

**Meeting Summary**  
**BACTERIA TMDL STAKEHOLDER MEETING**  
**Houston-Galveston Area Council**  
**June 25, 2007**  
**4-7PM**

**MEMBERS PRESENT:**

Clair Caudill (Business); Marilyn Christian (Local Government – Regulator); Catherine Elliott (Local Government – Flood Mgmt); Robert Hauch (Reservoir Operator); Terry Hershey (General Public); Bob Hunt (Local Government – Wastewater); Steven Johnston (Estuary Program); Trent Martin (Local Government – Stormwater); Linda Pechacek (Homeowners Assoc. – White Oak Bayou); Linda Shead (General Public); Brenda Thorne (Local Government – Public Health); Mary Ellen Whitworth (Conservation Group); Carol Ellinger (Local Government – Stormwater)

**MEMBERS ABSENT:** Adam Aschmann (Development); Neil Bishop (Development); Craig Bourgeois (Conservation); Delwin Cannon (Agriculture Community); Tom Ivy (General Public)

**H-GAC STAFF PRESENT:** Todd Running; Kathy Ramsey, Kristine Swann

**OTHERS PRESENT:** Mary Jane Naquin (Facilitator); Ron Stein (TCEQ); Casey Johnson (TCEQ); Tom Weber (TCEQ); Rainer Amon (TAMUG); Robin Brinkmeyer (TAMUG); John Schwarz (TAMUG); Tran B Duffey (HCPHES); Helen Drummand (GPEP); Tom Beck (TxDOT); Yu Chun Su (PBS&J); Hanadi Rifai (UH); Mel Varcas (Parsons); Robert Adain (Construction EcoServices); Mark Lowrey (TCB); Sharon Crabb (ENSR); Kim Laird (TCEQ); Camille Sowell (CDM); Sveral Patrl (County Attorney Office); Many Purzer (TCB); Alisa Max (HCSWQ); Nick Russo (HCSWQ); Maria Modelska (UH); Karen Atkinson (TCEQ); Terry Hershey (CEC); Monica Suarez (Parsons); Brenda Thorne (COH Public Health); Carla Wyatt (Harris County); Gail Price (COH); Linda Broach (TCEQ)

**WELCOME & INTRODUCTIONS**

The meeting was called to order at 4:10p.m. Mary Jane Naquin welcomed the group, followed by self-introductions.

**REVIEW AGENDA**

Mary Jane Naquin reviewed the agenda with the group.

**ADOPTION OF FEBRUARY 8, 2007 MEETING SUMMARY**

The February meeting summary was e-mailed to the group; members took a moment to review it and then approved it.

**RESULTS OF THE VIRUS STUDY ON WATER BODIES IN HARRIS CO & ORANGE CO**

Enteric viruses are the number one cause of waterborne illnesses. Gastroenteritis is the primary infection, although respiratory diseases, meningitis and other health problems are associated. Fecal coliforms compared to enteric viruses are larger, but have fewer cells per gram and have a shorter viability. However enteric viruses cannot replicate outside of host. Adenoviruses were studied because they are more harmful. The starting count of the viral particle is found after highly concentrating the samples. The monitoring sites where adenoviruses were found were

**Bacteria TMDL BBWOB 6/25/07**

mapped out. The treatment plants all came up positive, and most monitoring sites below the treatment plants came up positive. Monitoring sites above the treatment plants were not as often positive for adenoviruses, but they are also drier than those below. Pre and post UV treatments were also reviewed. UV treatment on adenovirus type 40 was effective, although treatment of other serotypes were not as effective, showing serotype resistance to the treatment. Results were reviewed in detail by site.

Source tracking was also done, and deer, dog, and cow adenoviruses were found, with deer being the most prominent.

### **DRAFT OUTLINE OF BACTERIA POPULATION DYNAMICS STUDY & ADVISORY PROCESS**

A study is to begin on the fate and transport of *E. coli* and *Enterococcus* spp. These are the questions it will address:

1) Under which conditions can *E. coli* and *Enterococcus* spp. Bacteria survive for extended periods in the natural waters and sediment in Buffalo Bayou and White Oak Bayou and in the soils in the watersheds?

2) Under which conditions can these indicator bacteria replicate in natural waters and soils in Buffalo Bayou and White Oak Bayou.

