

GROUNDWATER RESEARCH SUBCOMMITTEE MEETING RECORD

TIME AND DATE:

9:00 AM, Wednesday October 29, 2008

LOCATION:

Texas Commission on Environmental Quality Campus Building F, Room 2210, 12100 Park 35 Circle, Austin, TX 78753

PURPOSE OF MEETING:

First quarter regular business meeting

AGENCIES/ENTITIES REPRESENTED:

Bureau of Economic Geology [BEG]
Steve Walden Consulting [SWC]
Texas Commission on Environmental Quality [TCEQ]
Texas Department of Agriculture [TDA]

ATTENDEES:

Bridget Scanlon	BEG, Co-chair of the GW Research Subcommittee of the TGPC
Cary Betz	TCEQ, Chairman of TGPC
Richard Eyster	TDA
Kathy McCormack	TCEQ
Joseph L. Peters	TCEQ
Steve Walden	SWC

MEETING SUMMARY:

Call to Order and Introductions

Dr. Bridget Scanlon called the meeting to order at about 9:08 AM. Her first order of business was to have everyone introduce themselves. [There was a very low turnout for this meeting. One thing contributing to the low turnout was that the TSSWCB was having their annual 2-day Board meeting.]

Discussion of Sources of Funding and Current Calls for Proposals

Dr. Scanlon started the discussion with the problem of non point source contamination of groundwater and the joint work being done by TDA, TCEQ, and TSSWCB with E. coli for the development TMDLs. Mr. Eyster continued by stating that TCEQ and TSSWCB with the various river authorities are doing considerable work classifying stream segments in Texas. According to current standards – which are in the process of being revised by TCEQ -- it has been found thus far that there are from 300 to 400 stream segments in Texas impaired by bacteria and thus do not meet the current contact recreation standards (126 colony forming units per ml.).

Dr. Scanlon continued by explaining how this can affect groundwater since certain groundwaters are under the influence of surface water (GUIs). Mr. Eyster went on to inform us that in many rural areas wildlife is the primary source of non point contamination. In other areas it's a mixture of livestock as well as wildlife. And in some areas it's septic tanks or leaking collection systems. In some cases the problems could be ameliorated by upgrading the septic systems or collection systems.

Dr. Scanlon brought up the question as to whether emerging contaminants were being looked into for TMDLs, such as caffeine, etc. Mr. Eyster responded in the negative, that emerging contaminants as such are not targeted, but those contaminants that degrade a stream to the point that it doesn't meet TCEQ standards. Some common constituents that fall outside parameter standards include dissolved oxygen, mercury, TSS, nutrients, and bacteria. Mr. Eyster continued that as far as he knows neither TCEQ nor EPA is looking at emerging contaminants as a problem yet. For agriculture, fertilizer and manure are the issues. In the individual and general permits for CAFOs there has to be a groundwater protection review. Usually land application of manure or wastewater is not a problem if done at agronomic rates. All permits for such operations require a nutrient management plan that should ensure that there will not be an over-application of nutrients.

Dr. Scanlon explained that a great deal of the work that the BEG is doing on nitrate in groundwater suggests that much of the nitrate comes from the initial pulse during cultivation. In the Seymour 80% of the wells exceed the MCL for nitrate. Some researchers believe that the Seymour was actually created by cultivation, which increased the recharge rate.

Dr. Scanlon brought up the importance of knowing the actual costs of irrigation. It would be important to do an economic analysis which would seek to determine total costs, such as costs of dams, pumpage, etc., and compare it to the increase in income due to increased yield.

