

**PORTAGE COUNTY GROUNDWATER CITIZENS ADVISORY COMMITTEE
CONFERENCE ROOM 5, COUNTY ANNEX
THURSDAY, January 5, 2012 - 7:00 P.M.**

MEETING MINUTES

GROUNDWATER CITIZENS ADVISORY COMMITTEE (GCAC) MEMBERS LISTING:

MUNICIPALITY	MEMBERS NAME	Attendance	MUNICIPALITY	MEMBERS NAME	Attendance
TOWNS:		01/05/12	TOWNS:		01/05/12
Alban	VACANT		Plover	Barb Feltz	Present
Almond	Edward Burns	Present	Plover Alternate	Nancy Lila	Excused
Amherst	Mike Burress	Present	Sharon	Casey Jakubek	Excused
Belmont	Rita Walkowicz	Present	Stockton	Richard Filtz	Present
Buena Vista	John Ruzicka	Present	VILLAGES:		
Buena Vista Alt	Roger Turzinski	Present	Almond	Gary Schultz	Absent
Buena Vista Alt	Lynn Isherwood	Present	Amherst	Mike Hinrichs	Excused
Carson	Fred Copes	Present	Amherst Jcnctn	VACANT	
Dewey	Dennis Meis	Present	Junction City	Peter Mallek	Absent
Dewey Alt	Kathy Girolamo	Excused	Nelsonville	James Walker	Present
Eau Pleine	VACANT		Park Ridge	Paul McGinley	Present
Grant	Mary Kiedrowski	Excused	Park Ridge Alt	Christine Neidlein	Excused
Grant Alt	Scott Provost	Present	Plover	Dave Fritsch	Present
Hull	Tim Zimmerman	Absent	Rosholt	VACANT	
Lanark	Bill McKee	Present	Whiting	Matt Saloun	Excused
Linwood	Garth Frost	Present			
New Hope	VACANT		CITY:		
New Hope Alt	Cathy Derezynski	Absent	Stevens Point	Joel Lemke	Excused
Pine Grove	Wes Meddaugh	Absent			

STAFF PRESENT: Ray Schmidt and Jamie Phillis, Planning and Zoning Department.

OTHERS PRESENT: Barry Jacowski – Portage County Board of Supervisors District 19; Matthew Brown; Kristy SeBlonka – UW-Extension (UWEX); Ken Schroeder – Ag Agent UWEX; Justin Isherwood; Patty Dreier – County Executive; and George Kraft.

1. CALL TO ORDER: The meeting was called to order at 7:00 p.m. by Chair Burns.

2. INTRODUCTION OF NEW MEMBERS: Barb Feltz, Town of Plover, and Nancy Lila will serve as the Town of Plover Alternate. Feltz was welcomed.

3. REVIEW/APPROVAL OF MINUTES OF NOVEMBER 3, 2011: Motion by Walker, second by Ruzicka to approve minutes as presented. Motion carried by voice vote.

4. CORRESPONDENCE: None.

5. BURNS READ THE PUBLIC NOTICE: Members of the public who wish to address the Committee on specific agenda items must register their requests at this time with such comments subject to the reasonable control of the Committee Chair as set forth in Robert's Rules of Order. No one registered to speak.

6. GROUNDWATER PUMPING: EFFECTS ON LAKES AND STREAMS IN THE CENTRAL SANDS (KRAFT)

Kraft stated a study has been completed of the Central Sands water situation. He went through a brief presentation on the subject. Pumping groundwater always lowers groundwater from what it was before. You take water out of the ground, water levels lower, and water is kept from going to streams. Portage County is the largest groundwater pumping area of the State. Between Portage, Waushara, and Adams Counties, approximately 78 billion gallons of water is pumped per year. In the last year or two water levels have been up, and in 2010 Stevens Point had the third largest amount of precipitation on record, 42 ½ inches, which is about 10 inches above average. 2011 will be another big year for precipitation. When we get back to average again, there will be dry lakes and streams. The scientific work is based on observations.

Burns stated one of the wells on his property has water levels that measure the same today as in 1959 when constructed. He asked why the level is not steadily declining, since there have been years of pumping and expansion of wells in the area. Kraft replied there are two reasons, the weather, which makes things go up and down, and pumping, which causes a steady down. 1959 may have been the driest year in the last 100 years and the fact it is equal to the driest year in the last 100 is not very good. Wells in other places are at their 95th percentile. Burns stated according to Kraft's Hancock precipitation amounts, to sustain a 60 foot level you would need increasing precipitation every year to maintain the level above the 1959 level. Kraft replied yes, but if you look at what has happened since 1959 in places where there is no pumping, 1959 was the lowest because there has been increasing precipitation. Pumping takes the highs and makes them lower and also takes the lows and makes them lower. Burns thought the number should still be going down and not maintaining. Kraft stated 1959 was an all time drought and the level today is only as good as that after a year of excessive precipitation. Burns stated it was 61 feet in 2009, so it does not seem to fluctuate as much as expected.

Burns asked if Kraft has correlated precipitation amounts to the increase in groundwater measurements in wells. Kraft replied no. He is working with some hydrologists to sort it out. Burns asked how high groundwater can get. Kraft replied in low lying areas it will flood. If we do get to management, and develop tools to get answers, then a comparison could be made.

Burress asked Burns if all of his wells are tracking the same as the one being discussed. Burns replied that is the only well he measures. Kraft measures one near Burns' home, which was last measured November 15, 2011 and it was at the same level as in June 2011. In September 2011 it dipped down about one foot and then went back up. There are some year-to-year measurements. The well Kraft measures is large and irrigates 300 acres. Burns cannot see a sharp decrease. Kraft stated the trends are hard to spot.

Provost stated the water level in the well on Burns' property is the same now as it was in 1959 during the drought. Even though we have had a few wet years, it has not rebounded. He thought that would imply there has been some serious decrease in the groundwater. Burns stated he has never seen the level higher. In 2009, when Long Lake was dried up, it was the same level it is now. Provost wondered if that was not indicative to how much groundwater is being used. Burns wondered if it was indicative of the slope, how much water is running to Plainfield and out through the ditches to Lake Camelot, the Mississippi River, and the Gulf of Mexico. Kraft stated that is the natural drainage, the area does shed water, which is what keeps streams and lakes alive. Burns wondered if anyone has ever figured out how much water can be held in soil in certain areas. Kraft stated when talking about groundwater, not surface water, there will be an area where water will not get that high.

McGinley asked how long does it take for changes to have an effect. Kraft replied it takes a while. We can look back at data, but monitoring cannot be fully relied upon because it would be too late. You would not catch a problem in time to make a correction.

Filtz asked what the difference would be in wells going dry. Kraft replied in Filtz's neighborhood the pumping certainly has dropped the water levels, but is not sure how widespread it is.

Copes stated ditches allow for a more rapid release of excess water and asked if those ditches were not there, what effect would that have on recharge of groundwater. Kraft replied where ditches are, there was a natural stream network. At the headwaters of the ditches there still are natural streams controlling the height. There is not any more water leaving the system than before ditches were there, but ditches are pulling water out at a lower level. So there is not more water leaving, but the ditches are reducing the overall water levels. Copes asked if there was any discussion on if the groundwater drops so far, then irrigation is cut right off like it is in some other states. Kraft replied not yet. He feels we can do a better job of managing our water than to stop pumping. Advanced notice is important, such as how much water is going to be available. In wetter periods restrictions could be lifted and as built up water drops down, tighten up. Burress asked if it could be referred to as water budgeting. Kraft replied a water budget is part of idea, but more so adaptive management. You use observations to see where things are, make a management decision to increase or decrease amounts of water taken out, watch to see the results, and plan ahead for the future. The biggest weakness in modeling is not knowing what will happen next year for precipitation.

The Committee thanked Kraft for his time and information.

7. PRESENTATION: “WALKING ON WATER” – VARIOUS PERSPECTIVES ON PORTAGE COUNTY WATER

Isherwood stated the topic for the book came from an idea he had on the water issues in Central Wisconsin; rivers and streams, history of the Buena Vista Marsh, geology and plant formation, and forest cover. The idea changed into something more simple, such as a narrative of what is happening in Central Wisconsin. They began writing letters to those interested in or willing to help write the narrative. The intent was to have it published locally. AJ Busin volunteered to help, became the third editor, and handed the manuscript over to UWEX. The final draft was ready in July 2011 and 200 copies went to the August water conference.

Walking on Water is composed of essays by 18 authors, each with his or her own point of view. Isherwood would have liked more contributions from farmers. In his own mind he does not think the agricultural community has something to hide about irrigation, but there may be something they do not want to say. However, there needs to be some middle ground, which is the essence of these narratives. The suggestion behind the water issue is that we can change. Isherwood believes we do need to start talking about methods and solutions. He would like the Committee to read the narrative and give feedback on ideas. He is very pleased with the authors.

8. REPORT: TOWN OF HULL GROUNDWATER TASK FORCE (SCHMIDT)

Schmidt stated the Town of Hull has decided to figure out what groundwater is like in the Town. Groundwater is going to provide for the Town's 2,000 households for the foreseeable future. Back in the 1970's when the housing industry was booming and the size of the Town of Hull tripled, people thought water and sewer would be extended out to the Town eventually. To figure out how to manage wells and septic systems, we treat sewage before it gets back into the groundwater and make sure there is enough groundwater throughout the Town to provide for all needs of its residents. Schmidt and McGinley act as resources for the citizens group that is discussing the issues. There is one more meeting next week with the Task Force. McGinley is helping write the final report, which hopefully will be adopted by the Town Board. Schmidt sees the process as being a template for other townships to look at. The Towns of Grant and Stockton are looking at a similar process due to growing communities and limited resources we need to learn to work with. Drinking water certainly is a primary resource.

McKee asked if the report will have recommendations or just information. Schmidt replied they may put preliminary recommendations in the report, but may not form recommendations in such a short period of time.

Burress asked with the amount of land per septic system, is water quality sustainable. Schmidt replied if you look at individual lots, there may be four lots in a two acre parcel in some areas. Now the County requires a two acre minimum lot size, partly because of the dilution of nitrate nitrogen from septic systems. In a very small local area, there could be some concentrated contamination of groundwater. If you look at 160 acres that may have 60 small lots, then we see localized contamination of wells, but not overall broad contamination.

Jacowski asked how long Portage County has had the two acre minimum lot requirement. Schmidt replied since the late 1980's, as a result of the GWMP. Prior to that, the minimum lot size was a half acre. There were many subdivisions that could have smaller lots; one quarter of an acre was the minimum lot size for a subdivision lot.

Burns asked if the only problem was with nitrates or if other contamination was found. Schmidt replied we have not been looking for other contaminants besides nitrates. McGinley has applied for a grant from the Environmental Protection Agency (EPA) to study pharmaceuticals, which is one of the directions the Town of Hull study is going. The Town has porous soils and shallow groundwater. McGinley stated it relates to the question, where are nitrates coming from. The approach would be to look for other contaminants along with nitrate to find the source of the nitrate.

Jacowski asked if the Town of Hull study includes a lot of sampling. Schmidt replied it is based on existing data. They are doing some additional sampling in certain areas, like subdivision settings and areas where other things are suspected. Jacowski asked if they were going to take an area with smaller lot sizes and compare it to a new subdivision with two acre lot sizes to see if there is a higher nitrate level in those smaller areas. Schmidt replied yes. He believed better sampling is a preliminary recommendation that will come from the report. McGinley stated there is a lot of information on those 2,000 homes and approximately 1,500 samples analyzed over the course of the last 30 years. Jacowski asked if there are a lot of dried up wells in the area. Schmidt replied there have been. Many old driven point wells were replaced. Jacowski stated there is a difference in a well going dry due to groundwater dropping and it simply not functioning anymore because it plugs up. Schmidt stated it could be that someone is using more water than the well can provide.

Schmidt stated the City of Stevens Point has a series of monitoring wells in the Town of Hull surrounding the City's wellfield, so they can see what kinds of contaminants are coming toward the municipal wells. We have received some data from those wells for approximately 20 years. McKee asked if the Town of Hull report will go to the Planning and Zoning Committee (P&Z). Schmidt replied no, but it will come to GCAC.

Provost asked where the County is at with volatile organic compounds (VOC) and organic screenings on wells from samples taken when a Certified Survey Map (CSM) is drafted. Schmidt replied the County does not take samples for VOC's and was unaware of any VOC sampling or the results. The County does take pesticide scans when a lot is proposed, the sample goes to the University lab, and results are put into the database. Provost asked if anything is being done with the data, such as plotting. Schmidt replied at this point it has not been systematically plotted because there are only a few hundred samples County-wide, which are spread out. Burns stated atrazine is plotted. Provost stated metabolites of corn pesticides have been found in surface water in Wood County, so it is obviously in the groundwater. If we had data, we could get an idea of where it is coming from. Schmidt suggested Provost present information on what is in surface water. Provost stated he would like to see what the County is doing with all the samples they take. Schmidt stated we review results and if they meet water quality standards, then the lot is approved. Provost stated there has been a lot of sampling, but nothing is being done with the data. Schmidt stated the data is reviewed on a lot per lot basis, which is what the sampling is for. If we want to use the results for something else, the data is in the Geographical Information System (GIS) and can be used however people want. McGinley stated it sounds like a good job for the Continual Assessment Sub-committee (CAS).

Jacowski asked if there were any results on pharmaceuticals industry-wide or the science to track them. Schmidt replied we react to problems that potentially exist. For instance, aldicarb was discovered in groundwater because Byron Shaw thought it might leach into groundwater and went looking for it. That is the stage we are at with pharmaceuticals and finding ways to track what is going into the groundwater.

Filtz believed there were some studies several years ago in rivers near Rudolph where they were finding pharmaceuticals. Schmidt replied yes, in Mill Creek where pharmaceuticals were making it through the Marshfield sewage treatment plant. Groundwater is affecting surface water and potentially the contaminants could affect aquatic species. Provost stated they are affecting aquatic species. Some large-mouth bass have been developing both female and male gonads, which is from estrogen in birth control pills coming through human waste. Those are direct discharges to surface water, but there already is a base of pesticides in groundwater flowing into streams. We must have some of the highest nitrate concentration streams in the State. Schmidt stated it would be a good study topic for a future meeting. Provost believed the County should do it because they require testing. Schmidt agreed and would look into what P&Z would allow and what the County Executive could put into the budget. Any recommendations for groundwater programming go through GCAC, specific resolutions from GCAC to P&Z Committee.

Provost stated there is a gentleman from the Department of Agriculture, Trade and Consumer Protection (DATCP), Rick Graham, who has done some monitoring and pesticide sampling in streams. He may be a good source to contact. Schmidt asked for clarification if DATCP was looking for pesticides in streams. Provost replied they have been for the last couple years. McKee asked what streams have been sampled. Provost replied Four Mile, the entire watershed is in Portage County. Schmidt believed there were some studies on the Tomorrow/Waupaca River watershed when the watershed project first started, which is at least 10 years ago. McKee stated there is a lot of data, but not a lot of management. Provost stated there needs to be a lot of data to make management decisions, and there was not a lot of data before. It is positive to have a lot of data. If someone is going to be told not to do something, there has to be evidence on why they cannot do it.

McKee stated he has heard Kraft speak on managing groundwater and his presentations on pumping; it seems like managing pumping is where we need to start. Turzinski disagreed and does not believe that Kraft's information is complete. When he speaks with older generation farmers, they have been through the cycle before and remember things a certain way. There is land that, because of the weather, is dry and currently being farmed that was too wet years ago. McKee stated there are a few agricultural people in this room saying managing groundwater does not have anything to do with pumping. Turzinski's opinion is that Kraft's information is a good start, but only goes so far. In the last 12 years there have been at least three or four years the United States Department of Agriculture (USDA) has declared Portage County a drought hazard and Kraft's information says we have had just a little below average precipitation. The USDA will not just declare someone in a drought.

Schmidt stated those ideas are what need to be added to Kraft's information, which contains a good basis in science. We need to add measurements, such as rainfall data, and depth to groundwater from any of the farmers who have that data. Then we can try to make it make sense. Just having someone who remembers what happened years ago may not be very accurate. We can use data that has been recorded, which the County will be seeking this year. Turzinski stated pumping and dry weather go hand in hand. The drier it gets the more pumping there is. He does not want to say that pumping is not a part of it. Burns agreed, when it gets dry he notices it. It determines his entire day. Turzinski stated it is noticeable in electric bills, 2008 and 2009 tripled his budget for electricity. Jacowski stated he does not want people to just focus on the quantity issue; there is also a quality issue. Schmidt stated there are others regionally working on the quantity issue, so really Portage County is the only entity working on quality issues. Meis stated in Kraft's defense, his information is based on year-to-year. Even if there is not much rain in the summer months, it may look like a drought, but then twice as much is received in the fall, the numbers may average out for the year. Filtz stated there are many more high capacity wells (HCW) today than there were in the past, which means much more pumping. It may not be a good comparison to go by the older generation of farmers remembering past scenarios.

9. CONTINUAL ASSESSMENT SUB-COMMITTEE UPDATE: SUGGESTED GROUNDWATER SAMPLING AND MONITORING GUIDELINES FOR PESTICIDES

McGinley stated they took a holiday break and have not met since the last GCAC meeting. If any GCAC members are interested in joining CAS please let him know. CAS talks more about quality than quantity and meets once or twice in between GCAC meetings.

10. DISCUSSION/POSSIBLE ACTION: ADOPTION OF DRINKING WATER CONTAMINANT ADVISORY AREAS

Schmidt stated at the November meeting the issue was discussed and maps were distributed showing drinking water advisory areas where most wells tested above the health standard for nitrate. The idea is to focus on these advisory areas in informing people not to drink their water unless they sample it because many wells in their area are above the health standard. At the request of Jacowski, Schmidt revised the map to show all wells, not just those above the health standards. Burns stated it should be just a map full of dots. Schmidt stated it was when looking at the entire County, but when you zoom into a specific area you can see individual wells. The map shows how many wells are above the health standard, below the Preventative Action Limit (PAL) of two parts per million (ppm) for nitrate, those in between, and those that have not been tested. Schmidt referred to the map by showing specific areas near GCAC members' wells to give them an idea of the percentage of wells below the PAL, in the middle, and above the health standard of 10 ppm, in their areas.

Schmidt referred to an area where groundwater levels of nitrate are high and he believes people should be sampling, if they are going to drink their water at all. Schmidt would not mind advising those people not to drink their water unless they test it. A nitrate test can cost \$15 to \$20. He then referred to an area where groundwater levels of nitrate are not as high. Those wells not tested are not as much of a concern, since most wells in the area are testing safe.

McKee asked how Schmidt chose the boundary areas for advisory areas. Schmidt replied he would look at any area where 50% of wells are above 10 ppm. McKee stated he does not know what the boundary area is of Amherst Junction, but he would feel it would be an advisory area. Schmidt stated boundaries are approximately 640 acres, with small lot development. McKee asked if Schmidt is proposing that letters go out from the County to these residents. Schmidt replied yes, from his office. McKee stated it makes sense in terms of the County being responsible for safety and health and there are concentrations of groundwater contamination in these areas, people should be made aware.

