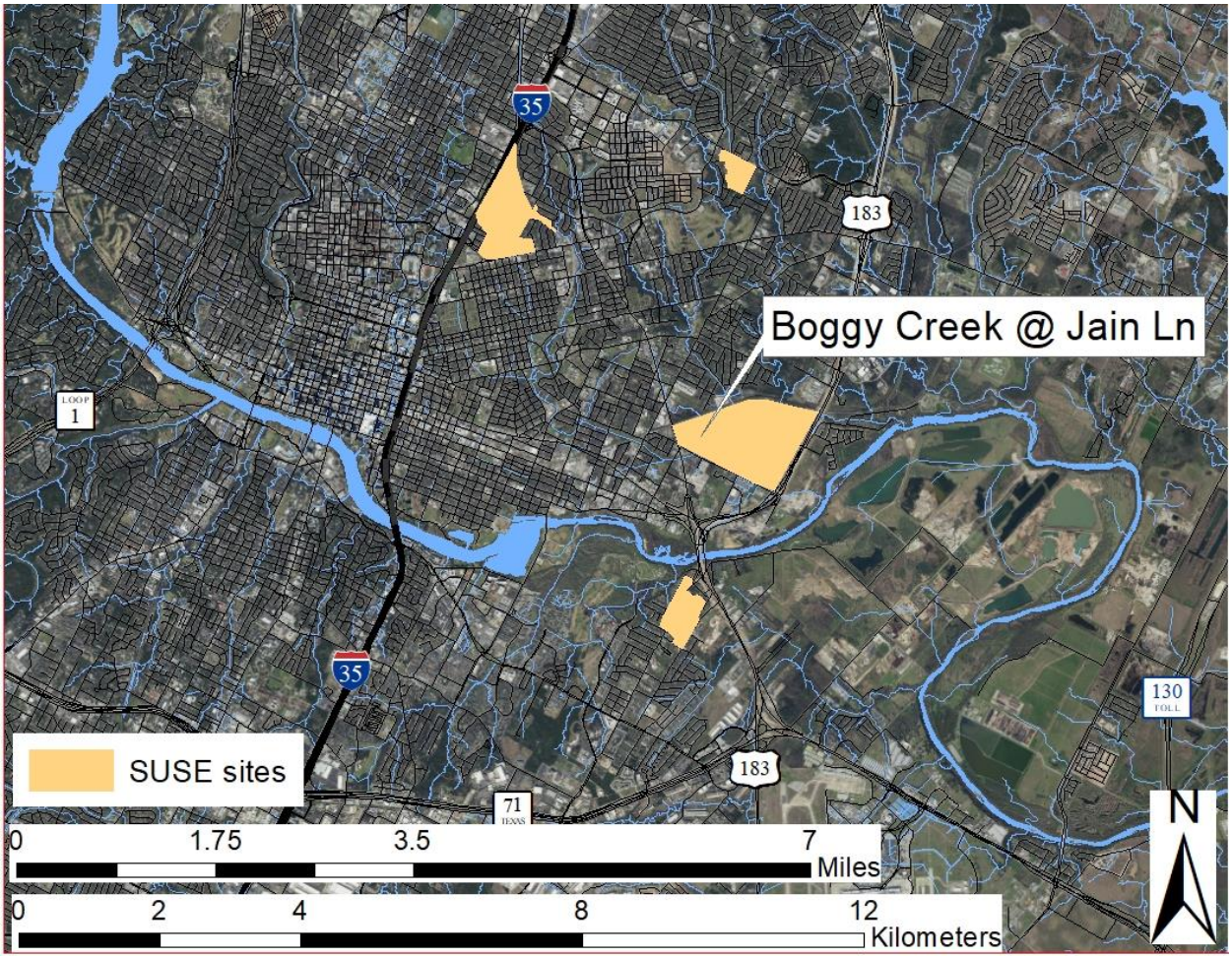
Why is Boggy Creek @ Cherrywood in the City of Austin Watershed Protection's radar?

Three converging tributaries of Boggy Creek have erosion concerns and coincide with flooding complaints in adjacent buildings and yards.

