



November 1, 2011

To whom it may concern

Subject: Addendum to Richfield Dairy EA

Dear Concerned Parties:

The Department thanks all persons and parties who submitted comments regarding the environmental assessment for Richfield Dairy. Due to the volume of comments and the need to go into greater depth on some of the comments, it has taken some time for responses to be prepared. The attachments serve as an addendum to the EA.

There were several comments requesting that an environmental impact statement (EIS) be prepared. While many comments pointed out the potential for impacts, the EA adequately details potential environmental consequences. As you read our responses, keep in mind there is no difference in content between an EA and an EIS prepared by the Department. The difference is in process only. However, in this case the Department increased the comment period from 14 to 30 days, and with the public hearing held for the WPDES permit and EA, there is no demonstrable difference between an EIS process and the EA process used for this project. The EA and addendum can be found at the following website: <http://dnr.wi.gov/org/es/science/eis/eis.htm>

Finally, there were comments that stated or requested that the permits should be denied. The purpose of the EA is to inform the decision-makers of the potential environmental impacts of the proposal. The EA is not the decision on the various permits and approvals.

Thank you again for your comments. They have provided for better clarification on several issues, thereby making the EA a better document that is more informative.

Sincerely,

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**Environmental Assessment Comment Summary and Response**  
**Richfield Dairy**  
**WPDES Permit WI-0064815-01-0**

**Modifications to be made within the Environmental Assessment**

Deleted the Pumping Withdrawal statement within EA (general project summary, paragraph 4) stating that the “applicant notes that this is less water than has historically been used for irrigating crops at the site.” Replaced with the following statement..... “

Richfield Dairy is required to submit a high capacity well permit application to the DNR to construct two high capacity wells and abandon one existing high capacity well which was previously utilized for crop irrigation. The Department’s Water Use Section has reviewed the application. The proposed wells would be drilled to a depth of ~350 feet. Based upon soil borings in the area, the static groundwater level at the proposed site is no less than 32 feet from the ground surface. The high capacity well application requests an average daily water use of 600,000 gallons and a maximum daily water use of 720,000 gallons for each of the two proposed wells. The dairy states that these amounts represent peak-day summer water usage. Average annual water usage at the facility is estimated to be about 52.5 million gallons per year, which includes 44 million gallons for animal watering / cleaning and 8.5 million gallons for evaporative cooling of the barn during hot weather. Based upon withdrawal history available for the site’s existing irrigation well, DNR Water Use staff have concluded that the proposed Richfield Dairy pumping rate exceeds recent withdrawal rates (2007-2010) by 40%, and exceeds withdrawal rates for all years on record (1978-1989 and 2007-2010) by 65%.

The Department received approximately 106 written comments on the Richfield Dairy WPDES permit and associated Environmental Assessment; with 25 expressing support for the proposed permit and 81 expressing opposition.

The Department also held an informational session and public hearing on July 18, 2011, 12:00 p.m., at the Adams County Community Center, 569 North Cedar Street, Adams, WI 53910. Department staff estimated that there were approximately 340 individuals in attendance at the Richfield Dairy public hearing. Of the 247 hearing appearance forms submitted at the hearing, 141 individuals registered in support of Richfield Dairy, 88 registered in opposition of Richfield Dairy, and 19 did not indicate a position. Of the 79 people who provided oral testimony, 43 individuals spoke in favor of the Richfield Dairy project, 35 individuals spoke in opposition of the project and one individual did not identify a position in support or opposition.

**Comment #1:** There were a significant number of comments asking/stating that the DNR complete an EIS for Richfield Dairy Project. Comments on this topic included:

- The environmental analysis (EA) was incomplete and was not of sufficient scope and detail to conclude that this is not a major action, which would significantly affect the

- The definitions/differences of the EA and the EIS are quite significant. An EIS is a more definite vs. the EA which is probable.
- Too many things have been done in the past for the sake of a few jobs or businesses that are catastrophic for our world.
- The DNR has the responsibility through the EIS process to examine potential “acts of God” and how these events would impact natural resources. These resources are simply too valuable to not carry out a full EIS. The risks associated with the proposed Richfield CAFO warrant the full EIS process.
- An EIS *and* at least appropriate delay and re-draft of this Permit is also required because the EA fails to recognize and sufficiently consider the increased nutrient loading to waters within Adams and extending to Waushara Counties given the 17,000 acres of manure spreading and unavoidable associated run-off.
- Associated externalized environmental costs of CAFOs, and therefore, these costs also apply to and support the "significance" of this CAFO action demanding an EIS.
- We urge the DNR to provide a rigorous cumulative effects analysis as part of an EIS for this CAFO, already, now, the fifth CAFO to be operated by this same applicant Milk Source Holdings in the state, especially because this company has already been cited and/or received numerous complaints in regards to its other CAFO dairies (esp. the recently permitted Rosendale Dairy) for which you did do an EIS.
- There are well-documented and commented potential (site-related and cumulative) *significant* impacts on the delicate and pristine human environment at the facility and beyond in at least a 10 mile radius
- This CAFO is proposed to be sited in a unique area (sandy soil, high water table, precious surface waters nearby, privately contaminated wells) for which an EIS has not previously been done regarding potential impacts.
- The EA is insufficient, has not evidenced proper consideration of cumulative impacts and alternatives in scope/phase consolidation/limitation/type, nutrient management, site, and pollutant discharge (such as wastewater and manure spreading) requirements, as required under WEPA and Wis. Adm. Code NR 150.22.
- Any Phase breakdown that necessarily precludes actual consideration of full environmental impacts, and should not be allowed. This is a standard ploy of Milk Source Holdings and other CAFO permittee applicants in order to minimize environmental review required, and the DNR as the public environmental steward, has an obligation under the public trust doctrine, to stop such allowances and minimal classifications.
- I am concerned about how chemicals in the water and air may adversely affect my health. I live across from Chaffee Creek. My kids and I have done water testing science in that creek. We know the abundance of biodiversity in that creek and

**Response:** Issuance of an individual WPDES permit for a new CAFO of this size is a Type 2 action requiring the EA process under chapter NR 150.03(8)(i)2a, Wis. Adm. Code. Chapter NR 150.22(2), Wis. Adm. Code determines the required content of EAs and EISs for the Department of Natural Resources. There is no difference in the content requirements for EAs and EISs under this chapter. The only difference is procedural. The Public Trust Doctrine does not place requirements on the Department's WEPA compliance. The Richfield Dairy EA, as amended, adequately covers the content requirements of NR 150.22(2), and did not find significant impacts that would otherwise require the EIS process under NR 150.20(1)(c)3.

The EA includes an analysis of cumulative effects by relying on the nutrient management plans of this proposed project, and other CAFOs in the project area. Neither an EA nor an EIS provides authority to alter the permit decision.

The DNR has issued approximately 230 CAFO permits. Catastrophic environmental impacts have not been known to have occurred.

The EA references the nutrient management plan which addresses all manure spreading acreages, and requires application measures to minimize the risk of runoff. The EA adequately includes an analysis of cumulative effects by relying on the nutrient management plans of this proposed project, and other CAFOs in the project area. Neither an EA nor an EIS provides authority to alter the permit decision.

The EA did consider other CAFOs in the project area. There is no known project segmentation in this case.

The Department believes it has adequately outlined alternatives. In addition, outlining alternatives does not create additional authority to require that alternatives are followed.

**Comment #2:** The addition of CAFO agriculture to the Central Sands is a major action significantly affecting the human environment and an EIS must be done before any permits are issued. Reasons to conduct an EIS include:

- It is incorrect to claim there will be no effect regarding groundwater pumping (see Kraft and Mechenich, 2010, report to the DNR).
- To claim that the proposed NMP will guarantee no groundwater pollution has no basis in fact or data collected and analyzed at this time. Where are the peer reviewed documents that support the claims in the EA?
- It is unknown how E. coli will act when spread in large quantities in the Central Sands. Also refer to comment response #83.
- The only EIS completed for a Wisconsin CAFO was not in the central sands, which is very different from other area of the state.

- The CAFO will have a large regional impact that has not been evaluated before (16,000 acres will be changed).

**Response:** The Department does not claim that the requirements of a WPDES permit, including the requirement to develop and implement an NMP, will guarantee that water quality will not be impacted. The proposed designs of the facilities and systems exceed minimum design standards and are expected to protect groundwater and surface water to the extent required by law, meaning the production site is not expected to cause exceedance of groundwater water or surface water standards. While it is still possible such an event could occur, the DNR acknowledges the need to balance the level of protection with what is deemed likely and reasonable. Only limited data exists on failure rates of manure storage impoundment liners, but the data indicates some level of protection above the minimum is appropriate for higher risk sites, such as this one. The DNR believes an appropriate level of additional protection is provided by the proposed designs. In addition, the Department has added a requirement for the permittee to conduct leak detection and groundwater monitoring as part of the WPDES permit.

There are a number of existing WPDES permitted facilities located within the Central Sands. The Department evaluated the compliance record of three existing CAFO permitted farms (Central Sands, Gordondale Farms and Ostrowski Farms) who have repeatedly applied liquid manure, over multiple years, to fields with sandy, highly permeable soils. We found no direct or circumstantial evidence that these three farms have caused any nitrate and bacterial contamination of drinking water wells, groundwater or lakes or streams from repeatedly applying manure to fields with sand soils over the multiple years they have applied manure to sand soils.

Refer to EA – Water Quantity section of this document.

**Comment #3:** A number of comments were received in support of Richfield Dairy. Comments included:

- Support for the current regulatory system.
- Better management in operating a dairy such as Richfield Dairy over having many smaller farms.
- The Environmental Assessment DNR generated for the proposed Richfield Dairy WPDES permit is adequate. It properly evaluates potential impacts of the proposed project and satisfies the Wisconsin Environmental Policy Act.
- Milk Source is investing millions of dollars to build a dairy in Adams County to add 4,300 new cows to Wisconsin's dairy herd and has applied for all of the necessary local and state permits including the WPDES discharge permit.
- This proposed dairy will actually increase environmental protection in Adams County while adding dollars to the local and state economy and creating jobs in the area.
- The project will add jobs to the area.
- All permitted dairies in Wisconsin have a very good track record of compliance with the regulations and the reporting requirements of the law.
- The Wisconsin DNR has a track record of enforcing these rules to protect the diverse land forms and water resources found within the state.

- Milk Source, the owner of Richfield Dairy, has been awarded WPDES permits for its other dairies located near Kaukauna, Omro, Rosendale and De Pere. They have successfully implemented sound nutrient management plans and environmental procedures at those farms.

**Response:** Comments noted.

**Comment #4:** Dumping manure on farm fields is basically a temporary landfill and produces methane gas. This is a safety issue and requires the EIS.

**Response:** The Department does not agree with this comment. When applied properly, manure is a valuable nutrient and soil conditioner that promotes crop growth and not considered a temporary landfill. The Department completed an EA and determined that an EIS was not necessary..

**Comment #5:** Information on the EA must be made available on-line and include the nutrient management plan.

**Response:** There is no requirement that the EA be made available on-line. The EA, WPDES permit and nutrient management plan were public noticed and made available for public comment. Copies of these documents were provided to members of the public that requested copies. The document, however, is now located at the following web address: <http://dnr.wi.gov/org/es/science/eis/eis.htm>

**Comment #6:** The Department received a number of comments stating that the Environmental Assessment prepared by the DNR to evaluate the proposed Richfield Dairy was more than adequate.

**Response:** Comments are noted.

**Comment #7:** Much of the data used to complete the permit process and to my understanding the EA was generated by Milk Source. A little, like letting the fox guard the henhouse, wouldn't you say?

**Response:** The Department acknowledges the perceived conflict of interest. However, the EA and the permit documents/approvals are ultimately Department documents that have been drafted and reviewed by Department staff. If there are deficiencies that are identified via public comment, they are addressed in our responses to the public.

The Milk Source submittal included plans / specifications for reviewable facilities, a nutrient management plan, the WPDES Permit application, a completed Environmental Analysis Questionnaire, Animal Unit Calculation worksheet, manure quantity estimates, soil maps, topographic maps, aerial photographs and a detailed narrative containing background information about the proposed operation and how it will function after construction. This information is required by all facilities that are applying for WPDES permit issuance and provides Department staff with the information necessary to properly evaluate the proposal.

The environmental assessment was drafted by Department staff in a collaborative effort between programs and disciplines. Chapter NR 150.22(1)(a)1 specifically allows information from an applicant to be used in an environmental assessment.

**Comment #8:** The Department received the following question related to the general project description within the environmental assessment regarding the plan and specification design for the proposed feed storage pad and manure solids storage area. “Do these areas have secondary liners?”

**Response:** The proposed feed storage pad and manure solids storage area each have a surface to be constructed of concrete with water-stop installed at all joints, in addition to a soil liner component to be located immediately below (and in contact with) the concrete. There is no codified definition of “secondary liner” for manure storage facilities, but the term commonly refers to a second liner that is separated from the primary liner, with a leak detection / collection system located between the liners. The term “composite liner” commonly refers to a system of two or more liner components in direct contact with each other.

**Comment #9:** Once again industrial ag has launched an attack on the environment and a small community; amazing what money and political clout can do. I already live near the Rosendale Dairy and it is not fun. The stench, the traffic, the noise, the worry over ground water and well water as well as air quality. Why do private citizens have no rights compared to corporations? I know the answer to that one but it does not make it any easier to live with. All owners of CAFOs should have to live on them.

**Response:** The Department issues water quality protection permits based on the requirements in state statutes and regulations and does not give preferential treatment to CAFO over citizens. Siting and expansion of large livestock operations is also allowed under the livestock siting law administered by DATCP and local units of government.

**Comment #10:** There were a number of comments which expressed concerns about the potential for Richfield Dairy to expand beyond current numbers and potentially doubling the herd size. They expressed concerns that existing large livestock operations already in the area pose more than the sand soil environment can handle. Comments expressed concern that the dairy farm will surely contaminate our environment, and significantly harm our health and quality of life.

**Response:** WPDES permittees are provided a certain level of flexibility in regard to increasing livestock numbers. The revisions to NR 243 provide significant reductions in actual and potential discharges from CAFOs by placing more stringent requirements on the storage and land application of CAFO manure than under the previous version of the code. The primary factors which limit a permitted facility from increasing livestock numbers is the requirement to maintain a minimum of 180-days of manure storage and the need to maintain an adequate land base to apply the manure in accordance with NR 243.14, Wis. Adm. Code. The Department’s plan approval for the construction of reviewable facilities at Richfield Dairy included manure storage structures with an available capacity of approximately 205 days of storage. If Richfield Dairy were to significantly increase animal units at some future date to the point that additional storage was needed, the facility would first need to undertake a construction project, which would require DNR plan approval.

Milk Source currently has land contracts on the majority of the 16,429 acres of land base that is identified within the DNR approved nutrient management plan. The Department views the additional purchase of cropland as a positive management decision. Cropland ownership provides a facility with more flexibility in planning cropland rotations while also allowing for better management of future nutrient applications.

**Comment #11:** Several comments noted concerns related to increased road traffic and wear and tear on local roadways.

**Response:** With regard to the WPDES CAFO permit, the Department only has the authority to monitor and address water quality based impacts from Richfield Dairy.

**Comment #12:** A number of comments, some of which generally supported agriculture, expressed concerns about the negative impact Richfield Dairy will have on air and water quality and smaller-scale farms. A number of these commenter's were local residents who expressed additional concerns about the negative impacts on the quality of life of people in the area (e.g. property values, traffic, noise, odors, wildlife impacts). They believe that these potential impacts present an unacceptable level of risk to the environment and they asked that the Department deny issuance of the WPDES permit.

**Response:** The Department supports responsible farming regardless of the size of a livestock operation. WPDES permitted CAFO facilities are required to adhere to very stringent requirements. The Department believes the permit as issued complies with ch. NR 243 and provides an adequate level of water quality protection. The Richfield Dairy facilities have been designed in a manner that exceeds NRCS Technical Standards to further reduce the potential of leaching. The manure storage facilities were also designed to exceed the 180-day storage capacity requirement, which also includes additional freeboard capacity to capture a twenty-five year rain event and prevent an overflow. It is important to note that an allowed overflow discharge to surface waters from the production area is very unlikely given the conditions contained within the WPDES permit. In addition, the only allowable land application discharges of manure, process wastewater or associated pollutants (e.g. nitrogen, phosphorus) from Richfield Dairy to surface waters are discharges of agricultural stormwater (those discharges that occur after compliance with ch. NR 243, the WPDES permit and an approved nutrient management plan) which are not subject to WPDES regulation.

As for land application areas, the WPDES permit establishes application restrictions and best management practices designed to keep pollutants on the land. Through permit coverage, all land application activities must be done in conformance with a nutrient management plan. In most cases, once a parcel of cropland comes under a chapter NR 243 based nutrient management plan, there will likely be a reduction of pollutant runoff from that parcel of land. This is due to the fact that cropland not previously covered under a nutrient management plan will, through permit coverage, become subject to more (water quality) protective management practices required by the WPDES permit program. Manure applications cannot exceed crop need and must be made in a responsible manner. Facilities must observe manure application set back requirements from private wells, conduits to groundwater and within defined surface water quality



management areas (SWQMS). Manure applications are restricted during snow covered and frozen ground conditions.

Information on permit conditions that protect water quality can be found throughout this document.

The non-water quality impacts described in many of the comments received and outlined in the Environmental Assessment for this operation are not regulated by the Department as part of the operation's WPDES permit nor can they serve as a basis for denying permit coverage. While negative impacts associated with the Richfield Dairy project may occur, the Department, through the EA process, has determined that the project will not have a significant adverse impact on the human environment.

**Comment #13:** If the DNR can't protect our soil from being blown away, ensure habitat protection for trout, and stop chemicals from being dumped on us by crop dusters, how can it protect us from an onslaught of chemical contaminations to sustain crop needed to feed, milk and clean 6,000 cows?

We already have allowable toxic chemicals from the paper mills being applied to our fields and now we want the manure of 6,000 plus cows. We understand that these chemicals permeate the groundwater, but what happens when they become airborne in Adams County during our annual "dust bowl" days that occur on numerous spring days due to high wind speeds and little windbreaks. Surely, this will increase particulate cow feces into our lungs and streams.

**Response:** The Department agrees that soil wind erosion within the Central Sands area is a concern. The Department does not have regulatory authority to address wind erosion. However, the introduction of alfalfa crops into the cropping rotation will result in a reduction of wind erosion within those specific fields. Pesticides are primarily utilized within the cash cropping industry. Implementation of more diverse crop rotations should result in a net reduction in pesticide use. With the implementation of a nutrient management plan, manure applications will be limited to crop need and result in a reduction of commercial fertilizer applications.

**Comment #14:** Comments were received from individuals expressing concern about the impacts air and water pollution from the operation will have on their existing health conditions (e.g., asthma, severe allergies).

**Response:** The EA acknowledges potential health risks associated with air emissions from livestock operations. The EA also states that air emissions from such operations are difficult to predict. Finally, the EA states that RD has proposed measures to reduce and mitigate air emissions.

**Comment #15:** We all know very well, this company is staying just under the 5,000 animal limit because they know it's a triggering number for the EIS. No one purchases enough land for 10,000 cows when they are only going to purchase 5,000.

**Response:** The Department does not have a set size of operation at which an EIS is required. Whether an EIS is needed is based on the specifics of an operation.