Questions 1 and 2 will be addressed with similar methods. Sampling will occur throughout year to assess influence of temperature and water flows. Analysis of samples will include: analysis of nutrients in water, sediments and soils, chlorophyll analyses to detect algae, laboratory incubations using substrates to determine if *E. coli* and *Enterococcus* will replicate or are only viable but non culturable (VBNC), traditional EC detection methods for comparison, determination of false-positives produced with traditional FC detection methods (DNA probes), HFERP fingerprinting to determine 'naturalized' indicator bacteria, and FISH and Micro-FISH analysis of all substrates with *E. coli* and *Enterococcus* specific DNA probes.

3) Under the conditions indicator bacteria are found to replicate in natural waters and sediments, what are they using for growth substrates? Are they utilizing WWTP effluent derived substrates from chlorine or UV based processes or from substrates found in the waters and sediments?

Analysis of samples will include: end member chemical characterization of organic sources, and stable isotopic composition of bacteria that replicate in natural substrates.

4) How does the hydrologic cycle influence survival and growth of these bacteria?

Analysis of samples will include: sampling during storm events, analyses to include nutrients, DOC FISH, IDEXX, and comparison of strain genotypes from soils and sediments to cultivated isolates.

5) Are these bacteria attached to particulate matter in the watersheds or surviving on biofilms in discharge conveyance systems and are then flushed into bayous during rain events?

Analysis of samples will include: FISH analysis of biofilms and particulate matter collected during storm events, and determination of biofilm growth on microscope slides affixed in discharge conveyance systems.

TCEQ will file two paths of review for above project. One is a typical peer review project. The second will be a Project Advisory Committee composed of stakeholders from the Houston area to provide guidance during this study. Proposed for this committee is the H-GAC Clean Rivers Technical Advisory Group. This group will direct the study towards areas of interest. Regrowth studies will also be accumulated.

The project advisory group will not be connected to the TMDL project. Ron Stein will be the contact at the TCEQ for this.

## **STATUS OF THE BUFFALO AND WHITEOAK INDICATOR BACTERIA TMDL PROJECT**

The public comments for the Summer 2006 Report are being addressed. There are technical and non-technical comments. The UH research team will address the technical comments; TCEQ will address the non-technical comments. Responses will be sent to the individuals who made the comments as well as posted online.

Since the last meeting, TCEQ has met with Harris County officials in regards to methods of estimating and calculating regrowth, problems with the BLEST spreadsheet, and other options other than TMDL. The TCEQ has also met with the Buffalo Bayou Preservation Association to outline the TMDL and IP processes. The Water Environment Association of Texas, the Texas Water Conservation Association and the City of Houston as a group, advocated that TCEQ look more closely at water quality standards before finalizing bacteria TMDLs. The TCEQ has been meeting with

TCEQ has undergone the triennial water quality standards revision.

Commission will consider adopting the 2006 303(d) list. The proposal requests a net gain of 126 impairments to the 2004 list.

A joint session will review the TWRI task force recommendations.

The Harris county MS4 permit: the TCEQ has received the comments on the MS4 permit, and it will be sent to the EPA for review. The permit is expected to be issued on October 1<sup>st</sup>.

An open version of the BLEST table is being developed so that it can be released to the public.

Once this is done there will be a three fold approach to calculate the loads to be used for allocations: mass balance, load duration curves, and the HSPF model. This will hopefully be finished by fall.

## **WATERSHED PROTECTION PLANS AND TMDL IMPLEMENTATION PLANS**

The EPA has outline a policy in a document titled "Watershed Plans in Lieu of TMDLs" as of May 2007. A watershed plan can serve as the basis for delisting a waterbody from the 303(d) list. This policy is applicable in situations where NPS predominates. Plans must meet requirements of TMDL regulations, Integrated Report Guidance and NPS program guidance.

The policy requires: problem statement, implementation strategy, estimate of time to meet water quality standards, reasonable implementation schedule, provisions for monitoring, tracking and reporting, commitment to revise implementation strategy if necessary.

Segments are not required to be included on the 303(d) list if other pollution control requirements (BMPs) required by local state or federal authority are stringent enough to implement applicable water quality standards within a reasonable period of time.

