

Meeting Summary
Peach Creek TMDL Stakeholder Group

August 31, 2004

STAKEHOLDERS PRESENT: Debbie Magin, Calvin Spacek, James Grimm, Wain Fairchild, Shari Johnson, Dan Cozier, Harold Grauke, Troy Peshorn, John Carey, Phil Breitschopf, Oren (Buddy) Remmer, and Reg Orthold.

STAKEHOLDERS ABSENT: Mike McCall, M.G. Hodges III, Barry Miller, Linda Rathmann, Kendria Ray, and Mark Walker.

SUPPORT TEAM PRESENT: Kerry Niemann (TCEQ), James Miertschin (James Miertschin & Associates), Timery DeBoer (Hicks & Company), and George DiGiovanni (TAES).

OTHERS PRESENT: Kevin Wagner (TSSWCB), R.C. Collins (SW Engineers), Allen T. Reiley (Gonzales SWCD), Mary Alford (landowner), Thomas M. Reed (landowner), Marsha Decker (KCTI Radio), Tim Knesek (Cal-Maine), Rudy Saucedo (Tyson Foods), Posey Alford (landowner), and Joe Walker (Holmes Foods).

WELCOME AND INTRODUCTIONS:

Kerry Niemann opened the meeting at approximately 12:10 PM and introduced himself, James Miertschin, Timery DeBoer, and George DiGiovanni.

PRESENTATION SUMMARY:

Mr. Niemann, Dr. Miertschin, and Dr. Giovanni gave the presentation. (*NOTE: Questions and Answers are inserted in italics for clarification.*)

Mr. Niemann began with an overview of the TMDL process. Due to elevated bacteria indicators, specifically fecal coliform and *E. coli*, Peach Creek was selected for assessment. Water quality standards serve two purposes; 1) they establish water quality goals for a water body, and 2) they provide a regulatory basis for controls. Water quality criteria are expressed as the number of Colony Forming Units (CFU) of bacteria per 100 milliliters (ml) of water. Indicator bacteria, although not generally pathogenic, are indicative of potential contamination by feces of warm-blooded animals.

This study is being conducted on Segment 1803C- Peach Creek. The segment was listed on the Clean Water Act Section 303(d) because measured levels of bacteria (fecal coliform) exceeded the specific criteria of 126 CFU/100ml (geometric mean) and 394 CFU/100ml (single grab). Designated uses on Peach Creek are aquatic life use, contact recreation use, and fish consumption.

TMDL development includes the following steps:

- Segment listed on the federal Clean Water Act Section 303(d) list of impaired waters.

- Pollutant is identified (bacteria)
- TMDL project initiated
- Data collection
- Data assessment
- TMDL allocation- identification of a quantifiable water quality target for each constituent
- Develop a TMDL Implementation Plan
- Draft TMDL Report
- TCEQ review / Public comment
- TCEQ approval / EPA approval

Stakeholder involvement is very important to the TMDL development process.

E. coli is a type of bacteria that occur, with other types of bacteria, in the intestines and are necessary for health. A specific type of *E. coli* (*E. coli* 0157:H7) is harmful. It produces a toxin called Shiga-like toxin, or Vero toxin. *E. coli* bacteria can be spread in many ways including undercooked ground beef, unpasteurized milk, raw vegetables, contaminated water, and from person to person. *E. coli* bacteria get into water bodies via point sources (e.g. pipe, ditch, channel, tunnel, conduit, well, landfill, concentrated animal feeding operations (CAFOS), wastewater treatment plants (WWTP), etc.) and non-point sources (water runoff gathers toxic substances and washes them into storm drains, creeks and rivers).

Land use in the Peach Creek watershed is dominated by deciduous forest (35%), grasslands/herbaceous vegetation (23%), and pasture/hay areas (21%).

The purpose of this Stakeholder Meeting is to review *E. coli* data (historic and current) for Peach Creek, present preliminary Bacteria Source Tracking (BST) results, and to discuss the next phase of TMDL development.

Dr. Miertschin began his portion of the presentation by reviewing historical data on bacteria levels in Peach Creek. Data from TCEQ (1996-2001) indicated that levels of *E. coli* were just below the geometric mean criteria and levels of fecal coliform bacteria exceeded the criteria; therefore the segment was selected for a TMDL. Measured levels of *E. coli* and fecal coliform in Peach Creek varied widely over this time period with no clear increasing or decreasing trends.

The first TMDL monitoring phase results, presented at last year's Stakeholder Meeting, included 10 sampling surveys at 4 stations. Three of the four stations exceeded the 126 CFU/100ml geometric mean criteria, which confirmed impairment of Peach Creek.

During this past sampling phase, one baseflow event (normal flow conditions) and two runoff events (during storms) were sampled. Four mainstream stations, two tributaries, and two WWTPs were sampled. Field measurements of flow, time of travel, bacterial kinetics, pH, conductivity, dissolved oxygen, and temperature were collected.