Completing an Environmental Assessment is part of the process of determining whether an EIS is necessary for a given project. It was determined that an EIS was not needed for this project. There is no difference in content for an EA or EIS prepared by the Department.

**Comment #16:** This area (Adams/Waushara) is made up of unique topography. I have a definition of it below because the DNR has seen to overlook this major factor. Our land in this area that cannot support a CAFO. Wisconsin has sold their soul to the devil too many times for these CAFO's. It's time to stop.

I have included articles of why our land is so fragile. The fact that we have the huge rock formation coming out of the ground right there in Adams County is a definite sign. I know that the DNR has to know these things (although from my understanding many people with the DNR have no environmental background at all), but we have been told we must show you that we know it too. It's ridiculous that we have to pretend to be scientists to protect our environment from the scavengers when we pay people to do this for us.

**Response:** Information provided by the commenter discusses karst topography, which lends to a landscape that is characterized by numerous caves, sinkholes, fissures, and underground streams. Karst topography usually forms in regions of plentiful rainfall where bedrock consists of carbonate-rich rock, such as limestone, gypsum, or dolomite, that is easily dissolved. Surface streams are usually absent from regions where karst topography exists.

Adams County is in the Wisconsin Central Plain, which is characterized by flat or gently undulating topography. Relief is generally low except for occasional pinnacles and hills of sandstone such as Pilot know, Friendship Mound and Roche-A-Cri Mound in which the commenter references.

Adams County is divided into two physiographic areas. The hills and kettles in the southeast comprise one area, where these landforms were caused almost entirely by glacial deposition. The Johnstown moraine forms the western boundary of this area where the Richfield Dairy facility is to be located. The other area is larger and comprises a broad outwash plain bordered on the west by the Wisconsin River. The outwash deposits are sand over silty and clayey lacustrine deposits laid down in old glacial Lake Wisconsin. The Johnstown moraine in southwestern Adams County divides the drainage between the Wisconsin and Fox Rivers.

The predominant soil types within the area of the Richfield Dairy facility consists of Billett Sandy Loam and Coloma Sand. The Billett series consists of deep, well drained soils on outwash plains. The soils formed in loamy and sandy outwash deposits. The Coloma series consist of deep, somewhat excessively drained, rapidly permeable soils on outwash plains and moraines. The soils formed in sandy glacial till or outwash plains and moraines. There are no documented karst areas in Adams County.

**Comment #17:** The potential for this huge operation to drive out small family farms in Wisconsin. Sustainability, local food production and maintaining a lower carbon footprint are not fostered by the developments such as Richfield Dairy. Large CAFO's benefit from taxpayer subsidies not available to small family farms.

**Response:** There is an ongoing debate about whether large-scale livestock operations are sustainable and their impact on the viability of smaller-scale livestock operations. The Department does not have the expertise to comment on which size farms benefit the most from government subsidies.

**Comment #18:** Staff representing the Northeast Region were not involved in drafting the EA and should have been to minimize or eliminate the environmental hazards of the construction and operations of these CAFO's

**Response:** The Richfield Dairy facility is physically located within Adams County and the DNR's West Central Region. Concerns expressed by local residents within Waushara County, which is located within the DNR's Northeast Region, are generally related to odor, water withdrawal from the high capacity wells and manure spreading on area crop fields as they specifically relate to impacts on the areas water quality and water quantity.

Ch NR 429, Wis. Adm. Code includes a procedure for determining objectionable odors based on conditions at the facility once it has been constructed and is operating. The high capacity well permit would be handled by DNR Engineers located in the Madison Central Office and the Nutrient Management Plan was reviewed and approved by the Madison Office Water Resources Specialist. These approvals are based upon existing standards and codes that are applicable on a statewide basis. Enlisting review assistance from Department Staff located in the DNR Northeast Region would be considered a duplication of effort, as all facilities must conform to the same standards and codes regardless of location. Therefore, the Department does not believe that regional boundaries related to review and approvals are relevant to the issuance of the WPDES permit or high capacity well permit.

**Comment #19:** Referencing the Department response to the environmental assessment significant of precedent section question "would a decision on this proposal influence future decisions or foreclose options that many additionally affect the quality of the environment? Describe any conflicts the proposal has with plans or policy of local, state, or federal agencies. The Department received the following comment: "NO" is clearly an incorrect determination. Has Waushara County's Land Use Plan been consulted? The Town of Coloma, just east of the proposed CAFO is a high density residential section of Waushara County. This CAFO will have a large and negative effect on tourism in Waushara County. Many jobs will be lost, business failures are likely.

**Response:** As stated in the EA, facilities of this kind are not new or precedent setting in Wisconsin. Approval of permits by the Department does not preempt, and therefore is not in conflict with, local land use control.

**Comment #20:** I am concerned because the EA discusses an NMP and BMPs with very loose terms. The EA describes this protection that will minimize sediment delivery if

they are properly controlled. It also describes the study is expected to develop standards and voluntary BMPs to reduce or minimize potential problems from CAFOs.

**Response:** The EA is not a regulatory document and does not contain all restrictions that apply to Richfield Dairy. The actual land application restrictions are contained in the WPDES permit and Richfield Dairy's NMP. The comment is correct that air BMPs are voluntary. Air BMPs are not enforced via the WPDES permit.

## **EA-WATER QUALITY**

**Comment #21:** The EA correctly states that nitrogen containing compounds such as ammonia and NO<sub>x</sub> result in increased nutrient loading and acidification of soils and waters. This statement must be researched and quantified in order for the environmental impact to be assessed.

**Response:** Nitrogen containing compounds are generated during the manure application process and will result in an increased nutrient loading to soils, acidification of soils and groundwater above current conditions. However, the Richfield Dairy NMP contains several required nutrient / manure management practices that, taken together, help reduce the risk for nutrient loading above crop fertility needs and further reduces the rate, scope and/or frequency of soils and water acidification. These practices include requirements to regularly test all crop fields for soil P, K, and pH levels and plan appropriate management practices to prevent over application of nutrients. Practices include lime applications to reduce soil acidification, immediate incorporation or injection of liquid manure, regular calibration of spreading equipment to ensure that application rates reflect the UW recommendations for crops selected and the planned application of manure in the spring, prior to crop establishment. Spring application prior to crop establishment on highly permeable soils reduces the risk for N mineralization and leaching from applied manure as opposed to fall manure applications. The NMP also includes detailed manure spreading and soil restriction maps of all fields covering more than 16,000 spreadable acres, including field and map verification procedures to ensure that all manure spreading setbacks are properly followed and s. 243.14 prohibited areas (shallow groundwater, conduits to groundwater) are followed or avoided when fields are utilized for manure application.

**Comment #22:** DNR's Environmental Analysis Review Conclusions About Applicant's Nutrient Management Plan Do Not Constitute an Evidentiary Basis or an Articulation for Concluding that Applicant's Operations Can be Validly Permitted under s. 283.31(3), (4) & (5) in a Manner that will Assure Compliance with Groundwater Quality Standards for Nitrate

The DNR Environmental Analysis (EA), makes a series of erroneous presumptive conclusions that the applicant's final approved nutrient management plan (NMP) will somehow prevent having any groundwater quality water problems – all of these claims are either unsupported, erroneous, are gross distortions or make unverified/unverifiable claims. Moreover, none of Applicant's NMP measures will address or assure whether NMP-allowed nitrogen applications will, in themselves, result in jeopardizing compliance with nitrate groundwater enforcement standards.

DNR's EA says the approved NMP "...reduces the risk of over application and nitrogen leaching." The EA goes on to claim: "If the operation conducts land spreading in accordance with an approved NMP, maintains an adequate land base for land spreading, and properly inspects and maintains manure storage facilities and runoff control systems, the threat to groundwater and surface water should be minimal under normal operating and climatic conditions."

The EA claims: "The operation must comply with its WPDES permit and associated Nutrient Management Plan. Consequently, the land spreading of manure should not yield any substantial increase in risk to the environment."

The applicant's NMP is written to embrace 'university recommendation' nitrogen applications that are contained in the SNAPPLUS algorithms. But reliance on university recommendations on nitrogen application rates in agriculture does not come close to assuring compliance with nitrate groundwater quality standards. One modeling review of a known nitrate problem in a municipal water system in the Central Sand Plains area illustrates that NMP-contained university nitrogen application recommendations do not provide for groundwater quality standard compliance and are otherwise not sustainable:

"For conventional practices, predicted steady-state nitrate-N concentrations are 38 mg/L for the Whiting recharge area and 26 mg/L for Plover. Full farmer adoption of university recommendations decreases the predictions to 26 mg/L for Whiting and 19 mg/L for Plover. These concentrations are about 1.5-2 times higher than present values. Agriculture is responsible for 90-99% of the nitrate loading. Even eliminating all other sources of nitrate only marginally will bring down nitrate concentrations."

Thus, in this Central Sand Plains groundwater modeling situation, mere compliance with university recommended nitrogen field application rates can only ensure that expected groundwater enforcement standards for nitrate are exceeded on a regional basis by a factor of 2, and are not otherwise protected as required by the ch. 140 groundwater enforcement standards.

Wisconsin 'university recommendations' for nitrogen application recommendations for farm fields address both animal waste and conventional commercial fertilizer total combined inputs. However, the primary purpose of the 'university recommendations' is to deduce a nitrogen application rate that will render a specific planned field crop yield rate. 'University recommendations' for nitrogen are not cropping nutrient removal rates.

Such university recommendations' do not address impacts on groundwater, and are not a basis for making statements that such rates ensure compliance with groundwater quality standards. There is thus no reason to believe that the university recommendations used and evaluated in the Richfield Dairy NMP for each NMP field's annual nitrogen waste/fertilizer nitrogen recommendations constitute an acceptable maximum nutrient input to land spreading fields that will ensure compliance with the nitrate groundwater enforcement standards or the preventative action limit for nitrate.

Nothing in Applicant's submitted NMP can substitute for a valid groundwater pollutant modeling demonstration to relate nitrogen loading rates to expected groundwater nitrate concentrations.

**Response:** The department disagrees that following UW crop recommendations (A 28909) for manure application rates/timing/amts within Richfield Dairy NMP will not assure compliance with groundwater quality standards for nitrate. The UW crop recommendations were adopted by the department as regulatory/discharge limits via adoption of NR 151 and NR 243 performance standards. The standards are referenced within the proposed WPDES permit and all CAFO permitted farms must demonstrate compliance with these criteria. The UW recommendations are based upon years of peer reviewed agronomy/crop fertility, nutrient management and water quality research completed by UW faculty - <http://www.soils.wisc.edu/extension/dir.php> & <http://www.soils.wisc.edu/soils/staff.php> - at various UW Ag research stations - <http://www.ars.wisc.edu/> - throughout the state, including the central sands region - <http://www.ars.wisc.edu/hancock/history.html> <http://www.soils.wisc.edu/extension/area/horizons/2005/CornNrecs.pdf> <http://www.soils.wisc.edu/extension/materials/VegCropsNPMgmt0306.pdf> <http://www.soils.wisc.edu/extension/pubs/A3588.pdf> <http://learningstore.uwex.edu/Assets/pdfs/A3422.pdf> [http://www.soils.wisc.edu/extension/materials/Potato\\_ACA.pdf](http://www.soils.wisc.edu/extension/materials/Potato_ACA.pdf) [http://www.soils.wisc.edu/extension/materials/Manure\\_Potatoes.pdf](http://www.soils.wisc.edu/extension/materials/Manure_Potatoes.pdf) [http://www.soils.wisc.edu/extension/pubs/pa\\_sampling.pdf](http://www.soils.wisc.edu/extension/pubs/pa_sampling.pdf) [http://www.soils.wisc.edu/extension/nhss/2011/11\\_07\\_ruark\\_sweetcorn.pdf](http://www.soils.wisc.edu/extension/nhss/2011/11_07_ruark_sweetcorn.pdf)

The department believes following UW nutrient application recommendations helps prevent over-application of nutrients and helps protect surface and ground waters of the state from environmental degradation. The underlying goal of the recommendations is to apply enough nutrients to the crop for optimum (not maximum) growth throughout the season. Because crop nutrient demands are not uniform throughout the growing season, an adequate supply must be available during the period of peak demand. The program defines the "critical" level as the cutoff between optimum and high soil test levels. The critical level determination within the UW recommendations is based upon the probability of yield increase to applied nutrients. If nutrient supply exceeds the critical soil test level, there is an increased risk of mobile nutrients moving into groundwater and surface water.

The UW Nitrogen (UW N) rate recommendations for corn are based upon soil organic matter, soil texture, growing degree days and yield potential of the soil. Please note corn for grain or corn for silage crops represent 30% of total acres within Richfield NM plan; all these acres have planned manure applications to meet corn crop needs using MRTN method. Recommendations for other crops are based upon soil organic matter and yield goal. The N recommendations are supported by field studies where crop responses to various rates of nitrogen have been measured on soils typically used for production of various crops. N recommendations vary according to crop to be grown, soil characteristics and yield potential, and soil organic matter content. The UW N recommendations are not written to maximize crop production.

The UW N recommendations contain a specific section entitled: Managing nitrogen to avoid losses. This section explains nitrogen rate, nitrogen credits and soil test nitrate recommendations assume best management practices will be used to control nitrogen losses. The following best management practices are described in detail in this section to control nitrogen losses:

(1) Nitrogen Rate, (2) Nitrogen Source, and (3) Nitrogen Timing. Many of these same best management practices will be used during manure applications planned by Richfield Dairy (e.g., following MRTN for all corn crop acres in plan; taking credit for manure and previous legume crops, applying manure in spring before crop establishment vs. fall application, regular testing of all manure sources applied to fields).

Some published studies that support UW N rate recommendations for corn and for reducing risks for nitrate leaching, include:

Adraski, T.W., L.G. Bundy, and K.R. Brye. 2000. Crop management and corn nitrogen rate effects on nitrate leaching. *J. Environ. Qual.* 29:1095-1103.

Hong, N., P.C. Scharf, J.G. Davis, N. R. Kitchen, and K.A. Sudduth. 2007. Economically optimal nitrogen rate reduces soil residual nitrate. *J. Environ. Qual.* 36:354-362.

The commenter submits that Attachment #2 - NITRATE LOADING AND IMPACTS ON CENTRAL WISCONSIN GROUNDWATER BASINS – by George J. Kraft – demonstrates that UW recommendations used in the Richfield Dairy NMP, will not ensure compliance with the nitrate groundwater enforcement standards or the preventative action limit for nitrate. The study uses the N-budget approach of Stites and Kraft (1997) to estimate each crop's nitrate-N loading rate (lbs. nitrate-N/acre).

After review, the study is a prediction and was not confirmed by any follow up sampling to verify the prediction. Moreover, the study is missing critical documentation of the nutrient management practices followed by growers in the sampling area(s). The N-loading rates quoted in study may not reflect the actual fertilizer applications or sources used by growers nor is it clear if any crop uptake of nutrients were considered. These two items are critical since it forms the basis for mass balance model and commenter's conclusions.

The study also does not indicate if any growers had or followed a nutrient management plan. Nor does the study confirm, what, if any, other nitrogen management practices, as described in UW crop recommendations, were followed by growers when applying commercial N. Examples of such practices include: application timing- spring vs. fall application; for sands, use side-dress or split N applications with most of nutrients applied after crop establishment; using N inhibitors; taking applicable N credits; schedule irrigation to minimize N leaching; under conditions where N leaching is likely, use all ammonium N sources, slow-release fertilizer materials, delay N application to match crop uptake; for potatoes, either apply 25-50% of crop N at emergence and remainder at

tuberization or apply remaining N in multiple split applications). Without this documentation, it is erroneous to conclude that nitrate concentrations will increase if UW recommendations are followed.

Last, the department agrees that highly permeable, sandy soils found within many RD fields have risks for groundwater contamination and the need for the farm to maintain compliance with groundwater quality standards. With that said, the department considers the factors listed under comment response #36 within the Notice of Final Determination for the permit, in addition to the requirement to adhere to UW recommendations, will help minimize the risk of nitrate N discharges to groundwater resource(s).

**Comment #23:** Besides the probable increase in nitrates in our well water, we are also concerned about other contaminants such as: hormones, chemicals, antibiotic-resistant bacteria, cleaning agents, ammonia and heavy metals, and silage leachate. Pathogens such as E.coli bacteria, cryptosporidium, and salmonella - all of which can cause sickness or death in humans and animals - may be present in CAFO wastes. The EA did not address these contaminants. No studies were cited to support the claim that the proposed process of waste management will decrease the nitrates in the groundwater (as stated at the hearing on July 18).

**Response:** The Department does not have the authority, via NR 243, Wis. Adm. Code or the WPDES permit to regulate other hormones, chemicals, antibiotic-resistant bacteria, cleaning agents, ammonia and heavy metals. The Department does have the authority to regulate silage leachate and, to some extent, pathogens, via land spreading requirements of NR 243 and WPDES permit. The points listed within comment response #36 within the Notice of Final Determination for the WPDES permit, addresses the commenter's concerns regarding nitrates in groundwater and pathogens:

**Comment #24:** The EA discusses that the operation will also be required to conduct manure and soil sampling to determine appropriate application rates, depending on soil and crop types but does not review frequency or timing to be reviewed by a certified crop consultant.

**Response:** The proposed WPDES permit requires Richfield Dairy to develop and maintain a NM plan that is consistent with the permit and NR 243.14 requirements, including regular manure sampling (2x/month) and soil sampling (1x/4years) to determine appropriate application rates. It also contains requirement for revising the NM plan with this information on, at least, an annual basis. All NM plans and revisions must be developed and/or approved by a certified crop consultant.

**Comment #25:** Nowhere in the EA is the potential of a Scab epidemic mentioned. It is well known that applying manure to potato fields can cause an increase in scab infection (see info from Purdue University at [http://vegetablemdonline.ppath.cornell.edu/factsheets/Potato\\_Scab.htm](http://vegetablemdonline.ppath.cornell.edu/factsheets/Potato_Scab.htm)).

**Response:** The Department agrees that manure applications to potato fields, in general, can increase the risk for scab infection of potato plants. Also, reference comment response #86 of the “**Permit Changes and Response to Comments**” document for additional information.



**Comment #26:** I disagree with the DNR conclusion that the EIS Process is not required for the proposed Richfield Dairy. The environmental analysis (EA) was incomplete and was not of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. Therefore, an environmental impact statement is required prior to final action by the Department on this project.

The construction and the ongoing business will be a Major Action Requiring the Full EIS Process. The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

At best, the EA restates the company's plans for the facility and provides textbook descriptions of scientific processes, neither of which are a suitable substitute for the required analysis necessary to make an informed decision on the issuance of a WPDES permit.

Specifically, the EA's "Conclusions of the Environmental Effects and Their Significance" are incomplete, lacking in depth of analysis and at times not accurate and therefore require a full EIS prior to final action by the Department on this project.

