

GROUNDWATER RESEARCH SUBCOMMITTEE MEETING RECORD

TIME AND DATE:

9:00 AM, Wednesday, April 17, 2013

LOCATION:

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

PURPOSE OF MEETING:

Second semi-annual regular business meeting

AGENCIES/ENTITIES REPRESENTED:

Bureau of Economic Geology [BEG]
Texas Commission on Environmental Quality [TCEQ]
Texas Department of Agriculture [TDA]
Texas Groundwater Protection Committee [TGPC]
Texas State Soil and Water Conservation Board [TSSWCB]
Texas Water Development board [TWDB]
Texas Water Resources Institute [TWRI]

ATTENDEES:

Bridget Scanlon	BEG, Co-chair of the GW Research Subcommittee
Kevin Wagner	TWRI, Co-chair of the GW Research Subcommittee
Alan Cherepon	TCEQ
Richard Egg	TSSWCB
Richard Eyster	TDA
Janie Hopkins	TWDB
Joseph L. Peters	TCEQ
David Villarreal	TDA

MEETING SUMMARY:

Call to Order and Introductions

Dr. Kevin Wagner called the meeting to order at about 9:05 AM. Dr. Scanlon was present as the co-chair of the Subcommittee. Dr. Wagner started the meeting by having everyone introduce themselves, observing that a quorum was present.

Discussion of Modification of the Charge for the GW Research

Subcommittee

Dr. Wagner explained that the Nonpoint Source Task Force (NPSTF) had recommended to the TGPC that specifically the Groundwater Research Subcommittee (GWRS) provide recommendations that would be used as part of the ranking procedure in determining which projects would receive grant funding through Clean Water Act Section 319. To help achieve this, the TGPC added language to the GWRS Charge tasking the Subcommittee with this responsibility. Mr. Egg, who was the chairman of the NPSTF, explained how the GWRS was uniquely qualified to provide recommendations. The GWRS membership present voted unanimously to approve the change in the Charge.

Dr. Wagner went on to ask how the GWRS could best develop its recommendations, adding that they would probably need to be finalized during the April meeting, since TCEQ is preparing their Request for Proposals (RFP) sometime in May or June, and the TSSWCB their RFP sometime in the Fall. Mr. Egg added that he didn't see that this requirement would necessarily be implemented for the coming round of 319 funding, but Dr. Scanlon added that it would be good if it was. Both Mr. Egg and Dr. Scanlon brought up some general groundwater quality topics that would be possibilities for research suggestions. Dr. Scanlon specifically mentioned nitrate contamination, with Mr. Egg elaborating, explaining that there were a number of aquifers in Texas that have elevated nitrates, and a research project could determine such things as which ones have high nitrates naturally and which due to the use of fertilizers. Dr. Scanlon further elaborated that sometimes excessive application of fertilizers isn't the only cause of nitrogen leaching into the groundwater; some of the elevated nitrates can be the result of the indirect effects of agriculture, for instance the induced release of natural occurring nitrogen from the soil, due to the disruptive effects of tillage, which can cause the oxidation of organic nitrate, rendering it mobile. Dr. Scanlon also mentioned the need for obtaining a better knowledge of the physical and biochemical dynamics that come in to play when land applying waste. Very often, for land application projects, monitoring is conducted only down to two feet, and the fate of the nitrogen below this depth remains unknown. Dr. Scanlon also mentioned, as a possible study, the comparison of Texas with other regions of the country, for instance California, which had recently spent several million dollars on projects relating to the leaching of agricultural and other constituents into groundwater, including the development of Best Management Practices (BMPs) to prevent such leaching. She said that it would be interesting to see what we can learn from them and to what extent some of their studies may be applicable in Texas.

Dr. Wagner suggested that Dr. Scanlon, considering all her past experience working with nitrate in groundwater, could give a presentation at our next meeting, outlining the state of the art in this area, and perhaps suggesting research directions that we now need to take. Dr. Scanlon agreed.

The discussion moved to various possible topics for research. Dr. Scanlon brought up the topic of fertilizers. The rise in energy costs has increased the cost of fertilizers