Turzinski suggested explaining to people they are being contacted to test their water, because of contamination in their area. Schmidt agreed; we are trying to protect people's health. Turzinski asked if contamination gets lower when getting closer to the groundwater divide. Schmidt replied right on top of the divide groundwater is cleaner and contamination is generally low because there is constant recharge from precipitation.

McKee made a motion to have the County determine the drinking water contaminant advisory areas of high nitrate in private wells, notify the landowners in those areas that drinking their water may not be safe, and highly recommend testing their wells. Burress seconded the motion, with the addition of a draft of the letter sent to GCAC for review and comments prior to mailing the letters.

Filtz suggested the letter not be too vague, and also give landowners suggestions on what to do if they have a test result with high nitrate. Schmidt stated that would be part of the letter.

Fritsch suggested the letter not say your water is unsafe, but rather records indicate nitrate levels are elevated in your area, here are the effects of drinking water with high nitrates, and we recommend testing your water. Provost agreed to soften the wording of the letter. Fritsch was concerned that if these letters make it to the media, Portage County would be accused of having bad groundwater. Provost and others stated that we do.

Schmidt would like to get the project started and asked if he could draft the letter, email it to GCAC for comments, once comments are received then they can be incorporated into the letter, and then he can start sending them. Fritsch asked if comments will include areas receiving letters first. Schmidt replied yes. Fritsch asked if the motion is passed, does it go to County Board. Schmidt replied it is just guidance from our Department. Fritsch asked for clarification if the issue does not go before the Portage County Board and GCAC can just do it. Schmidt replied yes, it is part of the recommendations in the Groundwater Management Plan (GWMP) to notify people who are in areas of health concern. Fritsch was just wondering where GCAC stands, he thought GCAC reported to P&Z and also to County Board. Schmidt replied GCAC does report to them on Ordinance type issues; all resolutions go to the P&Z for a public hearing and then to the County Board. Schmidt is asking for advice from GCAC on the approach to take in areas where we are aware groundwater is contaminated and how to notify the people. McGinley asked if technically Schmidt could do this on his own, without GCAC approval. Schmidt replied yes.

Burns felt area was an important issue. McKee did not feel area made any difference. The point is the health and safety of the citizens of Portage County. There are a lot of data points and all Schmidt is asking for is to get word out to people that wells in their area are contaminated and they should get their water tested.

Burress stated if we have information that affects the health of someone in the County, he does not feel it should be hidden. He would recommend Schmidt draft the letter, send it to GCAC via email or mail, and members can contact Schmidt if they have concerns.

Burns is concerned with someone in his town approaching him about the letter and he will be unaware which area they are referring to. McGinley feels that the areas may be limiting it too much. He suggested looking at the 40 acres the home is located on and the contiguous 40 acres that create a square mile.

Turzinski suggested not drawing a lot of attention to GCAC. The letter should say we have always recommended everyone in Portage County test their groundwater, but we feel there are more wells in your area that have tested high for nitrates. Schmidt agreed with that approach.

McKee amended the motion to include a draft of the letter being sent to GCAC via email so that the issue can move forward as quickly as possible. Burress seconded the amended motion.

Burns called for a vote on the amended motion. Motion carried by voice vote.

Walkowicz questioned a fee people have to pay for their HCW and what the money is used for. Schmidt replied the Department of Natural Resources (DNR) uses that money to fund three engineers in their HCW well section. McKee asked what those engineers are responsible for. Schmidt replied they issue permits for HCW and receive data on pumping. Walkowicz thought it was a lot of money for three engineers and asked if there was any other plan for the money. Schmidt believed the only intent for the fee was to fund the engineers. Provost thought some of the money was used for research and evaluations. Provost offered to find the information and supply it to Schmidt.

11. NEXT MEETING DATE:

The next meeting is scheduled for Thursday, March 1, 2012 at 7:00 p.m. Conference Room 5, County Annex.

12. ADJOURNMENT:

Motion by McKee, second by Walker to adjourn. Motion carried by voice vote. Meeting adjourned at 9:15 p.m.

Jamie Phillis, Recording Secretary

Ed Burns, Chair

Date

**7PORTAGE COUNTY GROUNDWATER CITIZENS ADVISORY COMMITTEE
CONFERENCE ROOM 5, COUNTY ANNEX
THURSDAY, March 8, 2012 - 7:00 P.M.**

MEETING MINUTES

GROUNDWATER CITIZENS ADVISORY COMMITTEE (GCAC) MEMBERS LISTING:

MUNICIPALITY	MEMBERS NAME	Attendance	MUNICIPALITY	MEMBERS NAME	Attendance
TOWNS:		03/08/12	TOWNS:		03/08/12
Alban	VACANT		Plover	Barb Feltz	Present
Almond	Edward Burns	Present	Plover Alternate	Nancy Lila	Excused
Amherst	Mike Burress	Present	Sharon	Casey Jakubek	Present
Belmont	Rita Walkowicz	Present	Stockton	Richard Filtz	Present
Buena Vista	John Ruzicka	Present	VILLAGES:		
Buena Vista Alt	Roger Turzinski	Present	Almond	Gary Schultz	Absent
Buena Vista Alt	Lynn Isherwood	Present	Amherst	Mike Hinrichs	Present
Carson	Fred Copes	Absent	Amherst Jcnctn	VACANT	
Dewey	Dennis Meis	Present	Junction City	Peter Mallek	Excused
Dewey Alt	Kathy Girolamo	Excused	Nelsonville	James Walker	Excused
Eau Pleine	VACANT		Park Ridge	Paul McGinley	Present
Grant	Mary Kiedrowski	Present	Park Ridge Alt	Christine Neidlein	Excused
Grant Alt	Scott Provost	Excused	Plover	Dave Fritsch	Present
Hull	Tim Zimmerman	Present	Rosholt	VACANT	
Lanark	Bill McKee	Present	Whiting	Matt Saloun	Present
Linwood	Garth Frost	Present			
New Hope	VACANT		CITY:		
New Hope Alt	Cathy Derezinski	Absent	Stevens Point	Joel Lemke	Excused
Pine Grove	Wes Meddaugh	Present			

STAFF PRESENT: Ray Schmidt and Jamie Phillis, Planning and Zoning Department.

OTHERS PRESENT: Barry Jacowski – Portage County Board of Supervisors District 19; Justin Isherwood; and Amy Nitka - AmeriCorps.

1. CALL TO ORDER: The meeting was called to order at 7:00 p.m. by Chair Burns.

2. INTRODUCTION OF NEW MEMBERS: None.

3. REVIEW/APPROVAL OF MINUTES OF JANUARY 5, 2012: Motion by Ruzicka, second by Hinrichs to approve minutes as presented. Motion carried by voice vote.

4. CORRESPONDENCE: None.

5. BURNS READ THE PUBLIC NOTICE: Members of the public who wish to address the Committee on specific agenda items must register their requests at this time with such comments subject to the reasonable control of the Committee Chair as set forth in Robert's Rules of Order. No one registered to speak.

Schmidt requested that Agenda Item number 8 be moved ahead.

8. UPDATE: TOWN OF HULL GROUNDWATER TASK FORCE (SCHMIDT)

Schmidt introduced Amy Nitka, AmeriCorps, who is working with the Town of Hull Task Force and writing their report. McGinley is also on the advisory committee with Schmidt.

Nitka stated her involvement began last November when she did a small groundwater study in the Town of Hull looking at nitrate sample levels and trying to find the sources of nitrate by looking at pesticides, as well as markers for septic waste. She will draft a report and the Task Force will make recommendations. Schmidt stated they will be finalizing the report for the Town of Hull at the Groundwater Task Force meeting on March 29, 2012 and then it will go to the Hull Plan Commission and Town Board. A few different Towns have expressed interest in looking at what the Town of Hull has done and doing similar groundwater studies in their Towns.

Hinrichs asked what specific markers they are looking for. Nitka replied for the septic waste she looked at boron, which is found in laundry detergents, and a few different pharmaceuticals and personal care products. The most indicative was Acesulfame, which is an artificial sweetener. Based on those concentrations it was determined that high nitrate levels in certain areas were coming from septic systems. Schmidt stated those were detected in the smaller lot subdivisions with sandy soils. Subdivisions being platted for the last 15 – 20 years have been larger lot developments, close to two acre lot sizes. If you get contaminants from a septic system traveling in a plume and they intersect the well, you will probably have similar contaminants.

Zimmerman asked if there was a difference in lot sizes for samples taken. Nitka replied lot size was not taken into consideration. Zimmerman asked how many samples were taken. Nitka replied nine. Jacowski asked why so few samples were taken. Nitka replied it was a budget issue. Analysis for the pharmaceuticals and pesticides can run from \$400-\$500. McGinley stated Nitka did this as part of a class project, so it was free to homeowners and to prove the concept that if there really were some differences between the markers in the samples, then we could seek additional funding to create some form of testing protocol.

McKee asked if the study was going to expand into other municipalities. Schmidt replied the Town of Hull set up their Task Force and the Town Chairman appointed interested individuals from the Town. They are to learn about groundwater in the Town and look at future land use and development trends for the Town, as well as what considerations to make based on water quantity and quality in certain areas. McKee asked what testing will be done. Schmidt replied they will be recommending some testing and looking at long-term trends in some wells that have been tested for a few years. McGinley stated Nitka's project was specific to the Town of Hull because the Town had an interest. They have approximately 2,000 homes and a fair amount of high nitrate nitrogen in the groundwater. Other issues would depend on the individual municipality and what they would like to look at.

6. DISCUSSION: GROUNDWATER PERSPECTIVES “WALKING ON WATER” (ISHERWOOD)

Isherwood stated he supplied questions for the Committee to begin a conversation. Burress asked if more copies of the book will be available. Isherwood replied yes, contact Kraft or Isherwood.

Burns stated many of the authors were at a recent groundwater meeting in Wautoma and he asked Isherwood to elaborate on some of the issues coming in the future. Isherwood replied the group has matured and is composed of farmers such as, Nick Somers, Andy Dierks, and others, as well as lake owners from Long Lake, Huron Lake, and Patterson Lake. The lake owners bring the recreationist point of view to the group. The group met three times. The first meeting was basically a science class where geologists from Madison gave a presentation on how geology in Central Wisconsin works. They looked at how many gallons of water are taken out per growing season and how much water goes out as surface water. They have come to a consensus that pumping does have an impact. Occasionally, there were fits of anger and frustration. One gentleman who retired to a residence on Long Lake just wants the lake back to where it was. He bought the property with an image in mind and now that image is gone. Then there is the other side that feels they are deemed responsible. There are basically two points of view; where agriculture is coming from now and what to do next, which is more research. They are going to use about 30 test wells spread around the lakes to see what fluctuations are over summer. There was a long discussion on the sites of those wells and where they would make a difference.

Isherwood asked the Committee if some things in the book were bothersome. Did you understand where farmers were coming from? McKee replied yes. In a sense, the farmers are coming from where everyone is coming from. It was talked about farming being a problem solving tactic, but McKee wondered if the groundwater and pumping issue is going to be researched until the ground is dry. Isherwood stated the farm sector probably finds it hard to take the next step. We have admitted there is a problem, but the issue is how to fix it. Turzinski stated the more times he read the book, the more he understood it. Many farmers feel blamed and the only ones responsible for recovering the losses, which is saying people in town can use as much water as they want. Lawns are being watered after we have received a few inches of rain. Turzinski feels everyone needs to work together. Water sensors could be put in yards for those automatic sprinkler systems, and then maybe farmers would not feel they are working alone. Make it more of a community effort. We know one yard will not pump what an irrigation well can pump, but we have to work together.

McKee asked how much processors, in their contracts, are dictating to farmers. Turzinski replied that is dictated by the public, and the demands for perfect produce. Approximately 40% of food, especially fresh produce, is wasted every year because it has a little blemish. Isherwood stated if grading standards were changed, there

would be a lot more food in the marketplace. He does not think there are any contracts from processors that speak of inches of irrigation; however, the expectation is that you will grow the crop to a standard. For example, if sweet corn dries out and does not snap crisp when harvested, it cannot be canned. Turzinski stated Del Monte's old contract stated they wanted 6/10 of an inch per week of water prior to blossom and at least 1.2 inches per week after blossom. The new contracts state irrigation will be provided to grow a good, fresh crop. Isherwood believes there is less food waste today than there used to be.

McKee addressed one of Isherwood's questions: Is any water user entitled to any amount of water for any purpose? He would say no. Is this a community resource? Isherwood replied his sense is the farm community will say no too. Turzinski stated there is still the issue of population growth. By the year 2050 there could be food shortages. If China, Pakistan, and other countries continue to grow at the rate they are, then a food shortage could begin in as soon as 15 years. He wondered if we were under obligation to try and feed them all. McKee replied if Portage County is responsible for feeding the world, it would mean lake, land, and stream owners do not count because food trumps all. Isherwood stated if we do not manage the water, it will be gone. The bottom line is we need a stable water system. McKee asked how much research it takes to find a stable water system. He believes every well should be monitored. Isherwood stated he personally does not have a problem with every high capacity well (HCW) being a public trust with record keeping. Schmidt stated the Department of Natural Resources (DNR) is trying to do that by collecting pumpage records. McKee stated no management has come from it. Isherwood believes management is a fairly new concept.

Jacowski stated it was mentioned there was no regulation, but he believes there is self regulation. Farmers have invested in new pivots and new irrigation models that use low pressure system crop nozzles. When talking about regulating every HCW, then we should look at the general public and monitor every well. We need to take a good look at all of the water usage. The agriculture community realizes there is a problem and has been investing in technology to help conserve water. Isherwood believes the difference is one of scale. A HCW can pump 1,000 gallons per minute. Burress stated it seems to be two sided and not much discussion to lead to a middle ground.

Burns believes there is some self regulation. For example, the Little Plover River (LPR) situation and what the Soik's did to help save the LPR. McKee stated each home in Stevens Point has a water meter, unless they have a private well, and they are billed accordingly. He wondered why the same model could not be used in agriculture. How many municipal wells and agricultural wells are in the County? Schmidt replied there are five municipal systems, approximately 25 wells, and 1,056 HCW. Turzinski stated there is some regulation because you may only put in a 600 gallon per minute well within 1,500 feet of a wetland. Meddaugh stated timeframes are also being set on when you can water and how much. McKee asked if any HCW has not been allowed a permit. Meddaugh replied yes, he had some applications denied. Filtz asked where they were and what the reason for denying the permit was. Meddaugh replied they were in the Bancroft area and too close to surface water.

Turzinski believes money would be better spent on research, finding where the biggest problems are, and testing methods. They cannot just say agriculture has to stop pumping because they would need proof. Most farmers check their well depth and some well depths have not changed in over 40 years. McKee stated we need to get away from models and see real numbers. He would like to see the details on every well, such as how deep to water, how much water is being pumped, and how much precipitation has come. Schmidt suggested a water budget. Turzinski stated Portage County cannot be lumped into one group; there are some sensitive areas and some that are not. Schmidt agreed. Burns believes they are on the right track. Meddaugh stated there are still two sides because nobody trusts each other and there is good reason for not trusting, which is political. There are even conflicting professors, one from Stevens Point and one from Madison, as to where the missing water is going.

Walkowicz stated she is a small dairy farmer. Everything they need costs more and they are getting less for the things they sell. They cannot afford to put monitoring equipment on their HCW. McKee stated he does not want to see an undue burden put upon people, but there should be a way to get all wells monitored. We talk about trust, he hopes this community could come up with the technology required to monitor our water. He does not want to point fingers because it is everyone's problem. We cannot manage without information. Schmidt stated we can make better decisions with information. Isherwood does not believe it is too early to begin mixed methods. Turzinski agreed. We need to search for alternatives and work them out, along with research and find

the exact problem. Isherwood had asked George Kraft what Volume 2 of Walking on Water was going to be and Kraft told him spectrum and solutions.

Schmidt stated when people say water levels are the same as 40 years ago, he believes those numbers are fuzzy. He checks the monitoring wells once a month, and has for 25 years. There are fluctuations in those wells by five feet per year, up and down. Within a few weeks period it can move one foot. You are not seeing those fluctuations when only monitoring a few times per year. One sample may be similar to one from 40 years ago, but that does not say anything about what has been happening overall with average highs and lows. We have seen highs gradually decreasing.

Jacowski stated when speaking of solutions, why do we let fresh water run-off instead of holding it with a dam in a creek, then use it to pump out of for irrigation. Isherwood stated it would be nice to create artificial wetlands to store water for Long Lake, but it really does not have a resource to supply or feed it. Jacowski stated the reason we are looking into and spending money to do research is to have the science to support resolutions. Some people may feel it is time to do something, but information is needed and jumping too fast is not the right situation. We are working in the right direction and need to know what we are doing before we do it. McKee agreed that we do need to know what we are doing. Once we know exactly what there is for the whole system, then we can reasonably manage. The more information we have, the better we can manage. There are approximately 1,000 HCW in the County that can give us information we need to completely manage water. He is not talking about managing or regulating HCW, but wants to know everything there is to know about the water table. Kiedrowski stated then we need to look at everyone that affects the water table, not just HCW. McKee stated HCW are using the most water, not just agriculture, but municipal water systems too. He has a private well and does not feel his personal consumption is the issue because it does not compare to the 1,000 gallons per minute a HCW can pump. Schmidt stated almost all of the water for a residential private well, if the house uses a septic system, is in a loop; it goes back into groundwater. If they water a garden, they are eating the produce, but if they water their lawn, it is a waste. A septic system and well operate in a cycle, which is not even an issue because there is so little water consumed.

McKee stated the three parameters we need are depth to water, gallons pumped, and precipitation. Meddaugh stated they have precipitation and gallons pumped. Depth to water will come. McKee asked how often. Burns replied every 15 minutes. McKee asked where the information is going and how it is being used to help manage. If we have information, why is there no managing? Schmidt replied they are talking about a very limited area around the lakes in Waushara County and McKee is talking about Portage County and the 1,000 wells here. Meddaugh stated they are going to have a couple hundred wells with depth to water data. Schmidt asked if it would be with the fields in Portage County. Meddaugh replied yes, the farmers have taken it upon themselves to record it. Schmidt stated he has received all pumping data for all of the HCW from the 1970's and 1980's and for the last several years.

McKee stated it should be a cooperative effort, not individual. If the agricultural community, as an organization, and the County, as a governing body, works together with information coming from all HCW, then they can regulate better. Jacowski stated the Wisconsin Potato and Vegetable Growers Association (WPVGA) was one of the key players in developing the Irrigation Task Force. He believes we are already at that point. McKee stated it may be in place, but we are not seeing management. Meddaugh stated it just started, it takes time. Burns stated if you look at the state of groundwater last year to now, there have been great strides. Isherwood stated the farm community knows we may be entering a saturation point. The climate may be changing to the point where all standards we have gotten used to may not be there 20 years from now.

Schmidt addressed questions supplied to the Committee. Is any water user entitled to use any amount of water for any purpose? Committee members represent themselves and their ways of life, but they are here to advise the County Board on what the County should be doing. We have been talking around the issue for an hour, and discussing a lot of different factors, but not addressing the groundwater issue. The Committee needs to focus on the questions that need to be answered and give some information. It is fine to express opinions, but it does not help with the groundwater situation we have and does not help in planning for the future.