The EA does not have sufficient data and analysis to have made the following statements:

- 1) Consequently, the land spreading of manure should not yield any substantial increase in risk to the environment.
- 2) Manure will be land spread in accordance with a Department approved Nutrient Management Plan, which will not allow poor land application practices; thus, operating practices should have minimal impacts on the environment.
- 3) Provided manure land-spreading is limited to existing croplands and application practices avoid increased nutrient loading to surface waters (see later discussion in this section), no serious threat to sensitive resources in the vicinity would be expected. Therefore, long-term significant impacts on terrestrial animals and vegetation are not expected.
- 4) No waterways, wetlands or other aquatic resources are present at the immediate farm site. Therefore, no ORW or ERW resource waters will be affected.
- 5) If the operation conducts land spreading in accordance with an approved NMP, maintains an adequate land base for land spreading, and properly inspects and maintains manure storage facilities and runoff control systems, the threat to groundwater and surface water should be minimal under normal operating and climatic conditions.
- 6) Manure will be land spread in accordance with a Department approved Nutrient Management Plan, which will not allow poor land application practices; thus, operating practices should have minimal impacts on the environment.
- 7) There are typically positive short-term economic effects to contractors and vendors during the construction phase of CAFOs. Long-term positive effects are also

The previous statements listed above are presented as facts to justify the Draft EA conclusion that an EIS is not necessary to make a final decision on the permit application. The EA statements in fact are made with improper extrapolation of data and/or incomplete or not of sufficiently rigorous research and/or are contradicted by other statements within the EA and therefore cannot be relied on to make an informed decision.

**Response:** See Response to Comment#1 for discussion on WEPA concerns.

With respect to NM plan, the Department disagrees that the EA statements of fact lacked depth of analysis and at times were not accurate, for the following reasons:

A NMP must be submitted to the Department and then reviewed for consistency with NR 243 performance standards before approval is granted, and a WPDES permit is issued. The Department fully understands that s. 243.14 includes specific NMP content requirements (which include, by reference, applicable sections of the NRCS 590 NMP standard) and also multiple and specific land spreading requirements designed to prevent manure and process wastewater from entering into surface or ground waters of the state.

- Failure to meet all s. 243.14 criteria is grounds for an incomplete application determination by the Department.
- The purpose of the NR 243 performance standard is to implement design standards for accepted management practices and establish permit requirements as a basis for issuing WPDES permits.
- Accepted management practices are practices, techniques or measures through which runoff, manure, milking center waste, leachate, or other waste streams associated with animal feeding operations are handled, stored, utilized or otherwise controlled in a manner to achieve compliance with NR 151 livestock performance standards and prohibitions and water quality objectives established under chs. 281 and 283, Wis. Stats.
- The general and specific land spreading requirements of NR 243.14 are more restrictive or prohibitive than similar criteria within the NRCS 590 standard (Winter Spreading, Nutrient Crediting, Setbacks from conduits to groundwater, surface water and wetlands, record keeping, manure testing).
- The applicant, owns and operates several permitted CAFO facilities in the state, many of which have herd sizes greater than 3000 animal units and have NMP's that encompass hundreds of fields and thousands of acres planned for manure and process wastewater applications to meet crop needs (N.P & K) and nothing more.
- Some of these CAFO facilities were recently issued or re-issued WPDES permits.
- Milk Source Holdings, Inc., has consistently demonstrated on existing facilities their ability to implement nutrient management plans which conform to NR 243 performance standard requirements.
- Milk Source overall record of compliance with WPDES permits demonstrates a consistent trend of water quality protection by the company.

- Milk Source has submitted NMP's to the Department for review and approval which exceed some s. 243.14 requirements and afford increased protection of surface and groundwater resources.

**Comment #27:** The EA correctly states that nitrogen containing compounds such as ammonia and NO<sub>x</sub> result in increased nutrient loading and acidification of soils and waters. This statement must be researched and quantified in order for the environmental impact be assessed.

**Response:** Nitrogen containing compounds are generated during the manure application process and will result in an increased nutrient loading to soils, acidification of soils and groundwater above current conditions. However, the Richfield Dairy NMP contains several required nutrient / manure management practices that, taken together, help reduce the risk for nutrient loading above crop fertility needs and further reduces the rate, scope and/or frequency of soils and water acidification. These practices include requirements to regularly test all crop fields for soil P, K, and pH levels and plan appropriate management practices to prevent over application of nutrients. Practices include lime applications to reduce soil acidification, immediate incorporation or injection of liquid manure, regular calibration of spreading equipment to ensure that application rates reflect the UW recommendations for crops selected and the planned application of manure in the spring, prior to crop establishment. Spring application prior to crop establishment on highly permeable soils reduces the risk for N mineralization and leaching from applied manure as opposed to fall manure applications. The NMP also includes detailed manure spreading and soil restriction maps of all fields covering more than 16,000 spreadable acres, including field and map verification procedures to ensure that all manure spreading setbacks are properly followed and s.. 243.14 prohibited areas (shallow groundwater, conduits to groundwater) are followed or avoided when fields are utilized for manure application.

**Comment #30:** One comment listed a number studies/research papers indicating Serious Pre-existing Problems of Contaminated Groundwater in the General Central Sands Area Occupied by the Applicant's Land Spreading Fields and Production Area.

A field research paper for 1999 indicates serious, intractable groundwater nitrate problems throughout the Central Sands agricultural region:

Another paper concurs with the observation of serious nitrate groundwater problems in the Wisconsin Central Sands agricultural area:

All of the papers indicate the proclivity for nitrate problems in the Wisconsin Central Sand Plains created by nitrogen application to highly permeable soils in the area of the proposed facility and its land spreading fields.

**Response:** The Central Sand Plains are vulnerable to groundwater contamination from agricultural chemicals. The threat to groundwater can be lessened if pest management and nutrient management strategies are used by all farmers. Managing manure according to a nutrient management plan as required under a CAFO permit will limit nitrate inputs to groundwater. It is assumed that lower application rates will result in less nitrate inputs to groundwater. Site specific groundwater monitoring of land application sites over a

long period would be required to determine trends in nitrate concentration in response to nutrient management plans.

**Comment #31:** The EA states that “There is a concern about nitrate contamination already present in the area,” this is a major environmental issue and requires investigation by the DNR. The applicant will be required to follow an approved NMP on all of the 16,429 acres under contract for manure application, which reduces the risk of over application and nitrate leaching. This is an incomplete comparison, the DNR needs to research actual current manure and commercial fertilizer applications and then make a comparison, there are no measurable facts in the EA comparison only unsubstantiated assumptions on current applications of fertilizer and manure and therefore no meaningful conclusions about the increase or decrease in the amount of nutrients can be made.

**Response:** The Department is unable to make the comparison suggested by the commenter as none of the local growers that farm the acreage identified within the Richfield Dairy NMP have an approved NRCS 590 NMP. The reasons growers do not have a standard 590 plan include: (1) many growers in the area do not agree with all of the UW crop fertility recommendations required in a standard 590 plan; (2) to require growers to obtain and follow a 590 NMP, the county/state must offer, by law, 70% cost share assistance for the increased costs associated with a standard 590 plan; (3) the cost share rate to develop a NMP is approximately \$28/acre. For the 16,429 acres associated with the Richfield Dairy NMP, this would result in an up front cost of \$460,000 dollars to county/state government (the 2009 and 2010 annual budget for NMP development in Adams County was \$65,000 and the annual state budget for NMP development ranges between 3-5 million).

As a WPDES permitted facility, RD is not eligible for state cost share funding, as it is required under the WPDES permit that the facility develop and implement a NMP that meets s.243.14 requirements. The permit requires RD to maintain detailed manure spreading and calibration records and to provide updated annual NMP reports to the Department. The NMP and WPDES requirements offer greater transparency to what nutrients are applied to crops above the current conditions. These factors provide the basis for the Department’s determination that the applicant will be required to follow an approved NMP on all of the 16,429 acres under contract for manure application, which reduces the risk of over application and nitrate leaching.

**Comment #32:** The EA states that the NMP will limit nutrient application to crop need where there were no limits in the past. There is a reduced risk of nitrate leaching from manure then from commercial fertilizer. Unlike commercial fertilizer where all nitrogen components are immediately available, manure contains a significant amount of organic nitrogen which is neither available to plants nor mobile in the environment until converted to plant available ammonium, nitrite or nitrate by soil microbes. These descriptions are not valid for making critical decisions. Actual data must be analyzed containing the current applications of commercial fertilizer and manure-application before a statement of comparison and the reduce risk can be made.

**Response:** The Department disagrees. Manure by definition, is an organic N source. It is fundamentally different than commercial fertilizer (which has inorganic N and is

immediately plant available form of N) as stated within the EA. Since none of the growers / landowners who have land base that is included within the Richfield Dairy NMP have a NRCS 590 NMP, a comparative analysis is not feasible.

**Comment #33:** Changed crop rotation will include perennial forage crops such as grass, hay and alfalfa on at least 25% of the acres. This statement confirms that 25% of the manure will not be incorporated into the field to reduce the risk of leaching into groundwater and run-off into surface-water, the EA does not address these increased risks.

**Response:** The Department disagrees. The Richfield Dairy NMP depicts crop rotations with 25% of acres having perennial forage crops. The NMP shows only 4% of the 16,429 acres is planned for alfalfa/perennial forage crop. The remaining 96% is planned with annual crops such as corn grain, corn silage, potato, winter wheat, snap beans and sweet corn. If such crops receive liquid or solid manure, the manure is planned to be immediately incorporated or injected.

**Comment #34:** The EA does not address the Karst Topography. From Wikipedia: *Karst topography is a geologic formation shaped by the dissolution of a layer or layers of soluble bedrock, usually carbonate rock such as limestone or dolomite,[1] but has also been documented for weathering resistant rocks like quartzite given the right conditions.[2] Due to subterranean drainage, there may be very limited surface water, even to the absence of all rivers and lakes. Many karst regions display distinctive surface features, with sinkholes or dolines being the most common. However, distinctive karst surface features may be completely absent where the soluble rock is mantled, such as by glacial debris, or confined by a superimposed non-soluble rock strata. Some karst regions include thousands of caves, even though evidence of caves that are big enough for human exploration is not a required characteristic of karst.*

**Response:** Karst topography, which lends to a landscape that is characterized by numerous caves, sinkholes, fissures, and underground streams. Karst topography usually forms in regions of plentiful rainfall where bedrock consists of carbonate-rich rock, such as limestone, gypsum, or dolomite, that is easily dissolved. Surface streams are usually absent from regions where karst topography exists. Adams County is in the Wisconsin Central Plain, which is characterized by flat or gently undulating topography. Relief is generally low except for occasional pinnacles and hills of sandstone such as Pilot know, Friendship Mound and Roche-A-Cri Mound in which the commenter references.

Adams County is divided into two physiographic areas. The hills and kettles in the southeast comprise one area, where these landforms were caused almost entirely by glacial deposition. The Johnstown moraine forms the western boundary of this area where the Richfield Dairy facility is to be located. The other area is larger and comprises a broad outwash plain bordered on the west by the Wisconsin River. The outwash deposits are sand over silty and clayey lacustrine deposits laid down in old glacial Lake Wisconsin. The Johnstown moraine in southwestern Adams County divides the drainage between the Wisconsin and Fox Rivers. The predominant soil types within the area of the Richfield Dairy facility consists of Billett Sandy Loam and Coloma Sand. The Billett series consists of deep, well drained soils on outwash plains. The soils formed in loamy

and sandy outwash deposits. The Coloma series consist of deep, somewhat excessively drained, rapidly permeable soils on outwash plains and moraines. The soils formed in sandy glacial till or outwash plains and moraines. There are no documented karst areas in Adams County.

**Comment #35:** The Environmental Assessment's discussion of the significance of cumulative impacts did not properly address the impact of additional nitrogen loading of the groundwater that would be caused by the manure spreading proposed. The increased nitrogen loading associated with the manure spreading needs to be evaluated in relation to the existing nitrogen loading of groundwater in the area. It is clear, as explained above, that nitrogen loading associated with the current cropping practices in the area is already causing harm to waters of the State. The proposed additional nitrogen loading would be a cumulative impact that would increase that harm.

The DNR has the authority and a general duty to consider whether the cumulative impacts associated with these approvals may harm waters of the state. Since these cumulative impacts harm the waters of the State, the DNR should deny the approvals associated with these impacts using its delegated duty and authority for protection of the State's public trust.

**Response:** The nutrients from Richfield Dairy's manure and process wastewater are meant to replace, not add, to the nutrients that are placed on area crop fields. Fields previously not covered under an NMP that receive Richfield Dairy manure will be covered under an NMP. The associated nutrient budgeting that goes along with an NMP, particularly under NR 243 and a WPDES permit, may result in decreased nutrient loading to area surface waters and groundwater. The Department is obligated by law to review a given proposal to determine if the proposal can meet the standards and any prescribed conditions of a permit or approval. If a proposal can meet permit requirements, we are obligated by law to issue the permits and approvals. Refer to comment response #36 regarding cumulative effects.

**Comment #36:** Your brief statement under Sec. 2, Cumulative Effects is inadequate review, as it remains unsubstantiated, to date. This will now be the third CAFO attempted to be sited in a 13 mile direction/radius, and the DNR has STILL utterly failed to address, analyze or even acknowledge cumulative impacts. We would, therefore, argue and comment that this third facility *is very poorly sited and concentrated in a small area* to the detriment of local high groundwater and public waters, especially Pleasant Lake, such that cumulative impacts WILL be significant, and thus an EIS is required.

**Response:** The Department does consider all projects requiring permits at the time they are proposed. As each is reviewed, cumulative effects are considered. In the case of the Richfield Dairy EA, no significant impacts were found. The Department does not have the authority to dictate locations of CAFOs. The Department is obligated by law to review a given proposal to determine if the proposal can meet the standards and any prescribed conditions of a permit or approval. If a proposal can meet permit requirements and they have sufficient land to apply manure and process wastewater, the Department is obligated by law to issue the permits and approvals. Potential effects on Pleasant Lake are addressed in the EA.

**Comment #37:** Regarding the statement within the environmental assessment that no waterways, wetland or other aquatic resources are present at the immediate farm site. Therefore, no ORW or ERW resource waters will be affected, the Department received the following comment: “How can this claim be made? Nutrient that will leak from the site will affect groundwater and as a result affect waters of the state – ORW, ERW and those not classified.”

**Response:** While discharges are allowed under the WPDES permit, the restrictions in the WPDES permit and Richfield Dairy’s NMP are designed to minimize potential impacts and ensure that groundwater and surface water quality standards are met.

**Comment #38:** Referencing the section of the environmental assessment stating that Richfield Dairy will follow any natural resources laws that may pertain to how and where the clay is obtained (for construction of reviewable facilities), the Department received the following comment: “There is nothing presented here regarding the risk of *E.coli* contamination to the groundwater. A significant omission. Wisconsin’s central sands and the groundwater that underlie them are incredibly vulnerable. Nowhere is this document is that mentioned. To assume the fine loam soils of eastern Wisconsin can be used as a model for what is likely to result in Wisconsin’s central sands is an error in judgment. This CAFO will have a large regional impact (16000 + acres will be changed), it is a significant change to the region that has not been evaluated before (there was no EIS completed for Opitz Custom Heifers), it is a major action that will affect the quality of the human environment.”

**Response:** It is expected the proposed operation will present less environmental risk than the previous / historic agricultural use for two main reasons. First, the proposed operation will be applying nitrogen contained in manure (where the nitrogen is less mobile than is true for liquid commercial fertilizer). Second, the proposed operation will be subject to regulatory limitations through the WPDES Permit, including a nutrient management plan that must limit nutrient application based on plant needs.

Nitrate conversion to nitrogen gas is called denitrification, and this process occurs best in water that contains low concentration of dissolved oxygen (referred to as reducing or redox conditions). Research has been done in attempt determine the vulnerability of private wells in the glacial aquifer system to nitrate contamination. An example of such research is described in the United States Geological Service publication SIR 2010-5100, Relations That Affect the Probability and Prediction of Nitrate Concentration in Private Wells in the Glacial Aquifer System in the United States, by Kelly L. Warner and Terri L. Arnold, <http://pubs.usgs.gov/sir/2010/5100/>. This research shows the environmental characteristics with greatest influence related to nitrate contamination near or above the drinking water standard of 10 mg/l nitrate are percent silt in soil, soil type, aquifer material and depth. So deeper groundwater tends to have fewer nitrates than groundwater closer to the ground surface, but this is also strongly dependent on local hydrogeologic conditions. The research also shows nitrate concentration can be highly variable over short distances. Nitrate contamination in an individual well was also correlated to the number of septic systems located with a particular distance from the well.

As for pathogens associated with livestock manure, they aren't a regional groundwater contaminant concern, but a concern to a well if surface runoff infiltrates down the well casing and then the individual well needs a one time treatment (with bleach). The DNR does not expect the proposed production site or land application sites to cause groundwater quality standards to be exceeded, or exacerbate (make worse) exceedences of groundwater quality standards that may already exist. The DNR acknowledges the nitrate concentration in groundwater will reduce more slowly if nitrogen continues to be added to surface soils, by land application of either manure or liquid chemical fertilizer. However, nitrogen added via manure application is less leachable than nitrogen added via liquid chemical fertilizer.

### **EA-WILDLIFE**

**Comment #39:** Regarding wildlife, the EA states “While no specific animal or plant inventories have been conducted at this location, a review of the Natural Heritage Inventory records indicate no endangered or threatened species, natural areas or other sensitive biological resources are present or depend on the development site or within a one mile radius.” The manure spreading will be over 16,000 acres (about 25 square miles) so the effects will (be) felt more than one mile away from the site. Based on the US Fish & Wildlife Services information: Adams & Waushara Counties are home to 3 endangered species: Karner Blue Butterfly, Gray Wolf and Whooping Cranes (which nest in Adams Co.).

From the EA: “Occasional visits/use by mobile rare species such as whooping crane or bald eagle may occur but will not be negatively impacted by such use.”

This would be a questionable statement based on the fact that the manure spreading area is south of the Necedah Wildlife Refuge. And there are other wildlife refuges in Adams County including Colburn Wildlife area, Roche A Cri State Park and Leola Marsh Wildlife Area.

**Response:** The Department disagrees. The immediate project area and proposed land spreading sites are existing cropland and would be expected to provide habitat primarily for common animal species acclimated to farm operations. Since the farm and land spreading sites are currently used for agriculture, the proposed land use will not change significantly as a result of the issuance of the WPDES permit.

**Comment #40:** Biologically, the EA mentions very little of wildlife in the area. All the manure created must be spread on a huge area that is not listed, but mentions they have permission to spread on 16,000 acres and probably will affect areas and watersheds not listed. Because these discussions (EA) are so loose they will most definitely degrade rare habitat of Karner blue butterfly, massassuga rattlesnake, Blanding's turtle and countless entomology in rivers not listed.

**Response:** The Department disagrees. The immediate project area and proposed land spreading sites are existing cropland and would be expected to provide habitat primarily for common animal species acclimated to farm operations. Since the farm and land



spreading sites are currently used for agriculture, the proposed land use will not change significantly as a result of the issuance of the WPDES permit.

**Comment #41:** From the EA, “A site visit will be conducted by Department staff to determine if lupine is present on the property. If lupine is present, it will be referred to the regional ecologist for further evaluation.” Has this been done? Lupine and the Karner Blue Butterfly have had a population within the area about 1 to 2 miles south of the proposed site. Karners will sometimes travel up to a mile in search of new territory. The manure spreading will cover a large area and how will this, along with changing the agriculture affect our wildlife? Our water quality? The air quality? We don’t feel the EA has sufficiently answered these questions.

