Agenda

- 1:00 Welcome/Introductions

- 1:15 Potential *E. coli* Sources in Rowlett Creek
  Watershed

- 2:30 Discussion

- 3:00 Adjourn

KD0   Added, I think there was confusion last meeting on if this was the exact sources

Kristin DeBone, 2023-08-08T20:20:14.126

Funding Sources

- Funding provided by the Texas Commission on Environmental Quality through a Clean Water Act Section 319(h) grant from the U.S. Environmental Protection Agency, with local match funding from Texas A&M AgriLife Extension, and the City of Plano

KD0

KD0   Is SMU still providing match for the second contract?

Kristin DeBone, 2023-08-08T20:20:43.535
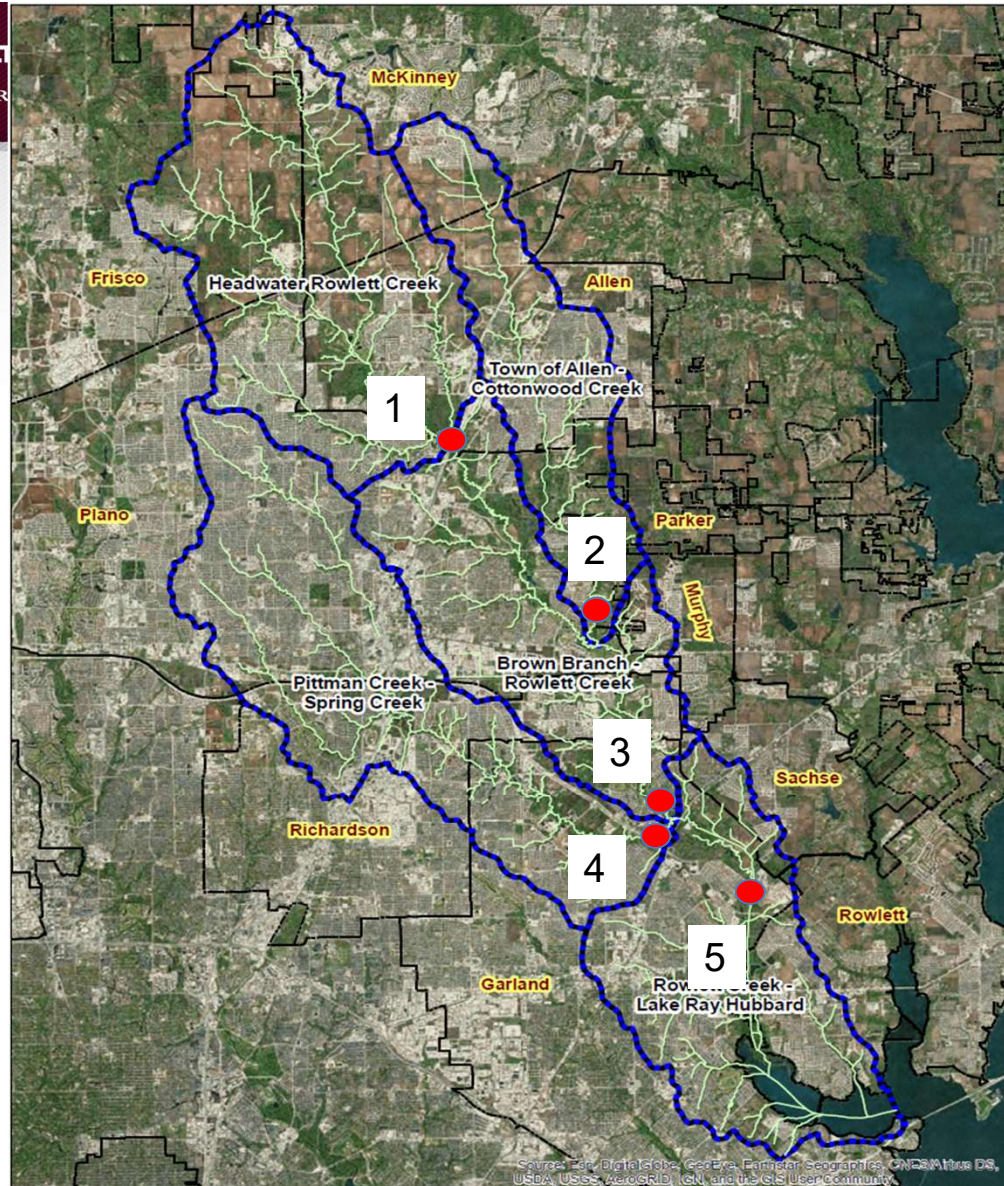
Potential Sources of Data for *E. coli* in Rowlett Creek KD1

