

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Scott Hassett, Secretary

101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921
DG/2 Telephone 608-266-0821
DG/2 FAX 608-267-7650
TTY 608-267-6897

April 21, 2003

File Reference: 11-3-0025

DOW DIDION
PRESIDENT
DIDION MILLING INC
501 SOUTH WILLIAMS STREET
CAMBRIA WI 53923

FILE

SUBJECT: Application Not Approved for Two High Capacity Wells,
Request for Additional Information,
Town of Courtland, Columbia County

Dear Mr Didion:

The Division of Water, Bureau of Drinking Water and Groundwater, received an application for two high capacity wells, the application was submitted on your behalf by Jeff Kramer of Sam's Rotary Well Drillers. The application was received by the private water systems section on February 24, 2003. On March 5, 2003, the department requested additional information, that information was partially provided to the department on March 31, 2003 by e-mail, however the provided information was incomplete. On April 18, 2003, the department requested additional information by e-mail, a copy of the e-mail is attached.

The attached e-mail also asked if you would like the department to proceed on the high capacity well review without us waiting for the non-pressurized storage vessel information. I did not get a response. Almost everyone, when asked that question wants the department to continue the review, so I assumed that would be your answer. Thus, I have continued the high capacity well review when I did not receive a response to the April 18, 2003 e-mail.

Section NR 812.09(4)(a)1., Wisconsin Administrative Code, states the following:

"The department may deny approval, grant a limited approval or modify an approval under which the location, depth, pumping capacity or rate of flow and ultimate use is restricted so that the supply of water for any public utility, as defined by s. 196.01, Stats., will not be impaired. Reduced availability of groundwater to a public utility well may be indicated when calculations using estimated values for aquifer characteristics result in 10 or more feet of water level drawdown in the public utility well based on 30 days of continuous pumping from the proposed high capacity well or well system."

Thus, the department has to review each high capacity well application to determine if it may impair a well operated by a public utility.

For this analysis for your site, the department identified the nearby wells operated by a public utility and reviewed aquifer characteristics from the area. The wells with Wisconsin Unique Numbers BF359 and OU123 are the nearest wells operated by a public utility, specifically the Village of Cambria. There was another public utility well with a Wisconsin Unique Number of BF358, however that well has been abandoned and is not applicable for this analysis. As noted in the attached e-mail, the department received conflicting information on proposed well locations. For this analysis, it is assumed that the location of the proposed wells is slightly east of Highway 146 and slightly north of Cabbage Road, which would mean that the proposed well locations are approximately one mile from each of the public utility wells operated by the Village of Cambria.

There is pumping test data from OU123, however the department files do not have any analysis of that pumping test data. The department performed both Cooper-Jacob and Theis curve matching analyses from that data and estimated that aquifer transmissivity is in the range of 5,500 to 5,900 feet squared per day.

Based on an inspection of drill cuttings from OU123 and from another test well nearby, the Wisconsin Geological and Natural History Survey is of the opinion that OU123 draws water from a single aquifer. The ground surface elevation of that well is approximately 995 feet above mean sea level (MSL) based on an inspection of the topographic map, and it appears that your proposed well location is approximately 860 to 870 feet above MSL. The department believes that the proposed ethanol plant wells would also draw water from this same aquifer. Therefore, the aquifer data from the pumping test from OU123 is applicable for this analysis.


Generically, pumping test data from pumped wells does not provide reliable aquifer storage coefficient data, the best data is from observation wells located at a distance from the pumped well. Such data is not available in department records for the test at OU123. Therefore, the pumping test data from OU123 was not used to estimate the aquifer storage coefficient. The department frequently uses a storage coefficient estimate of 0.0002 as a generic rule of thumb for confined aquifers. Another rule of thumb based on an aquifer thickness of 300 feet results in a storage coefficient estimate of 0.000274. For the analyses at your site, the department used storage coefficients from both rules of thumb.