considerably, even manures from confined animal feeding operations, though they can be economical close to their source, can become expensive due to the cost of energy, if they need to be transported any distance to the application site. Mr. Egg mentioned the topic of desalination when used to treat brackish groundwater. Dr. Scanlon agreed, mentioning one possible line of inquiry being the problem of disposing the concentrate, which can be fifty percent of the total cost. Dr. Scanlon went on to mention another project with the Center of Disease Control (CDC) in Atlanta, called Private Well Initiative (PWI), working toward advancing the knowledge that the rural population has about their groundwater. She also observed that the TWRI program, called Texas Well Owner Network (TWON), seemed to be a very similar type of initiative. Dr. Wagner gave Dr. Diane Boellstorff as a contact for getting information on TWON and mentioned that it was funded under 319. Dr. Scanlon added that Dr. Boellstorff would be a good person to contact for suggestions as to what further program needs there might be that have the same type of goals as the PWI and TWON programs, one possibility being the preparation of the rural population as to what to expect from any fracking operations carried out in their area. Dr. Scanlon moved the discussion to another project of which she had become aware, the gathering of background groundwater quality data, data that would be useful in determining if some future fracking project had somehow contaminated the groundwater. Dr. Wagner was familiar with the proposed project, explaining that it would not involve collecting new data but would be aimed at mining various existing groundwater databases, adding that he didn't think it had gotten funded. Dr. Scanlon went on to mention a technical paper, being written at the University of Texas at Arlington, giving the results of a study involving the analysis of about a hundred samples, taken from wells in the Barnett Shale area, an area where there has been considerable fracking; and she mentioned some Total Petroleum Hydrocarbon (TPH) data that Ms. Janie Hopkins had sent her, from analyses of groundwater samples taken in the Wintergarden area. Dr. Scanlon proposed that this would be a possible 319 project, compiling this type of data, putting it into a form that would be useful for both landowners and the oil and gas industry, and making it available on the TWDB webpage, so that it would be readily available. She also mentioned the FracFocus Chemical Disclosure Registry (<http://fracfocus.org/>) that provides information on the chemicals used for fracking. Mr. Cherepon reminded everyone that the use of surface casing for oil and gas wells was not always required and that there probably were a number of instances of groundwater contamination before surface casing was legally required. He cited one example, the Granger Well, where it was common knowledge that the well was contaminated during an earlier era before surface casing. However, Dr. Scanlon countered that there are examples where there was considerable older production, but where the local groundwater remained uncontaminated, such as in the Barnett Shale area. Mr. Cherepon suggested that it would be possible to use a screening tool such as a TPH field analysis kit that could provide an economical and easy way of testing well water to determine possible contamination from oil and gas development and production. Mr. Cherepon mentioned an American Association of Petroleum Geologists (AAPG) Workshop that had recently been held in Ft. Worth, Texas where there was considerable discussion on the fracking activities around the country and on the need for background hydrocarbon information

for groundwater. Dr. Scanlon asked about the existence of an attendee list for the workshop so that she could pursue some additional information. At this point Dr. Scanlon reiterated that she would be putting together a presentation for the next meeting, informing everyone on all the work she had done previously on nitrate contamination of groundwater, suggesting research directions that still remain unexplored, and including possible study subjects compatible with the purposes of PWI and TWON. Dr. Wagner added that we probably should work on identifying and listing research needs and prioritizing them since it's been a while since the Subcommittee has done that, since there has been considerable change in the state since it was last done. He reminded the Subcommittee that under the expected results outlined in the charge, listed first is the requirement that the Subcommittee provide input to the GWPC on groundwater research needs. Dr. Wagner suggested that the process begin either by immediately going around the table, asking the members present what they think should be on the research needs list, or soon after the meeting, soliciting research needs by email, and then finalizing the process at the next meeting. Dr. Scanlon urged that the first option be followed, asking Dr. Villarreal if he would like to go first.

Dr. Villarreal started by explaining that TDA had long been alerted to certain issues concerning groundwater quality. Mentioning that fracking had probably been the main issue, but, considering that that subject had already been covered in the meeting, he went on to the issue of longevity of microbes in groundwater -- viruses, bacteria, and protozoan cysts -- introduced into groundwater through activities such as manure applications. In some places this can be of particular concern, such as the Edwards Aquifer, where there could easily be an impact on endangered species. Another research subject, he mentioned, was the presence, transport, and persistence of pharmaceutical products in groundwater. Pesticides have long been of concern, but there has been a growing recent concern in pharmaceutical contamination. Pharmaceuticals can be introduced through the application of manure, just as the microbes, and can impact rural well owners and endangered species, similarly. The final subject he mentioned, always of interest to TDA, is brush control, for the purpose of enhancing groundwater recharge, especially from the standpoint of economics, adding that this subject is of particular interest to the Texas State Soil and Water Conservation Board (TSSWCB). Dr. Scanlon commented approvingly on the items that Dr. Villarreal listed, specifically mentioning that a couple of them involve endangered species, a subject which seems to be of increasing concern. Mr. Cherepon asked if there had been any problems caused by water levels dropping due to continued pumpage of groundwater for irrigation, thereby increasing water salinity, which in turn can result in an excessive build-up of salinity in the soil. Dr. Villarreal responded that he had heard of this problem arising now and again, but didn't think that the problem is common enough to be a primary concern. Mr. Egg commented that this type of salinity build-up is common in the Rio Grande Valley, but the problem there is from the application of surface water. Mr. Cherepon asked if there is a potential for this type problem in the Panhandle, Dr. Scanlon responding that proper irrigation management would include applying enough water to flus the root zone of excessive salinity build-up.

