

Lower Rio Grande, Rio Grande Estuary, and Lower Laguna Madre Bay and Basin Expert Science Team (Lower BBEST)

First Meeting

Thursday and Friday, June 30-July 1, 2011
University of Texas at Brownsville

MINUTES

Members Present: Hudson DeYoe, Chair; David Buzan, Vice Chair; Jude Benavides; Bob Edwards; Carlos Marin; and Warren Pulich.

I. Introductions and Minutes

Minutes for the May 26-27, 2011 meeting were reviewed and approved with minor revisions.

II. Project Administration

Budget Update (Guthrie, TWDB)

Carla Guthrie, TWDB, stated that the budget was not yet approved. However, it was submitted to the Environmental Flows Advisory Group (EFAG). The budget under consideration includes the \$5,000.00 of additional funding received from the SAC that needs to be spent by August 31, 2011. Chair Hudson DeYoe drafted a letter to SAC requesting additional funding for next year. The TWDB is trying to find additional funding for the BBEST groups for the 2012 fiscal year.

Science Advisory Committee (SAC) Update (Brandes)

Mr. Bob Brandes, SAC liaison, presented a brief summary of the last SAC meeting held on July 13, 2011. SAC comments on the Work Plans submitted by the previous BBASCs have been forwarded to the EFAG. He suggested members review the environmental flow rules recently adopted by the TCEQ to see how the recommendations from these basins were treated during the rulemaking process. Chris Loft, TCEQ, added that TCEQ is accepting comments until July 8, 2011 on the implementation of these rules. He also noted that the SAC formed a subcommittee to revisit and revise if necessary the SAC guidance document on geomorphology.

BBASC Update

BBASC Chair Tony Reisinger reported that the BBASC will not meet until the BBESTs have something substantial to present. Chair DeYoe anticipated the BBEST would be ready for a joint meeting of the BBASC/BBEST in September 2011.

Assignment Updates

TXBlend Model Update (Guthrie, TWDB): Carla Guthrie, TWDB, made a presentation on the TXBlend model. She discussed the geographic extent of the model, the available inflow points, data used, and the method used to calibrate the data. Members discussed how well the model can predict salinity and if the results can be used to predict the salinity gradient farther out in the bay. Members suggested some

additional work on a monthly and seasonal basis for particular dry, average, and wet years to see the salinity effects in the Laguna Madre. The years chosen to represent wet, dry and average periods in the TPWD/TWDB simulations are as follows:

- Wet years: 1991, 2008, 2010
- Dry years: 1990, 2000
- Average years: 1992, 1999

Members asked for TPWD to map the resulting salinity intervals in increments of 4 parts per thousand for the model.

Water Budget for the Rio Grande (Marin and Benavides): Dr. Jude Benavides presented an update on the Water Budget for the Rio Grande. He said work had been done on identifying gages and period of record, and noted that sufficient data exists on both the Rio Grande and Arroyo for at least a simple water balance. He reviewed projects identified in previous meetings and what progress had been made. He anticipated significant progress during July. Dr. Benavides said salinity, rainfall, runoff and gage data will be compared with the irrigation demands to determine any correlation. He said the group may define areas of specific concerns determined as a result of the TXBlend modeling and noted the importance of specific salinity zones in the lower portion of the Laguna Madre.

Dr. Benavides said prior to the next meeting in July, he will contact the watermaster to get copies of their gage and withdrawal data. Members discussed the importance of pulse rainfall events, and the impact of the resulting runoff. Vice Chair Buzan noted that the important issue is determining the amount of water needed for the system to remain healthy. Members asked Chris Loft, TCEQ, to provide discharge data from permitted wastewater plants in both the U.S. and Mexico.

Seagrass Presentation (Pulich): Dr. Warren Pulich gave a powerpoint presentation on seagrass distribution in the Lower Laguna Madre. He discussed how the distribution and the acreage of seagrass beds have varied historically. He presented some recent color photography taken in 2009 by TNRI that will be used to generate a map showing the more recent seagrass distribution. He discussed how the distribution map from the recent data will be used with the salinity contour maps from the TXBlend model to see how the salinity gradient produced under different flow conditions would potentially affect the seagrass beds particularly at the mouth of the Arroyo. He discussed the potential benefit of a study on the stable nitrogen isotope found in the sea grass and members considered whether the additional \$5,000 could be used for lab analysis of any samples collected. Ms. Guthrie, TWDB, verified that use of these funds would need a contract and TWDB Board approval. The next Board meeting is scheduled for July 20, 2011 and the groups needed to provide her the pertinent information ASAP. She will verify when the analysis can be completed.

Organize/Interpret Fisheries for LLM, Arroyo and Rio Grande (Edwards)
Mr. Bob Edwards gave an update on the work done on organizing and interpreting the fisheries of the Lower Laguna Madre, Arroyo Colorado, and Rio Grande based on the TPWD coastal fisheries data. He gave a powerpoint presentation showing the areas where data is available, and created a table showing the dominant species defined as

those species that made up at least 1% of the catch in each study area. He presented graphs for the dominant species showing populations and then compared the species diversity with flow for the Lower Laguna Madre. Mr. Edwards concluded that the Lower Laguna Madre appeared to be ecologically healthy according to species diversity.

Review Arroyo Water Quality and Fish Kill Data for Rio Grande and Arroyo (Buzan): Vice Chair Dave Buzan talked about his request for fish kill data from the TPWD to provide information on which bodies of water are having problems and discussed how the data may be used to see the effect of changes in the volume of flow on the environment. The data was forwarded to members prior to the meeting.