Examples of watershed plans in Texas were given: Arroyo Colorado (Dissolved Oxygen) and the Upper San Antonio River (Bacteria). EPA recommended watershed plans were listed.

Comparisons were made between WPP-4b and IPs in regards to approvals, storm water controls, point source controls, oversight and timeframe. They are as follows:

- Approvals:
  - WPP
    - Prepared by third parties; submitted to TCEQ
    - TCEQ/EPA pparove state 305(b)/303(d) every two years.
    - EPA TMDL staff review adequacy of load reductions.
  - IP
    - Prepared by stakeholders; TCEQ input
    - Approved by TCEQ Commissioners
    - Specific permits are subject to EPA review
- Storm Water Controls:
  - WPP
    - Best Management Practices
    - Controls must be requirements
  - IP

- EPA Memo; Nov. 22, 2002
- Effluent limits expressed as BMPs
- Iterative approach
- Adaptive management (NRC, 2001)
- Point Source Controls:
  - WPP
    - "...other pollution control requirements..."
    - Blended approach: TMDL for point sources; WPP for nonpoint sources
  - IP: Update the State's Water Quality Management Plan
- Oversight:
  - WPP: TCEQ must submit documentation of progress to EPA every two years
  - IP: TCEQ prepares a report on the progress of TMDLs every two years

Unanswered questions and concerns include the following. This process is a significant challenge for a point source dominated watershed. 2009 is the deadline for addressing 1996 impairments. Would EPA find a longer timeframe acceptable? What are the processes for demonstrating new discharges or expansions are approvable once a WPP is in place?

### **WATERSHED PROTECTION PLAN STRATEGY**

The JTF has concerns about the current standard and its reliability in indicating human health risks in nutrient rich subtropical waters. The standard may not be met even if all contributions to sources are eliminated.

There are many proactive implementation measures underway: illicit discharge detection and elimination programs above and beyond the joint permit requirements, funding studies and research to evaluate bacteria issues, including regrowth, as well as BMP Effectiveness, Harris County on-site wastewater regulations already exceed state minimum requirements, and these regulations are being further strengthened, City of Houston committing \$75 million per year to eliminate dry weather overflows, and project is two years ahead of schedule, and TxDOT and HCFCF scrutinizing flows from others discharging to their systems. Other strides towards implementation within the JTF include the consensus to adopt monitoring plan to determine the extent of bacteria reduction resulting from JTF activities, the support of HGACs UAA, and the consensus regarding the need for the additional re-growth, sediment, BMP studies, and enhanced regional public education.

A Watershed Protection Plan as an alternative to the specific numerical allocation of TMDL would allow broader categories of allocations providing the flexibility needed to develop implementation activities/strategies to reduce bacteria in an effective, fiscally responsible manner, would tie success/progress to performance of activities in a concurrently developed implementation plan rather than to compliance with a questionable TMDL formula, and would provide rigorous stakeholder involvement and opportunity to develop program the community will support. WPP isn't the easier road for the JTF; but it has the potential to provide flexibility and input needed to develop activities that will improve water quality & garner support of the communities required to implement and finance the efforts.

A Watershed Protection Plan does not eliminate any oversight, and in fact adds oversight by EPA over implementation, which is not the case with a TMDL Implementation Plan. It does not prevent Cities and Counties from passing ordinances within their current rulemaking abilities to control bacteria contributions from development.

The JTF recommends that the group not adopt the current TMDL allocation formulae. The allocation equations are flawed and so is the standard. The JTF proposes that a Watershed Protection Plan be substituted in lieu of completion of the TMDL. It further recommends the expedition of changes to the Contact and Non Contact Recreation standards and the address of issues of how to assess the relationship between regrown E coli and pathogens. It also asks for the JTF to be allowed to focus on improvements to the two segments listed in 1996 while the standards issues are being addressed. Subsequent segments were listed in 2002.

**OTHER BUSINESS**

Questions were raised on how the TCEQ will decide on whether a TMDL or WPP would be appropriate. It was decided that an interim meeting in late August to discuss the pros and cons of both methods is necessary for the stakeholders to decide their stance on the two methods.

**MEETING CONCLUSION**

Next meeting was scheduled for the second Quarter of 2007.

**ADJOURN**

The meeting adjourned at 6:34 PM.