McKee recommended the County Board and Executive make a concerted effort to work with County Boards from the other two counties in the Central Sands region because it is a regional problem. He believes it is critical to open up dialogue to the region. Jacowski stated University of Wisconsin – Extension (UWEX) is working on that issue quite often. The conversations are going on, but maybe not as in depth as they should be.

Kiedrowski asked what they will do with the answers. We talk about monitoring and that leads to regulation, but we need to balance private property rights with regulation. Schmidt replied monitoring will give us information. Kiedrowski stated the obvious answer is that no one has the right to any amount of water; it is common sense. Schmidt stated Kiedrowski's opinion is common sense; nobody should be able to pump all the water they want. He agrees, but it is GCAC's responsibility to guide policy. Filtz stated we are going to need some type of solution or plan, even the farmers. Isherwood stated even to say we need a plan, is a step forward.

McKee stated some uses should be considered more important. Walkowicz asked which uses are more important. McKee replied municipal uses. Walkowicz asked why would municipal be more important than growing food to feed those people. Burress replied because you can go longer without food than water. Turzinski believes agricultural and municipal uses should be grouped in the same area. The uses that need to be distinguished are water parks or golf courses. McKee disagreed on putting municipal and agricultural uses in the same group. He feels municipal uses are more important because they affect so many people they obviously have priority. Burress amplified the point, you can go without water for a while too, but we have to have both of them. So how do you prioritize one against the other? Hinrichs stated if we are going to ask HCW users to not use as much, then municipalities should have to ration as well.

McKee stated municipalities are making money off water use and he wondered if it has become a commodity for them. They should break even and maintain their facilities, but should pumping water subsidize other parts of municipal government. How much money should a community be able to make off delivering water? Saloun replied we cannot pump water to fill our pockets and pay for everything. It is regulated on how much rate of return municipalities can get on it, which is 6% maximum. So it really is break even to maintain facilities. The money is not supposed to go toward any other area. McKee had the impression the City of Stevens Point was making money off the water. Filtz stated the point is municipal water is being monitored, they are being charged for it, and we could get those answers. Farmers are not being monitored. Jacowski disagreed and thought farmers were being monitored. Meddaugh stated east of the ridge (groundwater divide) farmers are paying for water from the Great Lakes Watershed on top of what it costs to run their HCW. Hinrichs asked if it was based on volume. Meddaugh replied there is a yearly charge and then it is based on volume. Burns stated you are only charged if you go over a certain amount of gallons.

Saloun stated you will start to see a trend of surface water discharging from municipal plants into wetlands. There are new standards the municipality has to meet for phosphorous effluent limits and one way to alleviate it is surface discharging and wetlands creation. The DNR is more willing to look at those scenarios. The City of Marshfield Treatment Plant had no stream nearby, but they made one by surface water discharging to Mill Creek. Where there are stormwater issues you are starting to see catch basins for sediment. There has been a lot of negative talk, but there certainly have been positive things taking place. The municipal and agricultural industries have become more efficient. Everybody recognizes there is a problem and things are progressing.

7. UPDATE: GROUNDWATER MANAGEMENT PLAN 2012

Skipped.

9. CONTINUAL ASSESSMENT SUB-COMMITTEE UPDATE: SUGGESTED GROUNDWATER SAMPLING AND MONITORING GUIDELINES FOR PESTICIDES

McGinley referred to the handout supplied to the Committee with the agenda packet regarding pesticides. The Groundwater Management Plan (GWMP) states the CAS should be looking at pesticides used in the County and making recommendations on what private well owners and others should be testing for. This duty required CAS to identify pesticides being used on crops grown in the County and obtain a list of pesticides sold by dealers in the County. Those were tabulated and the list refers to major, or the highest pesticide poundage, sold in 2009. The next logical step would be to draft a list of pesticides to test for. Pesticides do have different levels of mobility, some break down faster than others, some travel more rapidly through soil, and some break down into other compounds. All of those issues complicate the process of making testing recommendations. At this point, GCAC can have a chance to review the list and make any suggestions in the analysis. CAS will continue to work on developing testing recommendations.

McKee felt along with quantity, we should jump on quality, time is of the essence. He would recommend the County pick a few pesticides from the list and start testing. McGinley stated some pesticides on the list have been tested for in the County. Schmidt stated when the list was developed they were only looking at pesticides

that were likely to contaminate groundwater, only the soluble ones. Then they looked at which ones were being used most. The list is composed of the most commonly used pesticides by the number of pounds applied. Concerns would be toxicity for health reasons, mobility because they will leach into groundwater, and commonality because they are likely to show up in groundwater throughout the County. Some of the pesticides on the list are not being used throughout the County, only on certain crops in certain area. Assistance from growers is needed to help point out where particular pesticides are being used. Filtz asked who will be paying for water tests. Schmidt replied that is getting away from the essence of the pesticides we are trying to identify. Who pays for them is another topic. Walkowicz stated technology changes so fast that what is recommended today could be outdated a few years from now. Schmidt stated just because we do not know everything does not mean we should not use knowledge we have to do what we can now.

Saloun stated we cannot dwell on what has been done, but we can see where trends are going. Water quality standards for wastewater plants, along with the technology, have improved. McKee wondered if quality would benefit from reduced consumption. Saloun replied it is always an option. There will be different rate structures that promote conservation, which is important and reduces a lot of the problems. In most places, the water rates still reflect "the more you use the cheaper it gets." Jacowski stated the problem municipalities have is paying for the water mains they lay. The more water running through it, the faster it is paid for. So in regard to volume, education will go a long way, but the municipality will still look at it as the more water pumped through the main, the quicker it will be paid for. Society, as a whole, is better at looking at the science than what is the cheapest way to accomplish things.

Burns asked how soon CAS would like comments on the pesticide list. Schmidt feels it should be done by the May meeting because it will be part of the GWMP that will be taken to the Planning and Zoning Committee in draft form in September. Jacowski stated if the Committee feels they need more time, the County Board would be willing to see it at a later date. Schmidt agreed, but thought it should not wait too long. McGinley replied it would be wonderful to find more pesticides, any information that anyone can provide would be appreciated. Burns stated the Environmental Protection Agency (EPA) is getting aggressive and making changes every year. Turzinski stated EPA has said to register a chemical it takes \$200 million because they study every aspect of it. Schmidt stated they have reached out to the experts they could find and used the EPA listings to compile the list of pesticide of concern in Portage County groundwater, which is only a portion of the whole list.

10. NEXT MEETING DATE:

The next meeting is scheduled for Thursday, May 3, 2012 at 7:00 p.m. Conference Room 5, County Annex.

McKee commented on the letter regarding the Groundwater Advisory Areas and asked how large of an audience it would cover. Schmidt replied potentially a few hundred. McKee suggested putting the cost of testing in the letter. Schmidt agreed. Hinrichs suggested grouping some of the tests together for those chemicals that are similar. Schmidt is willing to take comments on the letter at any time. Filtz suggested informing people they should test every 15 months and supply them a format to keep track of when they are due. Schmidt agreed.

11. ADJOURNMENT:

Motion by McKee, second by Hinrichs to adjourn. Motion carried by voice vote. Meeting adjourned at 9:35 p.m.

Jamie Phillis, Recording Secretary

Ed Burns, Chair

Date

**PORTAGE COUNTY GROUNDWATER CITIZENS ADVISORY COMMITTEE
CONFERENCE ROOM 5, COUNTY ANNEX
THURSDAY, May 3, 2012 - 7:00 P.M.**

MEETING MINUTES

GROUNDWATER CITIZENS ADVISORY COMMITTEE (GCAC) MEMBERS LISTING:

MUNICIPALITY	MEMBERS NAME	Attendance	MUNICIPALITY	MEMBERS NAME	Attendance
TOWNS:		05/03/12	TOWNS:		05/03/12
Alban	VACANT		Plover	Barb Feltz	Present
Almond	Edward Burns	Present	Plover Alternate	Nancy Lila	Excused
Amherst	Mike Burress	Present	Sharon	Casey Jakubek	Present
Belmont	Rita Walkowicz	Present	Stockton	Richard Filtz	Present
Buena Vista	John Ruzicka	Present	VILLAGES:		
Buena Vista Alt	Roger Turzinski	Present	Almond	Gary Schultz	Absent
Buena Vista Alt	Lynn Isherwood	Present	Amherst	Mike Hinrichs	Present
Carson	Fred Copes	Present	Amherst Jcnctn	VACANT	
Dewey	Dennis Meis	Present	Junction City	Peter Mallek	Excused
Dewey Alt	Kathy Girolamo	Excused	Nelsonville	James Walker	Absent
Eau Pleine	VACANT		Park Ridge	Paul McGinley	Present
Grant	Mary Kiedrowski	Present	Park Ridge Alt	Christine Neidlein	Excused
Grant Alt	Scott Provost	Excused	Plover	Dave Fritsch	Present
Hull	Tim Zimmerman	Absent	Rosholt	VACANT	
Lanark	Bill McKee	Present	Whiting	Matt Saloun	Absent
Linwood	Garth Frost	Present			
New Hope	VACANT		CITY:		
New Hope Alt	Cathy Derezynski	Absent	Stevens Point	Joel Lemke	Present
Pine Grove	Wes Meddaugh	Present			

STAFF PRESENT: Ray Schmidt and Jamie Phillis, Planning and Zoning Department.

OTHERS PRESENT: Michael Copas, Nick Somers, Lynn Isherwood, Bill Zakrzewski, Marvin Hopp, Duane Maatz, David Grandkoski, Ken Schroeder – University of Wisconsin – Extension (UWEX) Agricultural Agent, Barry Jacowski - Portage County Board of Supervisors District 23, Eric Ebersberger – Department of Natural Resources (DNR), and Larry Lynch – DNR.

1. CALL TO ORDER: The meeting was called to order at 7:00 p.m. by Chair Burns.

2. INTRODUCTION OF PROPOSED MEMBERS: Village of Almond – Richard Burns.

3. REVIEW/APPROVAL OF MINUTES OF MARCH 8, 2012: Burns made a correction on page 2, Tomah should be Wautoma. Schmidt made a change to page 4, conservative should be concerted. Motion by Ruzicka, second by Burress to approve minutes with changes. Motion carried by voice vote.

4. CORRESPONDENCE: Schmidt stated the Town of Plover sent him a notice regarding a drinking water education program they will be holding with free nitrate nitrogen screening tests on May 10, 2012 at 6pm. This is the third program Schmidt has done with the Town of Plover and each one has more attendance. Burns asked if the testing will take place at the site. Schmidt replied yes, by trained volunteers.

5. BURNS READ THE PUBLIC NOTICE: Members of the public who wish to address the Committee on specific agenda items must register their requests at this time with such comments subject to the reasonable control of the Committee Chair as set forth in Robert's Rules of Order. No one registered to speak.

Burns moved to agenda item #7 because the DNR representatives speaking on agenda item #6 had not yet arrived.

7. UPDATE: TOWN OF HULL GROUNDWATER TASK FORCE

Schmidt stated the Town of Hull Task Force has almost completed its study. They met March 29, 2012 and wanted a few things changed and added to their report, including looking at lot density issues, such as the size of

subdivision lots versus nitrate nitrogen within those areas downgradient of the subdivisions. The Task Force is going to bring the report to the Town of Hull Plan Commission sometime in May. Schmidt feels this project approach may work well in other County municipalities. It has been an educational opportunity for those involved.

Feltz asked if someone would need to work with the Town of Hull Board to begin a similar process. Schmidt replied yes. He has been asked to comment by the media on what the Town of Hull is doing, but it is not his project, it belongs to the Town of Hull and people should contact the Town for questions or comments.

8. UPDATE: LITTLE PLOVER RIVER WORKGROUP (SCHMIDT)

Schmidt stated they met in March for an update and are meeting approximately every six months, meeting again in October. The group has established the public rights flow rate, which is four cubic feet per second (cfs). It is based on the minimum flow of the Little Plover River (LPR) in the 1970's and 1980's, which was six to ten cfs, and also based on the minimum flow that can sustain a healthy ecosystem. For a few years it was impossible to sustain that rate and portions of the LPR dried up. Currently, the LPR is running at about six cfs, which is the lower end of average for the period of 1970-80. It is healthier that is has been in the last few years. The Village of Plover has looked at a few initiatives to help leave water in the LPR basin. They transferred most of their pumping from wells closest to the LPR to the well further south near Lake Pacawa. Del Monte has switched their wastewater operation so that most of their wastewater is put north of the railroad tracks and plant, closer to the LPR where it becomes part of the groundwater. Also, the Workgroup is looking at possibly planning for some future changes in land use by converting land from irrigated agriculture to some other uses that allow more water to stay in the ground and provide base flow for the LPR.

Feltz stated a few weeks ago Dan Bauman, Eau Claire DNR, was at the LPR with the DNR Secretary, State Water Administrator, and regional DNR staff. They are using the LPR Workgroup as a model for working locally for other endangered watersheds. Fritsch stated there was a meeting with the DNR representatives at Del Monte. They touched on Del Monte moving their spray irrigation, which also took a high capacity well (HCW) out of production. Schmidt stated farmers in the area closest to LPR, within a mile, have been making an effort to stagger their rotations to not plant high water using crops, such as potatoes, in the same year. Looking at records from the 1970's and 1980's for wells in the LPR basin, compared with the last few years, pumpage data is less than half of what it used to be. All efforts together are paying off. The New Page plant had been taking a lot of water from the Whiting Wellfield, which had an impact on the LPR. They were pumping three million gallons per day and now they are not pumping since the plant shut down. It could have a greater impact if it was closer to the LPR.

McKee asked how many wells are in the LPR basin. Schmidt referred to the map and replied there were eight and now there are seven irrigation wells, but two will be taken out of commission soon. The maps show all irrigated agriculture in place in the year 2000 and all HCW of all types in Portage County.

6. DISCUSSION: HIGH CAPACITY WELL PERMITTING, PUMPING REGULATION AND FEES

Schmidt introduced Eric Ebersberger, Section Chief, Water Use Section and Larry Lynch, DNR Hydrogeologist.

Ebersberger stated the Water Use Section was formed about three years ago largely in response to the passage of the Great Lakes Compact Legislation. They are charged with implementing programs mandated by the Compact and Wisconsin's Compact Implementing Legislation. Most apply State-wide, but some apply only in the Great Lakes Basin (GLB), which is about 1/3 of land area in the State. The programs include water use registration and reporting, and water use permitting. HCW owner's report, which has been required for years. There is a Water Conservation and Efficiency Program (WCEP) that is being built, it is mandatory in the GLB for new or increased withdrawals, and is voluntary in the rest of the State and for existing withdrawals in the GLB. A Water Supply Service Area Planning Program is also being built. The rules in effect already are NR856, Registration and Reporting; NR852, Water Conservation and Efficiency; NR854, Water Supply Service Area Planning, which has not been made final; and NR850, Water Use Fee Program and Water Use Fee Rule, which have been in place since January 2011. In addition to the Compact Implementation, the Water Use Section does groundwater quantity reviews on HCWs, which Lynch heads.

Lynch apologized for any inconvenience of their late arrival. The review process has changed over the last 10 years. From 1945 to 2003 there was a process that looked at HCW applications and two main criteria. One criterion was whether or not the well would have an impact on a public utility well. Impact was defined as water

being drawn down by 10 feet or more, if the well was pumped for 30 consecutive days. The other criteria were whether or not the well was going to be constructed in accordance to the well construction code, such as the physical aspects of constructing a well. In 2004, with the adoption of the Groundwater Quantity Act, an environmental component was added to the review process. The law stated if there was a proposed well within 1,200 feet of a trout stream or other designated high quality surface waters, or a 95% water loss associated with the well, or an impact on a large spring, there would be additional environmental review of those wells to ensure there would not be significant adverse impacts. In 2006, staff was hired, including Lynch, to implement Act 310. Administrative rule NR820 lays out the process to follow for applicants and staff.

In the summer of 2011, there was Supreme Court decision on the Lake Beulah Management District versus the DNR. An approval was issued for a public water well near Lake Beulah in southeast Wisconsin. The review was conducted in accordance with standards in place at the time. The Lake Management District was concerned that this public well was going to cause an impact on the Lake. There was disagreement and they sued the DNR after the approval was issued. Circuit Court upheld the approval, the Lake Management District appealed, and the Appellate Court reversed the Circuit Court decision stating the DNR has the general authority to protect all waters of the State when considering a HCW application. This meant DNR looks beyond trout streams, outstanding resource waters, exceptional resource waters, and considers any waters of the State. The Appellate Court decision was appealed to Supreme Court, which confirmed the Appellate Court decision. In the decision it was stated the DNR has an obligation to protect all waters of the State when reviewing HCW applications, which means they have to determine impacts on lakes, streams, wetlands, public and private wells, and have a much broader scope of review than one year ago. When an application is submitted, it indicates how the well will be constructed, expected geology, type of well, how it will be cased, pumping capacity, daily use, and they input that information into a database and try to determine whether or not a proposed well will have an impact on one of those resources. If they believe there will be an impact, then conditions are placed on the approval. Common conditions are working with the applicant to move the well further away from the resource, or setting pumping limits, such as reducing the pumping capacity or imposing a monthly limit. The goal of the process is geared toward ensuring there is no significant environmental impact from the proposed well, along with other wells on the property. In this part of the State, where there may already be impacts occurring, DNR does not consider the impact of neighboring wells, they just look at the proposed well and other wells on that property to determine the total impact from that property.

Ebersberger stated this will be a very fluid part of the law. DNR has already been challenged on an approval issued in Adams County. One issue is whether or not DNR has the authority to condition or deny wells based on cumulative impacts. DNR reviews these applications based on wells on one property and only property's impact on the waters of the State. There has been some Legislative action on the issue. In 2009 there was a bill drafted that would have given the DNR authority to designate groundwater management areas based on unsustainable withdrawals. The idea was to set water budgets, see how much water was available, and have local planning to design a groundwater plan to live within that budget. The bill never made it out of committee. One thing DNR struggles with is if we are given authority to condition cumulative impacts, there is no set framework for how to solve the issue. If we deny a well, that person can make a claim under existing case law that they have a privilege of withdrawing a reasonable amount of groundwater. How are we going to resolve that claim by determining what is the water body being adversely impacted and how many wells are impacting it? How can we dial people back so that this person denied can have a reasonable amount of water? And what is a reasonable amount of water?

Hinrichs asked what are being used to determine an impact. Lynch replied the tools are simple models. One is a spreadsheet model that predicts how much pumping a well from an aquifer with certain characteristics will reduce streamflow. The tool used for lakes is more complicated because you have to know how the lake is connected to groundwater. Typically a simple drawdown model is used. We will simulate pumping the well at certain rates and see what drawdown will be. The same is used for wetlands. One thing we are lacking is data on streamflow. In order to figure that data, field visits are done to take a discharge measurement on the stream and use streamflow model compiled by the Bureau of Fisheries. They predicted what streamflow should be on essentially every stream in the State at different times of the year. Once all data is put together, we can predict how much streamflow will be reduced. Each stream is taken on a case-by-case basis. There is a presumption that you can have some impact, it comes down to whether or not the impact is significant or adverse.

