

Meeting Report
North Bosque TMDL Refinement Advisory Group Meeting
December 5, 2003

Stakeholders Present: Joe Cude for John Moser (City of Stephenville), Ricky Garrett (City of Waco), Jerry Golden (City of Clifton), Kyle Headley (BRA), Allan Jones (TWRI), Richard Kiesling (USGS), Tony Provin (TAMUS), Pat Radloff (TPWD), Jeff Tripe (USACE-Ft. Worth), David Villarreal for Richard Eyster (TDA), Kevin Wagner replacing Donna Long (TSSWCB), Joseph White (Baylor)

Stakeholders Absent: Norman Bade (NRCS), Shawneille Campbell (USEPA), John Cowan (DFA), Norman Johns (NWF), Ned Meister (TFB), Justin Taylor (Sierra Club)

Support Team Present: Larry Hauck (TIAER), Heather Jones (TIAER), Anne McFarland (TIAER), Ali Saleh (TIAER), George Ward (CRWR)

Others Present: Clyde Bohmfalk (TCEQ), David Bowersock (USACE-Ft. Worth), Jay Bragg (TSSWCB), Tom Conry (City of Waco), Paul Jensen (PBS&J), Larry Koenig (TCEQ), James Miertschin (James Miertschin & Assoc.), Roger Miranda (TCEQ), Pete Schouten (dairy producer; TAD President), Bruce Wiland (Wiland Consulting)

Materials Distributed:

The following two handouts were provided at the meeting: a map showing the suggested new delineated subbasins for the North Bosque River watersheds and the schedule of activities for refinement and application of the North Bosque River TMDL modeling system.

Welcome & Introduction

The second meeting of the North Bosque River TMDL Model Refinement Project Advisory Group was held on Friday, December 5, 2003 from 10:00 AM until 12:00 PM in Room 1.138 of the Commons Center, J.J. Pickle Research Center, The University of Texas at Austin. Larry Hauck (TIAER) and Larry Koenig (TCEQ) introduced the meeting and self-introductions were made.

Old Business

The group approved the minutes from the last meeting

Meeting Overview

Ali Saleh (TIAER) gave an overview of the land use/land cover GIS layers that will be used in the model. A computer display of the dairy waste application fields (WAFs) and the land use was presented to the group. Dr. Saleh explained that the layer contains both active and historical WAFs. Dr. Ali also informed the group that the STATSGO soil database will be replaced with the more detailed SURRGO database for use in the modeling. He graphically displayed the differences in resolution between the two

databases and explained that the source of the SURRGO data is NRCS county level soil surveys.

The land use and soil presentations resulted in questions from Jay Bragg (TSSWCB), Dave Bowersock (USACE), Tom Conry (City of Waco), and James Miertschin (James Miertschin & Assoc.), which were addressed by the Support Team. In summary the responses follow:

- Because of limitations in existing dairy WAF soil-nutrient data sets and inconsistencies in the reporting of the locations of some soil samples, it is unlikely that initial soil nutrient concentrations can be specified on a field-by-field basis in the modeling system.
- The land use/land cover GIS layer represents conditions of dairy WAFs based on available data from 1999/2000 whereas all other land uses and covers were developed from a Landsat image from 1996; an inconsistency necessitated by data availability. Because the majority of intensive monitoring of water quality and streamflow data to be used in validation of the modeling system was collected in from 1993 through 2000, this combined GIS layer is the best available information to reflect land use and cover in the modeling system for use in the validation process.
- The modeling system will be validated (separately calibrated and verified) to available water quality and streamflow data collected within the watershed.
- Many initial conditions and input data in the modeling system will need to be estimated, including soil nutrients. At the suggestion of the Advisory Group, TIAER will document assumptions in the data input to the modeling system.
- The modeling system simulates different agricultural management systems (for example, fertilization rates and timing, crop harvesting, tillage practices, etc.) and these systems will be obtained from the NRCS and the dairy industry.
- Soils nutrient concentrations for the land uses and land covers in the watershed, not just for WAFs, will come from such sources as the SURRGO soils database, dairy self-reporting data on file with TCEQ, and other sources that have soils databases.