Sections of the stream network are buried (pipes) and those that are not buried tend to have relatively tight corridors and face both erosion and flooding challenges. This creates a complex case.

The water quality of this section of the creek can see improvements. The presence of *E. coli* in routine monitoring samples makes the water quality poor for contact recreation. Habitat and aquatic life scores are good and improving over the 1994 to 2017 sampling period.

SUSE5 Case II: Boggy Creek @ Jain Ln

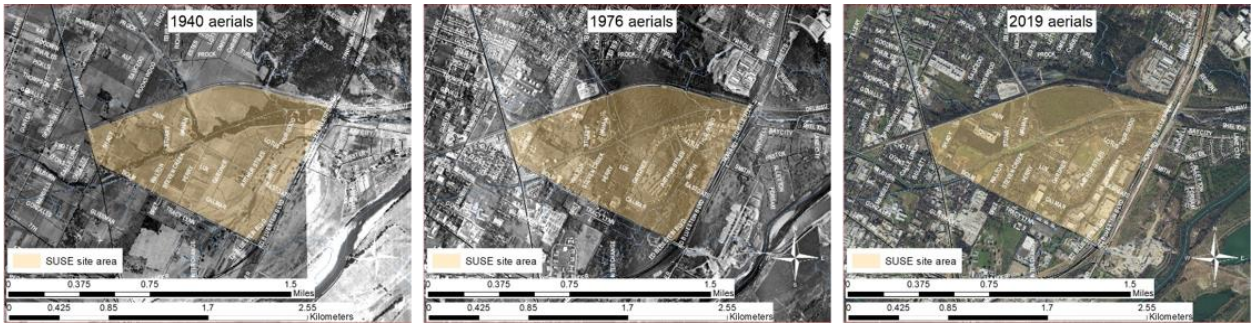


Use street view to get a sense of the site: https://goo.gl/maps/WMVAqsh3LLG2

What's the history of the area and its community?

The Johnston Terrace neighborhood surrounds this section of Boggy Creek. The neighborhood is predominantly a Hispanic community with historical social and environmental justice activism. Access to meaningful transportation and equity in services have been some of the social justice sought by the community.

In the 1940's most of the area was mostly farmland. Residential development near the creek in this area happened in the mid 1970's and commercial development in the early 1980's before any of the current regulations pertaining to water quality, creek buffers, floodplain and erosion risk. The nearly 395 acres (1.59 Km2) the creek have approximately 34% impervious cover while the 8,564 acres (34.7 Km^2) of area draining to this section of Boggy Creek have about 50% impervious cover according to 2017 data. In the 1980's the City of Austin in partnership with the Army Corps of Engineers channelized close to 3 miles (4.8 Km) of Boggy Creek to address flooding risk from properties surrounding it and removing nearly 1,600 structures from the floodplain.