Ebersberger stated some people do bring evidence of harm to us. In the Lake Beulah decision, the court stated that as part of the duty and obligation the DNR has to protect waters of the State from harm, was if people bring

evidence to us while the review is pending, it has to be considered as part of the review process. People are supplying what they feel is potential harm to the waters of the State. If we feel the evidence is concrete, then the burden is put back on the applicant to refute it. Otherwise the well will be conditioned to avoid the situation. The reviews can take longer, simply because of the back and forth on evidence of harm.

Schmidt asked if there is a code requirement for reviewing applications in a certain time period. Lynch replied yes, we are supposed to get approvals out within 65 days, but there is no presumptive approval. If we do not complete our review, following receipt of a complete application, within a certain timeframe the approval is not automatically assumed to be issued. We are doing the best we can to get reviews done in 65 days.

Feltz asked about regulation after permitting. Lynch replied the approach we have taken on wells with a concern, is to place additional conditions on the approval. Conditions could be related to well construction and to check on those, we look at well construction reports to verify it has been constructed correctly. Some will go into the field to check on well construction. Other conditions we place more routinely are pumping limits. There is a requirement for them to report pumping and also a requirement for wells that can pump greater than 70 gallons per minute to have a meter. Ultimately, these limits will be linked to a reporting system so that a flag can be sent up when they are in violation. Another common condition being placed since the Lake Beulah situation is to reserve the ability to reopen the permit to place additional limits, or require monitoring. We have been using the reopener condition fairly often.

Feltz asked if the wells from 1945-2004 have one set of conditions, wells from 2004-2011 have other conditions, and after Lake Beulah there are different conditions. Lynch replied they have been reviewed differently. The approvals are much shorter now. The older approvals were long and detailed with regurgitated code language. Now there is more streamlined approval, there may be special conditions placed upon an approval, but it is basically constructed according to code. The nature of conditions has changed. In the 1980's the only thing looked at in determining impact was whether or not it would have an impact on a public water supply well. Occasionally, there would be a limit imposed on pumping. Schmidt stated Lynch is talking about more than high capacity irrigation wells; he is also talking about municipal wells and industrial wells.

Lemke asked if an application is received for a HCW on a property where there already is a HCW, do the conditions spread out to the other HCW. Lynch replied yes. We may reduce the approved pumpage on an existing well or impose a condition that they may only have a certain combined pumpage. We have also required wells to be abandoned, if they have not been used much.

Schmidt referred to the map showing irrigated agriculture in Portage County and the GLB Area to the east of the groundwater divide. Ebersberger stated it is explicit in the Statute that in determining whether or not a withdrawal is from the GLB or Mississippi River Basin in our State, it is based on the surface water divide. While it could be pulling GLB groundwater, it is a Mississippi Basin withdrawal.

Schmidt stated water conservation requirements within the GLB are mandatory, but they are voluntary in the rest of the State. When doing approvals with pumpage limits and the well is more capable than the pumpage, the reporting is going to be what brings back another review. Those reporting can be careful to report only what they are allowed under the conditions of the approval, and there really is not a way to know any different. Lynch asked if he is suggesting data fabrication. Schmidt replied yes. Lynch stated yes that can happen, but eventually there may be a system of checking and looking at meters. People can always lie, but if they get caught, they will be penalized. It is a risk they will evaluate on their own. Schmidt stated he believes, in most cases, those people operating HCWs are reporting what they are pumping. He was just making a distinction between mandatory conservation plans versus the voluntary. Ebersberger stated the registration requirement requires any person with a water supply system having the capacity to withdraw 100,000 gallons per day, has to register it with the DNR. Any property that has surface water withdrawal above the 70 gallons per minute capacity, such as a dug pond used for irrigation, has to be registered with the DNR. People have to report their pumping annually by March 1st. There was an 85% compliance rate for the reporting requirement this year. About 40% reported online, which is quicker and more efficient.

Ebersberger explained water conservation and efficiency is not mandatory for anyone who was withdrawing in the GLB before December 8, 2011. They are grandfathered in and will receive a permit. If there is a new withdrawal after that date they require a permit, if withdrawing more than 100,000 gallons per day on average in any 30 day period. There is a general permit, which has a 25 year term, if you are withdrawing 100,000 gallons

per day, but less than 1,000,000 gallons per day. An individual permit is needed, if you are going to withdraw 1,000,000 gallons per day for 30 consecutive days. The individual permits have a 10 year term and one of the differences with these permits is they have to meet the decision making standard, which is ensuring they will not have an adverse impact on the waters of the GLB. The Water Conservation and Efficiency rule is designed to have conservation and efficiency measures or CEM's that are required by sector; public water sector, industrial sector, commercial sector, and agricultural irrigation sector. There are also different tiers, basic conservation measures, such as a system audit and leak detection, and information and education on simple water saving methods. The individual permit level has a higher tier of conservation measures. There is also a third tier of conservation measures reserved for people who divert GLB water, or people anywhere in the State who are going to have a water loss of two million gallons per day averaged over a 30 day period. Water loss is when it is diverted, incorporated into a product, or evaporated into the atmosphere. It is assumed with agricultural irrigation that 70% of the water will be lost. There is a rule being developed for water loss.

Ebersberger explained water use fees. There is a statutory base fee and a GLB specific fee. Anyone registered will have to pay a base fee of \$125 per year per property. Properties are defined as those with water withdrawal systems on them, wells, surface water intakes, that are contiguous and controlled by someone who owns or leases the property. The \$125 fee will cover all wells on one property, but if you also own, lease, or have a possessory interest in the property contiguous to it, there is a way to get the fee to cover both properties. There is a cap on the base fee; no person has to pay more than \$1,000 per year. In the GLB there is an additional tiered fee if you withdraw over 50 million gallons per year per property, which mostly affects public water systems, power companies, and larger industrial operations. This fee is capped at \$9,500 per year, but you have to pump 1.8 billion gallons of water to hit the cap. The easiest way to find information on water use programs is on the DNR website.

McKee asked if there are defined groundwater management districts. Lynch replied there are two areas designed as groundwater management areas for purposes of water quantity, which were defined in Act 310. There has to be 150 feet of drawdown from predevelopment days. One area is in southeast Wisconsin made up of several counties, near Waukesha County. The other area is in the Brown County area, between Green Bay and De Pere toward Appleton. So far nothing happens in those areas because there is not the ability to regulate. McKee asked if those areas were defined by the aquifer or geopolitical. Lynch replied a little of both. There has to be 150 feet of drawdown and in each case there was some groundwater modeling work done by the United States Geological Survey (USGS) and other researchers to define where the 150 feet of drawdown was. Then the law specified if you were in a civil township and any portion of the township had 150 feet of drawdown, the entire township would be in the management area.

Schmidt asked if an inch of water is put on 160 acres, what it is in gallons. Hopp replied 27,164 gallons per acre per inch. Different crops take different amounts of water on different growing days. McKee asked the average number of days in the season. Hopp replied it varies considerably by crop and weather. Lynch stated a lot of it has to do with what the plant is doing with the water that has been applied. If applying what the plant needs, it would be 100% water loss, which is a good thing in terms of efficiency. Hopp stated in 1980 the majority of irrigation was done with a manual type irrigation process. It took longer with more leaching and nitrate problems. Today they do not even manufacture those types of equipment anymore and farmers are capable of applying less than 2/10 of an inch just for germination. Lynch asked how many operators are using efficient systems and are fully automated. Hopp replied probably about 70%. Technology today is phenomenal to save water, money, and energy. Schmidt asked what percentage of acres in Portage County is being efficiently irrigated. Somers replied 80-90%, controlled by fewer growers.

Feltz asked what the DNR does with the fees they collect. Ebersberger replied several things. The Legislature requires we develop databases in terms of water resources inventory, which is how much water is used, where, for what purpose, and what are the water supplies throughout the State. There is money invested in building that database system. We are also developing a groundwater monitoring network, as well as a surface water monitoring network. Planning water supply needs through the water supply service area planning requirement. We are building the Statewide WCEP, and quite a bit of money is used for Information Technology (IT) needs and support for regulatory programs. Four permanent staff are funded through the fees, as well as two limited term employees. Approximately 1/3 of the money will go toward staff, 1/3 goes toward IT needs, and 1/3 for the monitoring program. Lynch stated there are other fees that help support staff, such as fees on HCW applications, which is \$500. For any well constructed in the State there is a \$50 notification fee. Ebersberger stated those fees are separate, the HCW and well notification fee go into one fund and the base fee and GLB

specific fee go into another, different staff are funded from those separate fees. Burns asked if any of the fees go out of State. Ebersberger replied no. The Counsel of Great Lakes Governors, which is the regional body for the Great Lakes states, has the potential to pay an annual fee to cover costs of that secretariat. Governor Walker has designated Secretary Stepp to the counsel.

McKee asked what the average is for new applications. Lynch replied it had been fairly steady, ranging from 250-300 applications per year. Last year was down a bit to approximately 240. This year they are back up, with about 150 so far.

Burress asked if there was any insight on the City of Waukesha application and if there was any precedence on the removal of water from the GLB. Ebersberger replied Waukesha is the first diversion proposed of its kind under the Compact. The Compact describes three things all states agreed to; a management system for large withdrawals, the permit system; to implement a WCEP in the GLB; and to ban diversions with limited exceptions, such as when a community straddles the basin divide. Waukesha County straddles the subcontinental divide, but the City is completely in the Mississippi Basin. One major difference is the diversion would have to be approved by all eight states. Provinces get to weigh in, but do not get to vote. Any diversion proposed will be case specific. For example, Madison could never get Great Lakes water because Dane County does not straddle the basin divide. Lynch stated it can only be for public water supply and they have to return an equal amount of water. Ebersberger stated Waukesha's proposal estimates that 35 years from now they will be at 10.9 million gallons per day on average and on peak days 18.5 million gallons per day. It does sound like a lot of water, but the Compact requires the water go back to the GLB. The application preferred return flow is to Underwood Creek, which is a tributary to Menominee. They have to show they do not have a reasonable water supply alternative in the Mississippi Basin. They have to return as much of the Great Lakes water they withdrew and minimize the amount of Mississippi Basin water that would come in. For example, try to minimize the infiltration and inflow into a sewer system that would then be treated.

Ebersberger stated Wisconsin is still a very water rich State with isolated areas of problems.

The Committee thanked Ebersberger and Lynch for their time and information.

9. DISCUSSION: SUGGESTED GROUNDWATER SAMPLING AND MONITORING GUIDELINES FOR PESTICIDES

McGinley stated at the last meeting we discussed the pesticides sold in the County in 2009. If anyone has comments or additions to those please let him know. Burns stated he has a list of five that he will provide.

10. GROUNDWATER QUANTITY ONGOING DISCUSSION

Burns stated he measured his wells for spring and compared to two years ago the majority are quite a bit higher. They measured 47 wells and one was five feet higher, nine were four feet higher, and 26 were three feet or more higher. He attributes it to the weather.

11. MEMBERS REPORTS

None.

12. NEXT MEETING DATE:

The next meeting is scheduled for Thursday, July 19, 2012 at 7:00 p.m. Conference Room 5, County Annex.

13. ADJOURNMENT:

Motion by Ruzicka, second by Feltz to adjourn. Motion carried by voice vote. Meeting adjourned at 9:00 p.m.

Jamie Phillis, Recording Secretary

Ed Burns, Chair

Date

**PORTAGE COUNTY GROUNDWATER CITIZENS ADVISORY COMMITTEE
CONFERENCE ROOM 5, COUNTY ANNEX
THURSDAY, July 19, 2012 - 7:00 P.M.**

MEETING MINUTES

GROUNDWATER CITIZENS ADVISORY COMMITTEE (GCAC) MEMBERS LISTING:

MUNICIPALITY	MEMBERS NAME	Attendance	MUNICIPALITY	MEMBERS NAME	Attendance
TOWNS:		07/19/12	TOWNS:		07/19/12
Alban	VACANT		Plover	Barb Feltz	Excused
Almond	Edward Burns	Excused	Plover Alternate	Nancy Lila	Excused
Amherst	Mike Burress	Present	Sharon	Casey Jakubek	Present
Belmont	Rita Walkowicz	Present	Stockton	Richard Filtz	Present
Buena Vista	John Ruzicka	Present	VILLAGES:		
Buena Vista Alt	Roger Turzinski	Present	Almond	Richard Burns	Present
Buena Vista Alt	Lynn Isherwood	Present	Amherst	Mike Hinrichs	Excused
Carson	Fred Copes	Present	Amherst Jcnctn	VACANT	
Dewey	Dennis Meis	Present	Junction City	Peter Mallek	Present
Dewey Alt	Kathy Girolamo	Present	Nelsonville	James Walker	Present
Eau Pleine	VACANT		Park Ridge	Paul McGinley	Excused
Grant	Mary Kiedrowski	Present	Park Ridge Alt	Christine Neidlein	Excused
Grant Alt	Scott Provost	Excused	Plover	Dave Fritsch	Present
Hull	Tim Zimmerman	Present	Rosholt	VACANT	
Lanark	Bill McKee	Present	Whiting	Matt Saloun	Present
Linwood	Garth Frost	Present			
New Hope	VACANT		CITY:		
New Hope Alt	Cathy Derezsinski	Absent	Stevens Point	Joel Lemke	Excused
Pine Grove	VACANT				

STAFF PRESENT: Amy Nitka, Ray Schmidt and Jamie Phillis, Planning and Zoning Department.

OTHERS PRESENT: Barry Jacowski - Portage County Board of Supervisors District 23, Patty Dreier – Portage County Executive, Barb and Jim Gifford, and Cathy Dugan.

1. CALL TO ORDER: The meeting was called to order at 7:00 p.m. by Vice-Chair McKee.

2. INTRODUCTION OF PROPOSED MEMBERS: None.

3. REVIEW/APPROVAL OF MINUTES OF MAY 3, 2012: Motion by Walker, second by Zimmerman to approve minutes. Motion carried by voice vote.

4. CORRESPONDENCE: Schmidt supplied the Committee with the groundwater portion of the “State of the County” address from the County Executive, Patty Dreier. Dreier stated she believes it is time for conversations to not point fingers and work together. If the Committee feels there is a role, she can offer to help move forward the future of groundwater in Portage County. Dreier welcomed the Committee members to call her office, or stop in, any time; she is willing to come to their location as well. She would like to form a stakeholder representation to have conversations with key individuals in the community that others can trust. We are not going to wait for the State to require us to do things, but can inspire from within. This is a “hot” issue that needs to move forward.

5. MCKEE READ THE PUBLIC NOTICE: Members of the public who wish to address the Committee on specific agenda items must register their requests at this time with such comments subject to the reasonable control of the Committee Chair as set forth in Robert’s Rules of Order.

Cathy Dugan and Barb Gifford registered to speak regarding agenda item #8.

6. UPDATE: LITTLE PLOVER RIVER FLOW

Schmidt provided the Committee with some flow reports and other handouts. The Little Plover River (LPR) has been doing quite well the last two years because of above average rainfall we received. Now that we have had such a long stretch without any precipitation, groundwater has to serve as sole source of flow for the LPR. The

LPR is just leaking off the surface of groundwater and as groundwater drops, less water leaks out. LPR flow is below the minimum healthy flow the Department of Natural Resources (DNR) set a few years ago [4 cubic feet per second (cfs) at County Road R] and is dropping. We are headed for a dry-up unless we receive a substantial amount of rain very soon.

Schmidt referred to a press release from the Friends of the LPR and a statement from George Kraft, "The River is naturally resilient to dry spells. In the days before pumping was as developed as it is now, the river weathered more severe and prolonged droughts very nicely. Flow records from the extreme dry times of the late 1950's and 1960's show the river flowing rather nicely for long periods. Too much groundwater pumping takes the resiliency out of the river. Pumping may amount to a foot of water on many fields this year." Even with irrigation on some of those fields, the crops cannot be kept healthy.

Fritsch provided the Committee with a handout regarding groundwater elevations. He takes measurements about once per week. There are two monitoring wells near the LPR. Also provided in the handout is a Concept Plan for a conservancy Area. Land acquired for the project will be taken out of irrigated agriculture and put into a conservancy area with walking trails. Grant money is involved and the project is getting closer to finalization.

McKee asked what the timeframe is to complete the project. Fritsch replied the land will be acquired in approximately one year, but development will depend on funds. McKee asked how many wells will be taken out of commission in the area. Fritsch replied two wells. J. Gifford stated he is on the Land Preservation Fund Committee and there was one well feeding everything, which will be carved out. Wells will still be there, but there will be fewer irrigated acres. Fritsch stated eventually the wells will be gone.

B. Gifford commended the Village of Plover and Del Monte for their conservation efforts. Fritsch stated it is a small step, but a start. McKee asked what the next step would be. Fritsch replied remaining land surrounding the area is designated for Department of Transportation (DOT) Wetland Mitigation, where they buy or swap land.

McKee asked Schmidt to explain the minimum public rights concept. Schmidt replied DNR has set the minimum flow at 4 cfs, which is the minimum flow under which the aquatic ecosystem can continue to thrive, below that level we will have negative impacts on fish reproduction, other creatures, and plants. Part of the scenario is, when flow is low enough the water warms up, and trout need cool water to survive. McKee asked if there were any consequences to public rights, other than to the ecosystem. Schmidt replied if the LPR dries up, obviously you cannot fish that stretch, which is one significant public right. There are people that use the LPR Wildlife Area for other activities, such as hunting and hiking.

McKee asked if DNR has any action they take once the minimum cfs is exceeded. Fritsch replied not at this point. They are looking for voluntary action, which is what we have seen happen, such as with the conservancy area, actions taken by Del Monte, and the Village of Plover switching most of their pumping to well #3, further from the LPR. McKee asked if switching wells presents a hardship to the Village of Plover. Fritsch replied yes, mostly in cost. Well #3 has higher nitrates, which costs approximately \$100,000 more per year. Also well #3 has harder water, which means stains, so aesthetically it does not look as good, which leads to customer complaints.

J. Gifford stated if people wish to know more on the public rights stage they can go to the Friends of the LPR website and click on several links to the DNR web page, including the public rights documents.

7. CONTINUAL ASSESSMENT SUBCOMMITTEE: SUGGESTED GROUNDWATER SAMPLING AND MONITORING GUIDELINES FOR PESTICIDES

Schmidt stated the Continual Assessment Subcommittee (CAS) is still consulting with the Department of Agriculture, Trade, and Consumer Protection (DATCP) groundwater section as far as recommended pesticide testing and sampling protocols. DATCP has standards for sampling. CAS has a conference call scheduled with DATCP to discuss issues. If every well could be sampled and analyzed, it would be the way to go, but since that cannot happen, CAS is trying to come up with a sampling protocol to be representative of the whole aquifer.

Zimmerman asked if DATCP relies on Environmental Protection Agency (EPA) testing of chemicals to update their list as far as gallons per day (gpd) for pesticides. Schmidt replied the State of Wisconsin has adopted groundwater standards and drinking water standards. Some are based strictly on EPA standards, some are more stringent than EPA standards, but they do incorporate standards that EPA sets. Zimmerman asked if a new pesticide comes out and EPA has not tested it yet, do they rely on the manufacturer specifications.