- Model My Watershed- website compilates data on land use, soil type, and farm animal populations KD0 https://modelmywatershed.org/
- Farm animal *E. coli* loads calculated from this data
- Data for dog *E. coli* load derived from this data
- Data used for load calculations will be covered under a future QAPP (in progress)
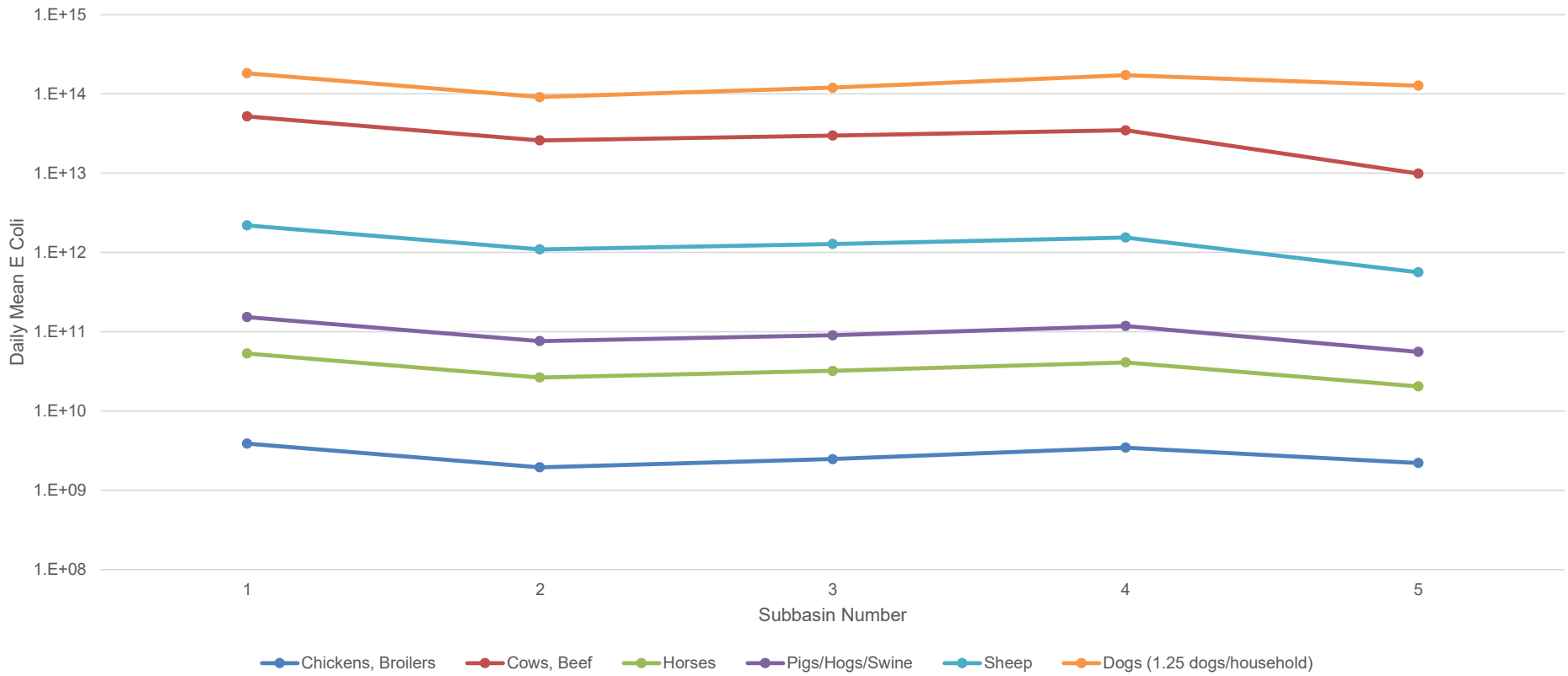
Slide 5

KD0   Make sure to mention this is not covered under a QAPP yet
Kristin DeBone, 2023-08-08T20:17:24.185

KD1   Added "potential" to avoid confusion
Kristin DeBone, 2023-08-08T20:22:07.981

Potential Animal Sources of *E. coli* in Rowlett Creek (Source: Model My Watershed website)

KD0

KD0   Added "potential" and the source, we need to mention this is preliminary findings and was not conducted under a QAPP

Kristin DeBone, 2023-08-08T20:25:45.317

KD0 0   This slide could be a good spot for discussion on other sources of information besides national averages

Kristin DeBone, 2023-08-08T20:26:19.808

On-Site Sewage Facilities KD0

$$OSSF\ E.coli\ Load$$
$$= \#\ of\ failing\ OSSFs * \frac{10^6 cfu}{100 mL} * 0.63 * \frac{70\ gallons}{person} * \frac{3785.41 mL}{1\ gallon} * \frac{2.76\ people}{household}$$
$$= 4.61 x 10^{10} cfu/OSSF$$

Where:
- 106 cfu/100 mL = fecal coliform concentration in OSSF effluent (Lowe et al. 2007)
- 0.63 = fecal coliform to *E. coli* conversion factor (*E. coli* standard/fecal coliform standard)
- 70 = gallons of effluent produce per person per day (USEPA 2003)
- 3785.41 = mL per gallon conversion
- 2.76 = average number of people per household in the watershed (US Census Bureau, 2022)

KD0   I couldn't find anything TCEQ related with OSSFs in the area, we have a coastal map. NCTCOG might have better numbers with their WQMP.

