In accordance with Minnesota Statutes Annotated (M.S.A.) 103E.227, and any other applicable statutes, the Board of Managers, Buffalo-Red River Watershed District (BRRWD) held a hearing pertaining to Clay County Ditch (C.D.) No. 39 on Monday, June 4, 2012 at 7:30 PM in the Council Chambers, Moorhead City Hall. BRRWD Managers present included, Gerald Van Amburg, Curtis M. Nelson, Breanna Paradeis Kobiela, Roger Ellefson, and John E. Hanson. Others attending included: Bruce E. Albright, BRRWD Administrator and Houston Engineering, Inc. (H.E.); Erik S. Jones, Project Engineer, H.E.; Xinhua Jia, Assistant Professor, Department of Agricultural and Biosystems Engineering, North Dakota State University (NDSU); Mark Dittrich, Senior Planner, Conservation Drainage, Minnesota Department of Agriculture, (MDA); and landowners: Gerald Zimmerman, Sharry Zimmerman, Ronnie Tang, Carol Schoff, David Kragnes, Donald Hurner, Dale Fischer, Brian Olek, Lois Jensen, Sylvia Kragnes Teigen, Kyle Horntvedt, and Craig Hurner.

BRRWD Chairman Gerald L. Van Amburg called the hearing to order at 7:35 PM. He introduced the BRRWD Board and staff and outlined the reason for this hearing. Albright then addressed the audience asking that members state their names for the record when asking questions. He also stated that tonight’s hearing was being recorded to assist in preparing minutes. Albright gave a background of Clay C.D. No. 39. He stated that NDSU and the MDA are involved with the proposed project to examine the effects of tile drainage, water quality, and erosion control. A grant application was submitted several years ago and funding was received for this research.

One aspect of the project involves experimental sub-irrigation in Sections 31 and 32, Morken Township, Clay County, where Gerald Zimmerman proposes to impound water on Clay C.D. No. 39 for the irrigation use. A year ago, Zimmerman proposed this project but wet conditions prohibited the development. Albright investigated Minnesota Drainage Law 103E.227 which addresses impounding, rerouting, and diverting drainage system waters. He believes this project partners well with the Statutes. The Statute states that a petition must be filed and a hearing held. The BRRWD Board of Managers, the drainage authority for Clay C.D. No. 39, will hear testimony and determine if the project has public value and is not detrimental to the drainage system. Albright stated that the Clay County Board of Commissioners held a redetermination of benefits just prior to the ditch being transferred to the BRRWD. At that time, the ditch was repaired and handles approximately a two to five-year event.

Albright introduced Xinhua Jia, NDSU. She has been the primary researcher on this project and was instrumental in obtaining the grant funding. The BRRWD is listed as a cooperator to the grant and education is part of the mission of the BRRWD.

Petitioner Gerald Zimmerman explained that the project was started in 2010 in the NW¼, Section 31, Morken Township, Clay County. The tile drainage coefficient is 3/8” with 3” tiles at 40’ spacing. Different from other tile systems, this drainage system can be filled from the high end of the field. It
is set up in three different parcels of approximately 34 acres each with three separate manufactured control structures in the northwest corner of each parcel. Zimmerman continued by saying his intention was to eventually tile the adjacent quarter to the east. The same pump, lift station and tank can be used to irrigate this field. Tiling has also been installed in the NE¼, Section 32, in two 75-acre parcels. The proposed pump will be at the quarter line along the north side of the tract. Pumping for the SW¼, Section 32 is also planned. The tiling system has not been used much this year due to lack of rain and insufficient flow. Zimmerman believes the system will work and asks for approval of his petition.

Van Amburg asked for comments from Mark Dittrich, MDA, and Xinhua Jia, NDSU. Dittrich stated that for years water has been allowed to drain and practices are being developed to manage it better. In the Red River Valley, it would probably be best to let the water drain in the winter and hold it in the spring to improve water quality and prevent flooding. On other projects, better yields had been anticipated but this has not been seen consistently. Dittrich said a task force has been formed which includes the Natural Resources Conservation Service (NRCS) and the Board of Water Soil Resources (BWSR). These agencies are cost sharing project expenses.

Xinhua Jia explained how the Zimmerman project developed. She said that instead of draining away the ditch water to the Buffalo River, using it would be beneficial for added moisture during the growing season. She continued by saying drainage management is needed for all of us and the development of good practices is necessary. Sub-irrigation may be one of those components.

Ellefson asked about pumping the water to the high end of the tile system. Zimmerman explained that it is a pressurized system. Water would be pumped out of the ditch to a tank, and then through a buried pipe, and into the upper end of the field. A 10,000-gallon tank will be placed higher than the upper end of the tile. Water will then gravity drain from the tank into the tile line.

Donald Hurner asked whether there were holes around the tile or just at the top of the tile. Zimmerman confirmed the entire pipe was perforated. He also confirmed the size of the tank for Hurner and stated that it is likely as each tile line fills, the water will move to the next line. This is unlike an above ground irrigation system where there is even pressure throughout the entire field.

Dale Fischer asked about the header pipe that is located in the NE¼, Section 32. The tile laterals in this section run north/south. In Section 31, the laterals run east/west. Fischer commented on possible saturation for his adjacent field and Zimmerman said the two quarters would not be irrigated at the same time. Zimmerman continued by saying the initial design was to be supplemental irrigation during August and specifically for sugar beets. If everything had been in place this year, Zimmerman would have started pumping water earlier to aid in germination. Dittrich followed up by saying the tile control structures were already half-full and Zimmerman only needs to add to it to maintain the water supply through the middle of July.

