



Meeting Summary
Tuesday, October 20, 2009

Members Present:

Michael Bloom	Catherine Elliott	Linda Pechacek
John Blount	Joe Ferro	Ceil Price
Pat Buzbee	Jason Iken	Kathy Richolson
Marilyn Christian	Tom Ivy	Jim Robertson
Robert Collins (by phone)	Michael Mooney	Linda Shead
Carol Ellinger	Raymond Pavlovich	

James Tynan Kelly was represented by Bruce Heiberg.
Craig Maske was represented by Scott Saenger.
Jack Murphy was represented by Susie Blake.
Becky Olive was represented by Tony Bennett.

Members Absent:

Mike Garver	Helen Lane	Brian Shmaefsky
Teague Harris	Cathy McCoy	Melvin Solomon
Ron Kelling	Mitchell Page	Robert Stokes

Guests Present:

Steve Archer (Archer Environmental), Linda Broach (TCEQ), Bill Carter (TCEQ), Richard Chapin (City of Houston), Anju Chalise (TCEQ), Catarina Cron (Harris County), Winston Denton (TPWD), Tom Douglas (UTSPH), Jesse Espinoza (City of Webster), Jedediah Greenfield (City of Houston), Nicole Hausler (PHA), Ruthanne Haut (City of Houston), Margret Hines-Dorman (Citizen), Steve Hupp (Harris County), Brian Koch (TSSWCB), David Kocurek on phone (City of Alvin), Ken Kramer on phone (Sierra Club), Michael Lindsey (Montgomery County), Jason Maldonado (PBS&J), Ed Matuszak (URS), Alisa Max (Harris County), Yuhayna McCoy on phone (City of Houston), Sam Metzger (City of Pasadena), Maria Modelska (University of Houston), Chip Morris (TCEQ), Allen Peach (URS), Tina Peterson (CDM), Nick Russo (Harris County), Carol Serna (AEI Engineering), R.D. Smith (CCFCC), Robert Snoza II (HCFCD), Laurie Thanheiser (Environmental Infrastructure Planning), Keith Tischler on phone (Texas General Land Office), Mel Vargas on phone (Parsons), Cheryl Wapnick (PBS&J), Carolyn White (HCFCD)

H-GAC Staff Present:

Justin Bower, Om Chawla, Kristi Corse, Ayo Jibowu, Erin Livingston, Carl Masterson, Rachel Powers, Todd Running, Jeff Taebel, Andrea Tantillo

1. Welcome & Introductions

Rachel Powers welcomed and thanked everyone for coming. She initiated self-introductions of BIG members and H-GAC staff. Rachel then reviewed the agenda.

2. Certification of Quorum

Twenty-one members and alternates were present, achieving a quorum.

3. Approval of Proposed Alternates

Mike Lindsey was approved as an alternate for Pat Buzbee.

Walid Samarneh was approved as an alternate for Jason Iken.

4. Approval of September 15, 2009, Meeting Summary

Meeting notes were accepted with the following changes:

- On page 4 change Strucker to Strecker.
- Edit notes for the "Presentation on Literature Research" for brevity.

5. Public Engagement Plan Phase I

Since the last meeting, we have had three public engagement meetings. Activities receiving the most support from stakeholders include FOG programs, improving compliance and enforcement for WWTFs, and identifying and addressing failing OSSFs. These priorities are not dissimilar from what the BIG had identified as their top priorities. H-GAC has also met with the Greens Bayou Corridor Coalition, a fairly new organization, concerned with bacteria in Greens Bayou and how it will affect their efforts to increase recreation in the bayou.

Q: So, there were eight people that responded?

A: Yes, in support of that particular implementation activity.

Comment: That is not enough people. These are not statistically significant results.

Comment: We are still soliciting comments and so we expect to get more.

Comment: The MUD attorneys I checked with still have not received letters.