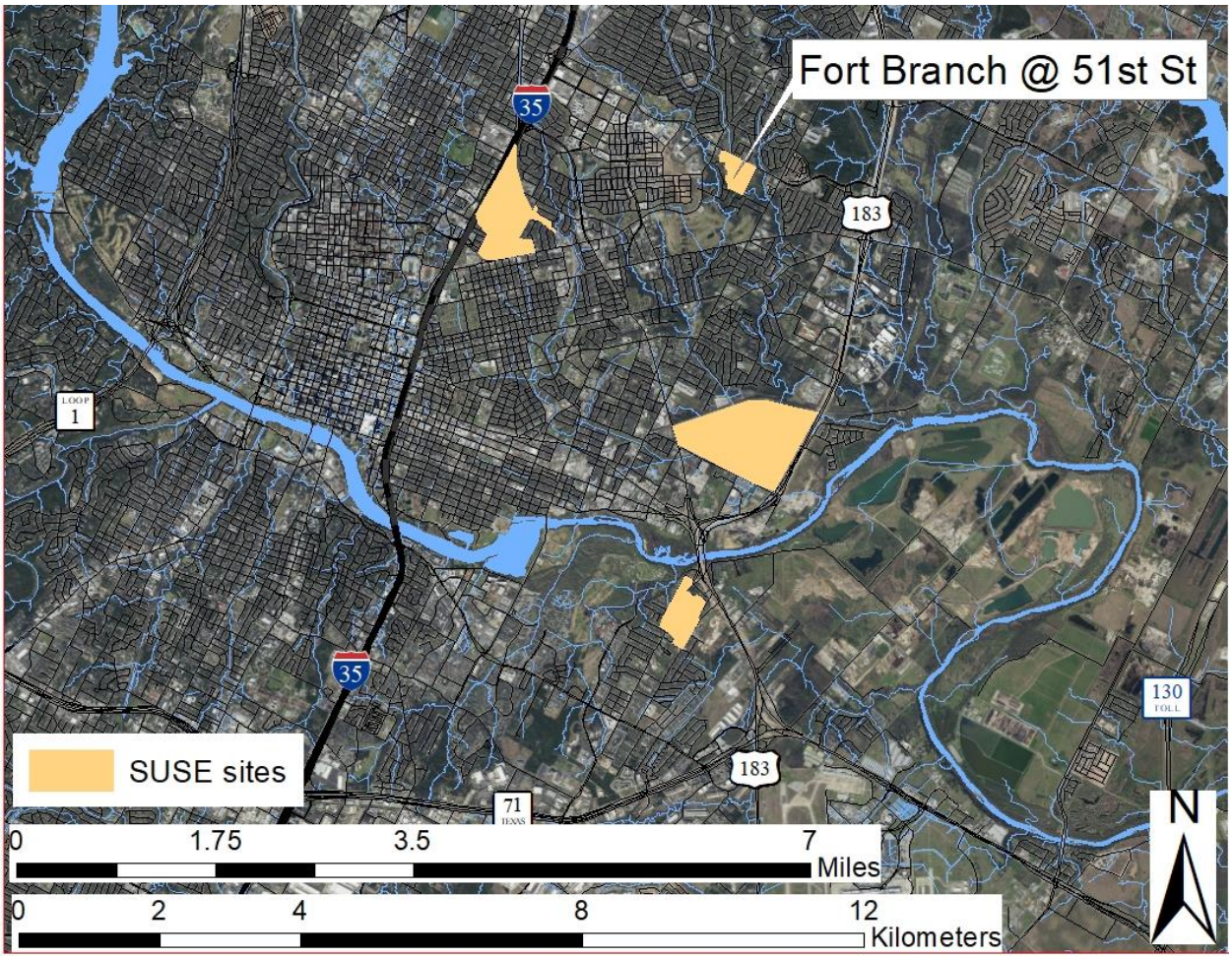


Why is this area in the City of Austin Watershed Protection's radar?

Sediment deposition in this non-concreted section of a historical Army Corps flood control project has led to concerns of reduced flood conveyance capacity while it has created wetland plant communities and improved habitat for aquatic organisms.

Engineered erosion control structures have blown out and ongoing bank erosion threatens pipes and other infrastructure while contributing to sediment deposition in the main channel. Rather than returning to the original flood control design, City staff posed the question: Could we do something more "creek friendly?" This section of Boggy Creek has overall good creek health indicators likely to be adversely impacted by large sediment removal to return the creek to the original flood conveyance design.