Results from Storm Event #1 (April 24,2004)

	Number of stations	No. of stations with geometric means > 126 CFU/100ml	No. of stations with maximums > 396 CFU/100ml
Main Stem	4	4	4
Tributaries	2	2	2
WWTPs	2	0	0

Results from Storm Event #2 (June 5,2004)

	Number of stations	No. of stations with geometric means > 126 CFU/100ml	No. of stations with maximums > 396 CFU/100ml
Main Stem	4	4	4
Tributaries	2	2	2
WWTPs	2	0	0

Results from Baseflow Event (July 27,2004)

	Number of stations	No. of stations with geometric means > 126 CFU/100ml	No. of stations with maximums > 396 CFU/100ml
Main Stem	4	4	0
Tributaries	2	1	1
WWTPs	2	0	0

Bacterial Source Tracking (BST) methods for this project use the genetic fingerprints of *E. coli* strains to distinguish between strains from different sources. For this TMDL, Dr. George DiGiovanni (Texas A&M) is doing the lab work and analysis. The first step in BST is to create a library of *E. coli* from known samples. Approximately 300 samples were collected from Peach Creek, 500 from Salado Creek/Upper San Antonio River, and 200 from the Lower San Antonio River. The preliminary results from the Peach Creek data are presented below. The second step in BST is to collect water samples (80 from Peach Creek) for identification of *E. coli* unknowns.

Dr. DiGiovanni began discussing his results by describing the two methods used to fingerprint DNA: ERIC-PCR and RiboPrinting. *E. coli* bacteria isolated from each water sample are compared to strains from the library of know samples. The strains must be at least 85% similar to be considered a “match”. Of the 80 water samples provided, bacteria isolates were pulled from 73. Preliminary results from both methods were similar, with cattle (20.5% ERIC-PCR; 11.0% RiboPrinting), domestic sewage (20.5% and 17.8%), and chickens (16.4% and 13.7%) being the main sources identified.

Q: Is it fair to say that 86% of the problem is unrelated to poultry?

A: Yes, but these results are preliminary. We are hoping to reduce the number of unidentified samples by adding to the known-source library.

Q: Was the BST sampling station the furthest downstream?

A: Yes, Peach Creek at CR 353.

Q: Could the unidentified samples be from a combination of sources?

A: Yes.

Q: Were the known pig sources from domestic or feral animals?

A: I don't know; I would have to look at the data. It was difficult to get feral hog samples in this watershed; we got several from the nearby San Antonio River that are not yet a part of this known library.

Comment: The Soil Board is conducting a companion study in Waco with over 1,000 known isolates.

Q: Can you distinguish between cattle fed on range as opposed to feedlots?

A: No.

Mr. Niemann discussed the appropriate permit for poultry farms in the watershed, as requested at the last Stakeholder Meeting. TPDES General Permit No. TXG920000 is appropriate even though this water body is listed on the 303(d) list. In order for an Individual Permit to be required, the TMDL would have to be adopted and would have to include additional water quality protection measures for CAFOs that are not required by the General Permit.

Next Phase of the TMDL:

- Modeling
- TMDL Assessment
- Stakeholder Participation
- Draft Implementation Plan

Questions and Comments:

Q: The BST data showed that domestic sewage accounted for about 20% of the known samples, but the sampled WWTPs did not exceed TCEQ's criteria. Please explain.

A: That result presents a modeling challenge. During the modeling phase we will have to look at the locations of septic systems, open pit systems, and other sewage sources.

Q: Is the BST report available?

A: An electronic copy of this presentation will be posted on TCEQ's website.

Q: The BST samples were collected at the location furthest downstream. Would collecting them near the WWTPs be helpful?

A: The downstream location should represent all of the bacteria input into the water.

Q: The WWTPs did not exceed the criteria, but does that mean they discharged zero bacteria?

A: No, some bacteria were identified in their discharge, but the amount did not exceed the criteria. This discharge will be included in the model.

Q: Were samples collected during storms?

A: Samples were collected during storm and baseflow conditions. Lab results show elevated levels of bacteria during storm events, which indicates non-point sources.

Q: Are you going to continue sampling the WWTPs?

A: No more sampling is planned for the Peach Creek TMDL at this time. Repeating the BST sampling at the WWTPs would be very expensive and would not be expected to yield dramatically different results.

Q: Do the WWTPs use disinfectant?

A: Both sampled WWTPs are pond systems. I would have to look at the TCEQ permits to determine if they use disinfectant.

Q: What are the discharge rates at the WWTPs? Have any violations been reported?

A: Mr. Niemann responded that he had spoken with local investigators and there were no problems with these two plants in terms of compliance. The TCEQ permits would indicate the amount of discharge.

Q: For the BST, do you identify all of the bacteria in each water sample?

A: No, from each water sample we isolate one strain of E. coli and identify it. This is a more statistically-sound sampling method as it allows us to process a larger number of water samples.

Q: Why do you use two methods to identify bacteria in the BST analysis?

A: Two methods provides backup and we are also still comparing the two methods. Also, these methods are used so are results will be comparable with those from the concurrent Soil Board BST study.

Q: How do you choose which E. coli bacterium to isolate from a given water sample?

A: Isolates are chosen at random.

Q: On the days you took the water samples for the BST, was it raining or during baseflow conditions?

A: Baseflow conditions primarily. Bacteria counts in the BST samples were similar to those obtained from the baseflow event samples.

Q: Are any strains of E. coli hardier than other strains?

A: Potentially, some strains could survive better/longer than others, but this does not appear to be associated with strains from a specific source.

The meeting adjourned at approximately 1:25 PM. The next meeting will be scheduled in August 2005.