<div align="center">

Meeting Summary
BACTERIA TMDL STAKEHOLDER MEETING
Houston-Galveston Area Council
February 8, 2007
4-7PM

</div>

MEMBERS PRESENT:
Neil Bishop (Development); 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);
Tom Ivy (General Public); 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)

MEMBERS ABSENT: Adam Aschmann (Development); Craig Bourgeois (Conservation);
Delwin Cannon (Agriculture Community); Jack Sakolosky (Local Government –
Stormwater)

H-GAC STAFF PRESENT: Carl Masterson; Todd Running; Jeff Taebel

OTHERS PRESENT: Mary Jane Naquin (Facilitator)**;** Alisa Max (HCSWQ); Nick Russo
(Harris County); Jon Paul Komar (HCSWQS); Guy Heig (Public);Gail Price (City of Houston);
Mark Lowry (TCB/JTF); Monica Suarez (Parsons); Susan Karlins (City of Houston); Dave Dilks
(Limno-Tech); Paul Jensen (PBS+J) Karen Atkinson (TCEQ – Houston Region); Linda Broach
(TCEQ-Region 12); Ron Stein (TCEQ); Casey Johnson (TCEQ); Tom Weber (TCEQ); Hanadi
Rifai (UH); Tina Peterson (CPM); Kim Laird (TCEQ); Sharon Crabb (TCB); Cindy Contreras
(TPWD); Michael Bloom (PBS&J); Carol Ellinger-on behalf of Jack Sakolosky (Local
Government – Stormwater)

WELCOME & INTRODUCTIONS
The meeting was called to order at 4:12p.m. Mary Jane Naquin welcomed the group, followed by
self-introductions.

REVIEW AGENDA
Mary Jane Naquin reviewed the agenda with the group.

ADOPTION OF SEPTEMBER 7, 2007 MEETING SUMMARY
The September meeting summary was e-mailed to the group; members took a moment to review
it and then approved it.

TECHNICAL ISSUES (WWTP SAMPLING RESULTS)
      Hanadi Rifai introduced the presentation and provided a brief summary of the sources of
data. UH and TCEQ measured bacteria colonies by weirs, while Harris County measured bacteria
colonies at the end of pipes to bayous, which tend to have higher bacterial rates. Wet rates, as
expected had much higher levels of bacteria. Because the wasteload allocation should be as near
to zero as possible, a 100% reduction is required. On the other hand, load allocation, as much of it
is mixed source, cannot be reduced to zero. Rather than a 100% reduction, the percentage
reductions vary, depending on environmental and reduction approach variables.

It is estimated that there will be a doubling of bacteria coming from WWTF due to regrowth. Sediment from downfall from WWTF carries higher concentrations of bacteria than the EOP detected amounts. Overall the percent reduction needed for waste load reductions for Whiteoak Bayou is 100%, and the percent reduction needed for load reductions for Whiteoak Bayous ranges from 97% to 98%.

UNCERTAINTY IN TMDL ALLOCATIONS

Ron Stein led the presentation, giving the TCEQ perspective. WWTP Discharges and Biosolids Releases, Dry Weather Storm Sewer Discharges, Sanitary Sewer Overflows, Storm Sewer Discharges, On-site Sanitary Sewer Systems, Re-suspension of Bed Sediment, and Direct Deposit all contribute loads to the bayous.

WWTP Discharges and Biosolids Releases, Sanitary Sewer Overflows, and On-site Sanitary Sewer Systems are all known to cause human health effects, but it is uncertain if the other sources of bacteria TMDL allocations have health effects due to their being from mixed sources.

All of these sources to varying degrees lead to exceedences, especially at low flow conditions, and many times they are a major contribution at intermediate flow. The one thing that all of these sources have in common is that we are not sure of the exact load that is contributed, although it is clear that Storm Sewer Discharges seem to be the largest source. Because this is such a large load, the three flow allocation strategy will be used. This will allow exposure prioritization to give time to understand the human health aspects of this load.

For most of these sources, regardless of the magnitude of the load, the goal is to keep the loads as close to zero as possible. However, with uncontrollable sources, bed sediment and direct deposits, there are no direct methods of reducing the bacteria population. Through the reduction of the loads that contribute to the bacteria population, the contribution of re-suspension of bed sediment may be lowered. The implementation strategy is the same for any magnitude of load from these sources.

Uncertainties in loads will affect implementation activities. All of the human source loads are regulated by an existing program. The bacteria concentrations in the bayou are so high that regardless of what proportions are assigned for reduction, all sources need to reduce significantly. The Implementation Plan will be developed by the stakeholders subject to the constraint of identifying sources of funding.

