Meeting Summary for the Copano Bay Bacteria Total Maximum Daily Load (TMDL) Project

SPONSORED BY THE

Texas Commission on Environmental Quality

Tuesday, November 8, 2005

6:00 PM – 8:30 PM

Attendees:

Aaron	Wendt	Texas State Soil & Water Conservation Board
C.R.	Pickering	U.S. Fish and Wildlife Service
Earl	Matthew	Texas Committee on Natural Resources
Elizabeth	Smith	Texas A&M University-Corpus Christi
Harold	Henley	Texas Department of Agriculture
Jim	Bowman	Coastal Bend Bays & Estuaries Program, Inc.
Joanna	Mott	Texas A&M University-Corpus Christi
Leroy	Wolff	USDA-NRCS
Richard	Bianchi	Citizen
Rocky	Freund	Nueces River Authority
Sally	Applebaum	Univ. Texas Marine Science Institute
Sally	Crofutt	Fennessey Ranch
T.J.	Fox	Texas Master Naturalist
Kendria	Ray	Texas State Soil Water Conservation Board
Blake	Traudt	Texas General Land Office
Tomas	Dominguez	USDA-NRCS
Melanie	Edwards	TCEQ – Region 14 – Corpus Christi
Dwight	Head	USDA-NRCS
Michael	Proctor	Rockport Water Quality Committee
Craig	Giggleman	USFWS
Lynn	Edwards	Save Cedar Bayou Inc
Karen	Meador	TEXAS Parks & Wildlife
Brian	Koch	Texas State Soil Water Conservation Board
Garrett	Engelking	Refugio Groundwater Conservation District
Carrie	Gibson	UT-Center for Research in Water Resource (CRWR)
David	Maidment	UT-Center for Research in Water Resource (CRWR)
Ray	Kirkwood	Texas Master Naturalist
James	Simons	Texas Parks & Wildlife
Sandra	Alvarado	Texas Commission on Environmental Quality – Project Manager
Earlene	Lambeth	Texas Commission on Environmental Quality – Outreach Coordinator

Stakeholder Meeting Agenda
for the
Copano Bay Bacteria
Total Maximum Daily Load (TMDL) Project

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The purpose of the meeting is to inform the public of the status of an on-going TMDL Project in Copano Bay (Copano/Port/Mission Bay (segment 2472), Mission River Tidal (segment 2001), and Aransas River Tidal (segment 2003)). The TCEQ would like to provide an opportunity for stakeholder input on the project and begin to solicit the formation of a balanced Copano Bay Watershed Advisory Group that is representative of the watershed stakeholders. This meeting will focus discussions only on the Copano Bay Bacteria TMDL Project. If other issues arise that are not pertinent to this project, we will see that they are passed along to the appropriate individual(s).

6:00 Welcome, Sandra Alvarado, TCEQ Project Manager
- Purpose of meeting
- Overview of the TMDL Program
- Historical data review

6:30 Copano Bay Bacteria Source Tracking Project
Dr. Joanna Mott, Texas A&M University-Corpus Christi

7:10 Break

7:20 Bacteria Loadings Watershed Model in Copano/Port/Mission Bay
Dr. David Maidment and Ms. Carrie Gibson
University of Texas Center for Research in Water Resources

8:00 Open Discussion, Earlene Lambeth, TCEQ Outreach Coordinator
- Wrap-up and Next Steps
- Formation of Copano Bay Watershed Advisory Group
- Next meeting to discuss load allocation

8:30 Adjourn

TMDL Meeting 1 Summary - Copano Bay Bacteria
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Introduction - Sandra Alvarado, the Total Maximum Daily Load (TMDL) Project Manager, opened the first meeting for the Copano Bay bacteria project with introductions of Dr. David Maidment and Ms. Carrie Gibson with the University of Texas Center for Research in Water Resources and Dr. Joanna Mott with Texas A&M University-Corpus Christi. She also thanked Jim Bowman with the Coastal Bend Bays & Estuaries Program for their project support and for providing refreshments.

Sandra next thanked the Welder Wildlife Foundation for hosting the evenings' meeting and introduced the Director, Dr. Lynn Drawe. He gave a brief history of the foundation and its objectives. Dr. Drawe said that the 7800-acre wildlife refuge that is located in Sinton, was a private, non-profit established in 1954 and has gained national and international recognition through its graduate student research program. The mission of the foundation is to conduct research and education in the field of wildlife management and conservation and closely related fields.

Sandra stated that the purpose of the evenings' meeting was to inform the public of the status of an on-going TMDL Project in Copano Bay (Copano/Port/Mission Bay (segment 2472), Mission River Tidal (segment 2001), and Aransas River Tidal (segment 2003)). The evenings' meeting agenda included presentations on the states' TMDL program and process, the history and development of the bacteria project, and the 305(b) and 303 (d) listing processes.