Review Literature on Salinity/Nutrient Effects on Seagrass (DeYoe): Chair DeYoe presented an update on his review of the water quality data from TPWD and TCEQ. The data included the hydro data for the coastal fisheries sampling for the period 1975 to 2010 and the fish data for the corresponding sampling. He presented a summary table showing which locations are important to the BBEST review. Chair DeYoe will complete a more detailed review once the group identifies the periods of interest. Chair DeYoe reported on a literature review on salinity and nutrient effects on seagrass. He noted there was ample data available on the high and low salinity levels. He reported one finding of interest: the negative effects of high nutrients were more apparent at higher salinities than lower salinities. He will continue his review once the group determines areas and periods of interest.

Qualitative Summaries – Status Report

- **Resacas (Buzan):** Vice Chair Buzan stated the group had talked about creating quantitative flow regimes for the Rio Grande estuary, Lower Laguna Madre and possibly the Arroyo Colorado and developing narrative descriptions of environmental flow regimes for the Resacas, Bahia Grande and San Martin Lake area. He has done substantial work on the Resacas, and Arroyo Colorado Tidal with less completed on the Rio Grande estuary. He presented a narrative of the Resacas and discussed how determining a sound ecologic environment needs to be based on relationships to flow. Members considered that the Resacas are substantially modified hydrologically, not the same as found historically, need restoration, but still provide an aquatic and riparian habitat in a relatively arid region which are important to protect, and opportunities should be sought to improve those conditions.

Rio Grande Estuary: Members discussed the Rio Grande estuary to determine if it is a sound ecologic environment in the context of its flow regime. Members talked about the different sources of information available including a study completed by Dr. Marin which showed the lower tidal part of the estuary does support an aquatic and riparian habitat different than was present pre-1950s. Members talked about documenting a strategy for this area that would recommend a velocity and/or a discharge rate that would provide enough erosive force to keep the mouth of the river open; and include a seasonal component to support freshwater and estuary fish species present. Dr. Buzan noted the group needs to decide how to relate the different flow components to the ecological health of that reach.

Dr. Buzan listed the following ideas discussed by members and noted that members need to choose which methods to pursue so additional studies can be completed:

- Using the flow regime to maintain the salt water wedge at particular location(s);
- Development of regressions between salinity and flow;
- Look at vegetation and use of flow to maintain vegetative communities;
- Keep the mouth of the Rio Grande open.

He also said members need to decide the key ecosystem components to focus on for the flow regime development. Members agreed on a simple model of the study area on which future work can be based

Friday July 1, 2011 Session II

Rio Grande Watermaster Program Overview Presentation (Yarrito)

Mr. Erasmo Yarrito, Rio Grande Watermaster, presented an overview of the Rio Grande Watermaster program. He described the responsibilities of the watermaster and the area under his jurisdiction. He presented a map of the Nueces-Rio Grande Coastal Basin showing the existing water rights on the Arroyo Colorado and the North Floodway none of which are presently utilized. He also presented a map showing the basins in Mexico and their contribution to the Rio Grande. Mr. Yarrito talked about the 1944 US-Mexico Water Treaty and ownership allotted to each country. He responded to members' question on water management and Mexico's contribution to the flow in the Rio Grande.

Mexico Water Programs (Miranda, TWDB)

Roger Miranda, TWDB, presented a powerpoint presentation on Mexican Water Law and Environmental Flows in the Lower Rio Grande Below Falcon Reservoir. He talked about the Mexican Water Law and how it relates to the BBEST charge. He discussed the 1992 Mexico National Water Law and talked about the organizations created and their purposes. He talked about the environmental flow policies of Mexico and how they are applied. He suggested some coordination or information exchange with representatives of Mexico.

Arroyo Colorado (Buzan)

Vice Chair Buzan discussed the recent work on the Arroyo Colorado tidal and whether members wanted a qualitative or quantitative review the Arroyo Colorado. He talked about the literature review completed and asked members to consider whether the Arroyo is a sound ecological environment in the context of its flow regime. He talked about the limited sources of water for this area and what restrictions may appropriate for the recommendation for this area. He suggested that the environment would be healthier with a more natural flow regime.

Member Assignments

- Update on the Water Budget for Rio Grande (Marin and Benavides)

- TxBlend model update (TWDB, TPWD)
- Update seagrass distribution map for LLM (Pulich)
- Organize/interpret fisheries for LLM, Arroyo and Rio Grande (Edwards)
- Availability of biological data from the Harrison and Rogers (2009) Rio Grande Study (Horan)
- Review Arroyo WQ study and fish kill data for Rio Grande and Arroyo (Buzan)
- IBWC conference call (Horan to coordinate with Benavidez)
- Begin qualitative summaries for
 - o resacas (Buzan),
 - o San Martin Lake (Buzan and DeYoe)
 - o Bahia Grande (DeYoe)
 - o And Above tidal Rio Grande
 - fish-Edwards,
 - riparian vegetation (Pulich)
 - water quality (DeYoe)

Next Meetings

The next meeting is scheduled for Wednesday and Thursday, July 20-21, 2011 at 9:00 a.m. at University of Texas-Pan Am, Texas. The following meeting is scheduled for Tuesday/Wednesday, August 16 and 17, 2011 at 9:00 a.m. at University of Texas-Brownsville, Texas

Adjourn