**Response:** The Department conducted an on site review within the project area where the facility is to be constructed as well as at all road access locations. No lupine was found at these locations. The site review focused on the specific area where construction activities would occur. Land spreading sites were not reviewed for Lupine, as the proposed land use for these fields will remain for agricultural crop production.

## **EA-ECONOMICS/PROPERTY VALUES**

**Comment #42:** The Department is obligated by statute and rule to consider the economic impacts of the proposed projects (see s. 1.11(2)(c), Stats., and ss. NR 150.01 and NR 150.22. Nothing has been said in the “Economics” section regarding the effect of this operation on Wisconsin tourism. It is likely to be negative. I understand the desire to pump up the dairy industry, but at what cost to other economic interests?

**Response:** The statewide EA for a general WPDES permit for dairy CAFOs did not find adverse impacts of CAFOs on tourism. See:  
[http://dnr.wi.gov/runoff/pdf/ag/Large\\_Dairy\\_CAFO\\_GP-Environmental\\_Assessment.pdf](http://dnr.wi.gov/runoff/pdf/ag/Large_Dairy_CAFO_GP-Environmental_Assessment.pdf)

**Comment #43:** Several individuals submitted comments to the Department noting their concern about the loss of local property values in the area, or that they believe the EA underestimates the potential drop in property values after the Richfield Dairy facility is built.

**Response:** The EA provides adequate analysis of impacts on property values, and relies on a 2003 study from Pennsylvania. “The tax base in local areas may go up in response to the increase in property values and improvements at production sites. Property values may also go up for parcels used for growing crops and application of manure. The value of nearby residential properties may go down due to the close proximity of CAFOs. On a large scale there may be little or no change in the tax base due to the presence of CAFOs (Purdue Extension Guide AY-318-W <http://www.ansc.purdue.edu/cafo/>).

Property values on adjacent residential parcels may decrease due to proximity to the farm operation and associated concerns about odor, noise, traffic, groundwater degradation, viewscape, etc. If a farm is properly managed and uses the best available technologies for dealing with waste and odor the drop in value may be short-term (Purdue Extension Guide AY-318-W <http://www.ansc.purdue.edu/cafo/>).

A 2003 study of property values in Berks County, Pennsylvania sheds some light on the effects of CAFOs on nearby residential properties. The following summary is from the executive summary of the report (Ready and Abdalla, 2003, *The Impact of Open Space and Potential Local Disamenities on Residential Property Values in Berks County, Pennsylvania*. Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University. See: <http://landuse.aers.psu.edu/study/BerksLandUseShort.pdf>).

*Several potential local disamenities were found to have a negative impact on nearby house prices. Of the potential local disamenities investigated, the impact of landfills on house price was largest, and extended the farthest (up to 3200 meters). A landfill located 800 meters from a house decreases that house's sale price by an estimated 6.9%. The impact of a large-scale animal production facility (over 200 animal equivalent units or aeu's) on house price was about one half to two thirds as large as that from a landfill (4.1% at 800 meters), and did not extend as far (up to 1600 meters). The impacts on house price from mushroom production and from the regional airport were much less (0.4% and 0.2%, respectively, at 800 meters). The impact from high traffic roads was small, and extended only a short distance. No significant impact was found for sewage treatment plants.*

*Additional analysis attempted to investigate whether different types of animal production facilities had different impact on nearby house prices. Differences in the impact due to differences in the size of the operation (number of aeu's) were not statistically significant. Further, medium-sized production facilities (200 to 300 aeu's) were found to have a statistically significant negative effect on house prices when considered apart from larger facilities. Similarly, the impact did not vary significantly by species (poultry, swine, and beef/dairy). An analysis of proximity of animal production facilities and residential properties showed that the density of single family homes around animal production facilities was lower than the average for rural parts of the county. An implication is that some potential for conflicts is avoided due to the way in which these land uses are located on the land.*

*The total impact on surrounding house prices was calculated for a landfill, the regional airport, and an animal production facility. The average impact on the value of 3342 houses located within 3200 meters was \$2442 (all values are in 2002 dollars). The total impact on all houses was \$8,162,000, which is 2.6% of the assessed value of the affected properties. The average impact of the regional airport on 2256 houses located within 1600 meters of the airport runway and its flight paths was \$104, and the total impact on the value of these properties was \$235,000, or 0.1% of the assessed value of the affected properties. This calculation does not include 2391 properties located near the airport within the City*

*of Reading. The average impact of a single animal production facility on 119 single family residences located within 1600 meters of the facility \$1,803. The total impact on all 119 houses is \$215,000, or 1.7% of the assessed value of the affected houses. These figures are intended as illustrations, and should not be considered averages for similar facilities. The impact from any given landfill, airport, or animal production facility will depend on the number of houses located near the site, and on the market value of those houses absent the facility."*

**Comment #44:** Referencing the section of the environmental assessment stating that the value of nearby residential properties may go down due to the close proximity of the CAFO's, the Department received the following comment. "This assumes that both the property increasing in value and that decreasing in value are in the same county and town. In this situation this is NOT the case. The land values may increase in Adams County, but the loss to property values will occur in Waushara County and the Town and Village of Coloma. Hardly equitable."

**Response:** The EA analysis of impacts on property value makes no assumptions as to which county or township impacts may or may not occur.

**Comment #45:** A number of comments expressed concern about decreases in tourism, real estate values, income from rental properties because of the likely pollution of ground and surface waters and the odors that will result from CAFO's.

**Response:** In light of permit requirements, The Department does not agree that pollution of ground and surface waters in the area surrounding the proposed Richfield Dairy project is likely. The Department acknowledges that real estate values, particularly for those residential properties near the operation, may decrease. Impacts to tourism are difficult to predict and will depend on which, if any, impacts (odors, noise, traffic) occur in areas where people recreate. The statewide EA for a general WPDES permit for dairy CAFOs did not find adverse impacts of CAFOs on tourism. Reference:  
[http://dnr.wi.gov/runoff/pdf/ag/Large\\_Dairy\\_CAFO\\_GP-Envrionmental\\_Assessment.pdf](http://dnr.wi.gov/runoff/pdf/ag/Large_Dairy_CAFO_GP-Envrionmental_Assessment.pdf)

**Comment #46:** Regarding the statement within the environmental assessment that the DNR has not done a study to examine if or how property values may have changed after confined animal feeding operation permits have been issued elsewhere, the Department received the following comment: "Why not? This could be part of an EIS. It is significant and not been evaluated before."

**Response:** The EA provides adequate analysis of impacts on property values. The Richfield Dairy EA adequately covers the content requirements of NR 150.22(2), and did not find significant impacts that would otherwise require the EIS process under NR 150.20(1)(c)3.

**Comment #47:** Regarding the environmental assessment noted in direct economic affects from Richfield Dairy, the Department received the following comment: "Will these added dollars be spent in Adams and Waushara Counties or elsewhere? How many farmers in Adams and Waushara County will be put out of business? How many jobs will be lost? In other words, what will the net job effect be? The Waushara County economy depends upon clean lakes and streams to support tourism. How will the

Richfield CAFO affect tourism in Waushara County? How many tourism jobs and businesses will be lost as a result of this CAFO? The Richfield Dairy will have a large regional impact on jobs – and EIS should be completed to assess this before permits are issued.”

**Response:** The EA provides adequate analysis of impacts on employment. The Richfield Dairy EA adequately covers the content requirements of NR 150.22(2), and did not find significant impacts that would otherwise require the EIS process under NR 150.20(1)(c)3. Neither an EA nor an EIS provides authority to alter the permit decision.

### **EA–AIR QUALITY/ODOR**

**Comment #48:** As stated in the EA animal agricultural operations generate odors and air pollutants. When enough animals are concentrated together in a small area, air emissions may cause human health and environmental concerns. Chapter NR 445 establishes ambient air concentrations for ammonia and hydrogen sulfide, two pollutants associated with agricultural waste from animal feeding operations. These concentrations are 418 and 335 micrograms per cubic meter, respectively, on a 24-hour average basis. Air emissions from animal feeding operations are not categorically exempt from these reporting requirements. The EA correctly states that nitrogen containing compounds such as ammonia and NO<sub>x</sub> result in increased nutrient loading and acidification of soils and waters. This statement must be researched and quantified in order for the environmental impact to be assessed.

**Response:** Fully evaluating the fate/transport of reactive nitrogen (including NO<sub>x</sub>, N<sub>2</sub>O & NH<sub>3</sub> – in terms of acidification and eutrophication) was beyond the scope of the EA. Air emission estimates are presented within the EA. The EA also discusses the limitations of dispersion modeling for livestock emissions. According to chapter NR 150.22(1)(e), Wis. Adm. Code, not all impact parameters must be quantified in an EA. If identified as unknown, however, there must be a discussion of the relevance of, and evidence for the information, and evaluation of adverse impacts. The EA meets these criteria.

**Comment #49:** The EA also states that both quantity and the types of air contaminant emissions from animal agricultural operations are difficult to estimate, making off-site air quality impacts difficult to predict. The difficulty according to the EA is due to diurnal and seasonal temperature variation, varying number and type of animal species present (which may change over time), type of housing and manure handling system, feed type, and chosen management practices. However, the difficulty of the analysis does not relieve the DNR of its duty to examine the impact to air quality and its eventual effect on the water quality. All of the variables are known or can be estimated based on information contained in the permit application, the NMP and published and peer reviewed scientific studies. The potential for a severe negative impact to both ground and surface waters requires the DNR to research the most likely environmental impacts before issuing a WPDES permit.

**Response:** Refer to previous response to comment.

**Comment #50:** To address air emissions and odors, Richfield Dairy plans to cover its main manure storage facility and exhaust emissions through a biofilter to minimize potential air emissions associated with manure storage. The permit also requires incorporation of all surface-applied manure within 48 hours-a BMP determined by WDNR to reduce odor and emissions from land application sites. (Michael Best)

**Response:** Covering manure storage is expected to reduce odors and air emissions associated with covered manure storages. It is uncertain how other uncovered manure storage, solids separation and storage, and subsequent land application will impact odor and air emissions overall. Land application BMPs identified by the Agricultural Waste Air Emissions Advisory Group in its December 13, 2010 report, include injection, followed by immediate and rapid incorporation (less than 12 hours), and band spreading. Incorporation within 48 hours was not identified as a BMP to mitigate ammonia or hydrogen sulfide emissions from land application of liquid manure

**Comment #51:** We believe this farm will negatively affect the areas air quality. The commenter referenced the environmental assessment section which states, “even with the proposed (and unspecified “additional”) measures in place, the new facility and the large quantity of animals housed and manure generated may produce occasional or more frequent odors that may be objectionable to some neighbors. Other potentially affected odor receptors include the Village of Coloma (~3 miles northeast) and Pleasant Lake residents (~2 miles southeast).”

**Response:** The Department does not dispute the assertion that the proposed facility may affect air quality and that odors will be generated. This is true for any size of animal livestock operation, even with successful air quality BMPs in place or with production methods which minimize air quality impacts. Federal air permit requirements are incorporated into state air permit rules in chs. NR 405, 406, and 407. In addition, chs. NR 406 and 407 also include air permit requirements for minor sources. Emissions associated with animal feeding operations are not, categorically, exempt from these requirements. However, the revisions to chs. NR 406 and 407 published in July 2004 established an exemption period ending in July 2007 for sources of hazardous air contaminant emissions from agricultural waste. The exemption period was extended, again, in February 2008 for chs. NR 406 and 407 and how they relate to NR 445.

Chapter NR 445 establishes ambient air concentrations for ammonia and hydrogen sulfide, two pollutants associated with agricultural waste from animal feeding operations. These concentrations are 418 and 335 micrograms per cubic meter, respectively, on a 24-hour average basis.

Similar to federal air emission reporting requirements, state air emission reporting requirements include the reporting requirements in ch. NR 445 and the annual air emission reporting requirements of ch. NR 438. Air emissions from animal feeding operations are not categorically exempt from these reporting requirements.

**Comment #52:** If the Department permits this operation, it should also require monitoring of malodorous emissions and particulates to protect public welfare.

**Response:** The Department believes it does not have the authority to require air quality monitoring for the proposed facility

**Comment #53:** The Department should consider the air quality impacts to the environment and people. The animals and land spread manure will produce concentrated noxious and harmful gaseous emissions. Ammonia, hydrogen sulfide, methane and particulate emissions that can exceed OSHA safe exposure limits may affect residents of Coloma and Pleasant Lake which is unacceptable. These toxins can cause respiratory distress, lead to asthma and other breathing ailments. This will also make the air rancid and impact the experience of fishing and hunting nearby or just living in Coloma.

**Response:** The Department acknowledges that livestock operations can impact both indoor and outdoor air quality. The Department does not have the authority to regulate indoor air quality.

**Comment #54:** It is evident that because of the nature of cows and manure high concentrations of ammonia and hydrogen sulfide will be released into the air. It is also evident that because of legislators' desire to increase Wisconsin's role as a dairy state and to increase state revenues they have excluded CAFOs from air quality regulations. They have excluded the biggest offenders. CAFOs do a great job of farming dairy cows and tending to water problems but they do nothing to address the air and odor issues which continue 24/7. Milk Source has said they may put a cover on one of the open manure pits. They may or may not. There is no mandate to do so. This will help, but not solve the problems. You can mitigate water problems, but once these odors and contaminants are released into the air they cannot be mitigated. Negative comments were made about absent property owners of the lake area. If you do a little investigating you will see that these property owners pay a large percentage of the revenues of Coloma Township. Degrading air and water quality of the area will have a large negative economic impact on Coloma Township. Protect the rights of citizens to clean air and not hide behind other issues.

**Response.** The Department does not dispute many of the commenter's points on air quality except a clarification that high mass emissions (flux) of air pollutants do not necessarily create high ambient (or indoor) air concentrations of those pollutants. The Department agrees that all livestock operations generate odors and air pollutants.

**Comment #55:** Although CAFOs are exempt from NR 445, they are not exempt from the more general "100 tpy of any air contaminant" permit trigger and this would suggest that hydrogen sulfide, ammonia and VOCs should be monitored at this facility.

**Response:** The Department concurs with the commenter that permit thresholds of 100 ton per year for "any air contaminant" apply to the proposed facility. However, the Department believes it does not have the authority to require air quality monitoring.

**Comment #56:** Recent revisions to exempt CAFOs from air pollutants have not been approved by EPA.

**Response:** While this is true, Ch NR 445, Wis. Adm. Code is a state rule and agricultural waste had previously been deemed in compliance with the rule. In addition,

the portions of Ch NR 445 regulating agricultural waste are currently suspended by the legislature.

**Comment #57:** NR 429, dealing with objectionable odors should be applied when evaluating impacts of this facility.

**Response:** Ch NR 429, Wis. Adm. Code includes a procedure for determining objectionable odors based on conditions at the facility once it has been constructed and is operating.

**Comment #58:** Based on estimates from a similar project by the Oregon Dept. of Environmental Quality, the project could emit an estimated 38.5-76.1 tons/yr VOCs and 37.2-426.8 tons/yr ammonia. The DNR regulates VOCs for industrial sources at 25 tons per year and ammonia at 100 tons per year, suggesting that they should also monitor and regulate air emissions from the Richfield Dairy.

<http://www.deq.state.or.us/aq/dairy/docs/technicalreport.pdf>

**Response:** The Department concurs with the commenter that permit thresholds of 25 tons of VOC or 5.7 pounds per hour (contained in s. NR 406.04 (2)(c), Wis. Adm. Code) and 100 ton per year for “any air contaminant” (major source is defined in s. NR 407.02 94)(b), Wis. Adm. Code) apply to the proposed facility. The proposed facility, as with any source of air pollution, is required to evaluate existing information and determine its air emissions, and comply with any air regulatory requirements that apply. The Department also believes it does not have the authority to require air quality monitoring.

**Comment #59:** Regarding the statement within the environmental assessment that “Nitrogen containing compounds such as ammonia and NOx result in increased nutrient loading and acidification of soils and water,” the Department received the following comment: “There is little limestone in Waushara County. The emissions from the CAFO will likely result in the pH of the lakes in the region decreasing – an acid rain problem. How can this be environmentally sound?”

**Response:** Air emission estimates are presented within the EA. The EA also discusses the limitations of dispersion modeling for animal agricultural emissions. According to chapter NR 150.22(1)(e), Wis. Adm. Code, not all impact parameters must be quantified in an EA. If identified as unknown, however, there must be a discussion of the relevance of, and evidence for the information, and evaluation of adverse impacts. The EA meets these criteria.

**Comment #60:** The Department received the following comment regarding Richfield’s proposed animal mortality storage building. “How long will bodies be held? Although there is no current request for a crematorium, can the prohibition of one be placed in this document so that one does not appear in the future? If they would want a crematorium in the future, what is the process to make the request? Are they licensed? Permitted?”

**Response:** The mortality facility consists of a three sided concrete roofed building with an overhead door on the front to allow access. Mortalities will be stored in the structure and picked-up within 24-hours by a contractor for use at a fur farm near Black Creek. While Richfield Dairy has not indicated an intent to construct a crematorium,

“crematories” are exempt from construction permitting under s. NR 406.04(1)(s), Wis. Adm. Code.

**Comment #61:** Will the Richfield Dairy have to meet the new air permit requirements under NR 405-407 going into effect July 31, 2011.

**Response:** There are no “new” requirements in effect after July 31, 2011 per se and the proposed facility is subject to air pollution rules with the exception of Ch NR 445, Wis. Adm. Code.

**Comment #62:** The Department received the following question based upon the statement in the environmental assessment under the Air Quality heading that if enough animals are concentrated together in a small area, air emissions may cause human health and environmental concerns. “How are you defining “enough”? i.e. How many animals equal “enough”?”

**Response:** The Department does not dispute the assertion that the proposed facility may affect air quality (both indoor and outdoor) and that odors will be generated. This is true for any livestock facility regardless of size, even with successful air quality BMP’s in place or with production methods, which minimize air quality impacts. Both human health and environmental concerns can be adversely affected by a relatively small number of animals, so more importantly, it is how those animals and their wastes are managed which ultimately determines human health and environmental outcomes.

**Comment #63:** The EA doesn’t require BMPs for hydrogen sulfide and ammonia. The permit should stipulate specific techniques to mitigate emissions of hydrogen sulfide. (Sierra Club)

**Response:** EAs do not contain enforceable conditions: They are an 'information document' that lays out the issues and environmental effects of a given project or new source category. They do not have any authority to require any applicable air management requirements, including any air quality beneficial management practices (BMPs).

Additionally, in 2011, the Joint Committee on Review of Administrative Rules of the Wisconsin State Legislature temporarily suspended portions of the state air toxics rule Ch. NR 445, Wis. Adm. Code (which includes ammonia and hydrogen sulfide) for “agricultural waste” until the end of the legislative session which ends in spring or early summer of 2012. In June 2011, the Natural Resources Board (NRB) was asked to make the suspension of rules for agriculture sources permanent. The NRB rejected the request.

Unless the state legislature extends or makes permanent a compliance determination for “agricultural waste,” facilities, such as the proposed Richfield Dairy, will need to demonstrate compliance with Ch. NR 445, Wis. Adm. Code when the temporary suspension ends.

BMPs identified by the Agricultural Waste Air Emissions Advisory Group in its December 13, 2010 report (<http://dnr.wi.gov/air/agWaste.html>), include a number of air quality mitigation practices and techniques for the dairy sector.