Project Overview – Sandra Alvarado
Sandra focused the discussion on the overall TMDL process and the historical data review. She explained that the goal of a TMDL is to restore water quality in the waterbody. The goal of the Copano Bay project is to reduce bacteria concentrations to levels that will make it safe to harvest and eat shellfish from the bay. Sandra's presentation could not be opened for the meeting but can now be viewed at the following web site:

http://www.tceq.state.Texas.us/assets/public/implementation/water/tmdl/42-nov05-tmdl.pdf

Question: Can we have a definition of "most probable numbers?"
Answer: The way that the method is run. Instead of collecting the bacteria on plates and counting individual colonies, it is done in a liquid medium with a tube and positives – there is a statistical conversion (a most probable number).

Question: Will you define the eastern boundary of Copano Bay?
Answer: Highway 35 bridge.
Reply: The reason I ask is because I see people oystering on the Copano Bay side.
Answer – It is not the entire bay that is impaired - the shaded areas on the map are the impaired/closed areas.
The Health Dept. opens and closes the bay based upon rainfall events – usually. The classification maps are distributed annually. Some areas are permanently closed, usually close to residential areas with on-site septic systems.

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Question: When was the bay officially declared closed to oystering?
Answer: The commercial season opens November 1 of each year. However, this year, red-tide was detected in the southern end of Aransas. Only Copano and Mesquite Bay are open for oystering (those areas designated "approved" by TDSHS).

Question: How can they be open when this is suppose to be the law?
Answer: Shellfish harvesting is not based on this. Remember, only on the shaded areas of the map are included in this project.

Question: Is e-coli the only thing that you test for?
Answer: It is fecal coliform that is tested in the water columns. Fecal coliform is an indicator of contamination.

Question: Who enforces these laws?
Answer: It is the Texas Department of Health (and Texas Parks and Wildlife).

Bacteria Source Tracking (BST) – Dr. Joanna Mott
Dr. Mott presented her findings on a BST project that was grant funded through the Texas General Land Office, Blake Traudt and the Coastal Bend Bays & Estuaries Program, Jim Bowman. The TCEQ has been assisting with the projects' planning and design, and coordination and cooperation with Dr. Maidment. The Texas Department of State and Health Services (TDSHS) conducts sanitary surveys to determine the concentration of fecal coliform. The bacteria source tracking is a set of techniques used to determine what the bacteria sources of contamination are. Using this assessment one can get results on what the main sources of fecal coliform in the watershed are. In summary, the work that began in 2003, reports findings as follows:

- both antibiotic resistance profiling (ARP) and pulse field gel electrophoresis (PFGE) suggest a human/sewage contribution (20-40% human islets)
- wildlife and gulls contributed relatively little contamination
- livestock contributed at many stations, especially under high river flow/rainfall (even distribution of cow, horse, duck islets)
- isolates identified as duck were found in areas known to be colonized by ducks

Each stations' findings were reviewed in the watershed. She reported a lot of different things going on in the bay depending on the location. There is no quick summary – they grouped stations where they could.

Dr. Mott said that the tests confirm there is definitely a human sewage contribution to the contamination to Copano Bay. She also believes additional studies will be needed for the river loadings and to answer other questions such as sediment contributions.

Question: Was there any testing done at Port Bay, down south?
Answer: No, we did not have any stations there.

Question: Number of islets means that when you sample the equal number of samples at each site, that you got over 200 in that one time period in the spring?
Answer: Correct and that is not necessarily all of them. We took a proportion from each of the stations so we could get a good number of islets and feel confident in the reporting.

Question: Could you explain why the islets for horses were so much higher than cattle when there is such a small percentage of horses than cattle?
Answer: A number of possibilities, there is a certain level of misclassification. Where are the horses actually located relative to the rivers? Can they go into the water to drink causing direct deposition? We have to actually look at where they are located not just the numbers. How much poop does a horse produce…how much poop does a cow produce? One horse does produce quite a lot of material.

Question: I am curious if you got a dolphin count or tested for them?
Answer: No. We used TDH sanitary survey as a basis for starting and they did not specifically identify dolphins. Also, when it rains and the numbers go really high is a fairly good indication.
Comment: Remember, you are above tidal level and these numbers indicate the closeness to upstream.
Answer: The indictor for determining if shellfish harvesting will be allowed is fecal coliform. We used e-coli for the source tracking. Normally the TCEQ uses *Entrorococcus* as the indicator for contact recreation. There is a change in indicator depending on the designated use assigned to a water body. The e-coli standard is different numbers. We had 2800 islets over the study period.

Question: You are looking at quality vs. quantity?
Answer: Right. And we correlated our sampling events with TDSHS sampling events.