Dr. Scanlon, in reference to a possible GUI project which she had discussed with Mr. Walden previously, announced that she had set up a meeting with Dr. Mary Jo Kirisits, Civil Engineering Dept., University of Texas, who has bacterial expertise, for next Thursday, to see what sort of laboratory facilities and capabilities she could provide. Since the River Authorities are doing a lot of monitoring through the Clean Rivers Program (CRP) perhaps we can get a couple of the more proactive ones, such as the Colorado River Authority and the Brazos River Authority, involved. We can also maybe get Dr. George D. Di Giovanni, Professor of Environmental Microbiology at Texas AgriLife Research Center in El Paso to collaborate as well. He has expertise in the protection of water resources from microbiological contamination.

The GUI project would include the consideration of land application. Dr. Scanlon indicated that she had asked Mr. John Meyer of the Water Supply Division, TCEQ for a GIS coverage of land application areas in Texas. Mr. Walden mentioned that in the Bosque River Basin manure was being trucked out of the watershed and applied to third party fields not close to any water body.

Municipal sludge is commonly applied to land. Class A sludge is sterilized sludge and Class B unsterilized. Austin calls their class A sludge Dillo Dirt which they market in bags or by the truck load. Austin also has contracts with some land owners for the application of class B sludge. Dr. Scanlon asked Mr. Eyster whether TDA was looking into the area of biofuels. He responded that some of TDA's marketing people were looking at this. TDA in general is in favor of biofuels, but

Mr. Eyster was not aware of what specific types of biofuels may be preferred by TDA. Dr. Scanlon indicated that Texas A&M had recently obtained a two to four million dollar grant from the state to work on biofuels. Some algae produce more lipids and are therefore more suited for biofuel production. Efficient ways of separating the lipids need to be developed. This is a bioengineering problem.

Dr. Scanlon mentioned that recently in Hockley County 10,000 acres were converted from range land to corn, presumably for biofuel production. Mr. Eyster said, that similar vein, he had heard that a lot of acreage around Hutto, Texas was being converted from cotton to corn production.

Mr. Eyster informed the group that the headwater springs of Gillian Creek in Plugerville, Texas was testing positive for bacteria. At this time the source of the bacteria is not known. Dr. Scanlon expressed the idea that it would be interesting to do some dye studies on these springs and also obtain the SWAP information for the area from the Public Drinking Water Program of TCEQ. Mr. Eyster informed us that work on the bacteria problem will be done as part of a TMDL implementation plan. The TMDL for the stream segment has been approved by TCEQ (However, perhaps not yet by TSSWCB). They are going to study the springs to determine whether the pathogens are of human origin, etc.

Mr. Walden at this point elaborated on an idea of funding a project with the drinking water people to review, first of all, their decision tree on how they are identifying vulnerable wells for both the larger *cryptosporidium/giardia* all the way down to other microbiological contaminants. An assessment will be made on how they are evaluating water for these organisms and how other states are doing it. The idea is to compare all the methods and techniques that could be used. Secondly, the project would have microbiologists actually do this type of work, looking for viruses, bacteria, and *cryptosporidium/giardia* in public and private wells. Today we have available several cost effective and easy to run methods of determining coliform bacteria, but there is still a lot we don't know about actually evaluating the microbiological status of water. Dr. Scanlon indicated that they had written up a couple of one-page proposals for these studies: one for the Edwards Aquifer and another for alluvial aquifers. Ms. Laurie Curra in the Non Point Source Group of TCEQ is evaluating the proposals.

Mr. Eyster went on to explain how at TDA they stress, at public presentations, etc., the importance of being careful around water wells, whether they be irrigation wells or domestic wells. They should be up gradient of any septic system and they should not be located where livestock can roam around them. For CAFOs buffer zones are required around wells, even around irrigation wells. Manure is not to be applied within the buffer zones.

Dr. Scanlon informed us that BEG was invited to give a presentation to a meeting of Gulf Coast water well drillers to provide training and an opportunity to earn CEU credits. The subject would be BEG's Gulf Coast Arsenic Project. The presentation would include general information on arsenic, the geologic distribution of arsenic, and about the use of BEG's multilevel sampler to look at the stratification of arsenic in the aquifer. A benefit of giving the presentation would be the possibility of finding cooperators to volunteer wells for the installation of the multilevel sampler to study the stratification of arsenic. BEG will be getting a new contract to continue the Gulf coast Arsenic Project south of Houston. If it is desired BEG is willing to give a short presentation for the groundwater group at TCEQ on the planned work.