SUSE5 Case III: Fort Branch Creek @ 51st Street

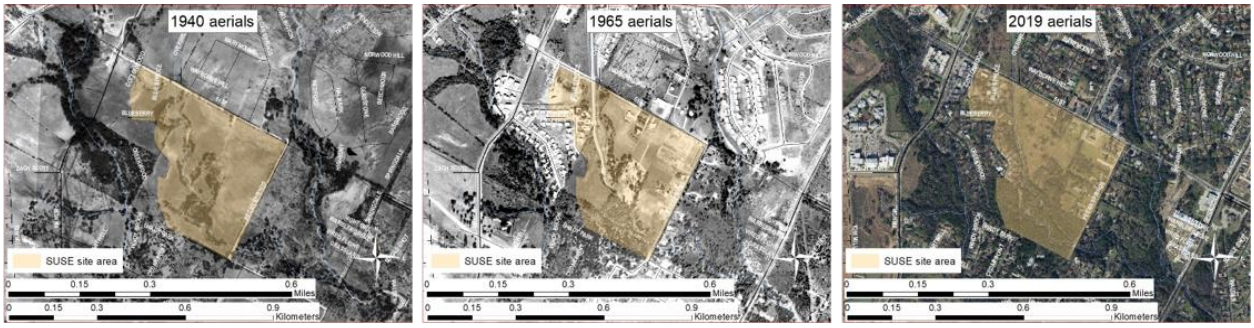


Use street view to get a sense of the site: https://goo.gl/maps/np9R2ssvBtdWqTST8

What's the history of the area and its community?

This area is located within the Rathgeber Village neighborhood. In the 1940's most of the area was mostly farmland. Residential and commercial development near the creek in this area happened mostly between late 1960's and early 1970's before any of the current regulations pertaining water quality, creek buffers, floodplain and erosion risk. The area around the creek, about 45 acres (0.18 Km^2), has approximately 25% impervious cover while the area that drains to this section of Fort Branch Creek, about 1023 acres (4.1 Km^2), has about 52% impervious cover according to 2017 data.

The proximity of the Mueller development nearby has greatly increased property values in the area leading to displacement and gentrification. New construction has also begun in undeveloped parcels recently.



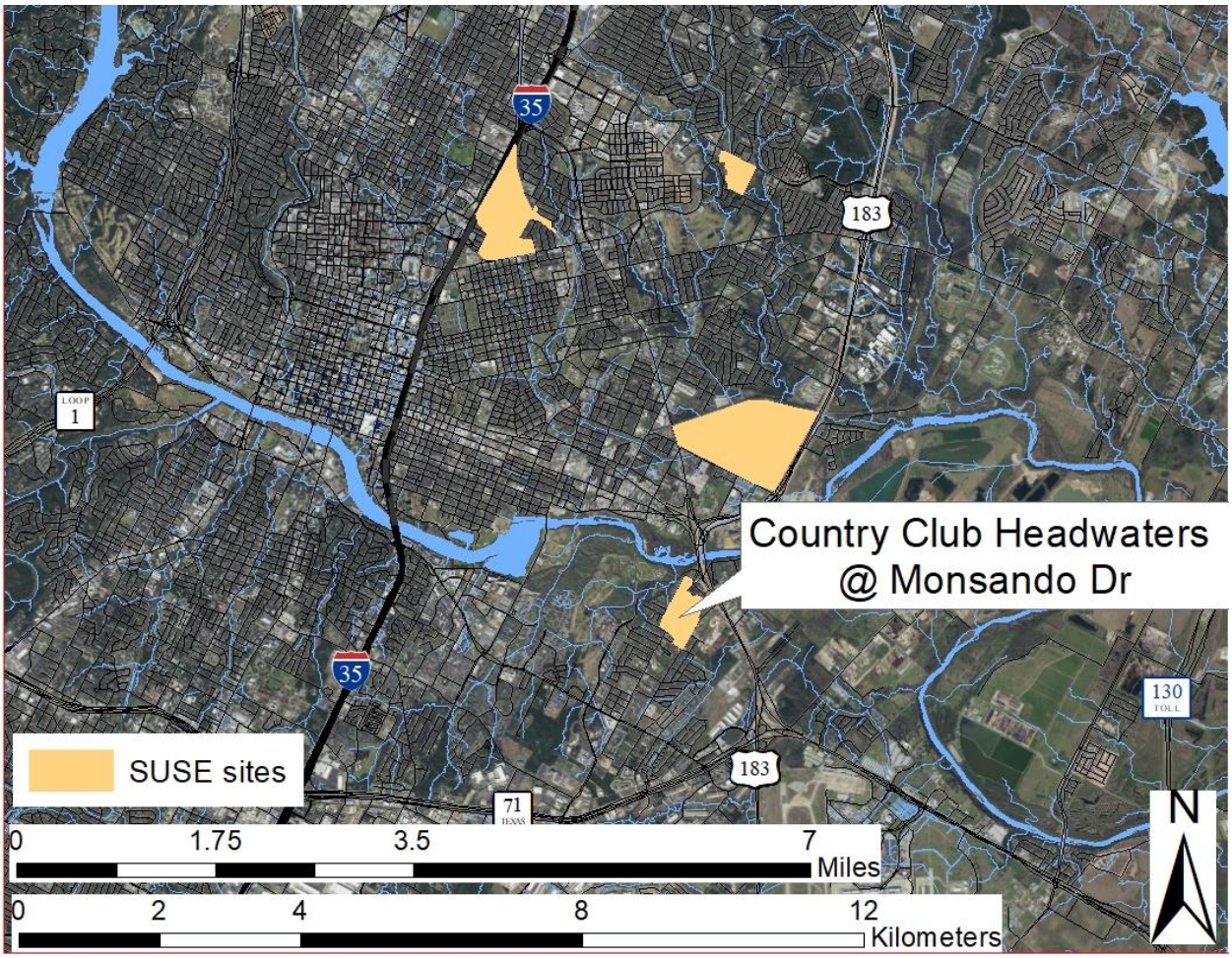
Why is this area in the City of Austin Watershed Protection Department's radar?