Turzinski replied a new pesticide cannot come out until EPA has reviewed it. Zimmerman disagreed. Schmidt stated whether or not EPA tests it, DATCP does a toxicological analysis before the State sets groundwater and drinking water standards, so standards are based upon what Wisconsin does not just automatically adopting whatever EPA has.

Girolamo stated she works for the Federal Drug Administration (FDA) who also regulates pesticides in food products and animal products. When FDA tests, there are many pesticides that show up on the test or chemical screen. We may not be aware of what it is, but we know what the components are. It may not come up with a brand, but we know there is a certain type of compound that will show up.

McKee asked how many chemicals do municipalities test for and how often. Fritsch replied it varies by year.

Jacowski asked if the Town of Hull did any more follow-up on their Groundwater Task Force. Schmidt replied the Task Force has taken their final report to the Town of Hull Plan Commission and they reviewed it. A public hearing with the Town of Hull Board is to be held near the end of August, then the Town Board will decide what to do from there as far as recommendations for sampling and anything else they feel is appropriate. Nitka stated there will be a summary of the report available for the public hearing. The report is basically complete, but has to be approved by the Town Board. McKee asked what recommendations are in the report. Nitka replied they are concentrating on an area of the township that has most significant quality issues to see if they can assist residents with looking at their water and making that information available to the township. There will also be resource recommendations for treatment options. Schmidt stated there are some wells with nitrate levels above the health standard even with reverse osmosis units. Burress asked if the high nitrate levels were from septic systems. Schmidt replied most likely not. In areas where there are only septic systems as input, other than lawn and garden fertilizers, we are not seeing the high nitrate levels.

8. GROUNDWATER QUANTITY ONGOING DISCUSSION:

A) CENTRAL WISCONSIN GROUNDWATER INITIATIVE

Schmidt stated the Central Wisconsin Groundwater Initiative (CWGI) covers parts of three or four counties, including Portage, Waushara, Adams, and he believes Waupaca, the areas where most irrigated agriculture is in the Central Sands. It is an attempt to do research on the effects of irrigation on groundwater, lakes, and streams. The University of Wisconsin (UW) – Madison is coordinating the entire effort. They are also trying to bring together different stakeholders in water quantity issues, such as farmers who irrigate crops, lake riparian owners whose lake levels have dropped, researchers, and concerned citizens. They are looking at coming up with knowledge base needed to make decisions about groundwater quantity. Some people think there is enough knowledge and we need to move forward, and others think there is not enough knowledge and are afraid if we move forward, someone will have to pay for the mistakes. There is about a two year research plan set for the UW – Stevens Point Experimental Farm in Hancock for putting monitoring wells in around some lakes and in the LPR basin to see what impacts are from irrigation on a real-time basis. During the last meeting everyone seemed ready to move forward until some lake owners said they could not do anything about the problem, but sit and watch the water level drop from their homes. They cannot put water back in the lake by pumping it from their wells because that will drop groundwater, which is at the level of the lake. They feel the only people that can do something are those taking water out of the ground to irrigate crops. This is where the idea fell apart. Research will move forward to add to the knowledge base, but as of right now the project is on hold.

J. Gifford stated the last meeting was May 22, 2012, but things have happened since then. Ken Schroeder, UW-Extension (UWEX) Agricultural Agent, is running a tour in August that will start at the LPR Park in Plover, then Hancock, Long Lake, Justin Isherwood's property, and more.

McKee asked what could possibly move forward. Gifford replied they now feel talking about the situation is better than throwing stones, so there will be on-going meetings with the initiative. He also believes they will set up a smaller steering committee consisting of a representative of each stakeholder group; growers, processors, and water advocates. It is facilitated by staff from the Institute for Sustainable Agriculture. McKee asked if this is the group that could start to develop a plan for managing groundwater. Schmidt does not believe they are at the point of talking about managing groundwater. They are still talking to each other and getting to know perspectives of other stakeholders. Researchers are doing basic knowledge gathering to move forward. He feels Portage County has a better opportunity to move the issue forward because here people have been listening to each other's perspectives for much longer, partly because of the LPR Workgroup, GCAC, and groundwater programming.

J. Gifford thought Dreier's idea of getting something together locally makes sense. There are six counties in the Central Sands, but each has their own separate issues. There is some resistance to a one-size-fits-all solution. It is perfectly reasonable for Portage County to do what is best for Portage County. McKee stated the groundwater is connected.

Dugan stated in September 2010 there was a Water Quantity Forum where it was found that people in Portage County did not know as much as they needed to know. Now we do know a lot and have the science and Schmidt did a wonderful job of presenting the science. The forum was done in two parts; first the science, which was very educational. Then there was supposed to be the economics from UWEX, which presented a conflict of interest and a clear report was not given. If farming brings jobs and that is good, then maybe they can pump more. She feels it should be kept here in Portage County because there are a lot of resources here. **(Portions of recording on comments inaudible).**

Walkowicz stated they are dairy farms and need the irrigated water to water corn they are going to feed to their cows to help keep the cost of food down in stores. She feels that all she hears is high capacity wells (HCW) are bad without ever thinking there are a lot of little farmers out there. We are not all big vegetable growers. It is still a HCW issue and people want to lump it all together. HCW are not bad, everyone needs them, but where the line is drawn she does not know. She is just tired of hearing how bad they are. McKee stated he did not hear "bad" so much and does think we all need the water as our common resource. The issue is regulating, if we are going to stop the lakes and streams from drying up.

Jacowski felt that Dugan misrepresented agriculture when she said it does not bring good paying jobs to the County. Turzinski stated Ken Schroeder from UWEX did a report on what agriculture does for the community and it was right up there with industry. McKee agreed agriculture is 25-35% of the economy of Portage County.

Schmidt stated one thing he has always said consistently is HCW's are not the problem because not all HCW are managed the same. The well is not the problem it is management and regulation of water use. When people look at HCW and irrigation rigs they may not realize it is only pumping a few hundred gallons per minute and putting on a quarter inch of water to keep the dust down, which is not wasted water.

Copes asked what is happening to groundwater in northwestern Portage County where there is basically an absence of irrigation. Mill Creek, on which he owns 130 acres, is dry and there is no irrigation on it. Schmidt replied it is a matter of shortage of precipitation. The soils out there above bedrock do not hold much water and there is not much storage for long dry spells. McKee asked Copes if he has seen Mill Creek that dry before. Copes replied about two years ago. In other counties such as Oneida, Vilas, and upper Lincoln where he has fished trout in creeks, now there is not one drop of water flowing, yet they have gotten rain. There are also lakes there down 10 feet and no irrigation around.

Kedrowski stated we cannot just blame wells for drying everything up; they do if they are not run well. There is a lot of domestic overuse of water. If farmers have to cut back, everyone should have to cut back in a dry season. Schmidt stated we are all in this together. McKee stated the community is making an effort.

B) WISCONSIN POTATO AND VEGETABLE GROWERS ASSOCIATION (WPVGA) IRRIGATION TASK FORCE PROGRESS REPORT

Schmidt stated he spoke with one of the principals of the WPVGA Task Force Jeremy Pavelski, Heartland Farms; he does a lot of data gathering. When they first started the Task Force they thought they could put together a history of what people have done in the past; groundwater levels people have measured and precipitation data from people's rain gauges. They found there was such a diversity of data gathering that they were having a difficult time putting it together. The push is to now go to more efficient pumps for irrigation, low pressure irrigation, timing irrigation, and putting on lower quantities of irrigation water in order to prevent over watering and to stop leaching of chemicals past the root zone. They are taking significant steps, but they have not moved as fast as they thought and are not ready to release information to the general public.

McKee asked for anecdotes on the current drought and what farmers have done to keep crops growing. Turzinski replied they are doing a lot of irrigating, which makes him feel like people are blaming farmers for the dry up. This drought is happening in places where there is no irrigation. From his perspective, he does not want to try and irrigate one day and find out he does not have any water. There has to be some solution. He would

hate to see good farmland go out of production or food shortages. The important thing is that people are getting together to discuss the issue, such as the Irrigation Task Force. One thing they are doing is putting field mapping on cultivators, equipment that passes through after the crop is growing, which reads certain properties in the plant to see how well they are growing. Then they put fertilizer through the irrigation specific to what the plant needs in each area of the field with different soil types. He thought one farmer in Portage County was going to try this system. Kedrowski asked if it was expensive. Turzinski replied yes, but probably not as expensive as running out of water. McKee liked the question, "How expensive is running out of water?" Walker stated it speaks to the complexity of the problem; it is not a simple solution by any one part of the users. We talk about HCW and irrigation issues, but population growth and number of developments that draw upon the water supply have an impact as well. We should look at the entire picture and see if we can afford to allow more development of properties, control the amount of agricultural land developed, or if changing weather patterns are going to extensively alter our resources for years to come. Turzinski stated we should not only look at agricultural development. Through housing and development many springs near the LPR have been destroyed.

Jacowski stated research also needs to look at the amount of water pumped out of the groundwater and discharged into the Wisconsin River that runs to the Gulf of Mexico. We need to think about keeping water here in some sort of retention. Girolamo agreed and thought we should not stop with just discharged water, but when there are heavy rains and a lot of water, instead of letting it flow to the river systems of our watershed, we should be slowing it down and keep the water from eroding things. In June there were heavy rains in Duluth, the water ran off into the Mississippi River and flooded La Crosse while the rest of Wisconsin was in a drought. Think about how much water is just gone away from the State. Schmidt stated municipalities have actively been working on groundwater infiltration and keeping surface water from running off into storm sewers. Walker stated he is from southern California originally, the Los Angeles community inputs water. The Los Angeles River, which is usually bone dry, is a run-off channel. Water in southern California comes from the Owen Valley to the north. It does not matter what weather is like in southern California as long as it rains or snows in northern California where it is caught and piped down. He does not see a similar kind of reservoir system here. With all of the natural resources available in Wisconsin and the tremendous amount of weather that comes through here, is there a way to create some reservoirs to hold some of the water to be used during crisis time. Fritsch stated in the Village of Plover, every non-residential development has to have a site plan review and all stormwater has to be retained on site. It is a start to retaining water. The Village is working on a study for revamping stormwaters that come up above normal groundwater levels and keeping it there instead of letting it flow to the river.

Turzinski asked hypothetically if we hold water back, what happens to the Mississippi River. Walker stated even downstream they get too much water at times. They do not want that much water flowing at that rate. Girolamo agreed. They do not want to lose their topsoil and all its nutrients. Turzinski stated the Nutrient Management Program (NMP) is trying to build a buffer between fields and streams so there is something to retain groundwater. McKee asked if Planning and Zoning does stormwater reviews. Schmidt replied yes. McKee thought stormwater retention would be a good agenda item for the next meeting. Walker agreed. There are no wells in Australia and they depend totally on rain water and catching it. He feels we need to educate people here that may be interested in doing the same, such as rain barrels and even more elaborate methods.

C) HIGH CAPACITY WELL PUMPAGE IN PORTAGE COUNTY

Schmidt provided handouts with graphs of HCW pumping. Not every HCW is equal or pumped equally. The graphs show the amount of irrigation water pumped out of an individual well by month. Schmidt referenced one graph from 1978 showing it was barely pumped, which was because it rained all summer. They also show that irrigation wells are not pumped constantly. The years it shows them not being pumped regularly are years they grow crops that do not need much water, or they received sufficient rainfall for the crop. Farmers only pump enough water to overcome the deficit.

McKee asked why some pumped more than others in the same year. Turzinski replied some of it could be timing: when the crop is planted and what type of crop is planted. Water pumpage should be dropping for irrigation now because some of the crops have been harvested. It also depends on what time of year you begin the drought. If there had been plenty of rainfall up to this point, less water would have been pumped. J. Gifford stated a DNR designated HCW could be a small well on the property that already has a couple other wells on it to get you above the HCW level. Some pump less, but are listed as HCW because the entire property pumps more than 100,000 gallons per day. Schmidt stated Portage County actually has several HCW, Lake Emily Park for instance has several residential type wells that pump 20 gallons per minute, but in the aggregate they go over 70 gallons per minute, so all the wells are considered HCW.

Schmidt provided a map showing the location of larger HCW. They do not take into account the DNR definition where they group a bunch of smaller wells together on a property. If we add in all smaller wells, we end up with a few hundred extra wells Schmidt does not consider true HCW like DNR. J. Gifford stated some of the new HCW application approvals have been restricted to pumping a certain amount of gallons per week or day. McKee asked if it was monitored. Schmidt replied yes, all new HCW are required to have a water meter.

Schmidt referred to the map. In the northeastern part of the County we see a lot of new HCW and more irrigation being developed. In the eastern part of the County, as those irrigation wells develop, we will see more of an impact on the aquifer, unless we can manage these wells. Burress asked what the average depth is for those wells. Schmidt replied not much deeper than private wells, 100-150 feet. Turzinski stated the reason for more wells in the eastern part of the County is because they could not get permits to pump out of streams, lakes, or rivers. Jacowski stated there is an input cost as well. You cannot afford to put in a crop and not raise it to its full potential. Schmidt has been told that farmers are not only using wells for insurance against drought, but they are putting more water on to increase the yield to help pay off the irrigation rig and the well. Jacowski stated that would be a viscous cycle. We need to be more efficient in the field. Burns stated the water is not free either. The electric bill for running an irrigation rig can be quite expensive. Turzinski agreed. It costs him about \$7 per inch per acre, which is just his cost, such as electricity and maintenance, not equipment or labor.

Zimmerman asked if people still invest in federal crop insurance. Turzinski replied not really, hail insurance is separate, but wind, flooding, cold weather, and frost is covered. Ruzicka stated insurance costs depend on how much you want to put toward it.

D) GROUNDWATER LEVEL RESPONSES TO LAND USE CHANGES

Schmidt referred to the graphs of the LPR basin. Wells on the south side of LPR are in the area where we have had some farmers change their farming practices to conserve water. You can see the contrast between irrigation levels from the 1970's and 1980's up to 30 million gallons and in 2007-9 they were only using about 10 million gallons even though those were drier years. Irrigation wells north of LPR have seen changes as well, such as impacts from different crop rotations.

B. Gifford asked if the Committee would respectfully consider encouraging DNR to not permit any new HCW in the Portage County basin. She is not referring to replacement wells, just new. Turzinski stated the DNR gentlemen were at the last meeting and he recalled them saying they were taking the whole LPR basin into consideration for any approvals. McKee believed Gifford was talking about a moratorium on new permits in Portage County. Turzinski thought it would infringe on people's rights. Jacowski felt that any group that tries to touch that subject would be taken to court and tied up in litigation. McKee thought Jacowski was slamming the door on the issue and he did not see anything wrong with discussing it. Turzinski stated there are some areas of the County that do not have groundwater level problems. Schmidt agreed. There are some areas in the County with no groundwater problems. J. Gifford stated the DNR almost never turns down a HCW application.

Schmidt stated in defense of DNR, they almost never deny a HCW permit application because drillers are savvy enough to not send in an application they know will get denied. DNR does place conditions on some new permits. He does not see where a moratorium on new HCW would be as controversial as some may think, as long as it was part of a concerted effort to resolve the issue. McKee agreed. That is what GCAC is here to do. Do we take this into our own hands? He believes it is up to the Committee to develop programs and protocols for management. We are here to educate ourselves and make recommendations to the County Board on what to do about our water. He likes spirited dialogue as long as everyone remains civil.

9. NEXT MEETING DATE:

Next meeting is scheduled for Thursday, September 6, 2012 at 7:00 p.m. in Conference Room 5, County Annex.

10. ADJOURNMENT:

Motion by Copes, second by Ruzicka to adjourn. Motion carried by voice vote. Meeting adjourned at 8:43 p.m.

Jamie Phillis, Recording Secretary

Bill McKee, Vice-Chair

Date

**PORTAGE COUNTY GROUNDWATER CITIZENS ADVISORY COMMITTEE
CONFERENCE ROOM 5, COUNTY ANNEX
THURSDAY, September 6, 2012 - 7:00 P.M.**

MEETING MINUTES

GROUNDWATER CITIZENS ADVISORY COMMITTEE (GCAC) MEMBERS LISTING:

MUNICIPALITY	MEMBERS NAME	Attendance	MUNICIPALITY	MEMBERS NAME	Attendance
TOWNS:		09/06/12	TOWNS:		09/06/12
Alban	VACANT		Plover	Barb Feltz	Present
Almond	Edward Burns	Present	Plover Alternate	Nancy Lila	Excused
Amherst	Mike Burress	Present	Sharon	Casey Jakubek	Present
Belmont	Rita Walkowicz	Present	Stockton	Richard Filtz	Excused
Buena Vista	John Ruzicka	Present	VILLAGES:		
Buena Vista Alt	Roger Turzinski	Present	Almond	Richard Burns	Absent
Buena Vista Alt	Lynn Isherwood	Present	Amherst	Mike Hinrichs	Present
Carson	Fred Copes	Absent	Amherst Jcnct	VACANT	
Dewey	Dennis Meis	Absent	Junction City	Peter Mallek	Excused
Dewey Alt	Kathy Girolamo	Excused	Nelsonville	James Walker	Absent
Eau Pleine	VACANT		Park Ridge	Paul McGinley	Present
Grant	Mary Kiedrowski	Present	Park Ridge Alt	Christine Neidlein	Excused
Grant Alt	Scott Provost	Excused	Plover	Dave Fritsch	Present
Hull	Tim Zimmerman	Present	Rosholt	VACANT	
Lanark	Bill McKee	Present	Whiting	Matt Saloun	Present
Linwood	Garth Frost	Present			
New Hope	VACANT		CITY:		
New Hope Alt	Cathy Derezinski	Absent	Stevens Point	Joel Lemke	Present
Pine Grove	VACANT				

STAFF PRESENT: Ray Schmidt, Jeff Schuler – Director, and Jamie Phillis, Planning and Zoning Department.

OTHERS PRESENT: Barry Jacowski - Portage County Board of Supervisors District 23, John Holdridge – Town of Hull Chair, Pete Arntsen, Cathy Dugan, and Barbara Gifford.

1. CALL TO ORDER: The meeting was called to order at 7:00 p.m. by Vice-Chair McKee.

Burns entered at 7:01pm.

2. REVIEW/APPROVAL OF MINUTES OF JULY 19, 2012: Ruzicka felt the minutes on page 4 misrepresented a discussion that took place between Dugan and Walkowicz. He thought Dugan had made a comment that “farmer’s only sit at a desk and pump water,” which he felt was not the first time she made a disparaging comment about farming. Schmidt stated the minutes are drafted from notes, as well as a recording, and are only summarized. This was not an intentional oversight. McKee thought the next paragraph summed up the situation by stating ‘Dugan misrepresented agriculture,’ which provides some balance. Chair Burns asked if the recording could be reviewed and a little more of the conversation added to the minutes. Motion by McKee to approve the minutes with correction, second by Ruzicka. Motion carried by voice vote.

3. CORRESPONDENCE: Schmidt supplied the Committee with a letter from the Town of Hull regarding the proposed construction of two gas stations in the City of Stevens Point.

4. BURNS READ THE PUBLIC NOTICE: Members of the public who wish to address the Committee on specific agenda items must register their requests at this time with such comments subject to the reasonable control of the Committee Chair as set forth in Robert’s Rules of Order.