Dr. Mott's full presentation can be viewed at the following web site:
http://www.tceq.state.Texas.us/assets/public/implementation/water/tmdl/42-nov05-bst.pdf

Bacterial Loading Watershed Model – Carrie Gibson under advisement of Dr. Maidment
Ms. Gibson explained that the reason a model is needed is to better understand the interactions between the different components in the watershed. She said that the model is a mathematical representation of what is actually happening in the field (watershed), using standard laws of physics to track what is going on. Carrie said that this TMDL model adds the capability to track a particular water quality component as it moves through the hydrologic system. The modeling component of this project is being funded through Blake Traudt with the Texas General Land Office (TGLO).
Carrie reported the following bullet points for the on-going modeling for Copano Bay:

- The bacterial loadings for the Water Quality Model has been created
- Model has been calibrated (adjusting k and τ parameters) to existing median bacteria monitoring data

Next modeling steps will be:

- Account for wastewater treatment plants in bacterial loading calculations
- Conduct parameter optimization on the entire model (determine parameter distributions in the watershed depending on how the parameters vary)
- Incorporate Joanna Mott's findings into the model
- Examine septic system densities and locations to see if correlation with human/sewage contamination in Bay, which would indicate septic system leakages
- Determine the current load, allowable load, and the load reductions necessary to meet water quality standards for each TCEQ segment

Carrie's presentation can be viewed on-line at the following TCEQ web page:
http://www.tceq.state.Texas.us/assets/public/implementation/water/tmdl/42-nov05-model.pdf

Please note: More information was gained through Dr. Mott BST final report and the model will be updated before the next steering committee meeting to reflect that new information.

Question: Are you doing this for just the bay?
Answer: We are actually doing this for the river also.

Comment: This is a fantastic undertaking and I compliment you on the model and the level of understanding of the model you have presented. I believe the stakeholders will have a lot of information to add to the model such as livestock density, etc.
Reply: Obviously we have made some assumption in the model. We encourage your input and any information you may have that will help the model.
Comment: I have built models and you have done a superb job. I believe we need to take the next step, and I do believe she is right (stakeholder), that there are ways to count the population of animals out there.

Question: If there was a better movement or flush (in Mission & Copano) would the bacteria be less? A high flush of salinity from the bay?
Answer: Yes, as the salinity goes up – the (bacteria) decay rate goes up and makes the concentration go down. It is better for bacteria concentrations if you get higher salinities.

Copano Bay Watershed Advisory Group (WAG)
The TCEQ is soliciting stakeholders to form a consensus-driven, twenty-four member balanced Copano Bay Watershed Advisory Group (WAG). The Copano Bay stakeholder group will be a joint effort among state and local stakeholders and will follow HB 2912 requirements. The WAG will operate under ground rules and will include diverse, balanced representatives from throughout the watershed. The WAG will represent various local, state & federal governmental agencies, recreational users, landowners, businesses and the regulated community and stakeholders, etc. Draft ground rules will be submitted to the WAG for comment. A web site will also be maintained at the following web address:
http://www.tceq.state.Texas.us/implementation/water/tmdl/42-copano.html

Meeting announcements, summaries, copies of handouts, presentations, etc. will be made

available at this website as they become available.

The TCEQ will maintain a database of interested stakeholders for mail out notices, draft-meeting summaries, and will communicate by e-mail as needed. To follow is a list of volunteers that would like to be considered for the WAG.

Volunteer:	Works or Represents:	Request to Represent the Following Category:
Aaron Wendt	TSSWCB	State Government/Agriculture
Earl Matthew	Texas Committee on Natural Resources	Non-Governmental Organizations; Industry
Elizabeth Smith	Texas A&M University-Corpus Christi	Education/Research
Harold Henley	TEXAS Department of Agriculture	Land Owner/Recreation
Jim Bowman	Coastal Bend Bays & Estuaries Program, Inc.	Non-Governmental Organizations
Richard Bianchi		Landowner/Recreation
Rocky Freund	Nueces River Authority	Local Government
Sally Crofutt	Fennessey Ranch	Business
T.J. Fox	Texas Master Naturalist	Land Owner/Recreation
Michael Proctor	Rockport Water Quality Committee	Non-Governmental Organizations
Craig Giggleman	US Fish & Wildlife Service	Federal Government
Lynn Edwards	Save C Bayou Inc	Non-Governmental Organization
Karen Meador	TEXAS Parks & Wildlife	State Government
Brian Koch	TEXAS State Soil & Water Conservation Board	State Government
Garrett Engelking	Refugio Groundwater Conservation District	Academia ?
Ray Kirkwood	TEXAS Master Naturalist	Recreation
James Simons	Texas Parks and Wildlife	State Government

If you would like to be considered for the WAG, please send an e-mail or telephone Earlene Lambeth at the TCEQ at elambeth@tceq.state.Texas.us or (512) 239-3129.

Sandra closed the meeting by thanking the stakeholders for their participation and encouraged them to consider being a stakeholder member. She said the next meeting would be held in February. She also encouraged the stakeholders to feel free to contact her with any information, questions or input they may have.

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