Dr. Scanlon also mentioned the possibility of offering some short courses on arsenic in groundwater for TCEQ personnel. Mr. Betz responded that the Water Quality Division does have a number of geologists that periodically need to earn some CEUs to keep their registrations current. It was also mentioned that the Field Operations Support Division of TCEQ has had a large turnover and thus a relatively large need of these kind of short courses. Dr. Scanlon offered to send Mr. Betz a list of the short courses offered last year for consideration. Mr. Betz responded that he would forward the information to the Continuing Education Coordinator of the Water Supply Division.

Dr. Scanlon reiterated that BEG was continuing with the Nitrate study in the Seymour Aquifer, supported through TWDB funding. A lot of the historical reports are suggesting that the aquifer was actually created when they started to cultivate the land. The Southern High Plains and the Central High Plains see an initial input of nitrate related to the beginning of cultivation. This may explain 60% to 70% of the nitrate in the groundwater of the Southern High Plains. It would be good to do more work on this in cooperation with the Texas A&M Experiment Station at Bushland where they have both rangeland and cropland areas, where a lot of sampling could be performed, and where input could be obtained from agricultural scientists.

Dr. Scanlon also threw out the possibility of doing some study on fluorides in groundwater, if there would be some interest from TCEQ. The World Health Organization limit is 1.5 mg/L. At that level, in the Texas High Plains, 80% of the wells would exceed the standard.

Mr. Walden brought up the subject of unregulated contaminant monitoring. EPA, every three years, puts out a new set of constituents for which they want the public water systems to monitor. The purpose is to determine what constituents might need to be regulated in the future. We need to contact Mr. Mike Howell in the Drinking Water Group of TCEQ to see what was found by the last three-year cycle of monitoring. EPA is about to come out with a new set of constituents for the next three-year cycle.

Dr. Scanlon brought up perchlorate. Mr. Walden responded that perchlorate was on a previous unregulated contaminant constituent list, which is how its presence in some areas was discovered. However, EPA has recently determined that, considering the combination of occurrence of perchlorate and its health effects, EPA did not need to regulate it as a drinking water contaminant. However, states can regulate it if they want. Texas does have an action level for perchlorate.

Dr. Scanlon went on to explain that BEG has done a lot of sampling in the southern High Plains of Lubbock. This is an area where a lot of perchlorate was found. They are now analyzing those samples for perchlorate to see if there may be a build-up of perchlorate under irrigated areas. Cotton leaves from the area will also be analyzed to see if that may be a pathway.

Dr. Scanlon went on to the subject of desalination. She said that Dr. Jean-Philippe Nicot of BEG had asked her to bring up the desalination issue at our meeting to determine if there were any new directions or projects in this subject area. He needs this information for a talk that he will be giving at El Paso next week at a desalination conference. Mr. Betz indicated that a rule was finalized last July that permits any potable water treatment residuals to be disposed under permit by rule. Also, he informed us that the TWDB has a Legislative Appropriation Request (LAR)

for characterizing brackish water resources. Another LAR, in the form of a general statement, states that, because of the desalination issues coming up, we need to make sure that existing regulatory agency rules, like the TCEQ's, were protective of brackish and saline aquifers. At present they pretty much are protected except should we become interested in desalinating waters with greater than 10.000 mg/L TDS.

Dr. Scanlon asked if the costs of desalination might have increased with the recent increase in energy costs. Mr. Walden responded that, with the use of improved membranes and the introduction of other efficiencies, desalination has actually decreased in cost.

The meeting adjourned at 10:13 AM.

Minutes prepared by Joseph L. Peters, January 14, 2009

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