Dr. Wagner was the next to present some research possibilities that would be of interest to the TWRI. He again mentioned fracking as a research subject of primary interest, but he went on to suggest that it might not be wise to come up with specifics until EPA is finished with its fracking study. He then mentioned aquifer storage and recovery (ASR) as being important, but perhaps the research involved would tend to be rather site specific. Dr. Scanlon mentioned that the Dallas area would be a prime consideration for an ASR project considering that the Trinity Aquifer there has pretty much been emptied, and there was some preliminary negotiation to obtain surface water from Oklahoma, which could be injected into the Trinity. Mr. Egg gave some background on why Oklahoma had this excess surface water supply, it being the result of the construction of a large number of reservoirs, more than what the state really needed, but inspired by a powerful member of Congress enthusiastic about reservoir construction. The Congressman used the argument that Oklahoma had all this surface water that could be captured and sold to Texas. But the people of Oklahoma have more recently had second thoughts about selling off their water. Dr. Scanlon followed with a suggestion that we should probably consult with Mr. Cary Betz (TCEQ), since he has had a special interest in ASR. Dr. Wagner went on to mention desalination as a research topic, with respect to the effects of withdrawing large amounts of brackish groundwater and how this may affect adjoining fresh groundwater aquifers. We need to know what kind of research has been done on this thus far and whether we need to do more. Ms. Hopkins reminded everyone that Mr. John Meyer (TWDB) was working on a brackish water database. Dr. Scanlon mentioned the San Antonio Water System (SAWS) desalination program, where the withdrawal of brackish water from the Edwards could certainly have an effect on the fresh water portion of the Edwards. Dr. Scanlon brought up the problem with the drought which prompted Ms. Hopkins to bring up the very big potential problem for rural well owners, if their well should happen to go dry, emphasizing the few alternatives that they would have, except possibly relying on a close neighbor that may have a deeper well. Putting in cisterns or drilling a deeper well could also be solutions depending on economics. Dr. Villarreal suggested that this could possibly be a research topic, determining what alternatives rural communities might have, should the drought bring them to a crisis situation. The discussion moved on to the problem of surface water being denied to the rice farmers near the coast, while the irrigation of golf courses and other seemingly frivolous uses of water are allowed to continue. This could lead the rice farmers switching, during times of drought, to groundwater. Dr. Scanlon suggested that this could be a form of conjunctive use, the applying of river water as irrigation during periods of abundant river flow, thus helping to recharge the aquifer, and then, during times of drought, using the groundwater from the aquifer. Mr. Egg suggested another topic of possible research, determining which aquifers are most vulnerable to contamination from surface sources. Since the TSSWCB is in the process of updating their Water Quality Management Program, this would be useful information. The focus needs to be on the recharge areas of the aquifers, eliminating DRASTIC as a source of this information, since DRASTIC is not confined or focused on the outcrop areas. Dr. Scanlon suggested that the LBG-Guyton Associates Report on anthropogenic sources of groundwater contamination, which has excellent GIS coverages, would be good starting point for such a study, combining it with recharge data which is available from previous

studies that BEG has done. Ms. Hopkins noted that the availability of these types of databases will be part of what should come under the purview of the Data Management Subcommittee. Mr. Eyster interjected one more research possibility, in which TDA would be interested, concerning a Food and Drug Administration (FDA) proposed rule that would require all irrigators that use groundwater to test their irrigation wells every three months for bacteria. The proposed rule would require irrigation water from surface sources to be tested every week. The rule would also require the development of a written plan, similar to a water quality management plan, for each irrigation site. Among other things, the plan would require a survey of all the surrounding land to look for any foreseeable hazards. Further, this regulation would require the immediate cessation of use of any water which tests positive for E. coli. This would be a tremendous burden on agricultural producers. He went on to ask if this proposed rule may not be just a solution looking for a problem; are there really any irrigation wells causing bacterial contamination problems? Perhaps this could be added to the list of potential research projects, determining if there is any justification for such a burdensome and costly regulation.

Bringing discussion on this agenda item to a close, Dr. Scanlon reiterated that, for our next meeting, she would be preparing a presentation summarizing her experience in doing research on nitrate in groundwater, suggesting research directions that still remain unexplored, and including possible study subjects compatible with the purposes of PWI and TWON. She also repeated her desire that work be initiated on Google Fusion maps showing background groundwater quality that would be useful for giving rural landowners a means of appraising whether activities such as nearby fracking operations had adversely affected their groundwater.

Discussion of Sources of Funding and Current Calls for Proposals

Dr. Scanlon mentioned that the TWDB has had a recent call for research ideas, something they do every year. Mr. Egg mentioned that the Coastal Coordination Council was opening their annual call for proposals later in the month, one of their categories being nonpoint source, but only projects in the coastal areas are eligible to receive their grants.

Discussion of Progress on White Papers

There was no discussion on this agenda item.

Information Exchange

A few future conferences and meetings were mentioned such as the Groundwater Summit in San Antonio, the Region 6 Pesticide Meeting coming up in mid-May, the TCEQ Environmental Trade Fair, and a Texas Groundwater Alliance meeting. It was suggested that more exact information on these and other meetings and conferences

would be available at the afternoon TGPC meeting.

Public Comment

There was no public comment.

Adjournment

The meeting adjourned at 10:14 AM.

Minutes prepared by Joseph L. Peters, October 2, 2013

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