**Comment #64:** Simply stating that “the Wisconsin DNR is currently working with an agricultural waste advisory group to examine and recommend beneficial practices that reduce ammonia and hydrogen sulfide air emissions and will work for Wisconsin farms,” is not analysis or a useful statement of the environmental impact. No conclusion on the environmental impact of the proposed facility can be made from this statement. Furthermore, comments about the facility proposed practices which are expected to mitigate air emissions also do not qualify as analysis of environmental impact of a process. Research and analysis from an EIS needs to be completed and in order to make a permit decision.

**Response:** Air emission estimates are presented in the EA. The EA also discusses the limitations of determining animal agricultural emissions. According to chapter NR 150.22(1)(e), Wis. Adm. Code, not all impact parameters must be quantified in an EA. If identified as unknown, however, there must be a discussion of the relevance of, and evidence for the information, and evaluation of adverse impacts. The EA meets these criteria.

**Comment #65:** The Environmental Assessment (EA) states that there are 5 single family dwellings within a 1 mile radius of the proposed site. It mentions Village of Coloma and Pleasant Lake as areas which may be affected by odor from the Richfield CAFO. Residential properties like my own and also properties of non-resident landlords which are between this 1 mile limit on one hand and the Village of Coloma and the Pleasant Lake Community on the other, are not mentioned in the EA, yet all of us will run the risk to be exposed to noise and odors associated with the Richfield CAFO operation:

**Response:** The Department acknowledges that the physical appearance of the site will change and that the activity level, noise and traffic at the farm and surrounding roads will be greater. While the use of the site will remain agricultural, the construction phase of the project will be most noticeable to neighbors located within a one-mile radius of the facility site. At the time Richfield Dairy becomes operational, odors from the facility will also be more noticeable to neighbors. Residents not located within the immediate vicinity of the facility may notice odors on a less frequent basis, particularly during the spring or fall period when the manure storage facility is agitated and the manure is land applied to area fields.

**Comment #66:** Comments expressed concern the EA downplays or does not adequately address air quality (Odor) and noise issues. Some expressed concerns that their house and their neighbors would be subject to air/odor based on prevailing winds in the area.

**Response:** The Department does not dispute the assertion that the proposed facility may affect air quality and that odors will be generated. This is true for any size of animal livestock operation, even with successful air quality BMPs in place or with production methods which minimize air quality impacts. Federal air permit requirements are incorporated into state air permit rules in chs. NR 405, 406, and 407. In addition, chs. NR 406 and 407 also include air permit requirements for minor sources. Emissions associated with animal feeding operations are not, categorically, exempt from these requirements. However, the revisions to chs. NR 406 and 407 published in July 2004 established an exemption period ending in July 2007 for sources of hazardous air

contaminant emissions from agricultural waste. The exemption period was extended, again, in February 2008 for chs. NR 406 and 407 and how they relate to NR 445.

Chapter NR 445 establishes ambient air concentrations for ammonia and hydrogen sulfide, two pollutants associated with agricultural waste from animal feeding operations. These concentrations are 418 and 335 micrograms per cubic meter, respectively, on a 24-hour average basis.

Similar to federal air emission reporting requirements, state air emission reporting requirements include the reporting requirements in ch. NR 445 and the annual air emission reporting requirements of ch. NR 438. Air emissions from animal feeding operations are not categorically exempt from these reporting requirements.

It is difficult to predict the odors that will be emitted from the operation. The operation has proposed to cover two of the three storage structures, which is likely to reduce odors from the operation's production area. Distance will also mitigate odors. Based upon modeling that has been done, air quality is not expected to be significantly impacted by the operation.

The Department disagrees that the EA downplays air emission issues. The EA adequately covers air emission effects.

## **EA-WATER QUANTITY**

### **Surface & Ground Water**

*Revised version of the Surface & Ground Water section with changes based on*

- *Updated information about the construction and pumping of the proposed wells*
- *Kraft & Mechenich (2010) regional drawdown modeling and Kraft (2011) Richfield Dairy drawdown modeling*
- *Expanded DNR review of impact of proposed wells on waters of the state based on the Lake Beulah Management District v. DNR Supreme Court decision.*

The proposed Richfield Dairy facility and wells are located approximately 1.1 miles west of the Mississippi River / Lake Michigan Surface water drainage divide and approximately 0.4 miles east of the Mississippi River / Lake Michigan groundwater divide. Surface water flows to the southwest, and groundwater flows to the southeast. Area geology consists of 150-200 feet of sand overlying 200-300 feet of sandstone. Based upon soil borings taken in May 2010, the depth to groundwater is greater than 32 feet below the ground surface.

Groundwater quality in the area is generally considered fair to good. However, nitrate levels are high in many wells, with 24% exceeding the Enforcement Standard threshold of 10 mg/l (ppm). Due to the preexisting nitrate issue at the site, the high capacity well application indicates that the dairy wells will be completed in the sandstone bedrock aquifer.

Average water usage for Richfield Dairy has been estimated at ~52.5 million gallons / year, 143,846 gallons / day or 99.9 gallons / minute. Animal watering and cleaning accounts for 44 million gallons/year, with evaporative cooling of the livestock facility during hot weather accounting for the remaining 8.5 million gallons/year. To meet their water demand, Richfield Dairy has submitted a high capacity well approval application to the DNR to construct two wells at a depth of ~350 feet. The DNR reviews high capacity well applications under its authority in Chs. 280 and 281, Stats, and chs. NR 812 and 820, Wis. Admin. Code to assess the proposed wells' impact on waters of the state, including potential impacts to trout streams, outstanding resource waters (ORW), exceptional resource waters (ERW) and springs. DNR Water Use staff have assessed the application to determine if the proposed wells would adversely affect any of these resources.

The proposed project is located within an area that has a relatively high water table, a high groundwater infiltration rate and a low surface water runoff rate. DNR water use staff have concluded that the water withdrawals associated with the proposed wells do not pose a risk of significant adverse impacts to neighboring wells if operated at the expected annual rate of 52.5 million gallons per year, and no pump tests will be required as part of their review of the application. To help ensure adequate water quantity for neighboring wells, DNR plans to limit *annual* pumping of the proposed wells to no more than an average of 250 gallons per minute (131.2 million gallons per year) and to limit *monthly* pumping to no more than 500 gallons per minute (21.6 million gallons per month).

No waterways, wetlands or other aquatic resources are present at the immediate farm site, and no Outstanding Resource Waters (ORWs) or Exceptional Resource Waters (ERWs) will be significantly affected by dairy operations. The closest navigable waterway is an unnamed tributary to Little Roche a Cri Creek, located ~2.5 miles northwest of the proposed Richfield Dairy facility. Other streams in the general vicinity of the proposed dairy include Fordham Creek, located 4.7 miles to the southwest, (with an intermittent unnamed headwater stream 2.7 miles southwest of the dairy), and Little Roche a Cri Creek, located 5.6 miles to the northwest of the proposed Richfield Dairy site. Fordham Creek and Little Roche a Cri Creek are trout streams and designated as ERWs, and both are located within the Central Wisconsin River Basin. In addition, Chaffee Creek and Tagatz Creek, both classified as trout streams and ORWs, are each located 3.5 miles from the proposed wells, within the Upper Fox River Basin. The water levels in these streams fluctuates seasonally. Base flow amounts in these streams have been reduced to varying degrees by groundwater withdrawals in the region (mainly irrigation) (Kraft and Mechenich, 2010). By itself, the proposed groundwater pumping at the dairy will not significantly impact stream flow. Kraft (2011) has modeled a maximum increase in base flow reduction of 5% due to the Richfield Dairy wells. According to Kraft (2011) this maximum reduction occurred in three 200 m segments of unnamed tributaries to Little Roche a Cri Creek. The greatest threat to local streams would be additional nutrients if permit-required BMPs are not implemented or maintained.

Pleasant Lake is located ~2.7 miles southeast of the dairy and is located in the upper reaches of the Upper Fox River Basin. Pleasant Lake's water level fluctuates seasonally and annually as a result of natural influences. However, groundwater modeling by Kraft and Mechenich (2010) and Kraft (2011) concludes that existing groundwater pumping in the area may also be resulting in statistically significant declines in lake levels beyond the level of change resulting from climatic variability alone. For example, Kraft and Mechenich (2010) attribute an average drawdown of 1.5 feet in the level of Pleasant Lake from 1993 – 2007 to groundwater pumping, suggesting that collective withdrawals from wells close to the lake could be having a significant effect on lake levels. Even assuming the cumulative effects of pumping may have impacts on the amount of groundwater available to surface water resources in the Central Sands, as described in the Kraft and Mechenich report, the Department's review is limited to whether the proposed wells on the high capacity property will have potential significant adverse environmental impacts. The groundwater model submitted by Kraft (2011) indicates that additional water table drawdown in the area around Pleasant Lake due to the proposed wells would be about 2 inches. A 2 inch reduction in water level potentially caused by the proposed dairy's wells would be fairly minimal in comparison to observed water level fluctuations in Pleasant Lake since 1964—and would not constitute a significant adverse impact on the lake.

Response to Ken Wade's critique of DNR's drawdown modeling:

Mr. Wade does an excellent job of pointing out the difficulties involved in modeling a large, complex system using simple tools. DNR acknowledges the assumptions and limitations of analytical models to accurately determine impacts in a large, complex groundwater system. For this reason, DNR generally uses analytical models on a much smaller spatial scale (where the model assumptions are a closer reflection of reality). The distance to the water bodies of concern in this case is beyond the normal screening distance where these models would ideally be used. Consequently, the Department used the models as screening tools to qualitatively identify potential impacts. The Department's determination of "no significant adverse impact" was based on the results of running the analytical model for an extended period (300 days) at 1000 gpm, ten times the dairy's actual estimated pumping amount. After this time period, the Jacob straight-line analytical model had reached "steady state" and the wells' modeled cone of depression extended less than half the distance to Pleasant Lake. The Department also ran a Theis analytical model (which uses slightly different assumptions) over the same time period, and that model produced results similar to the Jacob straight-line analytical model.

Mr. Wade's letter does not provide alternate drawdown amounts directly attributable to the Richfield Dairy wells, but rather points to the exacerbation of the existing cumulative impacts described in Kraft and Mechenich (2010). Mr. Wade does propose that the more complex numerical modeling of Kraft and Mechenich (2010) could be used to more accurately determine the effect that the dairy's wells would have on area water bodies. Dr. Kraft has provided DNR with this type of analysis. The results show two inches of additional groundwater drawdown in the vicinity of Pleasant Lake and base flow reduction of 5% or less in the upper reaches of several streams. The model was run at steady state, which basically represents an infinite pumping time under average recharge

conditions. The Department does not interpret these modeled reductions to mean that the proposed wells will have a significant adverse environmental impact.

Conestoga-Rovers' and New Field's groundwater/surface water impact analyses:

Conestoga-Rovers (CRA) and New Field (NF) each provided an analysis of groundwater and surface water impacts on behalf of the applicant, Milk Source. Both analyses concluded that the two proposed wells would individually cause no adverse impact to groundwater or surface water. While the Department generally agrees with this conclusion, several points in the reports require additional discussion.

CRA and NF each state that the Dairy's water use will be similar to the water use from the site's existing irrigation well. This is a major basis for the conclusion that no new impacts to groundwater or surface water will occur. Irrigation pumping did exceed the 52.5 million gallons annual use anticipated by the Dairy in two of the fifteen years on record. However, the Richfield Dairy's expected annual water use exceeds the average irrigation water use by 40% (for recent years) to 65% (for all years on record). The CRA and NF reports also ignore water losses. Based on ch. NR 142, Wis. Admin. Code, the Department assumes that 90% of water used at a dairy facility is "lost" from the groundwater system due to evaporation or incorporation into a product, versus 70% of irrigation water lost.

CRA performed a zone-of-capture analysis based on the dairy's expected water use; and that analysis concluded that water resources outside the site boundaries would not be affected by pumping. The zone of capture is an area from which the wells would be expected to draw water. This calculation is used to design remedial systems at contaminated sites or to define wellhead protection areas. The zone of capture is not the same as the area in which the water table will be lowered due to pumping. The groundwater drawdown area is not addressed in the CRA report. Another issue with the defined zone of capture is that the direction of groundwater flow, represented in Figure 2 of the CRA report as to the southwest, does not reflect the mapped direction of regional groundwater flow, which is to the southeast.

NF reviewed available well construction reports and concluded that the nearest low capacity well was 1/2 mile from the site. NF concluded that "based on these distances, no material negative impact is expected". However, many existing low capacity wells do not have well construction reports on file. Subsequent DNR review identified a private residence/water supply approximately 400 feet from the proposed wells. Based on the proximity to this well, the Department will place limits on maximum pumping at the dairy.

Both the CRA and NF reports discount the modeling conducted by Kraft and Mechenich (2010) as too general to be applied to specific groundwater impacts from the Richfield Dairy wells. These critiques are based on the sparseness of data and the regional versus local scale of the model. It is a valid point that the model was designed to identify regional cumulative impacts of groundwater withdrawals and may not be the best tool to determine impacts from individual wells. However, the model does represent a much

more detailed representation of the system than the analytical model used by CRA (or the drawdown analysis conducted by DNR). As mentioned above, the Kraft model has been used to simulate the effects of the new Richfield Dairy wells. The results show small additional reductions in local stream flow (5% or less) and in water table elevations near Pleasant Lake (roughly 2 inches). Assuming these changes would occur, the Department does not consider these changes to be significant adverse environmental impacts to surface water.

### Kraft Model

The numerical model submitted by George Kraft is an analysis of groundwater drawdown that is more detailed than the analytical models used by DNR to evaluate well impacts. As such, DNR has carefully considered potential impacts to groundwater and area surface waters in light of the modeling results. There are several issues with using this model to quantitatively determine the impacts of these wells on specific water bodies.

- Scale: The model was developed at a regional scale with a level of input data appropriate to that scale. Model results may not be entirely valid for local areas without further refinement.
- Lake levels: In the model, lakes are not modeled as separate entities. Lake levels are assumed to be equivalent to water table elevations. Surface water inputs can be a large part of a seepage lake's water budget, and individual lakes have varying seepage rates, so this may not always be the case (although a lower water table will increase groundwater flow out of the lake).
- Water loss amounts: The model represents groundwater pumping for irrigation as "missing" recharge rather than modeling individual pumping wells. There are valid reasons for using this method (to reflect water actually lost instead of water pumped, for example). However, it does create some difficulty in making an apples-to-apples comparison of additional impacts simulated by shutting down the existing irrigation well and inserting pumping from the new wells into the model.

Assuming that model results represent actual steady-state impacts, the additional groundwater drawdown resulting from the Richfield Dairy wells in the vicinity of Pleasant Lake would be 2 inches. The additional base flow reduction in the headwaters of Roche a Cri Creek would be around 5% (this is the maximum modeled flow reduction). The modeled reduction amounts do not constitute significant environmental impacts to the waters of the state.

The Department acknowledges that there are preexisting cumulative impacts from all groundwater withdrawals in the southeast Adams/ southwest Waushara county area. However, as stated above, even assuming the cumulative effects of pumping may have impacts on the amount of groundwater available to surface water resources in the Central Sands, as described in the Kraft and Mechenich report, the Department's review is limited to whether the proposed wells on the high capacity property will have potential significant adverse environmental impacts. In this case, that assessment shows no indication that such impacts will occur

## EFFECTS OF WITHDRAWALS ON SURFACE WATER RESOURCES

### Response to Comments #67-73 follows comment #73.

**Comment #67:** The Department received a number of comments from local residents regarding concerns that the addition of two more high capacity wells with a projected annual withdrawal rate of 52 million gallons will lower the water level of Pleasant Lake and also impact their private water supply. Several individuals also noted that Pleasant Lake is currently at its lowest level since record keeping began in 1964.

**Comment #68:** As a resident of Coloma, Wisconsin, I am against the CAFO in Richfield.

Although I am all for creating jobs, even if it's low income, and supporting a Wisconsin Business, Milk Source out of Kaukauna, I am most concerned about the water issues. We are in the Town of Coloma and have a well. We use Pleasant Lake. The fact that this operation could affect our water quality and tables deeply concerns me.

**Comment #69:** I am opposed to the permit because of the large volume of water that will be removed from the water table. Trout need water to survive and if they are allowed to remove that much water from the (area) it will cause the water levels to drop, thus causing harm to the trout and eco system.

**Comment #70:** How will the Great Lakes Basin aquifer be affected?

**Comment #71:** How will additional pumping from the Great Lakes Basin tributary groundwater impact Waushara County surface waters.

**Comment #72:** Regarding the statement within the environmental assessment that DNR Water Supply staff will assess the proposal (high capacity well permit application), to determine if the proposed wells would adversely affect any of these water resources: "DNR Water Supply staff could and should carry their assessment beyond these three resource classes to other surface waters in the region. An EIS should be conducted to assess harm to surface water beyond trout streams, ORW and ERW waters."

**Comment #73:** Regarding the statement within the environmental assessment that the groundwater use by the proposed dairy should not have any noticeable effects on Pleasant Lake's water elevations, the Department received the following comment: Where is the reference to the model that leads to this claim? Based on the rejection by the DNR of the Kraft & Mechenich, 2010 paper, Groundwater Pumping Effects on Groundwater Levels, Lake Levels, and Stream flows in the Wisconsin Central Sands by [http://www.uwsp.edu/cnr/watersheds/Reports\\_Publications/Reports/gwpumpcentralsands2010.pdf](http://www.uwsp.edu/cnr/watersheds/Reports_Publications/Reports/gwpumpcentralsands2010.pdf) it would seem to be in order for the DNR to produce a peer reviewed journal article supporting this claim."

**Response #67-73:** Whenever a well is operated, an area of localized groundwater drawdown develops. This “cone of depression” is a radial zone around the well in which groundwater levels drop from pre-pumping level. The size of the zone of groundwater decline is related to the geologic conditions, the pumping rate of the well, and the duration of pumping.

An evaluation of the Richfield Dairy high capacity well application showed no substantial potential for significant direct impacts to trout streams, ORWs, ERWs, springs or other surface water bodies. Analysis of groundwater drawdown (applying Theis and Jacob methods), using aquifer characteristics derived from testing of the nearby Coloma municipal well and assuming continuous pumping for 300 days at the wells’ maximum pumping capacity (1000 gpm total) , showed that zero water table drawdown would occur at distances of 4100-6600 feet (0.78-1.25 miles) from the well. Pleasant Lake, the closest surface water body, is 2.8 miles from the proposed wells, more than twice this zero-drawdown distance. The nearest trout streams, Chaffee and Tagatz Creek, are 3.5 miles from the proposed well site, also beyond the zone of influence of the proposed wells, according to the Department’s analysis.

On October 7, 2011, the Department received a more detailed numerical groundwater model of the system from Dr. George Kraft. This model is based on the modeling referenced in the *Kraft & Mechenich (2010)* report. Dr. Kraft’s modeling indicated that at steady state (a sort of time-averaged result), additional groundwater drawdown in Pleasant Lake could be approximately 2 inches, and stream base flow could be reduced by a maximum of 5% from base conditions (maximum reductions were modeled in a very limited section of the headwaters of Little Roche a Cri Creek). The model used the dairy’s expected annual average groundwater pumping of 52.5 million gallons and was run until steady state conditions developed. As discussed in **Response #86-97** below, the Department’s review is limited to whether the proposed wells on the high capacity property will have potential significant adverse environmental impacts. By themselves, the reductions modeled by Dr. Kraft are relatively minor and do not constitute a significant adverse environmental impact to lakes or streams. The predicted amount of groundwater drawdown and base flow reduction fall within the normal range of fluctuation for groundwater levels, lake levels and stream flow.