Response: Letters were sent to each of the MUD attorney firms listed with the Association of Water Board Directors (AWBD). We are going to be working to reach more individuals associated with MUDs. The AWBD did not send out their newsletter as planned. The newsletter would have reached a lot more people. We will set up another meeting and work with the AWBD again to see if they can help us reach MUD directors and other MUD representatives.

Comment: Regional Water Authority meetings would also be a great way to reach MUDs.

Q: Have we gotten any response from the MUDs?

A: Yes. Response has been generally positive and they feel that something needs to be done to address poor water quality.

Q: Which group are these results from?

A: These are from the four public meetings.

Q: Who were these people that showed up to the meetings and responded?

A: MUD engineers, a public works director, MUD operators, and a MUD attorney, among others.

Q: Are these general public meetings or were they targeted at a particular group?

A: They were targeted meetings.

Comment: These eight responses were informed responses.

Q: Are waste haulers regulated?

A: TCEQ regulates the waste hauler activities. Each waste hauler, statewide, is supposed to have a permit and keep records of their pick-ups and disposals.

Comment: The City of Houston has a very active program for waste haulers that requires permits and registration for hauling "City-regulated waste," including waste from grease traps, septic tanks, and portable toilets. The City has a manifest program which shows ultimate disposal sites and volumes, but it is only for haulers within city limits. Harris County has a manifest system, but it is not used extensively. Harris County has put some haulers in jail. There are not many people doing a thorough job of watching over the haulers.

Q: How many responses did we get from the written information we sent out?

A: Other than the public meetings, we have only gotten one other response since the last meeting.

Q: Should we try some other way to reach people? Should we try using a widespread survey to obtain responses?

Q: Weren't we trying to get input from government employees, organizations, and other stakeholders who are not yet at the table? I didn't think we were trying to engage the public at this point.

A: We have been trying to engage those that will have to implement the activities developed by the BIG. This approach did not work.

Response: We shouldn't do a survey to the general public. The information we want to gather will come from professionals, those that know about the issues and have a role to play in removing bacteria from the waterways.

Response: We could do an online survey for our targeted audience.

Q: Do we have emails for all of our contacts?

A: No.

Response: I think an email and an online survey are good ideas, but I think it will require a phone call to identify who is going to fill out that survey. People get too many emails, so if it is unsolicited and unknown it probably won't get much attention.

6. Workgroup Report

Three workgroup meetings have been scheduled:

Tuesday, November 3, 2009, at 1:30 PM Onsite Septic Facilities (OSSF)
Tuesday, November 10, 2009, at 1:30 PM Wastewater Treatment Facilities (WWTF)
Monday, November 16, 2009, at 1:30 PM Monitoring (tentative at time of BIG meeting)
Thursday, November 19, 2009, at 1:30 PM Sanitary Sewer System (SSS)

Onsite Septic Facilities (OSSF)

We have been contacting the authorized agents in the region to get their information and invite them to the meeting. Most are planning to attend or send a representative. We will be talking about the data collection effort and what to do next.

Wastewater Treatment Facilities (WWTF)

TCEQ has published proposed regulations for bacteria monitoring and limits. The workgroup will discuss whether the TCEQ regulations are sufficient or if we need to create stricter requirements for the BIG region.

Q: Are you talking about the rule revisions?

A: Yes.

Q: Are we going to have TCEQ representatives from the permitting program and the TMDL program?

A: We will invite them.

Sanitary Sewer System (SSS)

We will determine details for the SSS activities identified as top priorities during the prioritization exercise.

7. Staff Presentations

Water Resources Information Map (WRIM)

Ayo Jibowu provided information about the Water Resources Information Map (WRIM), a resource recently developed by H-GAC. It is an interactive map containing water quality data collected by local agencies as part of the Clean Rivers Program, which H-GAC manages locally. WRIM has the look and feel of a Google map. It gives a summary of the Basin Highlights Report, answers the question “how is the water?” and indicates if a station is on a waterway listed as impaired on the 303(d) list. WRIM integrates several GIS layers that are of importance to the BIG: water quality monitoring sites and data, WWTF outfalls, USGS gage stations, WWTF service area boundaries, areas dependant on onsite wastewater (information for this layer is not complete), aerial photographs, and zip codes. H-GAC will be adding more layers as they are available. WRIM has additional tools such as finding a location, determining the watershed it lies within and route trip planning. WRIM is available on the H-GAC website at http://www.h-gac.com/rds/water_quality/default.aspx. WRIM will be useful for analyses for the BIG as well as for other groups that have interest in water resource information. Ayo completed the presentation by conducting a short demonstration of WRIM.