Kristin DeBone, 2023-08-08T20:27:08.810

Wastewater Treatment Facilities

E. coli load calculation measured flow rates and *E. coli* concentrations reported to EPA were used to calculate an estimated *E. coli* load from WWTFs in the watershed (Rowlett Creek WWTP). To calculate the load, flow rate was converted from million gallons per day to mL and multiplied by the reported *E. coli* concentrations as shown in the equation below.

$$\textbf{\textit{WWTP E. coli Load}} = reported\ flow\ (MGD) * 3.785412x10^9 (\frac{mL}{million\ gallons}) * E.\ coli$$

$$concentration\ (\frac{cfu}{100\ mL})$$

Effluent data from Rowlett Creek WWTP, years 2012-2023 was analyzed for *E. coli* loads.

Average *E. coli* concentration= 4.77 cfu/100mL

Flow data has not been analyzed yet. However, with *E. coli* concentration so low, the WWTP likely has very little impact on the watershed's *E. coli* load as a whole.

Sources

Animal Data:

USDA National Agricultural Statistics Service

The USDA's National Agricultural Statistics Service (NASS) conducts hundreds of surveys every year and prepares reports covering virtually every aspect of U.S. agriculture. Production and supplies of food and fiber, prices paid and received by farmers, farm labor and wages, farm finances, chemical use, and changes in the demographics of U.S. producers are only a few examples.

USDA - National Agricultural Statistics Service – Texas

Dog Ownership Per Household:

AVMA 2022 Pet Ownership and Demographic Sourcebook- provides detailed analysis and insight into U.S. pet owners and the U.S. pet population, including pet populations, expenditures, veterinary visits, types of pet owners, and pet acquisition.

Pet Ownership Statistics - Veterinarians.org

E. Coli Loading Coefficient by Species

Metcalf and Eddy (1991)

Wastewater treatment facilities outfalls

KD0

TCEQ WWTF map

Slide 9

KD0   Added but it might be better after the WWTF slide
Kristin DeBone, 2023-08-08T20:24:09.512

TM0 0   moved
Therese Mehta, 2023-08-10T14:19:04.214

What is DNA Testing?

- Genetic tests identify bacterial strains that are host specific
- Fecal coliform bacteria is an indicator of fecal pollution and the potential presence of other pathogenic microorganisms in water
- Fecal coliform bacterium *E. coli* is more closely associated with fecal pollution than other fecal coliform bacteria, which may normally reside and multiply in the environment.
- *E. coli* is a common inhabitant of animal and human intestines
- Recent studies have shown that isolates from humans and various host animals (e.g., cattle, chickens, and pigs) may differ genetically and phenotypically
- Use of genetic and biochemical tests may allow the original host species to be identified and is referred to as bacterial source tracking (BST)

KD0

KD1

KD0   Added, feel free to adjust
Kristin DeBone, 2023-08-08T20:19:14.467

KD1   What is the plan for this meeting? In the WPP timeline it looks like draft chapters might be written by then. You may want to mention that.
Kristin DeBone, 2023-08-08T20:27:56.823

KD1 0   Maybe have a separate slide for next meeting goals or talking points
Kristin DeBone, 2023-08-08T20:28:40.783

Why Not DNA Testing? KD0

- Accuracy varies between labs and depends entirely on the BST library contents

- Expensive with little gain over traditional surveying methods

- Lack of information about host strains make identification inaccurate ("Unknown" result, incorrect result)

  Source: Expansion and Evaluation of Texas' Bacterial Source Tracking Program
  Texas Water Resources Institute TR-493, September 2015

Slide 11

KD0   Added "Testing" to keep it consistent with previous slide

Kristin DeBone, 2023-08-11T16:04:00.594

Upcoming Tasks

- Final determination of *E. coli* sources
- Finalization of modeling methodology
- Secondary QAPP to acquire data and model
- Determine load reduction necessary to meet water quality standards

Upcoming Meeting Goals

- Next meeting- November 28th, 1-3 pm
- Several draft chapters of WPP should be completed and ready for stakeholder review
- Update progress on modeling

KD0   All of them? Maybe mention stakeholder review?

Kristin DeBone, 2023-08-11T16:02:04.792

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