Reference response #102-#105 for a discussion of potential impacts to private water supplies.

**Comment #74:** Pleasant Lake is located ~2.7 miles to the Southeast and is located in the upper reaches of Upper Fox River Basin and subject to seasonal fluctuations of water levels. This is mainly a result of natural influences due to its location rather than groundwater withdrawal from pumping. Pumping closer to the lake may have an effect; however, the groundwater use by the proposed dairy should not have any noticeable effects on Pleasant Lake’s water elevations. These statements in the EA contradict and therefore have no meaning.

**Response:** The statements in the EA are not contradictory. They simply describe different possible causes of lake level changes. The main mechanism that causes lake



levels to rise and fall is seasonal fluctuation due to natural cycles. Longer term climatic factors can also affect lake levels over several years and such influences have been observed throughout different parts of Wisconsin. Groundwater pumping can also affect lake levels; the extent of this impact on specific lakes is complex and site specific and is often the result of cumulative impacts of many operating wells within a given watershed. In this case, analyses have shown that no environmentally significant drawdown to Pleasant Lake or other surface water bodies will be directly associated with the proposed Richfield Dairy wells, as described in Response #67-73.

**Comment #75:** Any and all other additional requirements necessary to achieve and MAINTAIN water quality standards for Pleasant Lake, in particular, under the public trust doctrine, should be analyzed and additionally permitted. The groundwater maps being relied upon in the DNR's analysis are now over 30 years old and a DNR representative him/herself has acknowledged that these maps can no longer be accurate given the addition of 700+ high capacity wells in Waushara County alone, and the vicinity surrounding the proposed CAFO, drawing down and changing groundwater flows over the last thirty years significantly. The DNR is required to base its analyses on up to date information, and these maps and presently drafted Permit alone, are insufficient to properly safeguard and protect threatened groundwater flows, feeding precious state waters and private and public water supplies.

**Response:** DNR's conclusion that the Richfield Dairy wells will not significantly impact surface water bodies is not dependent on the direction of groundwater flow, although the Dairy's location on the eastern side of the groundwater divide was considered during the review. It should be noted that the 1981 water table map depicts groundwater from the wells' location flowing directly toward Pleasant Lake. Because of this, a change in groundwater flow patterns would not result in a determination of additional harm to the lake.

**Comment #76:** What is the elevation of the farm in relation to the neighboring surface water bodies? What ground water draw down will dry up Pleasant Lake, 2.7 miles to the east, Fordham Creek ~4.7 miles to the Southwest and Little Rochi Cri Creek 5.6 miles to the Northwest; and Necedah Federal Wildlife Refuge, ~ 10 miles north of the proposed Richfield Dairy site, both are trout streams and designation as Exceptional Resource Waters.

**Response:** The elevation of the proposed wells is 1080 feet above mean sea level (ft. msl); the elevation of Pleasant Lake is 979 ft. msl. The lake is approximately 30 feet deep. As described in Response #67-73, simple analyses of groundwater drawdown showed that the water table will not be lowered by any measurable extent at distances greater than 4100-6600 feet (about 1 mile) from the wells, and a numerical groundwater model submitted to the Department showed that long-term lake drawdowns attributable to the proposed wells would be around 2 inches.

## **WATER USE AMOUNT**

**Response to comments #77-78 follows comment #78.**

**Comment #77:** Each well would be supplied with a 500 gallon/minute pump with proposed average water use of 600,000 gallons/day and maximum water use of 720,000 gallons/day. Therefore total maximum permitted groundwater withdrawal would average 1,200,000 gallons/day (440 million gallons/yr) with a maximum of 1,440,000 gallons/day (526 million gallons/yr). The Environmental Assessment (EA) indicates the estimated groundwater use at the Richfield Dairy would be 52.5 million gallons/year (144,000 gallons/day or 100 gallons/minute). The yearly maximum pumping rate allowed in the proposed high capacity well permit exceeds the EA-stated expected Richfield Dairy groundwater use by 1000% (factor of 10).

**Comment #78:** What is the real water usage for Richfield Dairy, now and in the future?

**Response #77-78:** The Department's review of potential impacts from the proposed wells was based on information from Richfield Dairy's high capacity well application. The dairy did not provide an estimated water use of 52.5 million gallons per year in its high capacity well application. Instead, the application requested an average daily pumpage of 600,000 gallons for each well (417 gallons per minute) and a maximum daily pumpage of 720,000 gallons for each well (500 gallons per minute). The Department used the higher values for water use in its analysis of impacts related to operation of the wells.

The dairy stated that the higher daily pumpage requested in the well application is needed for peak water use during summer (for livestock cooling). The dairy anticipates that its actual annual water use will be approximately 52.5 million gallons, as stated in the EA. In the Department's experience, this is a typical water use amount for a dairy operation of this size.

Based on considerations regarding nearby private wells (see response #102-#105 for a discussion of private water supplies), the maximum withdrawal amount for Richfield Dairy's high capacity wells will be reduced from the amounts originally requested (1,000 gallons per minute, or 525.6 million gallons per year) to 21.6 million gallons in any 30-day period, and 131.2 million gallons in any 365-day period. This translates to a maximum average pumpage of 500 gallons per minute during any one month and a maximum average pumpage of 250 gallons per minute over the course of a year. These restrictions are not expected to alter the dairy's projected water use.

**Response to comments #79-80 follow comment #80.**

**Comment #79:** During the hearing, Mr. Ostrom stated that the well (high capacity) will use exactly the same amount of water it has been using. The well may currently be permitted for the same amount (I don't know that for a fact), but:

The well logs as maintained by the DNR from the proposed site date back to 1978 with data through 2010. During that span of 32 years the pump was actually in operation for only 15 years. Over the course of those 32 years a total of 478,554,253 gallons were

pumped. This equates to an average of 14,954,000 gallons per year. Even if calculations are only based on the years in which the well was in production (which frankly doesn't make sense) the average jumps to 31,903,000 gallons per year. The 52.5 million gallons that is proposed per the EA is an annual increase of 350% over the long term historical use! That information comes from the DNR's own logs. When Mr. Ostrom's "fact" was challenged, the DNR rep stated that looking back since 2007 it was something in the range of 40 million gallons (I can't recall the exact number) which would be a 40% increase.

The bottom line is that in allowing Milksource to present during the informational portion of the meeting, there was no fact checking, and they could simply say anything they wanted, be it in error, a misrepresentation or an outright lie. What else were they wrong about yet putting forth as fact?

**Comment #80:** The EA states: "Water usage at the facility is estimated to be about 52.5 million gallons per year, which includes 44 million gallons for animal watering / cleaning and 8.5 million gallons for evaporative cooling of the barn during hot weather. The applicant notes that the 52.5 million gallons per year is less water than what has been historically utilized for crop irrigation at the site."

In reviewing the well logs from the site extending back 32 years... no matter how I do the math I cannot come even close to find that the applicants statement is anything but false. In fact, the average water usage over 32 years has been just less than 15 million gallons per year. Even if I toss out those years in which irrigation did not occur the number is still less than 32 million gallons. And from a lake and stream perspective, these are the number that count and need to be compared against.

And the new wells, is it really necessary to have 2 wells capable of producing 600,000 – 720,000 gallons per day or 262 million gallons per year each or 525 million gallons per year combined? Why I ask is this capacity needed if in fact there is only a need for 52.5 million gallons, expansion plans? Are you not concerned about streams drying up such as the Little Plover has done or lake levels dropping?

**Response #79-80:** The DNR reviewed Richfield Dairy's high capacity well application for impacts to trout streams, Exceptional and Outstanding Resource Waters, and springs in compliance with Ch. NR 820, Wis. Adm. Code. The review also considered potential impacts to other area surface water bodies, such as Pleasant Lake and Chaffee and Tagatz creeks. DNR analyzed the new wells based on the total requested pumping capacity (1000 gpm). This amount is much larger than the dairy's projected average annual use (~100 gpm). The review – which assumed a groundwater withdrawal rate of 1000 gpm – found no probable significant impacts to surface water as a result of the proposed wells. As discussed in response #317-320, conditions on the final high capacity well approval will reduce the approved average annual withdrawal rate to 250 gpm and reduce the average withdrawal rate in any month to 500 gpm.

Several comments expressed concerns about the comparative amounts of past and future groundwater pumping. The historical average pumpage of the existing irrigation well is around 31.9 million gallons per year. The absence of records from 1989-2006 should not be interpreted to mean that no pumping took place. The lack of pumping data reflects the fact that owners of high capacity wells were not required to report pumping data during that period. Pumping for the most recent period of record-keeping (2007-2010) averaged 37.2 million gallons per year.

The dairy's contention that it will use similar amounts of water to past pumpage is based on comparing *monthly* pumping rates during the summer. On an *annual* basis, the dairy's projected groundwater withdrawal of 52.5 millions gallons per year constitutes a 40% increase over the 2007-2010 period, or a 65% increase over the average for all years on record. The Department is updating the Environmental Assessment to include past high capacity irrigation water usage at the site.

**Comment #81:** This is a permit on water quality, and here on Wood Lake we are all about water quality. We diligently monitor our boat landing to keep our lake free from AIS. We educate our members about maintaining their septic systems. We encourage our boaters to "keep it deep" so not to stir up the bottom sediments and release phosphorus into our lake. So our property owners are very pro-active and do all we can to keep our lake clear and clean.

The idea of a 6000+ dairy farm (CAFO) has many of us concerned. This is something we cannot control. Granted, we cannot control mother nature, but eventually (like this year) we do get a surplus of moisture to make up for any deficits. With the CAFO there is only deficit. Even though the amount of water being withdrawn from our aquifer is supposedly the same as the current crop, the water being drawn out for the CAFO will not make it's way back into the ground. At least with crop irrigation a portion of that water will seep back into the ground. So let's say 30% of the crop irrigation water makes it back into the aquifer and 0% from the CAFO goes back. Using this assumption, the CAFO be taking out today's equivalent of 74mm gallons a year - substantially more.

After hearing Jim Ostrom of Milksource speak, I did find the idea of a CAFO less appalling. However, I do believe that Milksource could locate their farm in a less environmentally sensitive area. There are just too many nearby lakes and streams that could be effected by this CAFO. Milksource's argument that they have already invested money in this site should not allow them to locate where ever they please without taking into account the effects the usage of water AND the effects of their by-products could have on neighboring water bodies. By the time we find out the CAFO has harmed the water it will be too late.

I ask you to help us at Wood Lake to keep control our water quality by denying this permit and thereby protecting our Natural Resource.

**Response:** The Department's review of potential impacts to nearby water resources assumed 100% water loss, and that the wells were pumping at their maximum requested

capacity (1000 gpm). That review found no potential for significant impacts to surface water resources as a result of the proposed groundwater withdrawal.

Under Ch. NR 142, Wis. Adm. Code, water losses from dairy farming are assumed to be 90%, while water losses from irrigation are assumed to be 70%. Past annual water loss from the irrigation well (for years with records) has averaged 22.3 million gallons per year (MGY). Water loss for the proposed wells could be between 47.25 MGY (at the dairy's projected annual usage rate) and 118.26 MGY (at the maximum approved annual average pumping rate of 250 gpm).

**Response to comment #82 - #83 follows response #83:**

**Comment #82:** Total water usage for Richfield Dairy has been estimated at ~52.5 million gallons / year, 143,846 gallons / day or 9.9 gallons / minute. Animal watering and cleaning accounts for 44 million gallons/year, with evaporative cooling of the livestock facility during hot weather accounting for the remaining 8.5 million gallons/year. This annualized water estimate does not take in to account the seasonal variations of the water use, as stated in the EA “evaporative cooling of the livestock facility during ho weather accounting for the remaining 8.5 million gallons/year,” This 8.5 million gallons should have been divided over only the hot months when the water will be utilized. All conclusions in the EA about the impact to water levels are inaccurate based on the annualized water usage numbers. Further detailed analysis needs to be completed to accurately project any impacts to the environment due to water levels.

**Comment #83:** The increase in pumping rates at the Richfield Dairy site from a current average of 14,954,000 gallons per year to 52.5 gallons per year is a significant increase. Most of this increase will occur during the summer (e.g., weather for barn cooling), the same time period that irrigation systems are running and the time of greatest stress to the water table.

**Response #82-#83:** The Department's analysis of the high capacity wells was based on the total *maximum requested* capacity of the two new wells, 1000 gallons per minute (gpm). The Richfield Dairy's projected annual water use of 52.5 million gallons per year is equal to an average pumping rate of 99.8 gpm ( $52,500,000 \text{ gallons/year} \div 365 \text{ days/year} \div 1440 \text{ minutes/day}$ ). Using the dairy's estimates for the volume of cooling water used, pumping during summer months would be expected to average 150 gpm, while pumping during the rest of the year would average 84 gpm. While the proposed water use rate in the summer is significantly greater than the rate of water use in other times of the year, the projected summer water use rate is still well below the pumping rate used in the Department's impact analysis. By using a higher rate of water use, the Department's analysis is conservative and the results will tend to overestimate impacts in both the summer and winter months. Even with this approach, the Department's analysis indicates there will not be significant adverse impacts to any water resources as a result of the high capacity wells.

**Comment #84:** The EA states that “A high capacity well permit falls under the

provisions within Ch. NR 820, Wis. Adm. Code, to assess potential impacts to trout streams, outstanding resource waters (ORW), exceptional resource waters (ORW) and springs. DNR Water Supply staff will assess the proposal to determine if the proposed wells would adversely affect any of these water resources. This analysis needs to be completed prior to the issue of a WPDES permit. The estimated water usage by the new facility exceeds the historical usage of the existing well on the property. In order for the DNR staff to accurately analysis water quality issues for WPDES permit they need to first complete their analysis of for the well permit. This analysis in order to be meaningful must compare actual water usage of the previous well to the estimated monthly usage projected by the new facility.

**Response:** The Department completed its water quantity impacts review of the high capacity well application prior to issuing of the WPDES permit. See also Response #67-73.

**Comment #85:** Richfield Dairy's two proposed high capacity wells are not considered "new withdrawals" from the aquifer since they will be replacing an existing high capacity well which has historically pumped a significant amount of water from the aquifer, particularly during the irrigation season. No new impacts are expected from Richfield Dairy's proposed high capacity wells (comment references studies by Conestoga Rovers & Associates and NewFields, Inc.). (Michael Best)

**Response:** The DNR considers an application for a replacement well as equivalent to a new well application. Applications for replacement wells are reviewed with the same level of scrutiny as new wells. The finding of the DNR's review of the high capacity well application was that significant adverse impacts to waters of the state directly related to the proposed wells are very unlikely to occur.

## CUMULATIVE IMPACTS

**Response to comments #86-#97 follows comment #97.**

**Comment #86:** The existing on-site high capacity irrigation well (WDNR 146), drilled in 1976, would be abandoned. An examination of WDNR 146 well record data shows that 478,336,400 gallons was pumped from 1978 through 2010 for an average withdrawal of approximately 15 million gallons/year (see Table 1).

The hydrologic features of concern in the site area are shown on Fig. 3 (streams) and Fig. 4 (lakes & high capacity wells). Note that the headwaters for the Little Roche a Cri Cr. are located approximately 3.0 miles west of the site and that Pleasant Lake and the headwaters of Chaffee Cr. are located at 2.5 and 3.0 miles east-southeast of the site. Note in Fig. 4 that the dense area of high capacity wells does not lay immediately adjacent Pleasant Lake, but is found at two miles and further to the west northwest. Kraft & Mechenich (2010) and Kraft et al. (201X) use a statistical comparison of well and lake water levels assumed not to be impacted by irrigation pumping to those that may have been impacted, and determined that Pleasant Lake water levels have been reduced by an average of 1.5 feet due to historic and current pumping in the area. The report goes on to

say that these impacts are probably underestimated by 0.4 to 0.76 feet because the calibrated numerical simulations showed a potential impact of 0.4 to 0.76 feet in area of the reference wells that were assumed not to be impacted by pumping. Fig. 5 compares the modeled groundwater declines (in color code) to the statistically determined water level declines at wells and lakes. Note that the model predicted a water level decline of approximately 2.0 feet at the proposed Richfield Dairy site area and approximately 1.0 foot at Pleasant Lake. This would indicate the model may be under-predicting impacts at Pleasant Lake since the statistical analysis resulted in a decline of 1.5 feet. Additional model calibration might be made, increasing the Pleasant Lake bed conductance, to better match the statistical results.

Fig. 6 shows that the model-predicted irrigation pumping impacts to the Little Roche a Cri Cr. headwaters produce a 20% to 30% reduction in stream base flow while the base flow reduction at Tagatz Cr. is 5% to 10%. It is noted that since the base flow reductions were based on steady-state model conditions the actual base flow reductions would be much greater during conditions of low flow base flow such as during periods of lower precipitation. Note that the Tagatz Cr. headwaters are approximately one mile further from the highly developed irrigated area than the headwater area of Chafee Cr., and therefore larger base flow reductions would be expected at Chafee Cr. This shows that impacts to stream headwaters over three miles from the heavily irrigated areas are expressed as significant reduction in base flow due to the pumping. The maintenance of base flow for these creeks is critical for the support of trout populations due to trout dependence on the cold groundwater discharge necessary to insure that adequate concentration of dissolved oxygen is provided for fish respiration. The warming of headwater stream temperatures due to reduced base flow produces a reduction in stream dissolved oxygen because of the decreased solubility of oxygen in warm water. This means that although the resource may not be impacted by pumping during climate-related periods of high groundwater recharge and discharge, reduced or low irrigation pumping, or colder air temperatures; severe impacts are likely and would be expected during weather variations resulting in low base flow and increased heat loads in summer.

The cumulative impacts of historic and current irrigated agriculture pumping have been shown to have already caused significant negative impacts to groundwater levels, lake levels, and stream flows in the vicinity of the proposed Richfield Dairy.

Based on the previous discussion, additional harm to waters of the state would result if the high capacity well permit would be approved. The two Richfield Dairy high-capacity wells would contribute to and exacerbate cumulative impacts caused by the existing pumping in the area. Due to the degree of existing pumping and documented resultant harm to the waters of the state the DNR must deny the high capacity well permit in order to prevent this additional harm.

**Comment #87:** As a property owner on Pleasant Lake, I am writing to protest the two proposed high-capacity wells by Milk Source Holdings, Inc., in Adams County, 2.7 miles west of Pleasant Lake. It is likely that this farm and these wells will negatively affect the

water quantity and quality of the lake. I know you agree that Wisconsin lakes are some of our greatest resources and should be preserved, managed and protected.

These high-capacity wells and farm will likely exacerbate current issues and could destroy property values:

1. Pleasant Lake is already at its lowest lake level since recorded levels were established in 1964.
2. Another Waushara County lake, Long Lake, experienced a similar issue and is now dry. Per the Milwaukee Journal Sentinel, “water siphoned for high-capacity wells and agriculture irrigation” was a factor.”
3. Private wells and the lake water is often contaminated by farm run-off, specifically nitrogen, phosphates and bacterial contamination.