Q: What do the various colored dots represent?

A: The monitoring sites are color coded to indicate which agency conducts the monitoring for the site.

Q: When data is missing from an area, do you contact the local government to try to get the information from them?

A: We have done that. Some communities have been helpful while others have been unresponsive. We get most of the information from TCEQ.

Comment: The City of Webster is willing to provide any information they have to WRIM.

Q: Where did you get your maps for your WWTF service areas?

A: Some came directly from the operators while others came from TCEQ.

Q: Is data from volunteer monitoring on the website?

A: It will be made available.

Onsite Septic Facilities (OSSF)

H-GAC has been gathering information on septic systems: locations, violations, and complaints. H-GAC hopes to develop a robust database with the information. Four counties have provided information. Several additional counties and cities have agreed to provide information about OSSF in their communities. We want to work with the Authorized Agents to ensure H-GAC gets regular updates of this information, and to make sure this effort is valuable to local communities. This work is being done as a result of an ARRA grant from the TCEQ.

Comment: You should be careful about relying on information regarding violations. Violations represent enforcement activity by the local government and not the actual number of violations. In some areas of the region, there is virtually no enforcement by the local government.

Response: We understand that issue. This is just a source for official information.

Recreational Uses

H-GAC has been gathering information on recreational uses of the waterways from the BIG and others. Water quality monitors are among the groups that have been asked to provide information about their observations of recreation. The issue was discussed in the Regional Monitoring Workgroup as a result of the BIG and STORET codes are now being created to officially record the information. It will eventually be a statewide effort. Information that has been collected so far has been compiled into a map (on display). Other information that must be added includes phone survey results from past efforts by H-GAC and Harris County and results from TCEQ's past and future UAAs.

Q: Is TCEQ currently moving forward with UAAs in the BIG service area?

A: One has already been done for Buffalo and White Oak Bayou. UAAs are just starting for Oyster Creek and Armand Bayou.

Effluent Dominated Streams Analysis

Om Chawla presented information on an analysis of how much stream flow can be attributed to wastewater treatment facilities. This analysis looks at the percentage of flow in a waterway that comes from a WWTF. It does not say anything about how concentrated the effluent is. A map was created to display this analysis with results divided into four categories <25%, 25-50%, 50-75%, and >75%. The map represents the best available information at this time. In conducting these analyses, H-GAC:

- did not look at tidal areas because water goes in and out
- averaged the flow from USGS stations if there were two of them
- used the most downstream station to get the most accurate representation of the waterway
- did not assume a flow gage on a tributary was representative of the main stream
- tried to find datasets that were at least five years in length to balance out wet and dry years
- interpreted no flow, intermittent, or variable as zero flow from the self reported data,
- interpreted a zero as a missing data value, for which half of the permitted flow limit was used.

We are actively looking for other data sources to help us populate the map.

Q: How do you compensate for the variations in flow resulting from significant runoff?

A: We used daily averages from USGS gages where available, which helps account for the wet season, runoff events, and dry season.

Q: Did you look at any other parameters--biological, physical or chemical--to designate the waterway as wastewater dominant?

A: No. We just looked at flow.

Q: By effluent dominated, are you referring to the fraction of the water in the stream that was discharged from a wastewater treatment plant for a five-year period including wet weather events?

A: Yes.

Q: How can a stream go from being wastewater dominated to not?