Based on an aquifer transmissivity of 5,500 to 5,900 feet squared per day and based on storage coefficient estimates of 0.0002 to 0.000274, and assuming that both proposed wells are operating at a total capacity of 1,000 gpm, the estimated drawdown that would occur in the aquifer one mile from the proposed wells after 30 days of operation ranges from 10.25 to 11.71 feet.

As noted above, the department may restrict the operation of a high capacity well if it determines that the estimated drawdown at the location of a well operated by a public utility may exceed 10 feet. Due to the anticipated

drawdown of over 10 feet at the public utility wells, the department has determined that your proposed two wells, each of which have a proposed pumping capacity of 500 gpm will not be approved.

Based on the above, the department has determined that the following are your options:

1. The department will only approve a combination of wells that does not exceed a total of 850 gpm. Therefore, the department would be willing to approve two wells of 425 gpm capacity. If this is the option that you select, please provide the manufacturer and model number of the proposed pump and calculate total dynamic head during pumping. The approval would specify brand and model pump.
2.  If however you conclude that you need more total capacity than 850 gpm, another option is to perform a high quality pumping test after one or more wells are installed. Then perform a pumping test to determine if a more accurate transmissivity and storage coefficient can be determined that would allow you to pump more water. If you perform a pumping test, the department would be willing to re-evaluate the data to determine a revised total pumping capacity for the property. The department would also have to review the raw data from the test. If you choose this option, the department strongly recommends that you submit a workplan for the pumping test to the department first for review, as we may have suggestions and recommendations.
3. If the Village of Cambria would not mind if you operate the proposed wells at a total capacity of 1,000 gpm, the department would be willing to approve of the proposed wells without any additional testing. Under this option, the department must receive a signed statement from the Village that states that the Village of Cambria will not object if the department issues an approval for two wells on your property that each have 500 gpm capacity. The signed statement should be on Village letterhead and would have to be from a responsible official, such as the mayor, director of public works, etc. Please note that if the Village later retracted such a statement, the department would then retract the high capacity well approval.

Since almost all of your property is equidistant from the location of the public utility well with a Wisconsin Unique Number of OU123, simply shifting the proposed location of your wells is not a viable option. Another option that is not viable is to propose different well construction because there does not appear to be another prolific aquifer that is not intersected by a public utility well.

The department cannot complete the approval until additional information is provided, as follows:

- As noted in the attached e-mail, the application included inconsistent locations for the proposed well. Please clarify exactly where the proposed well locations are.

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- As noted in the attached e-mail, the submitted information is insufficient to perform a review on the non-pressurized storage vessel. Please provide additional information.
- The department anticipates that the water system would be classified as a public water supply, thus we need to know how many people will use the well on a daily basis. Therefore, how many employees do you anticipate for the ethanol plant?
- The department needs to know which of the above options you wish to select regarding our inability to approve two wells with a combined capacity of 1,000 gpm.

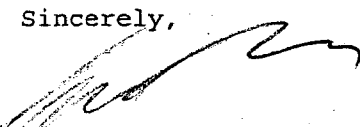
Once I receive the above information, I should be able to complete the review. When you or your contractor submit that information, please include the file number 11-3-0025 and submit it to:

George Mickelson
WDNR Mail Code DG/2
P.O. Box 7921
Madison, WI 53707-7921

I will keep the file at my desk for approximately a month. If I receive the information during that time, I should be able to process the approval faster than the turnaround time for a new application.

If you have any questions about this letter, please do not hesitate to call.

Sincerely,



George Mickelson, P.E., P.G.
Private Water Systems Section
Bureau of Drinking Water and Groundwater
(608) 267-7652 FAX (608) 267-7650

enclosures:

E-mail dated April 18, 2003

cc with enclosures:

Jeff Kramer, P.G. - Sam's Rotary Well Drillers
Del Maag - SCR
Dave Barkhahn, P.E. - SCR, Horicon
Roger Peters, P.G. - WGNHS