Please do not approve this dairy. At a minimum, I request that a public hearing be held and a full Environmental Impact Study to be conducted.

**Comment #88:** Since the high capacity wells are located in the Great Lakes aquifer and 60% of the manure will be discharged to the Mississippi River Drainage basin, creating a net loss of water to the aquifer feeding Pleasant Lake, Wood Lake and the Class 1 trout streams Chaffee Creek, Tagatz Creek, Wedde Creek and the Mecan River. Already these waters are impacted by agricultural water withdrawals through lower water levels and reduced flows.

**Comment #89:** Although some DNR people classify George Kraft, as a Kook, his data is scientifically sound. It shows a marked decrease in the central state aquifer levels with the increase use of high capacity wells. This dairy if granted a permit will have two such wells and as documented by their own estimation will use, at a minimum, 15,000,000 more gallons of water a year than currently being used. The current EA even says residents should expect some local wells to be impacted. This was with the misreporting of equal usage.

**Comment #90:** The Council (Waushara County Lakes Council, Inc.), is deeply concerned about the impact of groundwater pumping on surface water resources (our lakes, rivers, streams and wetlands). While no single high capacity well is a threat, the cumulative impact of an ever-increasing number of high capacity wells pumping out the groundwater in the watershed is. Waushara County has already experienced the effect of groundwater pumping in our watershed; Fish Lake, Huron Lake, Pine Lake Hancock, and Pleasant Lake all bear the scars.

Although he proposes dairy is to be located in Adams County, it will be located on the eastern side of the groundwater divide, and will be at the top of the recharge zone for groundwater flowing into Waushara County. This makes the construction of Richfield Dairy a great concern to the Waushara County Watershed Lakes Council. For these reasons, the Council requests that a public informational hearing be held to address how



the proposed Richfield Dairy will affect the quantity and quality of the ground water in Waushara County, and in turn, the surface water bodies of Waushara County.]

**Comment #91:** I am writing to express our opposition to the proposed Milk Source project, Richfield Dairy, here in Adams County.

As residents of Adams County, we are opposed to large-scale agricultural and farming practices in our county. The high-cap wells and water usage needed to sustain over 6,000 cattle plus manage feeding and maintaining this facility will put too many increased demands on an already fragile system.

As volunteers for the Citizen Based Stream Water Monitoring program, we have witnessed a draw down of the Roche-a-Cri River, Carter Creek and other streams here in Adams County. One only has to look at the current draught and see lower stream levels and less habitat for sustaining trout. Plus, when droughts occur, mega-farm agriculture is allowed to tap into these same water resources to protect their crops and animals. I don't believe we can increase this demand for 6,000 plus cows. The Little Plover River, and numerous lakes in adjacent Waushara County, have never recovered from lower groundwater levels and the irrigation and demand continues.

Our experience with corporate farms in Adams County has taught us that what the corporations say is one thing, and what they practice is another. Heartland Farms recently expanded into northern Adams County and promised to leave windbreaks to prevent wind erosion and retain the precious rural community. I have attached a photo (taken today) as proof of their environmental ethic and commitment to Adams County residents. What they say, and do, are separate things. Our property value has decreased and our township will have to cover the cost to plow more roads due to the lack of windbreaks. We have just witnessed a massive loss of forest and wildlife habitat, increased soil into the air, so bad that we can't have windows open in this heat, and forcing us to put our home up for sale. What hurts most is that 95% of Heartland Farms potatoes are grown for potato chips, the largest single contributor to obesity in America, according to the latest New England Journal of Medicine.

If the DNR can't protect our soil from being blown away, ensure habitat protection for trout, and stop chemicals from being dumped on us by crop dusters, how it can protect us from an onslaught of chemical contaminations to sustain crops needed to feed, milk and clean 6,000 cows?

We already have allowable toxic chemicals from the paper mills being applied to our fields and now we want the manure of 6,000 plus cows. We understand that these chemicals permeate the groundwater, but what happens when they become airborne in Adams County during our annual "dust bowl" days that occur on numerous spring days due to high wind speeds and little windbreaks. Surely, this will increase particulate cow feces into our lungs and streams.

I attended Richfield Dairy's presentation to the Adams Count Board this past spring and just don't believe what they propose will bring quality jobs to our county, keep our groundwater safe and NOT increase the impact that agriculture already has on our county's streams and groundwater. Instead of bringing jobs to Adams County, large-scale agriculture is forcing our small business to move, perhaps even out of the county.

Our SWIMS data already support the fact that our streams are under increased pressure due to agriculture in our county. Why is the DNR doing nothing with this information that we continue to provide on a yearly basis?

**Comment #92:** The Pleasant Lake Management District (PLMD) Board was provided with a presentation on this proposal at their April 16, 2011 meeting. Mr. Bill Harkel, Milk Source, LLC., provided a PowerPoint presentation consisting mostly of operations at their flagship dairy in Rosendale. Many of our questions, specific to groundwater use and pumping, land spreading, odor and pathogens, water quality, runoff and increased truck traffic, were not answered or answered from a business point of view and not science based as many of us had expected. This issue was also a subject at the Special Meeting of May 28, 2011 whereby member property owners gave the Board broad powers to represent their interests.

This was the first introduction to a large CAFO for many of our members. Due to jurisdictional issues, we had not been notified of this CAFO planned to be built in Adams County at the border of Waushara County, just 2.7 miles from the lake. Even though being a governmental unit, as per ch. 3 Wis. Stats., at this time we were not informed of nor provided with notice of any public meetings in the adjacent township or county for conditional use permits, etc. {Note: Also a Resolution was passed by our members at PLMD Annual Meeting July 2010 and forwarded to the DNR requesting to become a participant in the permit; see copy attached; to date we have never received any notice pertaining our requests.}

PLMD, a lake management district created in 2002 under ch. 33, Wis. Stats., and approved by resolution by the Waushara County Board, has always believed that the work needed to create & support a lake management district and the volunteer time (and expense) in obtaining approvals for such a distinct, assured that we were partners with the Wisc. DNR, in our goals, mission, activities, educational endeavors and expected outcomes. The 3-4 generations of property owners on this lake have strived to be good stewards at Pleasant Lake long before the creation of the PLMD and the enactment of many of the state rules which today we rely upon to preserve our environmental resources.

After attending the Informational and Public Hearings in Adams on Monday July 18, I question if the DNR accepts views of people like the 204 member property owners of Pleasant Lake and the Lake District Board as partners. More alarming was the apparent preferential treatment during the hearings towards the WPDES permit applicant Milk Source, Inc., their employees, business interests and paid lobbyist/legal team. (I individually requested information from Tom Baumann of DNR on 7/19/2011 on how to

file a formal complaint; to date, I have yet to receive a response.) In my opinion input from these sources were not science- or fact-based, but anecdotal stories about various business relationships and a regurgitation of a PR/marketing presentation sold to both the Town of Richfield and Adams County to obtain conditional use permits, and to the Town of Coloma, Village of Coloma and other local groups to find support for their interests.

The most glaring disappointment in this whole public process was the obvious impending approval of the WPDES permit. During its eight years of existence, PLMD has taken land stewardship seriously—we have developed partnerships with local, regional and state resource experts and contacts thereof, all in order to carry out our activities for a lake rehabilitation and improvement district.

When I enumerate the many positive activities PLMD has engaged in to improve our lake, the environment and the local community, I am saddened that the DNR is about to make a decision based on economics (mostly spoon-fed by the permit applicant) and not the negative impacts to the environment on a regional level brought to the DNR's attention at the hearing. Many question if this is the mission of the "NEW DNR", catering to business at the expense of the environment. This is why an EIS is so important in moving forward on the WPDES permit as land spreading of manure of the magnitude in the Central Sands and on other resources could also be affected – Mecan, Chaffee and Taggets creeks.

Much of our focus and education is related to water quality as well as water quantity; lake levels of this sand seepage lake are dependant on seasonal precipitation and snow melt as well as fluctuating ground water table. (Lake levels for Pleasant Lake are also accessible on the DNR webpage.) The number of high capacity wells in Waushara County as well as in the groundwater watershed shredding upstream in Adams County have been a great concern to PLMD as lake levels in the mid- to late- 2000s have been steadily decreasing levels. Please also consider our history of stewardship in any application(s) for a high capacity well(s) associated with the proposed Richfield Dairy.

Our greatest concern in that an EIS needs to be developed to make a complete and comprehensive review of this proposed facility and its offsite impacts. We are also focused on the water quality and quantity issues and feel an EIS is necessary to assess the groundwater situation in depth.

**Comment #93:** I request that the site selection for Richfield Dairy be reconsidered. The DNR is charged by the legislature to protect and preserve its waters under the Public Trust Doctrine. There are a large number of high capacity wells in this area and the groundwater resources of the central sands is overtaxed (see Kraft and Mechenich report, 2010). This has resulted in a lowering of river, lake and stream levels. The high capacity wells from Richfield Dairy will further stress the aquifer. This will potentially take away the rights provided to Wisconsin citizens under the Public Trust Doctrine. Moving the dairy to the west of the Great Lakes Basin groundwater divide would move it away from a region of highest groundwater demand in the state to an area that would be better able to support its needs and avoid potential legal challenges.

**Comment #94:** On July 6, 2010, the Wisconsin Supreme Court ruled the “DNR must consider the environmental impact of a proposed high capacity well when presented with sufficient concrete, scientific evidence of a potential harm to waters of the state.” This evidence is described in the Kraft and Mechenich, 2010, report.

I am disappointed that the DNR does not appear to embrace the study by Kraft and Mechenich titled “Irrigation Effects in the Northern Lake States: Wisconsin Central Sands Revisited” as a respected and reliable source of information regarding the groundwater situation in the central sands.

**Comment #95:** If groundwater pumping is allowed to continue unchecked, more lakes and rivers will dry up, municipalities will not be able to supply water to their residents and agriculture in the central sands will die. For these reasons, I request that no new high capacity well permits be issued to Richfield Dairy at the proposed site.

**Comment #96:** Regarding the statement within the environmental assessment that the area geology consists of sand over 300 feet of sandstone which is located at an approximate depth of 150-200 feet, the Department received the following comment: “Not to mention the current stressed condition of the western aquifer of the Great Lakes Basin is a serious omission. The Kraft and Mechenich, 2010 report, *Groundwater Pumping Effects on Groundwater Levels, Lake Levels, and Streamflows in the Wisconsin Central Sands*, provides a picture of the current condition of the central sand aquifer; it is inappropriate to leave it out.”

**Comment #97:** The Department received the following question regarding the exclusion of the George Kraft report from the environmental assessment’s list of documents, plans, studies or memos referenced in the preparation of the environmental assessment: “Why wasn’t George Kraft’s 2010 ground water report considered in the construction of the EA?”

[“http://www.uwsp.edu/cnr/watersheds/Reports\\_Publications/Reports/gwpumpcentralsands2010.pdf”](http://www.uwsp.edu/cnr/watersheds/Reports_Publications/Reports/gwpumpcentralsands2010.pdf)

**Response #86 - #97:** These comments deal with the potential for cumulative impacts from high capacity wells on surface water bodies and groundwater in Adams and Waushara Counties. Even assuming that cumulative effects of pumping may have impacts on the amount of groundwater available to surface water resources in the Central Sands, as described in the Kraft and Mechenich report, the Department’s review is limited to whether the proposed wells on the high capacity property will have potential significant adverse environmental impacts. In this case, that assessment shows no indication that such impacts will occur. (See Response #67-73 for more details of this analysis.)

See Response to Comment#1 for discussion on WEPA concerns.

## **GREAT LAKES COMPACT**

### **Response to comment #98-#100 following comment #100:**

**Comment #98:** In accordance with s. 281.343(4t)(e) and 281.346(2), the Great Lakes Basin (GLB) is defined by the “surface water divide” (a line delineated over the ground surface), not by groundwater resources or alleged hydrogeologic connections. The Richfield Dairy production area and its two high capacity wells are more than a mile outside the GLB. Therefore, the Great Lakes Compact statutes and rules are not applicable to Richfield Dairy’s proposed water withdrawals. References to s. 281.343(4h)(a)(4), a general policy statement, as means to identify the GLB using the aquifer below the ground surface are incorrect.

Regardless, the landspreading of manure and milk production at Richfield Dairy would not constitute a diversion from the GLB under the Great Lakes Compact. (Michael Best)

**Comment #99:** This withdrawal would also be in violation of the Great Lakes water compact because a large portion of the water is taken from an aquifer draining to Lake Michigan and discharged into the Mississippi Basin. The Department is charge with defending the public trust doctrine, enforcing the Great Lakes water Compact and should not allow these additional high capacity wells.

**Comment #100:** No new high capacity well permits should be issued to Richfield Dairy as long as it is located in the Great Lakes Basin.

**Response #98-#100:** The Great Lakes Compact states that the surface water divide is used to determine whether a withdrawal of surface water or groundwater is from the Great Lakes basin. The proposed Richfield Dairy wells are located west of the surface water divide; therefore for purposes of the Great Lakes Compact, the proposed water withdrawal is from the Mississippi River basin. Consequently, although the owner must register the withdrawal and annually report the monthly water withdrawals (a state-wide requirement for all water users with the capacity to withdraw more than 100,000 gallons per day), the withdrawal will not require a water use permit and is not considered a diversion under the Great Lakes Compact.

**Comment #101:** 68% of the 52.5 million gallons of groundwater pumped from the Great Lakes Basin by Richfield Dairy will be transferred to the Mississippi Basin through manure spreading activities. This violates the Great Lakes Compact. Moving the dairy west eliminates this problem.

**Response:** As stated above, the proposed wells are not located within the Great Lakes Basin as defined by the Great Lakes Compact and provisions in the Great Lakes Compact that pertain to diversions are not applicable.

## RESIDENTIAL WELLS

### Response to comment #102-#105 following comment #105:

**Comment #102:** I am opposed to issuing a permit for the (CAFO) – large corporate dairy farm for the following reason: I have a private well like most people and when they did the ditching” on County Road C, my water was reduced to a trickle. But I learned to deal with it. Any composition to it, I won’t have any. And it is too late in the game for me to afford to dig a deeper well. Like most people living on fixed incomes, no body has the money for this expensive event.

*(The Department’s interpretation of this comment is that you are concerned that increased high capacity water withdrawals from the proposed Richfield facility will further lower groundwater levels within the immediate area of the proposed Richfield Dairy facility and result in the loss of a private water supply at your residence.)*

**Comment #103:** We, the undersigned members of the PLMD (Pleasant Lake Management District) are strongly opposed to the establishment of the Richfield Dairy Facility. The dairy would be 2.3 miles from Pleasant Lake and 3 miles from the Village of Coloma. It would cause much Disruption to our Water Source, our Air Quality and the Amount of Traffic in our (and adjacent) areas. For these, and other unforeseen negative affects to our town we strongly oppose the establishment of the Richfield Dairy Facility.

**Comment #104:** This CAFO will take huge amounts of water from the aquifer and is likely to dry up nearby shallow residential wells. The owners will be forced to dig new, deeper wells that are very costly. If they can’t afford to do that, what are the alternatives? Sell their home and their farm? What is it worth if it doesn’t have clean water? Property values drop when a CAFO moves in nearby. [per Property Values: Concentrated Animal Feeding Operations and Proximate Property Values, The Appraisal Journal July 2001, Volume LXIX Number 3 By John A. Kilpatrick]\*

Why is the owner of a high cap well allowed to pump more water per year than the volume of water that falls on the number of acres that party owns? This means that he/they are drawing water out from under the land of the neighbors. Would my neighbor be allowed to dig a mine down and then sideways under MY land, and mine precious minerals out from under MY land? Water IS a mineral, and it IS precious. Access to water has a monetary value (see Property Values, above).

**Comment # 105:** If Richfield Dairy is awarded a high capacity well permit, monitoring for groundwater quantity must be required. The permit must include a “no harm to surface or ground water” standard along with consequences for “harm.”

**Response #102 – 105:** The distance between the nearest private well and the proposed high capacity wells is approximately 400 feet. Richfield Dairy estimates its average water use at 100 gallons per minute. According to the Department’s analysis, after a year of constant pumping at this rate, drawdown in the nearest private well would be less than

two feet. In almost all cases, a groundwater decline of less than five feet will not impact the ability of a residential well to produce water. Drawdown in the nearest private well could approach five feet if the dairy wells were pumped constantly for a year at more than 250 gallons per minute; this is more than twice the dairy's estimated withdrawal amount.

All other public and private wells in the area are located much farther from the proposed wells and would also have much smaller water level drawdowns.

Due to the potential for impacts to the nearby private wells at higher pumping rates, DNR plans to include a condition similar to the following in Richfield Dairy's high capacity well approval:

*Based on annual water use averaging 52.5 million gallons per year (estimate provided by Milksource, Inc.), the Department has determined that operation of the wells will not result in significant adverse environmental impacts. However, operation of the wells at or near their maximum capacity for an extended period could result in adverse impacts to the private well located at 1721 1<sup>st</sup> Drive. Therefore, the maximum total pumping from the two wells in any 30-day period may not exceed an average of 500 gpm (21.6 million gallons), and the maximum pumping in any 365-day period may not exceed an average of 250 gpm (131.2 million gallons).*

*In addition, the Department may require monitoring and may impose additional restrictions or conditions on the use of the wells if available information indicates that pumping of the wells is resulting in adverse impacts to private wells or surface water.*

The common law in Wisconsin generally establishes that property owners are entitled to withdraw groundwater, provided that the withdrawal does not cause unreasonable harm to another. If water use by one landowner unreasonably interferes with a neighboring landowner's use of the groundwater, resolution of the conflict can also be decided through a civil suit. {See State v. Michels Pipeline Construction, Inc., 63 Wis.2d 278 (1974)}. High capacity well approvals include a condition stating that issuance of the approval does not relieve the owner from any liability related to claims brought by nearby landowners related to potential harm to their water supplies.

## **GROUNDWATER QUALITY**

**Comment #107:** Regarding the statement within the environmental assessment that the proposed project is located within an area that has a relatively high water table, the Department received the following question: "What is meant by 'relatively high' this should be replaced with numbers!"

**Response:** “Relatively high” is a subjective assessment of depth to water table over a large area. According to driller construction reports, groundwater depth near the production area and land application sites varies between 1 and 192 feet below the ground surface with 89% of the wells showing static water level in wells at 10 feet or greater below the ground surface. This information cannot be used to determine site specific depth to groundwater because the information was collected over many years. It does indicate that there maybe shallow groundwater in areas near land application sites. Under NR 243, there must be a two foot separation between the ground surface where manure is applied and groundwater as measured in a hole dug just prior to manure application. There is debate over whether this separation is adequate to protect groundwater in all circumstances. Research on this topic is ongoing.

**Comment #108:** Water in the proposed area is already high in contaminates. DNR reports show 24% of wells over nitrate limit and many others close. DNR has also required local eateries to post signs warning children 3 and under not to drink the water and in the case of BJ's just north of the proposed site required a new well. I understand this wasn't the case at other sites.

**Response:** Restaurants are regulated under the Safe Drinking Water Act. They are considered “Transient, non-community wells and are owners must sample for certain contaminants according to a schedule. If sample analytical results for a well exceed federal Maximum Contaminant Levels (MCLs), DNR will require them to post notices and in some circumstances will require a well owner to replace a well or install appropriate treatment. Exceedences of MCLs, especially for widespread contaminants like nitrate, unfortunately occur all over the state and especially in agricultural areas where soils are thin or permeable and groundwater occurs close to the land surface.