A: That is a result of the available data. Sometimes a tributary would have a USGS gage, but then the main stream did not. We could not say what percentage of the main stream was from the tributary and so we were unable to determine the percentage of the stream that was wastewater effluent.

Q: Is there any way to designate on the map where you had to make assumptions?

A: We can look into that.

Q: How can any of the streams be effluent dominated with the amount of rain we get here?

A: The USGS flow data doesn't include the total volume of rainwater; it just takes a flow measurement at regular intervals.

Rachel thanked Om, and suggested that some of the discussion regarding effluent-dominated streams might seem more relevant after hearing the next presentation.

Q: I thought we were going to hear about the Annapolis Protocol?

A: The next presentation will include a brief discussion of the Annapolis Protocol. The tool that will be presented is an application of the Annapolis Protocol.

8. Presentation on the Bacteria Decision Support Tool

Rachel introduced Cheryl Wapnick, senior scientist with PBS&J.

Introduction

The goals of this presentation are to describe the decision support tool, illustrate its application, and show how it can help identify sources of fecal contamination, prioritize basins for implementation actions, and target load reduction actions.

Indicator Organisms

Indicator organisms, usually fecal coliforms, *Escherichia coli*, and Enterococci, are bacteria that are present in the GI tract of warm-blooded animals. In theory, they are predictive of the risk of illness in humans caused by bacteria, viral pathogens, and protozoan pathogens.

There are a variety of sources, which can be categorized depending on how much risk is presented by different sources. Thus, human sources, such as human sewage from septic tanks or sanitary sewer leaks, would be considered high risk. Definite risks might include cattle and potentially poultry. Unknown risks might include wildlife, pets, sediment, and soil.

Bacteria Decision Support Tool

The tool was originally designed to answer three questions:

- 1) Which basins should be the first priorities in which to implement management actions? Jacksonville started with 55 tributaries, and now there are 75.
- 2) What are the sources of the fecal contamination? This will help determine the level of associated health risk .
- 3) Are the management actions working?

The Bacteria Decision Support Tool incorporates major elements of the Annapolis Protocol, which was recommended by the World Health Organization in 2003. The key concept that is incorporated is that two types of information need to be integrated: water quality data with information from field surveys. The tool also incorporates the phased monitoring approach recommended by the NRC in 2004.

Importantly, the tool acknowledges the limitations of existing bacteria water quality indicators to protect public health, by incorporating information about the sources of contamination and the risk that those sources present.

Step 1 categorizes streams based on water quality samples relative to water quality standards. Using a decision tree, the tool assigns a “Microbial Water Quality Assessment” (MWQA) category from A (need more information) to E (relatively high exceedences). This assessment should show which sites are high priorities (MWQA category E), and so forth.

Step 2 categorizes sites based on potential for human health risks using “contaminant source surveys” (CSS). Based on data analysis, stakeholder interviews, field visits, etc., this stage classifies sources into five categories, ranging from one, very low risk (no visual sources of human pathogens, natural environment...), to five, very high risk (current failing wastewater infrastructure, evidence of illicit sewage discharges...).

The Classification Matrix, through which each site is evaluated, has the CSS category on one axis and the MWQA category on the other axis. A site with a MWQA of A and a CSS of one would be considered low priority. A site with a MWQA of E and a CSS of five would be identified as a very high priority. A site could be classified in a variety of locations on the matrix, indicating varying levels of priority (shown with color coding) or possibly anomalies (shown as grey on the matrix).

The results of Steps 1 and 2 will narrow the focus of the investigation to specific areas.

Microbial Source Tracking

Step 3 involves Microbial Source Tracking, or MST. This is an optional stage for those sites that require additional investigation of confirmation of human/non-human sources. This is considered a higher-cost, more sophisticated analysis. Normally, this would be used in areas of high frequency and magnitude of bacteria limit exceedences.

MSTs are constantly changing, but, generally can help identify the source of the bacteria. In particular, some MST tools can differentiate between human and non-human sources.