Dr. Anne McFarland (TIAER) presented an overview of the data acquisition activities that have been completed to date. The quality assurance project plan (QAPP) has been approved by TCEQ, was sent to EPA in late October, and is awaiting approval from EPA. Until the QAPP is approved no direct field survey and monitoring activities can occur. Non-direct data, sometimes referred to as secondary or existing data, do not require QAPP approval prior to collection, and such data are being collected and reviewed for project purposes. To date most of the non-direct data have been obtained from TCEQ files and are to assist in defining soil nutrients on WAFs, dairy lagoon systems, and manure and lagoon nutrient concentrations. Non-direct data collection has occurred to quantify the physical characteristics of the PL-566 reservoirs. Finally, efforts were begun to review the TCEQ files for the municipal wastewater treatment plants in the watershed. Further details on non-direct data collection efforts are summarized in “Data Structure Report for Non-Direct Data Collection to Support North Bosque River Model Refinement.” This report was made available to the group prior to the meeting as an e-

mail attachment. The assistance of the advisory group was solicited for sources of additional, existing data sources.

This presentation resulted in a series of questions and comments from Mr. Garrett, Jerry Golden (City of Clifton), Paul Jensen (PBS&J), Tony Provin (Texas Cooperative Extension), and Pete Schouten (dairy operator). Summaries of responses from the project team follow:

- The project studies of in-stream sediment-water phosphorus interactions will focus on the upper two inches of sediment, and initial reconnaissance indicates limited sediment accumulations in most locations.
- An analysis will be performed of existing flow and water quality data collected for two PL-566 reservoirs. Inflow and outflow quantity and nutrient quality were monitored for approximately a five-year period in the 1990s, as well as water quality in the reservoir.
- From a separate funding source, edge-of-field monitoring is occurring on three adjacent plots to quantify runoff characteristics from Coastal bermudagrass receiving commercial fertilizers, which is an agricultural land use for which there are limited water quality data in our watershed. This information will complement existing edge-of-field data collection efforts that have occurred on several plots on dairy WAFs conducted in the Bosque-Leon watersheds over the course of the last 10 years.
- Characterization of urban runoff in the North Bosque River watershed occurs through one station on Methodist Branch in Stephenville, which has been operated approximately 10 years.
- Large variability in lagoon water quality in response to rainfall-runoff events presents a challenge as authorized and unauthorized lagoon discharges are included in the modeling system.
- Because of the differences of test methods used and laboratories performing extractable phosphorus on soils, a means of normalization of data needs to be attempted. Dr. Provin volunteered to assist in this effort.
- Third party fields represent a challenge to the modeling effort, since information on these fields is essentially nonexistent.
- An extended discussion occurred regarding responsibilities for dairy lagoons when the enterprise is no longer in operation. Several attendees had pertinent information from their experiences, but no one knew the actual regulations governing such situations.

Dr. Ali Saleh (TIAER) presented the proposed SWAT subbasin delineation with refinements to include greater spatial resolution (i.e., smaller subbasin areas) to allow inclusion of subbasin outlets at monitoring stations, each of the 40 PL-566 reservoirs, and below catchments with high concentrations of dairy operations.

Mr. Golden, Allan Jones (TAMUS), Dr. Provin, and Joseph White (Baylor) provided several questions regarding facets of the refined subbasin delineation and modeling system functionality. Summaries of responses follow:

- Soil moisture conditions in the modeling system are simulated through rainfall input and calculated estimates of evapotranspiration within the modeling system.
- Rainfall records exist in the North Bosque River watershed from approximately 14 stations operated by TIAER and additional National Weather Service observation stations.
- The calibration and validation processes for the modeling system will be used to address concerns regarding the effects of different sizes of subbasins on modeling system results. Subbasins range in size from relatively large in the southeast portion of the watershed to progressively smaller in the northwest portion of the watershed.
- Advisory group members and other interested parties will be provided a version of the subbasin delineation, which can be viewed in a manner allowing “zooming” on the image.

Dr. George Ward (CRWR) provided an overview of the methodology behind and the findings of his investigation of the hydroclimatological responses in the watershed as determined through temporal investigations of streamflow at key gauging stations. He reported three dominating categories of flow: dynamic (20 %), slowly declining (20 %), and quasi-steady (50 %). The dynamic regime is entirely the sharp rise and fast recession associated with thunderstorm hydrographs. Various questions were addressed concerning the methodology and how the analyses were conducted.

Dr. Hauck concluded the meeting with a presentation of the overall project time line and stated that the project ending date is August 2006.

The following items were mentioned:

- Provide meeting attendees the executable and necessary input files to operate the hydroclimatological model, HYDRAWL, developed by Dr. Ward
- Provide meeting attendees the interim report of Dr. Ward’s on the hydroclimatological analysis
- Provide meeting attendees an electronic version of the watershed subbasin delineation that can be viewed with a zoom feature in an appropriate software package
- Provide meeting attendees materials on the SWAT model [see <http://www.brc.tamus.edu/swat/swat2000doc.html>]
- Include as a future agenda item a presentation on the SWAT model

Adjourn

The meeting was adjourned at approximately 12:00 PM.