Ongoing erosion has damaged both the concrete channel in the upper reach and the natural channel in the lower reach. Sections where concrete is broken have apparently contributed to aquatic habitat and wetlands in some areas.

The 100-year floodplain affects the area along Blue Spruce Rd. Localized flooding problems have been identified near Manor and 51st St. Other flood objectives relate to minimizing risk to structures in the 100-year floodplain as required by the National Flood Insurance Program.

Water quality monitoring shows worsening scores for contact recreation (due to high *E. coli*); marginal non-improving habitat scores, very good recent non-contact recreation and aquatic life, and fair overall scores.

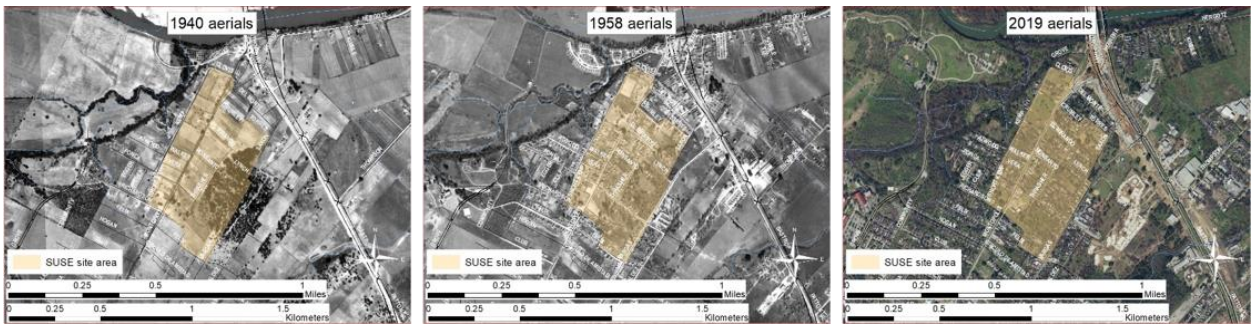
SUSE5 Case IV: Country Club East Creek headwaters @ Monsanto Dr



Use street view to get a sense of the site: https://goo.gl/maps/TQjrFZKFWr62

What's the history of the area and its community?

This area is located within the Montopolis neighborhood. The community in this area is predominantly Hispanic. In the 1940's most of the area was farmland. Residential and commercial development in this area happened mostly between late 1950's and mid 1980's before any of the modern regulations regarding water quality, creek buffers, floodplain and erosion risk. This headwater section of Country Club East Creek is 88 acres (0.18 Km^2) and has approximately 36% impervious cover according to 2017 data.



Why is this area on the radar of the City of Austin Watershed Protection?

Localized flooding affects many yards and buildings in this residential neighborhood. This is one of the smaller watersheds of the SUSE5 case studies; however, it is close (within 700 meters) of the Colorado River, Austin's largest waterway. Historically, the drainages in this area were placed into pipes that are frequently too small or too flat to prevent flooding.