No one registered to speak.

5. IMPACTS OF STEVENS POINT DEVELOPMENT ON TOWN OF HULL GROUNDWATER

Holdridge stated about one year ago citizens addressed him on groundwater quantity. At the time, well #11 was being constructed off State Highway 66 by the City of Stevens Point, so the Town of Hull decided to assess their water situation. The move went quickly from quantity to quality. There are at least 2,020 private wells in the Town of Hull (2,020 households). The Town is attempting to analyze all those wells by taking data from the University of Wisconsin – Stevens Point (UWSP) water lab from the past 20 years. There were four sections of the Town involved, with concentration on the southeast section, which happens to be north and south of Highway 10 where the City of Stevens Point has proposed two gas stations. A final report is being written and the Town will need to figure out some way to selectively analyze some of the wells in that area. We are already aware of high nitrates. One issue is the discussions on groundwater only focus on lakes, streams, and municipal wells. No one is discussing private wells. Holdridge cannot imagine any worse disaster in the Town of Hull than to find out there are contaminated wells and people cannot drink from them. Most often the issue is when someone wants to sell their house, a water test is required, and high nitrates are found. The UWSP lab offers a Homeowner's Package for water testing, which costs \$49.

Burress asked what action Holdridge would like the Committee to take, such as a resolution against the gas station or a letter to Mayor Halverson. Holdridge thought both were good ideas. He stated both Schierl and Kwik Trip have all the technological advances, but nothing to avoid human error, which seems to be the biggest issue. Fritsch wondered what could be done to avoid human error.

McKee asked what the restrictions are in Wellhead Protection Areas. Holdridge replied it requires a conditional use permit and has to go to the Common Council for final approval with a series of restrictions applied. Lemke stated essentially what happens is in that zone of the Wellhead Protection Area, which is Zone B, everything needs to be done according to its zoning classification, but there are certain things that can be approved by conditional use only. That process gives the ability to put in more stringent requirements.

Zimmerman asked if the City of Stevens Point shrunk the size of the zones. Lemke replied the City is in the process. There was other modeling to modify Zones A and B to be more or less restrictive where appropriate. Zone B is 60% City of Stevens Point and the remaining area is partially in the Village of Whiting and elsewhere, which does not mean it should get a blanket approval. Lemke is struggling to not wear too many hats, as a Committee member and Director of the City of Stevens Point Water Department. The agenda item is the impacts of Stevens Point development on Town of Hull groundwater, but all of the concerns point directly to things other than Stevens Point and our development. He felt the agenda item should have been titled differently. Holdridge disagreed and believes the issue is that Stevens Point has promoted two gas stations without input or planning from the Town of Hull. Simple communication could have been better between the City of Stevens Point and the Town of Hull.

Zimmerman stated years ago when the spill occurred on State Highway 66, the City of Stevens Point refused to provide, even on a temporary emergency basis, water to neighboring households. He asked what would happen if a spill would occur from either of these proposed gas stations. Lemke replied he is unsure of some details because it happened before his time with the City. The Kwik Trip on Stanley Street years ago was called Kickapoo and used to be in the Town of Hull. They had a leak or a spill, which was found through one of the City of Stevens Point monitoring wells. Lemke stated he has a hard time believing the Water Department, at that time, would have refused temporary emergency connection to its distribution system. It would not be refused at this point. There is some pretty strict language about water service for out of town customers. If it were a matter of an individual trying to get municipal water without annexing, it would not have happened unless we are told to make it happen by someone who is a regulator authority.

Holdridge was excused from the discussion.

McKee stated the Village of Park Ridge has private wells, but the sewer is connected to City of Stevens Point. The Village is not annexed and still an individual municipality, how is that possible. Lemke replied sewer and water are separate. McKee understands that the City of Stevens Point makes money off the water. Lemke replied we make 2.5%. The rate of return is for operating services. Burns asked if it is regulated by the Public Service Commission. Lemke replied yes. McKee stated the Town of Hull is facing a huge issue. Lemke stated he would like to address that situation. He thought the agenda item should have been titled "let's protest the installation of two gas stations," which is what the discussion is.

Burress stated he would like to see some sort of resolution or action taken to slow down the process. Lemke stated what makes him comfortable with the decision are the conditions placed on it. There is the ability to place restrictions on the project and manage it appropriately. Burress asked who is responsible to pay for a spill. Lemke replied it depends on the situation. Gas stations are required to carry insurance that would be needed.

Schuler stated the Department received the plans for both gas stations and were able to look at the conditions involved. Based on review, Schmidt made some good suggestions. Each of the gas stations has 29 different conditions for its approval. Schmidt made comments on over 12 of the conditions to either increase the frequency of testing, or to tighten up regulations. It does not make sense to place a gas station in a Wellhead Protection area, but from a land use and zoning standpoint, with all of the conditions placed upon the approval, he felt comfortable that it is as safe as it can be. The County had nothing to stand on to stop the process.

Schmidt stated the County Wellhead Protection Ordinance prohibits gas stations and underground storage tanks within Zones A and B. In order to consider a gas station at either site, those needed to be annexed into the City of Stevens Point, which has its own Ordinance in place and considers those as conditional uses, not prohibited. The City did put a lot of conditions on the approval. Zimmerman asked if those conditions are to detect or prevent problems. Schmidt replied both. McKee asked if it was a done deal. Lemke replied if the Committee is looking to draft a resolution before Common Council, there would not be enough time. Schmidt stated it is not a done deal until the Common Council acts on it, which is next week. At the Common Council meeting they will take public comment. The Committee cannot act on a resolution tonight that is not on the agenda.

Jacowski stated he finds it ironic that the County Wellhead Protection Ordinance is willing to protect the City of Stevens Point wellhead recharge area, but the City itself is not willing to protect their own wellhead. Lemke disagreed and did not believe that was exactly accurate. The point is that things otherwise allowed in zoning districts outside the wellhead zoning districts are either restricted or conditional uses. Conditions are placed on the approval to make it an allowable use. Jacowski stated the County Wellhead Protection is only for the City of Stevens Point, which the County is protecting. Schmidt stated when the County Wellhead Protection Ordinance was first written, it closely matched the Ordinances of the City of Stevens Point and Village of Whiting and there was no economic reason for annexation to the incorporated municipalities. Now with the City Wellhead Ordinance rewritten to allow conditional uses, there is an economic benefit to annex. The County may provide a higher level of protection than the City, however, the City is providing, with the conditions, prevention and detection.

Schuler stated the reason this is on the agenda tonight is because Holdridge contacted him with a concern that did not get mentioned before he had to leave. He wanted Wellhead Protection for individual wells and wanted to know how to get that accomplished. Schuler had advised him to start with this Committee, especially since the Groundwater Management Plan (GWMP) update is a current project.

6. UPDATE: LITTLE PLOVER RIVER FLOW, OTHER PORTAGE COUNTY STREAM FLOW, AND LAKE LEVELS

Schmidt stated when the Committee last met in July he was certain the Little Plover River (LPR) was going to dry up, but it did not. The level was dropping quickly, as well as levels in the groundwater monitoring wells; the LPR was on course for drying up. Some of the groundwater monitoring wells have continued to drop; they are at their lowest level since July 2010. We did receive a lot of rain in July, August, and September 2010, and more into 2011. The management efforts in the LPR basin have kept it from drying up. Other streams in the County have not been as fortunate, such as Stoltenberg Creek.

McKee asked if the LPR was still below the public rights level. Schmidt replied yes. McKee asked if Schmidt attributed the fact the LPR did not dry up to management. Schmidt replied the lack of pumping from the Village of Whiting Wellfield, Del Monte discharging water closer to the LPR, and the Village of Plover transferring most of their pumping to Well #3 are all major factors. Also, farmers planted crops early this year, so irrigation ceased earlier. McKee stated this is an example of groundwater management. Burns stated he noticed the wells he monitors are at the same level as 2010 and Long Lake has water, when two years ago it was bone dry. He believes they are putting undue credit on groundwater management. We are seeing things happen in other parts of the County. He believes that Mother Nature did most of the work. Schmidt stated different parts of the County respond differently.

Turzinski stated AJ Bussan made a point that since there was an early spring, many native plants matured early and are no longer using water. He also believes Mother Nature deserves credit. Schmidt agreed that native plants either died off or went dormant from the heat.

McKee asked Burns, based on his last comment, if he was against or does not believe groundwater needs to be managed. Burns replied over the last few months the well readings did not accurately reflect what the model would show with no rainfall. With excessive pumping and no rainfall, groundwater should have been plummeting. So how can that be explained? Is the groundwater table so massive and unpredictable that we are just guessing and managing on a guess? McKee asked if Burns thought we should not manage and assume there is an endless supply. Turzinski stated the Wisconsin Potato and Vegetable Growers Association (WPVGA) Irrigation Task Force is working to put together actual models of groundwater. Right now we are using presumed models. We do not want to judge groundwater and how it acts by our surface water. Schmidt agreed. Turzinski stated the only way to know how to manage groundwater, if we have to manage it, is through research. Schmidt disagreed with the statement "if we have to manage it," we have to manage it and figure out how to do so right now. Burns stated Schmidt was using his prediction and his model saying LPR was going to dry up and it did not. Schmidt stated he was watching the groundwater level in the monitoring wells drop one foot per month and based on that, the LPR should have dried up.

7. CONTINUAL ASSESSMENT SUBCOMMITTEE (CAS): SUGGESTED GROUNDWATER SAMPLING AND MONITORING GUIDELINES FOR PESTICIDES

McGinley stated CAS is still working on recommendations on testing for pesticides based on pesticide use in the County. We met by phone with a scientist from the Department of Agriculture discussing strategies to come with the number of wells and how best to locate those wells to give an evaluation on the likelihood of pesticides being in the groundwater.

8. STORMWATER RETENTION REQUIREMENTS FOR MUNICIPALITIES IN PORTAGE COUNTY

Schmidt stated Lemke is going to help with the requirements for the City. The Planning and Zoning Department has different requirements for the County. Any areas with impervious surfaces are assumed to be contaminated, whether it is a roof top or parking lot. Anywhere water cannot infiltrate can pick up contaminants as it runs off. The County has to regulate stormwater in wellhead areas and within 300 feet of surface water bodies; they need to have a stormwater plan, such as how the stormwater will be retained on site. It has to infiltrate through at least six inches of topsoil. Depending on the size of the lot, this may be done by containing it, keeping it on top of the ground, and letting it soak through the topsoil. Most developments subject to a stormwater plan like this are on smaller lots and need to have some constructed basin, which has to be sized for a 25 year storm event or a 4 ½ inch rainfall. County Zoning staff does the stormwater review and the County Conservationists do the calculations to see if the plan works.

Lemke stated the City of Stevens Point is in the process of transitioning this function from the Public Works Department to the Utility office. As of January 1, 2013, the Utility office will have a stormwater utility. Chapter 31 of the City Ordinances is the Stormwater Ordinance. It is much more development based, where it basically starts at an acre or more. If you are going to disturb an acre of ground, a stormwater plan, permit, and approval are required. It requires tracking in and out of the site, so you are not carrying any solids over the site and also to control the discharge of stormwater (during construction) off the site. A plan is submitted. The City of Stevens Point has been a municipality regulated by Wisconsin Pollution Detection and Elimination System (WPDES). Every year we write an annual report stating what we do and how we do it. More information on the process can be found on the City of Stevens Point website.

Hinrichs asked if there was a way to control. Lemke replied there is the ability to require a stormwater plan and an erosion control plan. They are reviewed on a case-by-case basis. Schmidt stated the County Ordinance allows for a stormwater plan to be required on any site where there is a substantial amount of stormwater that needs to be dealt with.

Arntsen stated stormwater regulation changed in mid-2000. Construction projects wanted to get rid of stormwater as fast as they could. The State changed the rules to say the run-off cannot be more after construction than before. The emphasis has been on municipalities finding ways to slow down stormwater run-off, by putting in swales or infiltration basins.

9. GROUNDWATER MANAGEMENT PLAN UPDATE

Schmidt provided the Committee with handouts on the GWMP process. Section 6.0 from the GWMP will be used as the basis for moving forward. More knowledge and science will be added to the GWMP that we have learned since 2004. There is a need for a Technical Advisory Committee to look at specific items in the GWMP. Members should include local agency staff, University staff, and private sector experts. He anticipates the group meeting two or three times in September and October. What they come up with will come to the full Committee as a draft in November as a consideration. This fall Schmidt is planning to hold meetings with local government to share with them the knowledge we have of existing groundwater conditions within their municipalities. He would like to learn from municipal officials what they consider to be groundwater related issues and what the County may be able to do to resolve them. Results from those individual meetings will be brought to the Committee and members will be invited to attend those as well. The plan is to start the local effort off with a short presentation to the Portage County Chapter of the Wisconsin Towns Association.

Jacowski asked what Schmidt would like to see from the Committee. Schmidt replied he would like the Committee to feel comfortable with adding this to the process established in November 2011. Jacowski stated in order for the Committee to give approval on a new committee, they should know who the members are going to be. Schmidt stated we have not invited the people yet to the Technical Advisory Committee. We anticipate local people involved in groundwater protection programs, such as the County Health Officer, Ken Schroeder, Paul McGinley, and people familiar with other GWMP's.

Schuler stated the basic thought is the GWMP is overdue to be updated. With a large Committee structure such as this and meeting every other month, it is impossible to see progress. The idea was to get a smaller group of people to go through technical aspects of the background of the GWMP. Then bring their ideas and issues to the November Committee meeting. Subcommittees can meet more often, but will still need to justify their work to the Committee. The County Executive has made groundwater quantity issues a main concern for the upcoming year.

Jacowski suggested asking people from WPVGA to sit on the subcommittee. Schmidt stated they will bring in people like that for certain aspects. Jacowski asked if the Committee will be able to approve the list. Schmidt replied if they would like. We do not want the technical committee to be bogged down with politics. Schuler suggested having the Chair make the decision for the Committee; whatever they feel comfortable with.

Schmidt stated he would like to get the process moving and will keep in communication with the Chair.

10. GROUNDWATER QUANTITY AND HIGH CAPACITY WELLS ONGOING DISCUSSION

Schmidt stated at the July meeting the County Executive attended and made a presentation on what she would like the County to do on groundwater quantity issues. She is not willing to wait for the State to put anything in motion and would like to put together people on a local level to work on groundwater quantity and solve our own problem. Schmidt has suggested some names to her and she also came up with some people she believes will be a part of the group; people with the ability to make changes needed and to help set policies in place. Anything that comes through the group would come to the Committee for action, then on to the Planning and Zoning Committee and County Board. The group will represent various parts of the community that are concerned with groundwater, and agriculture is one of those parts.

Walkowicz asked if the Executive is forming the group on quantity for High Capacity Well (HCW) usage. Schmidt replied no, it is for quantity in general, not just for HCW. They will look at agriculture, industry, municipal water supplies, and the environment. Walkowicz is concerned this group will start telling farmers how much water they can pump in order to feed their animals. Schmidt replied he does not believe that is the intention, but the situation now is anyone can pump any amount of water for any purpose. We have seen problems with groundwater quantity in certain areas of the County, which is what she is looking to address. Burns asked if any recommendations would come through the Committee. Schmidt believed that would be the case, but the County Executive can make any final decision.

Walkowicz was confused on how the Executive can make local policy, if the State has authority over policy. Schmidt replied the State has legislative and rule writing authority. We have to live within what the laws and codes are. Dreier does not believe the State is taking a leadership role in moving forward and addressing groundwater quantity issues in Portage County. She is taking an initiative to educate people, bring them together, and develop groundwater policy recommendations for what should be done. Burns asked who they will be recommended to. Schmidt replied our legislators and County Board.

Schuler suggested having the County Executive make an appearance at the next Committee meeting, if possible; otherwise, he and Schmidt will find out everything they can and report back. Schmidt stated Dreier is concerned with balancing the resource with the economics. She realizes the agricultural sector is a major economic player and she wants to do what is best for the County as a whole.

Walkowicz asked if Dreier can only make recommendations and not implement anything. Schmidt replied Dreier cannot do anything that is not allowed under the law or State codes. Lemke stated currently counties do not have the jurisdiction to limit groundwater withdrawal.

11. UNLIMITED TOPICS

Skipped.

12. MEMBERS REPORTS

None.

13. NEXT MEETING DATE:

Next meeting is scheduled for Thursday, November 1, 2012 at 7:00 p.m. in Conference Room 5, County Annex.

14. ADJOURNMENT:

Motion by Lemke, second by Zimmerman to adjourn. Motion carried by voice vote. Meeting adjourned at 9:30 p.m.

Jamie Phillis, Recording Secretary

Ed Burns, Chair

Date

**PORTAGE COUNTY GROUNDWATER CITIZENS ADVISORY COMMITTEE
CONFERENCE ROOM 5, COUNTY ANNEX
THURSDAY, November 8, 2012 - 7:00 P.M.**

MEETING MINUTES

5. GROUNDWATER IMPACTS FROM CHANGES IN CROP ROTATIONS ON IRRIGATED FIELDS

Burns stated AJ Bussan is a professor at the University of Wisconsin – Madison (UW) Horticulture Department. He has given speeches before on the evolving land use of agriculture and how the potato acreage is declining and some of the lower use crops are actually increasing. Burns has heard him speak before and has enjoyed it and thought he should present to the Committee.

Bussan thanked the Committee for inviting him to come speak. He is an Extension Specialist working in the Agriculture and Natural Resources Extension side. His job is primarily a vegetable cropping specialist.

Bussan began his presentation and will cover a few different topics. There have been some questions about what is happening in terms of how we grow crops, what crops we actually grow, what kind of patterns we have seen with that over the course of time, and how some of the different crops use water. They are not all the same, we don't grow them all the same, and some are highly sensitive to drought stress and heat stress in particular. Others are a little more tolerant and we don't need to maybe water them as aggressively. In visiting with some Committee members and reading some of the minutes from the past meetings, it seems like some people would like to learn a little more about those things. There was a specific question about what the Groundwater Task Force is doing. One of the bigger efforts that it is undertaking is actually trying to start to increase your capacity for monitoring groundwater, monitoring groundwater in particular in a couple of the sensitive areas where there is a lot of questions and concerns about what is happening both in the ground and surface waters. I am not a hydrologist per say, but have sort of taken on the challenge on how we figure out what to do with our vegetable production system to try to make the most efficient use of the water we are applying, the growers are applying, and then the second part of that would be to try to figure out ways that we can actually maybe get by with pumping less to maintain our crops.