There are also uncertainties not associated with the allocations. Human health risk associated with non human sources is unknown. The EPA requires all bacteria to be considered the same risk unless it is demonstrated that there is a different level of risk. This can be examined in the implementation phase. The study conducted by Standards Group/HGAC will help. There are many unknowns in the fate and transport of bacteria. This is important in understanding why and how loads enter the bayous. This does not change the fact that they get there through discharges including runoff. Re-growth is an in-stream property that does not change the character of the loads to the streams. If re-growth is occurring then assimilative capacity is reduced. It is not clear that the standard can be achieved. The EPA requires TMDLs to be written to meet the standard. Currently only contact and non-contact recreation standards are available in Texas and both of these standards require significant load reductions. Any future changes in the standard for the water bodies in the TMDL; will result in revisions in the TMDL allocations. Currently there is a triennial review of the standards, which could lead to changes in the standards. There is a Use Attainability Analysis project occurring by the TCEQ and HGAC, which may also affect the standards for the given water bodies.

HSPF MODEL VS. BLEST VS. LOAD DURATION CURVES

The concentrations of E. coli in the bayous are several orders of magnitude larger than the standard. The models were reviewed. The BLEST approach requires a higher percentage of reduction than the LDC approach, and the LDC approach requires a higher percentage of

reduction than the HSPF model. The conclusion is: no matter which approach we use, all will require a large reduction.

FUNDS SPENT ON TMDL

To date, the project has expended $1,369,577. The current contract that governs 2006-2007 provides $100,000 per year.

HARRIS COUNTY BACTERIA REGROWTH UPDATE

Trent Martin led the presentation. Harris County is dedicated to reducing bacterial levels in the bayous; however, further analyses need to be completed to create an implementation plan. Two Harris County studies were discussed. The first study concerned sedimentation in retention basins as a method of reducing bacteria. The second study experimented on the effects of sediment settling rates and excess nutrients on the regrowth of different types of bacteria in water. There were varying degrees depending on the types of bacteria and the environmental conditions. Settling appears to be an effective way of reducing bacterial regrowth. Bacteria may need to be considered alongside other variables, such as nutrients.

BACTERIA TASK FORCE UPDATE

Tom Weber led this presentation. The Commissioners of TCEQ and the board members of the Texas State Soil Conservation Board asked Dr. Alan Jones of Texas Water Resources Institute to formulate a task force to look at issues related to bacteria TMDLs. This task force was asked to create recommendations for how to carry out Bacteria TMDLs in the future. Their report can be found online. Within the report, there is a framework for a tiered approach for developing the TMDLs. This approach has no timeline in place. There are also recommendations for future research that should be taking place, and what tools and models have been used in other states around the country (many of which are being used locally). Some of the research recommended is needed in this TMDL.

Tier I: involves the formation of a stakeholder group, development of GIS of the watershed and a sanitary survey, and the calculation of load duration curves. The stakeholders will be a part of the decision making process throughout this.

Tier II: involves the collection of targeted monitoring data, the use of library independent bacteria source tracking (BST) data to identify sources of bacteria (human/wildlife/etc) and the development of mass balance models of bacteria in the watershed (BLEST/ArcHydro). The stakeholders will be a part of the decision making process throughout this.

Tier III: implements extensive targeted monitoring, conducts the BST analysis and develops a detailed hydrologic/water quality model for the watershed. This is purposefully for the development of the implementation plan. The stakeholders will be a part of the decision making process throughout this.

BRIEF REVIEW OF USE ATTAINABILITY ANALYSIS PROJECT

Todd Running led this presentation. Presently HGAC and the Clean Rivers Program are waiting for their contract to come through.

PCR DETECTION OF HUMAN ADENOVIRUS BUFFALO AND WHITE OAK BAYOUS

The preliminary data was handed out for the research project from Texas A&M University at Galveston on virus detection. The report addresses whether it is possible to detect virus genetic traces in the bayou water, sediment, and other media accurately. The findings is that detection is possible in water; however, the more complex the media (such as sediment), the harder the process of the detection and the less reliable the detection. The purpose of this study is to consider the procedures necessary to be able to accurately detect in complex media.

This study will be explained more thoroughly at a future meeting.

NEXT STEPS

Comments on BLEST Spreadsheet Model need to be in by March 8, 2007. Following that, comments will be incorporated, and a Final Modeling Report will be completed. A Cheat Sheet for data modeling is online.

The EPA has a nationwide policy of adopting TMDLs within 8-13 years within listing the contaminants within a given water bodies.

MEMBERSHIP ISSUES

It is uncertain as to whether a replacement can be found for Bill Manning, who recently passed away.

MEETING CONCLUSION

Another meeting will be scheduled before the end of the fourth Quarter of 2007.

ADJOURN

The meeting adjourned at approximately 7:10 PM.