



Brazos River
Authority



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North Bosque River TMDL Refinement Project

In our society, we have become more and more dependent on the use of computers to model everything from average life expectancy to stream flows. Computer models are not exact and they cannot predict what will happen 100% of the time, but they can predict what might happen to a system if certain inputs or parameters are changed. One advantage of using models is that you can apply several different input or parameter changes and see which ones have the most effect on the

target goals. This could lead to more effective use of resources.

The development of the two Total Maximum Daily Loads (TMDLs) for the North Bosque River was based in part on the applications of the Soil and Water Assessment Tool (SWAT) computer model, which is designed for assessing large-scale agricultural management and water quality issues, and is supported by the U.S. Department of Agriculture – Agriculture Research

Service. Application of SWAT model in the North Bosque River watershed is a useful tool to evaluate how the receiving stream is affected by land use and management practices. For SWAT to be an effective tool, the model has to be calibrated and periodically refined to accommodate new ideas and technologies.

To incorporate ideas on model improvements such as; spatial resolution and definition of subbasins, inclusion of the

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Animal Waste to Alcohol

The Brazos River Authority (BRA) has been meeting with a joint venture called Novahol Brazos River, consisting of Norcon International, Inc. and Nova Fuels, concerning the construction of a processing plant near Stephenville. The



(Local dairies provide the waste)

plant would take waste material and convert it into a usable energy source. The company has proposed using dairy cow manure and wood waste as feed to the plant, and converting them to a fuel alcohol called Novahol through a gasifica-

tion/separation process. Novahol will be used as a gasoline additive to replace Methyl Tertiary Butyl Ether (MTBE), which is being phased out of production due to environmental concerns. The byproduct of this process is a nutrient enriched ash that has several potential markets including fertilizers and concrete building blocks.



Either market will eliminate the phosphorus as a threat to water quality in the North Bosque River watershed.

In an effort to make the proposed plant a reality, there are several sets of key players including dairy producers, BRA, Novahol Brazos River, railroad officials, city and county officials, trucking representatives, and

others that will need to work closely and cooperatively to plan and coordinate the many logistical details that still need to be ironed out.

The proposed Novahol Brazos River project could



(Waste is converted to a usable resource)

prove to be a long-term, economically viable outlet for a large percentage of the dairy manure generated in the Erath County area. Project funding decisions may be available by November.

North Bosque River TMDL Refinement Project

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40 PL-566 flood control reservoirs, contributions from unauthorized discharges from dairies lagoons and municipal wastewater treatment plants, and estimating the assimilation capacity of the watershed, a project was developed to refine the TMDL modeling to incorporate new ideas and technologies.

On September 28, 2004, the North Bosque River TMDL Refinement Project Advisory Group met at the J.J. Pickle Research Campus in Austin. This advisory group discussed the tasks necessary to refine the North Bosque River TMDL Model and the progress that has been made to date. The main entity involved in the SWAT refinement is the Texas Institute for Applied Environmental Research (TIAER) with assistance from the Center for Research in Water Resources (CRWR). The funding for the refinement of the SWAT model is provided by, EPA Section 319 (h) and Section 106 Grants,

administered by the Texas Commission on Environmental Quality (TCEQ). There were 19-20 subtasks described during the meeting that TIAER will be incorporating into the refinement efforts of the model. One of the key components of the refinement is further delineation of the subwatersheds to increase the spatial sensitivity of the SWAT model. During the initial TMDL development, the SWAT model divided the North Bosque River watershed into twenty subwatersheds. Each subwatershed is defined by parameters such as types of crops, timing of irrigations, fertilizer applications, soil types and topography, weather conditions, water quality, and stream flow data. When the model is simulated using those parameters it calculates the amount of water and constituents (i.e. particulate and soluble forms of phosphorus, sediment, and pesticides) leaving the subwatershed. The refined model will divide the North Bosque watershed into 92 subwater-

sheds. The additional subwatersheds will include specific dairy WAFs, specification of liquid or solid application, range land, wooded, urban, and pasture and row crops. Once the additional subwatersheds are applied to the model, TIAER will perform sensitivity testing on the model to determine the improvements to the SWAT model.

The ultimate goal is to refine the TMDL modeling, to more accurately understand the watershed and be able to implement plans to efficiently reduce phosphorus loading. Modeling environments such as the North Bosque River watershed, with its variety of point and nonpoint sources of pollution, can be very complex; however, the use of models gives decision-makers a good understanding of the current and future conditions and allows them to evaluate different strategies that can potentially alleviate problems.

Website update:

BRA has updated the project website with some of the information from the recent stakeholders meeting. Check it out at www.brazos.org under the Basin Projects tab.

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This newsletter is produced for the benefit of the North Bosque River Watershed Stakeholders. Its purpose is to inform the readers and to highlight positive activities taking place within the watershed. If you're involved in a project in the watershed or hosting an event related to pollution prevention or water quality enhancement and you'd like to see it in a future issue of this newsletter, please contact Chris Higgins (chiggins@brazos.org) or Kyle Headley (kheadley@brazos.org) by email or by phone at 254-761-3167.

THESE NEWSLETTERS, ALONG WITH OTHER ASPECTS OF THE PROJECT, ARE NOW LOCATED ON THE AUTHORITY'S WEBSITE (WWW.BRAZOS.ORG) UNDER THE TAB LABELED "BASIN PROJECTS"

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