This graph and there will be several subsequent to it, will just talk about crop production patterns of the most recent years. This is probably one of the best success stories with regard to more efficient use of water that we have in the central part of the State. When I first started in Extension in 2001, we were growing somewhere around 85,000 acres of potatoes in the State of Wisconsin, and 75% of that was in the seven counties we call Central Wisconsin. Portage County is down below it to show that where it is over 20,000 acres of potatoes. At that time there were 270-280 potato farms in the State of Wisconsin. Several things happened, not sure we need to get into all the details of that, but the profitability of the potato market really left it for quite a while. By the time we got to 2004 or 2005 we had 130 potato farms left in the State and we're growing 25% fewer acres, so that actually dropped to about 60,000 acres total, which equals what we were growing as a whole and we see 20,000 acre reduction in planted potato acres and harvested potato acres in central seven county areas. What's that mean? We are using 30-35% less water to grow potatoes. I think you are all smart enough to understand that something else was planted there, this is a big success story because potatoes is actually one of the most water intensive crops that we have, so by reducing acres of potatoes, we reduce the amount of water we're using. The other thing that happened, when I first started about a third of the crop or even more was planted to Russet Burbank, mostly because it was feeding the Orieda plant, or then the McCain plant in Rapids. If I'm wrong you can correct me, but one of the big areas of loss was the production of Russet Burbank for that plant. We are now growing, that's actually one in four planted acres in the central part of the State, most of the crops that replaced it primarily Russet Norkotah, which is sold for fresh market, actually grows for about three to four weeks less per year. What's that mean? Well really we to use water to grow the crop, right, but when the crop stops growing then we stop applying water to maintain ET, and so not only did we reduce the potato acres, but we switched to a potato crop that actually requires about two or three inches less water than Russet Burbank did. And believe it or not, a lot of that transition happened immediatly around the vicinity of the Little Plover River (LPR) some of those growers were some of the bigger process growers and now they almost exclusively grow fresh market and early harvested crop. So that has been a big shift that has happened at least in my time here.

Burns stated usually Norkodah is harvested first. Bussan stated so that is a good example where we won't bind to something like Russet Burbank until after the first of September. That doesn't mean...how many people have driven by a dead potato field and they see the water system going on and think well that's ridiculous. Why are you doing that Ed? Burns replied to keep it cool mainly. Bussan stated yep, there you go, so, but it takes about a third of the water to do that as it does to grow the crop. So it's not that we stop water use, that's why we don't say, well because I dropped....inaudible...vine kills...that crop is about the first of August. If we were to stop watering all together it would be like a five inch reduction in water use, but we do have to still apply water to maintain, actually, the moisture content and the tubers so that they still....inaudible....so they have good quality when we go to sill. That's a lot of talk about potato. One of the big things we saw almost per acre, per acre increase, about half the acres went into snap bean productions. This is also sort of a success story, why is this a success story? Snap bean grows for 54 days, potatoes, Russet Norkotah is a 90 day potato, and Burbank is 110-120 days. Again here is a 40 day reduction in the number of days that the crop is actually growing. Snap beans take 6.2 inches of water to grow from the time we plant to the time we harvest. Potato requires about 13-18 inches depending on the growing season and the variety; I can actually show you a variety and some data later on. So we also think that this is a real positive story to tell as well.

Pea acres, we've actually seen an increase in pea acres. Actually one of the big things that you see with peas, is peas actually are grown with...first and then snap beans came in behind it. So we actually have about 15,000 acres of peas grown in Central Wisconsin. Almost 80% of those acres are planted back to snap beans and that increases the water use back up around 15 or 16 inches in terms of total ET. But that's again only about one in three snap bean acres total that that happens on. There is also a one in five pea acres that are only grown, now peas use a little bit more water, that's because they come up, how many people grow peas or seed peas in their garden, right? We plant them in really narrow rows, like this right? And they come up out of the ground and they produce full canopy almost immediately and so that's why they use more water because they have more green vegetation, it's really what we're talking about.

Sweet corn is where we've actually seen a really big increase over time, from the 1980's until now, and then almost all of it is increasing, about 80% increases the curve in Portage County. All of it is irrigated. And you'll see there's about a 15,000, oh not quite, about a 10,000 acres jump since 2004-2005 when potato acres reduced. So that's where some folks have observed that when you are pumping more, or we have more irrigated agriculture, this is one of the crops that's represented in. And again it is only an 80 day crop and for the first 45 of it, it's not anywhere near full canopy, so it's not using full water like a potato crop would. So we're really working on this yet, I have not done the research to finish this all up, but we've figured that corn uses somewhere around, an ET of 10 or 12 inches. Now I've mentioned ET a couple times. How many people in here know what ET means? That's evapotranspiration, that's a big word. Evapo is evaporation, so that's direct water evaporation from the soil. Transpiration is evaporation through the green vegetation. So we'll see evapotranspiration will typically be two to three times what you'll see in bare soil. Mostly because the plants are very effective at pulling the water out of the ground. And that allows them to open up the leaves so that they can take in carbon dioxide and that they can grow basically.

The other crop that has increased a great deal is soy bean and we'll talk about that in a minute. What's not well known is how much of that is actually irrigated versus how much of it's not irrigation. Because soy bean is actually very drought tolerant and can be planted on a lot of dry land or non-irrigated acres and actually do fairly well, outside of this year. Just to give you an indication, corn is yielding anywhere this State this year, if you had 50% of corn you'll be pretty happy. And that's like around Dane County and things. We went 85 days without more than a half an inch of water, which is unbelievable in my house. So I have actually seen corn die in the field for the first time in my life, where it actually died, didn't produce anything. Soy beans actually sat there and didn't do anything for two months, and then it started raining about the last week of July and we actually got 70-80% of yield potential. So it is really amazing what it will do without a whole lot of rain, a whole lot of water. And I'll talk a little bit later about how we're trying to take an advantage of that when we grow soy bean as an irrigated crop. One of the big things that's talked a lot about is that we're seeing big increases in field corn. This is the National Ag Statistic Service data for the seven counties, we've not seen changes in acreage, but I don't know if this reflects are...is some of that field corn actually being irrigated now and it was dry land before. And I'll tell you how we are going to try to sort that out, if you're interested, in a little bit. So this is just all crops, irrigated vegetables in blue and vegetables and vegetables and agronomic crops in purple. We believe, our best estimates are somewhere around 250,000-280,000 acres of irrigated vegetable production...or irrigated production. In the County, I have heard estimates as high as 300-320 I actually might have written that in the paper somewhere, I have revised those numbers based on some more recent data. Yet we have a total across

the seven counties of about 500,000 acres of irrigated...of all crops planted and harvested. Schmidt asked how much in Portage County. Bussan replied in Portage County I do not have that specifically. This is just, I consider the seven counties all Wood, Adams, Juneau, Waushara, Waupaca, Portage...maybe part of Marquette as well. Most of the reason I did that is I'm fairly familiar with the soils. They're growing vegetables all the vegetable crops are irrigated, there's no longer any dry land vegetable crops, but there's quite a bit of dry land corn and hay and soy beans. That's why it's little bit harder to tease that part out.

So that's just kind of some...inaudible...data, this is actually self-reported by the farms to USDA and to the Wisconsin Ag Statistic Service actually. And so in order to move this conversation forward and start understanding water patterns and specifically water patterns in specific watersheds, actually since 2003 USDA basically collects imagery of every township in the Country. And so this just shows what some of the plot maps maybe look like that go back and then we combine that with aerial imagery. You can see the pivots here versus these...this is a...non-irrigated field here and you can see where there is some other non-irrigated fields because they have the square shapes, you don't see the rounded corners on them. We could combine these over the top of one another, along with other data, then we can go out, and we can find where the irrigated fields are at, where the cultivated fields are at and then we can go in and we can start to do imagery assessments with different colored wave lengths and this all gets really fancy and I'm not sure we ought to get into the details because I don't know if I understand it, as to what the outcome is. We could come back and by the time we're...USDA risk management agency is done, we could go in and now we can access these data layers that have these different color codes. What does that all mean? Or we could go into Portage County, and I could come over here to the LPR Watershed or the Plover River Watershed, right? And we could create assessments on what all the land use is basically with those data layers. We don't have to go out and go field to field and assess it. So in the Plover and LPR Watersheds there is a million...over a million acres and I'm not sure...we could probably argue over the boundaries and determine whether or not that is accurate or not. The estimated total acreage within that is somewhere, that's farmed, is about 38% is planted to crops and about 17% of the total land area is actually estimated to be irrigated crops. And the red is the peas, potatoes, soy beans, sweet corn, miscellaneous fruits and vegetables, corn, carrots, alfalfa, and included in that...so we could actually go out and say how much of the land area is actually a planted to the different irrigated vegetable crops versus fallow...inaudible...oats, hay, small grains, pasture hay, spring wheat, winter wheat, etc. The other part of that is that 10% of it's actually in developed land, its roads, its buildings, its city. Natural areas, the different cups, wildflowers, deciduous forest, evergreen forest, grasslands, wetlands, etc. That's actually the biggest part of it, 41%. And then open water actually is almost 10%, around 9%.

A lot of this discussion, so why has it become so important. Well we just looked at all the different crops that are growing, if we could start to understand how much water each crop uses, then we could start to maybe be some type of quantification to what the total number...or the total ET would be by township or by watershed. And then maybe we start to say, well if we get different precipitation patterns we could start to see what kind of balance we might have between the amount of precipitation that occurs versus the amount of ET that's occurred across the landscape. That's sort of where we are headed. There have also been questions about....well I'll talk more about this in a minute...but is it pumping, is it ET, is it recharge. There are fairly substantial debates about this right now across the different scientific groups. But the reality is, we are actually starting to work towards trying to understand and assess that in a much more accurate way and try to predict that so that we can start to get a feeling so if we have years like we had this year and we're going into next year and we don't get a lot of precipitation, maybe folks can make decisions on what they want to plant to differ...or make a different impact or change or conserve water. Or maybe we know we have really good water, groundwater levels, maybe they could be more aggressive than what we are growing or planting.

Zimmerman asked if any of the farms, that are like that, are they just strictly just vegetable, fruit, or do they have animal units. Bussan replied this does not take into account any animal units of any kind. So it's just vegetation cover. There are some mixed agricultural operations where they have cattle along with growing crops, but I think up until recently almost all of the land was almost exclusively crop production. Of course I think you are all aware that that's changing in some of the different parts, parts where we're seeing some larger dairies come in, to Grand Marsh and down in Richland. I don't know where the rest are all at, but....

Burns asked are you going to assign ET value to the developed area, the natural areas, and the water, if you want to get a collected ET for the whole area. Bussan replied it needs to be done. I'm not going to do that. So we're working very specific. Me and the Water Task Force, along with the growers, are trying to do the crops and I will show you very specific information on how we're doing that in a minute. In the terms of the water use,

Ray asked me to get into that a bit, I will also show you how they manage. I would really like to see how this is; you know what's going on over here so we can figure out how to manage. I think one of the big questions I have is...I know that some farms are being...the Village of Plover, I talked a great deal with Dan Mahoney, for example, there's a couple pivots that are being talked about. Some of the land is being reverted back to a natural area in cooperation with DNR. My question is what do we plant there to try to maximize recharge and make it most water use efficient. Because those fields have been planted to snap beans and sweet corn and short season potatoes and I'm not sure every summer it'll use any more rain. We're using more water than some of the natural vegetation that might be established there.

How many people know what evaporation is off of bare soil? It is 13-16 inches of water per year off of bare ground. Turzinski asked if that is tilled soil. Bussan replied yes. Turzinski asked if it was covered with grass. Bussan replied it depends. Burns stated that is half the rainfall. Bussan replied 15 inches would be. I think the big thing...that didn't happen this year because it's gotta rain in order for the evaporation to occur off the soil, right? So the soil has to be wet, once...sand...this is the other part that is very complex, is sand is a different beast. If we go down to like where I'm from in Madison, we have silt loam soils you actually get percolation of water up. That never happens in sand and so...we also have, you know, some of the vegetation has rooting capacity 20-30 feet, so it has a pretty substantial water supply to draw on to survive from. And so I think there is a lot of debate of what that looks like, at least within the scientific groups. Hinrichs asked if that 13 inches is for sand. Bussan replied it is actually, that's if there's normal precipitation patterns where we get an inch to...what is it...6 ½ inches of rain for June, 5 ½ for May, 4 ½ for July, 2 ½ for August, or something like that. None of them are over an inch in size. It gets to be, it's not trivial, and it varies a lot year to year. The larger...the less frequent the rainfalls, the less the evaporation will be. But I would say...this creates an opportunity for agriculture because soil, say on a snap bean field, Ed, how many weeks out of the year is that bare ground. Burns replied a lot, beans are 50 days, so the whole rest of the year. Bussan asked do we need to maintain some type of grass...is it better to keep a cover crop on top of it to help cool the soil...inaudible...losing the grasslands less. Do we need to keep residues on the top, like if you harvest a corn crop, do we just let that corn still relay there and not incorporate it right away so that we provide shade and keeps the soil cooler. Burress asked if he had numbers for the difference between the bare soil versus the cover crop. Bussan replied I don't. That's a good question, we have a graduate student that's gonna be working on the Isherwood farm I think, that's gonna spend a great deal of time looking at effects of crop residues and cover crops and bare soil on evaporation areas, correct. Does that sound right to you? Isherwood replied yes. Bussan stated I met with her earlier this week so that's one of the more exciting things that's going on. Alright, so any other questions on this? Kiedrowski asked if he was saying the evaporation rate is approximately the same if it's sandy soil or clay. Bussan replied it differs. We'll see more evaporation off of medium or heavy textured soils because we get percolation of water up typically. But you also get crusting; it's compiling a whole thing. I'll be honest; I'm confused by all that. The soil scientists love that kind of stuff, but it's just....I don't mean to belittle its importance I just cannot comprehend all of it and I'm sure I'm misspeaking on some of it. Kiedrowski asked if the crusting will slow down the evaporations. Bussan replied the crusting would, absolutely.

Bussan continued...so one of the things we actually do...I came from...I worked at Montana State for a while and...and four million acres of their farmland actually fallowed to try harvesting...(inaudible)...they actually tilled it...very shallow about one to two inches about every three weeks. And what that does is creates a pack of layer...in that really like fluffy area and that maximizes recharge in soil. I don't know that that will work in sand because you can't pack sand like you can some other things. Filtz stated somewhere it was brought up...about 10-15 years ago about row crop farming...you know...because it is open in the center to put like rye or grass to keep the water in and it never materialized, but it was brought up several years ago. Bussan replied so...that's actually something we are actively pursuing in a different project. I also think...there's not a lot of no till and I think it's something we ought to reconsider. The processors don't tend to like it because they think it increases trash that ends up in soy beans. They use sort of a...all these little fingers to pick the pods off the plants, I don't know if anybody has seen bean harvesters...they theoretically harvest trash with it...um...so they don't like it, but I'm not so sure it couldn't work if it's managed correctly and it's the right cover crop. But I would say this is an area where we have some work to do. I want to just talk a little bit...oh...this is neat...so this actually shows the potato crop in Central Wisconsin with the previous method I talked about where we go out and use all the fancy maps and stuff. This is the average number and then this is how it's declined basically from 80,000 down to around 60,000 or 70,000 acres and so...(inaudible)...it works. We talked a lot about snap beans and this just shows...we talked earlier transpiration...evapotranspiration in the planted crop is really...even though we do get evaporation it is driven by the vegetation. It's driven by the green part of the crop. And this just shows how one particular variety of snap bean grew over the summer and this is important because then we go back and Ed

takes this type of data, or Roger or other farms, and they try to figure out well how much do I have to water. Well they know that, if we're at 50% of canopy cover...that while the crop only used 50% of it what my daily estimate would have been...this is called adjusted ET so they lower it. So you might be able to go four days between irrigations when the crop is at 50% canopy cover and then when you get to full canopy you might have to go every other day. This just shows daily evapotranspiration from the time of planting, which was 6/22 out to the day of harvest, which was I believe was 8/15 or 16. Basically shows it took about a...almost a half a month to get up to where it was using 20% of the potential ET and almost a full month before it was at 50% of ET. It also shows that really the average is somewhere around about 15/100 of an inch a day even when it's full canopy, except for in 2012 when this would have been up here around here. Difference in 2012 was this took...um...I think this is almost 58 days, this crop was maturing at about 46 days because it was so much warmer and...(inaudible)...faster. And sometimes that doesn't always work out very good. Stuff to be harvested...stuff needs to be harvested before July 28th or so we're running around four tons if I understand my words from the processors correctly. The reason that is is it's so hot when the flowers were forming that the flowers were dying in response to the heat. Once we got past that date, we had snap bean harvest like 12 tons the acre...(inaudible)...for field average. I had plots that went 17 tons, it's just never happened before, it's unbelievable. Just because we planted them later and so it's more efficient. So then the question becomes, was it better to plant earlier and use water early or do we plant late, how do we best do that? Nobody has given me an answer to that question.

Zimmerman asked what that translates into bushels an acre. Bussan replied bushels an acre. Zimmerman stated 17 tons doesn't mean a thing to me it's how big...(inaudible). Bussan stated you've caught me a little off guard. You could do some...I'll tell you an answer before the end and it will be in cans, how's that. Zimmerman stated I was just thinking of a farmer down in Missouri who's doing African beans, things like that, and is getting like 243 bushels an acre. Bussan stated that is high...for beans that is incredibly high. Zimmerman stated for like African beans, they are like 16 inches or so. Bussan stated well...it's not...bushels is a volume measurement, so you have to convert...I don't know what snap beans would weigh for volume, but I can talk...I was going to try and do something quick but I don't think that will work.

Bussan continues this just shows if we take all that data we can do cumulative ET, this is harvest, we got and this is from 2010, that during the snap bean crop we had 4.8 inches of precipitation or 4.9 inches of precipitation and we used 6.4 inches of ET so we had to add...the grower had to apply 1.3 to 1.4 inches of irrigation. This year changes it a lot compared to other years. So what we're doing now is working with growers to go out and get averages over the last 20 to 30 years so that we can come up with...what does a crop use every year based on their own data. And then come back and then go back and evaluate all those years how did they manage precipitation versus irrigation. That's where it gets a little tricky, because I read in the minutes...somebody said something about, well they just kind of turn the system on and then they let it go. Well that's not exactly, oh before I get to that, so the question is well what happens if I don't apply 6.2 to 6.5 inches, what if I decide to skip an irrigation? So in 2010 we did that...um...this was at...anybody know where the Firkus Farm is? Everybody knows where the Del Monte plant is; you go past the Del Monte plant by about a half a mile and take a right. This field is right there where we do this work. We did half the plots...we skipped the irrigations, the only five days we could, which was basically right at the same time the crop was flowering. Everybody remembers 2010, right, what was special about it? We got 30 inches of rain from May 1st to October 1st. The Little Plover River for the last three weeks of September...the last 10 days of September actually came...the groundwater around it came above the ground, right. So people had potatoes sitting in water, that's never a good thing. Anyway, so we skip...all that rain, we had like 12 inches of rain during this crop, but we got five days where it didn't rain and the sun came out and it just so happened to coincide when the crop was in flower and we skipped. This is what we got; we got about a two ton reduction in yield versus where we didn't. Now the year after that it was a lot more easy to manage with regard to irrigation, we didn't have so much rain. In that year we actually skipped irrigations...um...it was almost two inches worth of irrigation up until the point...the plant started to flower and we got almost no difference in yield. So now all of a sudden instead of about...I'm not sure we lowered evapotranspiration because the plants still are using water even though they're thirsty based on all the modeling and all the data we had, we did reduce pumping by about an inch and a half or two inches. That's 54,000 gallons on an acre and we got the same yield. Is that a good thing? Right? Now Ed's sitting there saying to himself, and maybe Lynn, and others are saying, well wait a minute, what if I do that at the wrong time and...(inaudible). That's why we are trying to learn more so that we can give the growers the tool to know exactly how far they can push the envelope and not risk the productivity or the quality of their crop. Does that all make sense? So I think that is one of the things we're spending a great deal of time doing.