Brian Olek asked Zimmerman if there was enough water to fill the tank from the ditch. Zimmerman felt there was enough water but then there would not likely be any water running downstream in the ditch if he's irrigating. Donald Hurner commented that the ditch has very low flows right now. He also commented on heavy rainfall events and asked whether the sandbags/diking could be removed quickly enough to avoid water breaking out of the ditch and affecting neighboring lands.
Eric Jones, H.E., gave a brief report of the proposed project using an overhead projector. Generally, the ditch in Section 31 is about 1.5 feet lower than when it was repaired in 1985. The bottom of the box culvert on the east end of Section 31 is at elevation 888. In Section 32, the upstream culvert is at elevation 893 with 4 to 5 feet of extra depth in this mile versus the repair gradeline. Jones explained the ditch has a fair amount of slope in the channel. Ditch erosion appears to be less since the box culverts were installed at the section lines versus the old bridges. Hurner said that there is a lot of slumping and erosion in the area of the old bridge. Zimmerman stated the MDA and NDSU are studying solutions for the slumping issues. Albright commented that the channel is in the process of cutting and eroding to the elevation of the Buffalo River. Slumping can be aggravated during dry conditions. Ellefson asked for clarification on the gradeline. Jones explained that from the repaired gradeline to the east culvert there is about 2.5' drop.

David Kragnes asked if there was a possibility of more slumping because of water being held in the ditch. Jones said the way in which the water is released from behind the proposed impoundments might be more of a factor. Kragnes asked if the temporary structures would be removed in the fall and asked the depth of the proposed fill. Zimmerman explained that it needs to be lower than 6' to do the work without a Minnesota Department of Natural Resources (DNR) dam safety permit. Albright added that repair of any damages to the ditch caused by the structure will be at the petitioner’s expense. Albright noted that the BRRWD is a co-partner to the grant, and it would be a Board decision to consider a project contribution to the project.

Albright explained the proposed process of placing the sandbags in the ditch. He added that this is an experiment and the best solutions need to be determined/studied. A permanent impoundment is not cost effective. Craig Hurner stated he approved of the concept and that he had concerns about potential damages, repairs, and costs to the ditch system. Donald Hurner voiced his concern about the use of sandbags and the possibility of overtopping and causing more downstream ditch erosion. Dittrich commented on the use of a geo-textile product and possible configuration of sandbag stacking. Zimmerman spoke about a secondary structure with a pool between the two impoundments, which could possibly help with sediment issues. In Section 32, it is easier to access the ditch bottom. In Section 31, it is much more difficult because the ditch has about a 17' bottom and very steep side slopes with trees.

Ellefson asked about the depth of the ditch where the bags would be placed. Albright confirmed that a DNR permit would be needed at a dam height greater than 6'. Discussion continued about possible breakouts.

Albright stated the purpose of tonight's hearing was to take testimony for the Board to decide whether to grant Zimmerman's request for a BRRWD permit. This is a 3-year demonstration project to see if the impoundments on Clay C.D. No. 39, in Sections 31 and 32 can be installed without affecting the ditch system. Albright also stated the DNR would need to make any determinations regarding water appropriation and permits in that regard. He added that this project is experimental and that the BRRWD would not become involved in water allocation issues should similar requests occur in the future.

Donald Hurner asked about the locations of the ditch plugs and voiced his concerns about the timeliness of sandbag removal. Albright explained the impoundments would be near the quarter lines in Sections 31 and 32, Morken Township. He said the height of the plugs would be set so water does not back up and affect the next upstream culvert. Albright explained that the Board would consider
defining a timeframe for placement and removal of the bags; however, it is important not to limit research. Albright stated the entire project is experimental and educational.

Ronnie Tang commented that he felt it was not necessary to impound the water higher than the current depth of each upstream culvert. He is intrigued by the concept and understands the ditch capacity issues in the event of heavy rain or flooding.

David Kragnes stated his concern about the possibility of degradation of the ditch. He was also concerned about additional slumping and ditch capacity/function impacts resulting from the proposed impoundments. Albright noted that Verna Kragnes called the office today with concerns about water quality, ditch bank vegetation, and possible environmental impacts. Albright explained that cattail spraying already occurs and that slide slopes are not usually sprayed. Ellefson commented that some of erosion might be a consequence of the cattail spraying in the lower sections of the ditch.

Brian Olek asked about saturation levels and the effect on the property he farms in the NW¼, Section 32. Zimmerman addressed the concern by explaining how the control structures will function. Albright shared information from a tiling study by the International Water Institute (IWI). Studies recommend all future pattern tiling systems have an outlet control structure. Also suggested is that pattern tiling may have an effect on increased spring flooding and that other practices may need to be evaluated. Ellefson talked about the IWI study findings that drain tile does not increase crop yields. Ellefson did not agree.

Chairman Van Amburg called for additional questions and comments. He noted that the Board would review the hearing testimony at their 6/11/12 meeting in Barnesville. There being no further questions or testimony from the audience, Chairman Van Amburg thanked the audience and adjourned the hearing at 9:00 PM.

Respectfully Prepared and Submitted by,

John E. Hanson, Secretary