Application Example (Hillsborough County, Florida)

Hillsborough River is in Florida, near Tampa. Cheryl showed a chart illustrating bacteria levels relative to state criteria in six waterbodies in the area. The next chart showed bacteria levels at tracking stations along each waterbody. The more detailed chart illustrated how bacteria levels could vary along a waterbody.

The Lower Hillsborough River is in downtown Tampa. Cheryl showed some pictures along the river and some of its tributaries, explaining that the tributary with the highest bacteria levels was a stormwater culvert.

Cheryl showed a map indicating locations of potential sources such as sanitary sewer systems, illicit discharges, stormwater, and septic systems.

Summary, including benefits and costs

Cheryl showed a sample indicating how different sites could be evaluated using the tool using the 'stoplight' approach: red indicates sites with high CSS and MWQA, orange and yellow with a less high priority, and green with a low priority. This can also track changes over time.

Benefits of the tool include:

- Savings of time and money,
- Increased efficiency and effectiveness, using both level of impairment and potential human health risk,
- Coordination and leverage of available resources, and
- Assurances that projects will address impairments in an effective way.

Costs are about \$20,000 per tributary for 6 tributaries for steps one and two. Step three, or MST, would add an additional \$48,000 per tributary.

Cheryl concluded by acknowledging the Florida Department of Environmental Protection; Dr. Valerie J. Harwood and Chris Staley with the University of South Florida; Gerold Morrison with Terra Ceia, Inc.; and the Hillsborough River Basin Management Action Plan Steering Committee and Work Group.

Q: Can this tool be used for both tidal and non-tidal areas?

A: Yes. We sample on outgoing tides. You could also use Enterococci instead of fecal coliforms or *E. coli* in tidal waters.

Comment: Earlier, the BIG talked about the nine elements of a watershed protection plan. This tool could help describe many of these nine elements.

Q: Do you have evidence that suggests that human sources of bacteria pose more of a risk than non-human sources?

A: The State of Florida seems to be addressing human sources first. Cheryl can provide additional information about studies that might indicate such a connection. Michael Bloom added that the EPA does not appear to have taken that stance, although there is evidence both supporting and refuting a link between source and risk.

Comment: The BIG could choose to prioritize activities to address human sources first. Cheryl then commented that Florida's DEP is starting to look at elimination of sources, and not just bacteria loadings.

Q: How do soils and sediments play into this? Do you ever have to dredge?

Soil and sediment certainly need to be considered. One question is whether the bacteria in soil and sediment are harboring new sources or regrowth. Dr. Hargrove had looked at this issue at an old dairy farm, which was quite interesting. Dredging might end up being the appropriate action.

Q: What do cost estimates include? If we wanted to do something like this for all of Harris County, it would cost between \$40 and \$80 million.

A: The costs included all MWQA, CSS, collaboration, facilitation, field efforts, and data analysis. It did not include monitoring, but it did include compilation of existing data. It did not include MST. Step 3 would only be implemented on an as-needed basis.

Comment: Harris County, H-GAC, City of Houston, and others already have a lot of the data in a highly processed form.

Q: Regarding the chart showing the different indicator organisms at the different monitoring stations... Were all of the samples taken together in triplicate in one aliquot of water?

A: Yes.

Rachel related the discussion back to the 'effluent dominated stream' exercise as a means to incorporate human-based source risk.

9. Other Business/Roundtable

Todd Running described a pilot project with the City of Houston. There are about 330 monitoring sites in the region, with about 200 in the BIG area. This study looked at 21 sites. The City of Houston conducted a detailed habitat study and examination of potential bacteria sources immediately upstream of the monitoring sites. The QAPP was approved by TCEQ. We hope to be able to do this for all 330 sites in the next year or two, although we need partners to do this. Please contact Todd if you are interested.

10. Next Meeting Date

The next regularly scheduled meeting will be on November 17, 2009. Jason Leifester of TCEQ will present an update of the Houston Metro and Lake Houston TMDL Projects.

11. Adjourn

The meeting was adjourned at about 3:35 PM.