This is just a different graph. Take it to another level. This is my other question, I read in the minutes somebody made a comment well they don't, they just turn on the systems and sort of let them run. This is graph that shows all of the decision making that goes into irrigating a crop. And actually a big piece of data that is missing out of here...because we don't have adjusted ET, this little blue bar...that's every time it rains. Right? So we had a 75/100 of an inch of rain on potato and the next day we get like 11/100 then 20/100 that's almost a full inch, a little bit over an inch in three days that the crop only used about 75/100 of an inch. Because if we look at ET's for that day, they are right here in the red, right? So they only used 6/10 of an inch. So what happens to the extra half an inch? Went down beyond the root zone and that's on the way to the groundwater and that has its own questions associated with it. That's recharge events that occur in the crop. So you see they are tracking that, they are tracking water use. Every day we send an email out from the University of Wisconsin the climatology group, to whoever...whatever farm signs up for it, some of the farms pay for it on their own for different services. But every day they get a note or an email that tells them how much water the crop used the previous day, what the ET was. Then they measure precipitation, they measure irrigation and then they determine when to turn it on based on this ET number. And then what this purple line shows is this was the ET, what was the course for the entire summer, and then this was the amount of total water applied. So for potato in 2011 it was somewhere around 20 inches. What's significant about this is Russet Burbank. Right? So it's that heavy water using potato crop. If we talk about...actually that's wrong...this is Bannach Russet because it didn't die until the 10th, it's actually longer than Russet Burbank. Ed mentioned he grows mostly Norkodah's and he stops watering on August 6th, 14 inches. So he still...(inaudible)...but it wasn't near as much. So that's one of the things we're looking at is part of that as well.

I know there's a lot more soy beans grown and a lot more soy beans grown under irrigation. But again remember I said that soy beans are one of the lowest water using crops out there. So this is actually showing the same graph...all the data this farm in this particular year decided to actually deficit irrigate, or irrigate below ET and that's why we are seeing total water applied deviate from total ET to the point where the crop...the total crop ET was estimated to about 20. The adjusted ET, based on the canopy, is somewhere around 16-18. Then the total water between precipitation and irrigation was only 13 or 14 inches. They've actually applied four inches less water than the crop needed. So you start running numbers like that, 100,000 gallons per acre less pumping than what we're currently asking. They're commanding through...through our irrigation scheduling modules. This goes again...how do we manage...how do we make recommendations so growers can make informed decisions about when can we maybe conserve on irrigation versus when can we start to target a little bit more. Schmidt stated that's a significant water use for present pumping...that's a significant savings in energy costs for the farmers. Whereas you said your ET email tells them what the ET was so that...I'm thinking that they would want to replenish that the next day, but you're saying they may be able to go that. Bussan replied yes. Depends, so you can...soy beans they'll only become sensitive like snap beans when they start to flower. Once they start to flower you can't really cut them because then they'll be really...you'll start having negative impacts on yield. We're spending a fair bit of time trying to sort through that. Again this is potential ET, so this is the numbers every day...we send them the numbers...all this red. Again recognize back here when the corn crop is at May 29th everybody remembers how cool it was, there was no corn on the ground. Right? Or very little corn so it wasn't using a whole lot of water. So if you look here and went almost three weeks and didn't apply any irrigation on this corn because ET's were low plus you had no real canopy. Really the interesting thing with corn is that we also know that once it starts to tassle it becomes very sensitive to heat and water. On July 25th or 28th or whatever we got to tassling then all of a sudden boom...these two lines are running parallel because the grower doesn't want to jeopardize this corn filling. The overall savings on this was about two inches per acre under what his estimate for what his ET was based on the growth and development of this corn crop and versus where he was at and so...um...it's a little bit complicated you got to think about everything that goes into it again as this ET number how big's my crop, how much vegetation is there, how much does that reduce my potential...my actual ET, then how much water do I have to apply relative to how much rain I'm getting. And I think Ed, I assume you keep records almost identical to this and Lynn and everybody else does, correct? And on top of that we have guys that go out there...so how many days a week do you go out and dig in the ground and figure out how wet the ground is with your hands. Burns asked in the summer. Bussan replied yes. Turzinski replied every day. Burns replied sometimes more than once a day.

Bussan stated this is all the math and this is what the models and all the fancy climate data tells us, they still go out and they double check to make sure that its using. Why does this become important...we saw potatoes, not this year so much, two years ago on August 10th they had full canopy, they stopped growing. They go out and they squeeze the ground and the water's still...even though the numbers say we should be applying water, there's no water use. That's the ideal we find that potato that stops bulking stops growing starts shutting down

but maintains canopy to keep the ground cool. Reduces the water we have to apply. So, anyway. This is just all the different crops over the 10 years...let's see...I think this is 88 to 98, we haven't gotten everything all done yet, but the alpha, this was basically the amount of rain, the average amount of irrigation that was applied, the average ET, and then the average adjusted ET, and so these numbers become pretty important back here. In terms of alpha was like 15 inches of ET per year, corn was almost 14. The amazing thing about corn is it ranged from 13 inches to 18 inches. And so you get wide fluctuations and what happened this year. This year was a 18-20 inch year for corn. One of the things to remember about corn is that basically it was done by the 25th of August. It reached black layer...it's supposed to grow until September 5th or September 10th, but it was so warm it grew too fast, or grew faster. So they stopped...(inaudible)...irrigating. I don't know what makes this...here's peas that's actually 11 ½ inches, which was bigger than I anticipated, but again it's because they come up out of the ground and they close canopy really quickly. The big thing with peas is you can apply...you should not apply any irrigation, if possible, until they flower because it promotes root rot. So most of the farms won't irrigate...is that correct...or irrigate very little until they flower because we don't want root rot. You actually see 14-18 inches, but the amount of irrigation isn't very high...they're also grown when it tends to be pretty wet because of rain, so we only applied 4 ½ inches. Potatoes actually has a high amount of rain, actually full season. This 11.6 inches, the reason that is is this farm actually harvests potatoes in July a lot of times, so it's a cross over crop. So now 5% of the crop is harvested in July, about 10-15% is harvested in August, then the remainder is grown into September. Then there's soy beans and some other things.

This goes back to create these maps, then we can go and start to figure out, well what's the ET and if we do this over enough years we can look at how much irrigation does it require relative to the amount of rain fall that occurs. Turzinski asked wouldn't peas really historically take less water because they're applying it early and July and August are actually our driest months and peas are usually off by then. Bussan replied that's exactly right. Even though it's a 12 inch crop, if we compare how...let's see if I can find some...like corn and peas, well they're pretty similar actually...I don't know. Turzinski stated but corn uses the water later in the season when we get less rainfall, so we're actually irrigating corn more than we are peas. Bussan replied right, but this doesn't show...that's right but this does not show yet...if I understand it correctly...I've got to go back. We're just starting this part of the analysis. So I go back...what we don't show is the amount of precipitation that occurs that doesn't get used by the crop. So we have recharge that occurs typically in April or May at the same time that we might...so we might go six days without a rainfall the last week of May, then we have to irrigate our peas if they're in flower, but we might have had rain on either side of it I think everybody will agree that the precipitation patterns are higher in May and June than the rest of the year. Well the last three summers, we've had more rain in August than we did in May, June, or July, if you go back and look at the numbers, which is really kind of interesting. I mentioned the water task force before...um...working with growers, working with the village, working with the processors, and anybody who wants to participate, let me know. It's not my committee, but I think there's a lot of interest. But there are research priorities that have...and this comes from the subcommittee...we're trying to improve the amount of data we have about what's going on with the groundwater. There's about 50-60 farms that are collecting well depth data on over 200 different wells right now and putting into a common database. We're actually in the process of installing an additional 75 wells...we met with DNR yesterday to get more pumping...or more stream flow monitors, lake monitors, things like that. This big question is it pumping or is it ET or is it recharge? And I don't know the answer to that, but we're trying to address all three areas. How do we become more efficient in our pumping, how do we maximize our ET, and our return on our ET...(inaudible)...do that over a shorter period of time. And then how do we maximize recharge when we don't have a crop growing are the three big areas that we're focusing on...and we're trying to understand how those three things interact. There's a lot of effort on water conservation. This gets in trying to improve water use efficiency, for example, this year we're going to grow a crop that's 110% of the 2004 crop, in terms of total hundred rate harvesting. We, the growers did do that, that's in the bins...um...they did it on 25% fewer acres. Again that's a win, right? We made our most water heavy crop more efficient and we've seen big changes in the variety that are grown at the same time. To me that's a real success.

How do we improve groundwater recharge? Can we do this in a landscape scale? A lot of disagreement in terms of can we actually install dams and drainage ditches and then try to hold some water back and then make that available to go out and actually irrigate with. And would that change our impacts or improve the efficiency that we use water. I'm sure many of you are aware that McDill Pond is empty right now. That lowered the water table to the point where a lot of trees around it actually didn't do so hot this summer because they didn't have access to the groundwater. Other ways to do mechanical recharge...one of the things...anybody know how many gallons are pumped out of...wastewater are released out of the Village of Plover on an annual basis. Jacowski asked you mean discharged down the river. Bussan replied yes. Some thought about...can we take

the greywater and instead of putting it downstream has been Wisconsin policy basically since DNR came on board, can we actually take that the other way and landspread it or use it in a way that we eliminate the potential for environmental damage from whatever contaminants remain in the water and then take advantage of it with regard to managing the groundwater. That's just one example of what we might do with mechanical recharge. Again talking about the drainage systems...can we actually hold some of that water back? We want to know if there is a minimum groundwater levels that we need to maintain in sensitive regions to make sure that we minimize impacts on surface waters. I think we all understand that the groundwater is linked to the surface waters. Nobody can give us really hard numbers like on...where does the groundwater need to be on August 1st to make sure that the Little Plover River maintains a healthy flow. Does anybody know what that number is? We haven't identified what that is yet, so that's one of the challenges we have. One of the thoughts is maybe there's places where we should reestablish wetlands and I think that's one of the things the Village of Plover is doing with the Soik farms...or Soik family and the DNR. So anyway. This is just the water monitoring...this just shows all the monitoring we're doing at Long Lake. One of those is near your place I believe Ed. Those are the pink ones or the ones we've actually installed this summer. There's a couple green ones where they actually are installing it. and then Maribeth Miffin has actually put two monitors on each side of Long Lake so she can monitor the lake level as well. So we think that that's positive and we've also asked DNR if they'd help us do a monitor on Huron Lake.

This is Pleasant Lake, there's a lot of discussions about that. This is actually a farm where we have six monitoring wells installed just to see what happens when we turn the well on in this pivot and how big of an impact does it have. We're going to put some more in between this farm here and then Pleasant Lake is here. They think they've seen fluctuations in groundwater or surface levels. This is another lake where nobody has really said anything and there doesn't seem to be an issue. So we want to try to see what the relationship is between groundwater and lake levels in this region. Stoltenberg Creek, how many of...I've not been up here a whole lot, that's up here. They talk a lot that that is...more fluctuation year to year, but that seems to go back quite a ways, so there is some hope that...you see the green spots where there's USGS wells. We have about three or four monitoring sites we might put in there. Then this is the Little Plover River, we've not established any wells yet. The yellow spots are where we might get established wells; the blue ones are where wells have or are existing. So we are trying to figure out how do we take advantage of those. Again just trying to understand the relationship between the groundwater levels and the flow of the river.

Hinrichs asked what are you using to determine where you're putting the yellow pins. Bussan replied I don't know, we talked with George and we talked with some landowners and sort of got an idea where...George being George Kraft...I guess...and so basically trying to know based on where the flow is, so I understand things correctly, this groundwater...all the people in the room can talk to this better than I can...basically flows this way and down to the Little Plover. So we're trying to see how the groundwater fluctuates relative to the flow rate. Right here is where I think the gauge station is at so we're trying to make...we talked to DNR to make sure that that's calibrated. So that's given us data that the people can have some confidence in. Zimmerman asked what kind of monitoring is taking place...I mean is that every 15 minutes. Bussan replied yep. So we've got...I'm a little concerned because there's a solar panel about the size of this computer that sits there and powers it and I've seen what happens to road signs in the countryside. But...so there's a well...we've actually...we bought wells but right now our strategy is...it's unbelievable how many wells USGS has inserted and left around the countryside. That's what all these blue spots are. So our hope is to go out and put a continuous monitoring device into each spot and generate more continuous data. Turzinski asked the blue spots are...aren't where there is monitoring wells not... Bussan replied it was at one time and based on all the data record...all the records, the wells should still be there they're just capped. So our hope is to go there and put the monitor on the top. McKee asked this is monitoring depth to water. Bussan replied depth to groundwater table yes.

Fritsch stated we have in the Village of Plover we have six different areas that we monitor groundwater levels. We've done that for the last six years. Bussan asked how frequently. Fritsch replied every Monday morning we do. Bussan stated oh nice. Well maybe this will make your job a little easier. We might have monitoring wells we could put in. Let's see, Lynn, where is your farm at is it on that picture. Schmidt stated it's off to the south. Bussan asked it's down here right? This is...B...right here is Del Monte...that's right. Lynn's down here...so actually...so what's happening...we made reference earlier that there's a new student that's going to do quite a bit of work with Isherwood's looking at crop water use between potatoes and sweet corn. And then what evaporation is outside and then we're probably installing four wells surrounding that as well in that area. So I don't know if I have a lot of answers to questions you might have...um...but I did want to kind of let you know the effort that we're putting into it and sort of some of the strategies. It was interesting we talked to the DNR

yesterday...um...it sounds like we're on target with what all the questions are coming from all the angles what the agriculture and agricultural interests. So hopefully we can start to find what I call solutions rather than research.

McKee asked what percentage of the farms...farmers are using the information that you are collecting. Bussan replied I didn't hear the first part of your question. McKee repeated what percentage of the farms or farmers are using this kind of information or are plugged in to these programs that you're talking about. Bussan replied the irrigation scheduling is done on computer by about 40% of the farms. There's...that goes back a ways. I would say there's an equal number that are basically monitoring soil moisture either with their hands or with electronic devices and they're using that as their primary strategy. And then there's 28% that we're still hoping to get more engaged. McKee stated you mentioned on one of those that they can get a daily email or ET, is that what is was. Bussan replied yep. McKee asked and how many...how many...how many farms are using that. Is this a common resource for them? Bussan replied across the State it's like 2,500 farms. Burns stated and it's been upgraded. Isherwood stated it's a local area...it's local...you know...it's not like Statewide this is what it is. Bussan stated so people are interested in how they do it I could send you information to Ed or Lynn or somebody could present it. But basically every day they take land...satellite images of the State and they take the cloud cover, that's NOAW does, National Oceanic Atmospheric for Weather, and so they...soil science pays just a little bit of money to get access to all that to...the meteorological group on campus. And they take that and combine it with temperature data and relative humidity data and they predict what that is every day. That comes out at 5:00 in the morning. They used to do it on the radio. So when they first started it...I'm sure some folks remember that. All the radio stations had an Ag report... a number of the radio stations had Ag reports every morning and they would announce what the ET was for the whole area at that time. Now it's based on latitude and longitude you could get irrigated at very specific...so like ah...I'm not sure I'm as familiar with Ed's farm as with others, but I'm assuming if it happens over a little bit of the landscape you might have different ET numbers over several miles and often times farms are spread out that far. So they can be very specific.

Hinrichs asked ET numbers...ok...you were saying that bare soil has like a 13 inch...ok...is that taken into consideration in the numbers as the crops growing. Bussan replied no...we don't because we don't...we're not trying to water the soil. Hinrichs stated so the ET that you're talking about is only the amount of water that's coming off the crop, not what's coming off the ground. Bussan replied right. Evaporation is almost exclusively from the top two to four inches. Once the crop is growing it has roots that are going down further than the soil and that and that's what we are worried about maintaining. Once we get the full ground cover with the canopy there is no more ET, excuse me no more evaporation directly from the soil surface. That's a shaded...it's all through the vegetation. And so really what we are talking...when the adjusted ET numbers all are derived and how the growers are irrigating is simply to try to make the crop demand not to keep the soil moist. Hinrichs stated so what I'm saying is that from the time of planting of previous to full coverage there's an added ET in there that's not on. Bussan replied there can be, we don't manage for it in terms of how much water is applied. Turzinski stated but you have to remember that ET on bare ground is just directed to the rainfall. Bussan agreed right it only occurs if rain falls. Turzinski stated because a year like this year where it was so dry...once the water was evaporated the top three or four inches doesn't draw anymore from the bottom so there's no more evaporation than what was there without a rainfall. Bussan stated so most the farms will water before they plant. So how many people have driven around in the spring and say 'holy cow what are they running the system for its bare ground?' It's to make sure there's enough moisture in the soil so when they plant...that the see can get up and get growing right away. It doesn't work so well to plant and then irrigate on top of the seed. It doesn't matter the crop...a lot of time we get loss and...(inaudible)...because of that for whatever set of reasons. So we always try to make sure the soil is nice and moist when we go to plant. We also see irrigation when the herbicides are applying or other management is going on. There's a very specific reason for that, they can apply about half as much herbicide if they water it in right away than if they don't, because you get much better activation by making sure it's incorporated in the soil and wetted into the soil. So that's a really big step that's probably worth pointing out. You also probably saw some fields being irrigated not that long ago and being irrigated now and that's getting to prepare for fumigation or to make sure that once the fume gets applied it works to the best potential that it can. So again a lot of that water isn't going anywhere but it's just being recycled maybe 10% or 20% is evaporating off, depends on the temperatures. Schmidt stated you mentioned relative humidity, where is that measured. Bussan replied most of that's actually measured all over the place. There's a lot of weather stations everywhere and that's collected on a...Statewide scale. That's highly refined as temperature. But relative humidity is really important because it effects what we call vapor pressure potential. So basically how fast evaporation is going to occur. Bare soil is such a difficulty because of the warm...anybody...how warm do you think soil turns on a sunny day in April. It can be 120 degrees, so you have 120 degree soil in 50 to 60 degree

air or maybe even 80 degree air, the vapor potential goes way up. Once you get into the middle of summer that starts to draw off. One of the big things that's become...how many open winters have we had in the last 20. Right versus say a decade ago or two decades ago. What do you think is happening on that bare, or not so well covered, soil when we don't have a lot of snow pack? It's a really...so in 2010 we had 100 + inches of snow. I don't know grave diggers, but I talked to a lot of people that seem to know grave diggers, a lot of people...the frost was permanent, right, it never came up. All winter of 2010 because we had snow pack, not last year we never had...we had frost that went down in the ground 20 or 30 inches but then would come back up and that happened repeatedly all winter long. So the one way to tell is if we have volunteer potatoes, the ground never froze, it takes freezing soil to kill potatoes and volunteers were a bear. I don't know if there's any other questions, but I'm assuming you have other business. It was a real pleasure to come up...so.

The Committee thanked Bussan for his time and information.