Below are three tables summarizing groundwater sample analyses for nitrate in wells located near the production site and land application sites. The analyses are from the DNR’s GRN database and the UW Stevens Point Center for Science and Education Lab. No data from the proposed production site itself exists. Well water quality varies in the area of the proposed production facility and land application sites – as it does across the Central Wisconsin River basin and the state, in some locations in the area exceeding the enforcement standard. Tables show the most recent nitrate sample analytical results for each well sampled between 1/1/2000) and 9/1/2011 (some wells had multiple samples over several years). Samples represent analyses done over multiple years and through all different seasons. To get an accurate assessment of nitrate concentrations at the production site and near land application sites, monitoring wells would have to be appropriately installed and sampled quarterly.

Transient Noncommunity wells are required to treat water if nitrate levels exceed 20 ppm under the Safe Drinking Water Act.

Private Wells (DNR)						
Township	Range	No. of well samples	No. <PAL (2 ppm)	No. >=PAL, <ES	No. >=ES (10 ppm)	No. >=20 ppm
20	8	13	5	5	3	2
19	8	28	5	14	9	6



18	8	33	8	19	6	5
14	8	47	24	21	2	0
20	7	9	6	2	1	0
19	7	19	8	7	4	2
18	7	9	2	4	3	1
17	7	15	5	4	6	3
15	7	65	33	29	3	1
14	7	38	15	19	4	2
13	7	23	7	16	0	0
18	6	55	36	17	2	0
15	6	61	35	19	7	1
14	6	77	37	35	5	2
18	5	40	9	25	6	3
15	5	40	22	14	4	0
Total		572	257	250	65	28

Transient Noncommunity wells (DNR)						
Township	Range	No. of well samples	No. <PAL (2ppm)	No. >=PAL, <ES	No. >=ES (10ppm)	No.>=20 ppm
20	8	7	3	4	0	0
19	8	4	0	2	2	1
18	8	3	2	1	0	0
14	8	11	4	7	0	0
20	7	5	2	0	3	2
19	7	0	0	0	0	0
18	7	0	0	0	0	0
17	7	0	0	0	0	0
15	7	14	12	1	0	0
14	7	8	4	3	1	0
13	7	30	10	20	0	0
18	6	13	13	0	0	0
15	6	5	4	1	0	0
14	6	34	13	19	2	0
18	5	9	3	5	1	0
15	5	18	13	5	0	0
Total		161	83	68	9	3

Private wells (Center for Watershed Science and Education)						
Township	Range	No. of well samples	No. <PAL	No. >=PAL, <ES	No. >=ES	No.>=20 ppm
20	8	13	5	3	5	4
19	8	38	8	15	15	8
18	8	25	8	11	6	3
14	8	11	6	4	1	0
20	7	25	10	3	12	4
19	7	14	6	3	5	3
18	7	22	8	8	6	2
17	7	23	3	8	12	3

15	7	98	66	18	14	5
14	7	16	6	6	4	2
13	7	9	5	3	1	0
18	6	69	47	17	5	1
15	6	18	10	5	3	1
14	6	49	29	19	1	0
18	5	61	28	20	13	9
15	5	2	1	0	1	0
Total		493	246	143	104	45

The sample analyses show that about 16% of the private well samples collected from wells near the production area and land application sites, exceeded the Enforcement Standard of 10ppm. Of those analyses, about 7% were greater than 20 ppm. Sample analytical results from transient community well samples, serving restaurants and churches for example, showed that almost 6% exceeded the Maximum Contaminant Level for nitrate of 10 ppm. It is unknown how many of these transient community wells have been required to treat for nitrate so results are skewed.

**Comment #109:** The Applicant and DNR Have Failed to Provide Comprehensive, Clear and Site-Specific Information on the Present State of Groundwater Quality for Areas around both the Production Area and the Land Application Fields, But Nevertheless DNR’s Environmental Assessment Acknowledges the Presence of Serious Nitrate Groundwater Contamination Problems.

Commenter’s have reviewed DNR’s RD Environmental Assessment, the DNR RD Fact Sheet and the DNR NMP submittal and other records searching for baseline information on current groundwater quality including compliance with present groundwater conditions with DNR’s rule-based preventative action limits and enforcement standards for compliance of the ‘waters of the state’ with groundwater quality rules.

The Applicant has apparently not submitted any information about groundwater quality for any of the areas around the production area and land application fields.

The only review or information on present groundwater quality was provided only by DNR in sections of the DNR RD Environmental Assessment at p. 7. DNR first states:

“Groundwater quality in the area is considered between fair to good.”

In making this characterization which could not be more generally stated, DNR’s statement does not specify which of the 200+ field areas and/or production site, all scattered across large area of the Central Sands area and likely covering several tens of square miles of land area. DNR does not give any numerical criteria for what it deems to be ‘fair’ and ‘good’ groundwater quality.

Next, without explaining if the cited groundwater problems are ‘fair’ or ‘good,’ DNR then admits:

“Samples taken within the township of Richfield had detectable levels of atrazine and other pesticides. Nitrate level are high in many wells with 24% exceeding the Enforcement Standard threshold of 10 mg/l (ppm).”

This statement is not clear whether the 24% of tests exceeding the nitrate enforcement standard were confined to Richfield Township, or reflect a broader geographic area. DNR does not cite a source for the basis of the 24% figure cited.

The EA then states:

“There is a concern about nitrate contamination already present in the area.”

In addition, Department water supply staff is working with the applicant to assess the nitrate situation and some possible well construction modifications, such as completing the wells deeper in the sand aquifer or maybe into the sandstone bedrock aquifer.”

Nothing further is provided in either the EA or the Fact Sheet to address the so-called “nitrate situation.”

The information in the EA about nitrates in wells around both the planned spreading fields and the production area is grossly inadequate for decision making. However, the EA does indicate the substantial actual presence of groundwater exceeding the DNR enforcement standard for nitrate of 10 mg/l provided in Table 1 of NR.140.10 (public health related groundwater standards).

In addition, a number of comments expressed concern about high nitrate levels (above the enforcement standards of 10 mg/l) in well water.

**Response:** The rating of “fair to good” is from the Central Wisconsin River Basin plan and is based on a numeric ranking based on available nitrate and pesticide data and land use. Ranking is used to determine basin wide water quality improvement goals. Groundwater quality varies from location to location within the basin. Groundwater in Adams County has high levels of nitrate in agricultural areas. Limiting the amount of commercial fertilizer, manure and other sources of nitrogen to the level needed by crops will limit the amount of nitrate reaching groundwater over the long term. A nutrient management plan such as the one required for the proposed Richfield Dairy may help avoid additional nitrogen loading.

DNR recommends that you have your well tested annually for nitrate and bacteria or if you notice a change in taste or smell in your drinking water. If you have further concerns, please contact the local DNR office and ask to speak to a Drinking Water specialist about your well.

Reference comment response #108 for additional information on groundwater quality in the area.

**Comment #110:** One comment listed a number studies/research papers indicating Serious Pre-existing Problems of contaminated Groundwater in the General Central Sands Area Occupied by the Applicant's Land Spreading Fields and Production Area.

A field research paper for 1999 indicates serious, intractable groundwater nitrate problems throughout the Central Sands agricultural region:

Another paper concurs with the observation of serious nitrate groundwater problems in the Wisconsin Central Sands agricultural area:

All of the papers indicate the proclivity for nitrate problems in the Wisconsin Central Sand Plains created by nitrogen application to highly permeable soils in the area of the proposed facility and its land spreading fields.

**Response:** The Central Sand Plains are vulnerable to groundwater contamination from agricultural chemicals. The threat to groundwater can be lessened if pest management and nutrient management strategies are used by all farmers. Managing manure according to a nutrient management plan as required under a CAFO permit will limit nitrate inputs to groundwater. It is assumed that lower application rates will result in less nitrate inputs to groundwater. Site specific groundwater monitoring of land application sites over a long period would be required to determine trends in nitrate concentration in response to nutrient management plans.

Reference comment response #108 for additional information.

ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED  
FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

Form 1600-8

Department of Natural Resources (DNR)

Region or Bureau West Central Region
Type List Designation Type II

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before 4:30 p.m.,

(date)

Contact Person Terence Kafka
Title Agricultural Runoff Management Specialist
Address 5301 Rib Mountain Drive Wausau, WI 54401
Telephone Number (715) 355-1363

Applicant: Milk Source Holdings, Inc (operator) for Richfield Dairy, LLC

Address: N3569 Vanden Bosch Road, Kaukauna, WI 54130

Title of Proposal: New Concentrated Animal Feeding Operation, Application for WPDES Permit

Location

County: Adams City/Town/Village: Town of Richfield

Township: 18N Range: 7E Section(s): 25 Quarter: NE¼

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**PROJECT SUMMARY – DNR Review Information Based on:**

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**1. General Project Description**

This environmental analysis (EA) is associated with Wisconsin Pollutant Discharge Elimination System (WPDES) permitting and approval actions for a proposed new dairy facility named Richfield Dairy and operated by Milk Source Holdings, Inc. The proposed dairy facility would house 4300 milking / dry cows and 250 steers for a total of 6270 animal units (AU), where one milking/dry cow is equivalent to 1.4 animal units – or a 1,400 pound animal. Proposed facility structures include a sand-bedded cross-ventilated freestall barn (416’x1232’), 80 stall milking parlor (106’x164’), livestock holding area (74’x194’), concrete feed storage pad (680’x765’), vegetated treatment area for precipitation runoff after collection of first flush (932’x348’), sweet corn silage bunker (658’x221’x12’height), High Density Polyethylene (HDPE) lined sweet corn silage attenuation basin (23,500 sq. ft.), manure processing building (92’x210’), concrete lined manure solids storage area (202’x384’x12’height), animal mortality storage facility (14’x24’), concrete lined waste storage pond (WSP) with cover (480’x400’x28’deep), uncovered concrete lined waste storage pond (480’x250’x15’deep), commodity shed (120’x300’), shop (60’x120’), two high capacity water wells, four

storm water management ponds, five infiltration basins, Fuel Depot (24'x70'), weigh scale (12'x75'), potable water supply system, a domestic waste sewerage system and other lesser facilities. The proposed Richfield Dairy facility would be located is the southeast corner of the intersection of 1st Drive and Cypress Avenue. Primary access to the facility would be from 1st Drive. Total site disturbance entails the conversion of 115 acres of existing cropland to farm buildings, production area and ancillary area.

All livestock would be housed within a cross-ventilated and sand-bedded freestall barn. The combined annual estimated quantity of manure and process wastewater (including precipitation runoff) is 55.3 million gallons, plus an additional 8,552 tons of separated manure solids. Waste storage ponds (WSP #1 & #2), will have a combined design capacity of 33.2 million gallons (excluding freeboard), which represents approximately 205 days of storage for the proposed wastewater stream. WSP #1 will have a 6" thick concrete base with underlying 8" compacted clay liner which provides a secondary liner in the event of a concrete failure. An 8" clay liner will also be placed under the feed storage pad and manure solids storage area. WSP #2 includes a loading station for containment of any liquid spills while wastewater is being pumped to tanker trucks. After loaded, tanker trucks will then landspread on area farm fields in accordance with the DNR approved Nutrient Management Plan (NMP). Richfield Dairy owns or has agreements for landspreading manure and process wastewater on ~16,429 acres, which are generally located within a five mile radius of the farm site.

Storm water runoff from the production area of the proposed Richfield Dairy facility will be handled by a series of culverts, swales and diversions directing flow to the storm water detention ponds (the largest of which is sized to retain runoff from a 100-year storm event).

Richfield Dairy is required to submit a high capacity well permit application to the DNR to construct two high capacity wells and abandon one existing high capacity well which was previously utilized for crop irrigation. A preliminary review has been completed by the Department's Water Supply Section. Engineering details such as well depth will be determined after Richfield Dairy submits the high capacity well application. The proposed wells would be drilled to a depth of ~150'. Based upon 2010 soil borings, the static groundwater level at the proposed site is no less than 32 feet from the ground surface. Water usage at the facility is estimated to be about 52.5 million gallons per year, which includes 44 million gallons for animal watering / cleaning and 8.5 million gallons for evaporative cooling of the barn during hot weather. The applicant notes that the 52.5 million gallons per year is less water than what has been historically utilized for crop irrigation at the site.

The proposed construction start date for the Richfield Dairy facility is March, 2012. The facility anticipates reaching the 6,270 animal unit threshold by 2013. The project cost is estimated at \$35 million. The facility expects to employ ~40 staff with an estimated annual payroll of \$1.5 million. The applicant owns and operates four other permitted confined animal feeding operations in Wisconsin: Tidy View Dairy (7000 dairy cows/9400 animal units, Outagamie County), Omro Dairy (2500 dairy cows/3500 animal units, Winnebago County), Rosendale Dairy (8000 dairy cows/11,500 animal units, Fond du Lac County) and the recently permitted New Chester Dairy (4300 dairy cows, 250 steers/6270 animal units).

The Department of Natural Resources has the following authorities regarding this operation:

- WPDES Permits for Concentrated Animal Feeding Operations (CAFO), those operations with 1,000 animal units or more
- Odor control requirements may be imposed by order of the Department of Natural Resources (Department), if the Department determines that an objectionable odor is determined to exist per s. NR 429.03 – Malodorous Emissions, Wis. Adm. Code
- Air emission limitations from s. NR 415.04, Wis. Adm. Code, covering fugitive dust sources
- Air emission limitations from ch. NR 445, Wis. Adm. Code, regarding control of hazardous pollutants

- Potentially applicable permitting thresholds contained in s. NR 406.04(2)(c), Wis. Adm. Code (construction permits); s. NR 407.02(4), Wis. Adm. Code (operation permits), and s. NR 405.02(22)(a)2, Wis. Adm. Code (prevention of significant deterioration).
- Chs. NR 406, 407, and 445, Wis. Adm. Code, contain provisions that allow a source to exclude emissions of hazardous air contaminants (ammonia and hydrogen sulfide) associated with agricultural waste in determining the need for an air permit until July 31, 2011. These provisions apply to hazardous air contaminants only and do not apply for criteria pollutants such as PM or VOCs or to PSD major source permitting thresholds contained in Ch. NR 405, Wis. Adm. Code.
- Emissions reporting requirements contained in Ch. NR 438, Wis. Adm. Code.
- High capacity well approval for operations using 70 gallons/minute or more from operator-owned wells, or temporary dewatering approval for operations pumping 70 gallons/minute during construction only
- WPDES Permits for Land Disturbing Construction Activities affecting one or more acres (WI-0067831)
- Review and approval authority of manure storage facilities and runoff control systems
- NMP review and approval
- Ch. NR 140 Wis. Adm. Code Groundwater Quality

The development site is zoned as exclusive agriculture and will not change.

## 2. List documents, plans, studies or memos referred to and provide a brief overview

The following documents have been used in conducting this environmental analysis:

- WPDES Permit application
- EA Questionnaire for Livestock Operations completed by Conestoga-Rovers & Associates
- Plans and specifications for proposed manure storage facility completed by Conestoga-Rovers & Associates
- NMP prepared by Polenske Agronomic Consulting
- Soil survey maps, topographic maps, wetland maps and aerial photographs
- Internal Department correspondence regarding possible environmental impacts associated with the operation

Copies of application materials, design plans and EAQ are available from the DNR contact listed on page 1.

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## **DNR EVALUATION OF PROJECT SIGNIFICANCE (complete each item)**

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### 1. Environmental Effects and Their Significance

**Discuss the short-term and long-term environmental effects of the proposed project, including secondary effects, particularly to geographically scarce resources such as historic or cultural resources, scenic and recreational resources, prime agricultural lands, threatened or endangered species or ecologically sensitive areas, and the significance of these effects. (The reversibility of an action affects the extent or degree of impact.)**

#### Physical

Long-term physical impacts entail the conversion of ~ 115 acres of cropland into a dairy production and ancillary area.

Farm construction and operations will significantly increase vehicular traffic when compared to existing use as cropland. Visual and noise impacts will result. Building materials will be delivered and construction equipment will operate while the site is being constructed. Following construction and population of the proposed Richfield Dairy facility, long-term traffic increases would occur primarily during daylight hours. Estimated annual increases in traffic volumes include 3,500 loads of haylage / corn silage and 2,200 loads of sweet corn silage. Annual levels of Traffic departing the facility include 7,000 loads of manure and 2,190 loads of milk. Traffic would be particularly prominent during the spring season as the operation will land apply most of the manure and process wastewater during this timeframe. Road access to 1st Drive will be paved following construction to minimize dust dispersion. All vendors will be instructed to follow standards related to truck routes and engine breaking. Richfield Dairy will also install

'courtesy to neighbors' signs at all the property exits to remind truckers to be courteous and considerate to neighbors of the dairy.

Short-term physical impacts are primarily associated with construction activities at the site. These impacts include noise and dust from machinery and construction equipment. Site grading accounts for a significant portion of the work required for the construction of the proposed Richfield Dairy facility. The applicant estimates that approximately 315,992 cubic yards of soil excavation is needed to prepare the site for construction, with an additional 125,324 cubic yards of excavated top soil. Excess fill from the construction of the waste storage facilities and freestall barn complex will be used to level slopes around the proposed components and fill around the sweet corn silage bunkers.

Since the project will result in a total soil disturbance in excess of one-acre, the operation must obtain coverage under the storm water construction site general permit (WI-0067831-1), which requires the operation to implement Best Management Practices (BMP's) to address impacts from storm water runoff. These protections will minimize siltation and sediment delivery to surface waters to the most practical extent. If properly controlled, impacts associated with construction activities would be negligible. Storm water runoff controls must be in place to control any leachate from feed storage sites. If the Department discovers a water quality problem related to storm water runoff, the operation will be required to implement a management plan and install any necessary best management practices.

Residents located in general proximity to the proposed Richfield Dairy site include both year round residents and absentee landowners. Currently, there are 5 single family residences located within one mile of the development site. Businesses located within one-mile include warehouses owned by Coloma Farms, Inc., Spur & Slider, LLC, Opitz Custom Heifer – a WPDES permitted CAFO facility and a power substation maintained by Waushara Electric Cooperative. While the use of the site will remain agricultural, increased traffic and visual impacts will be noticeable to neighbors.

#### **Air Quality:**

Animal agricultural operations generate odors and air pollutants. When localized and insignificant, these odors and air pollutants pose few problems. If enough animals are concentrated together in a small area, air emissions may cause human health and environmental concerns.

Airborne contaminant emissions emitted from CAFO's or other types of animal agricultural operations, include gases and particles. Air quality concerns have focused primarily on ammonia (NH<sub>3</sub>), hydrogen sulfide (H<sub>2</sub>S), two toxic air pollutants, as well as odors, particulate matter (PM), volatile organic compounds (VOC), and greenhouse gases (GHG). Diesel exhaust PM emissions from semi-trucks, manure spreading, and other miscellaneous farm operations could also be associated with animal agricultural operations.

Emergency generators, other stationary diesel or biogas engines and other combustion sources, such as dryers, will emit pollutants, too. Criteria pollutants (oxides of nitrogen (NO<sub>x</sub>); carbon monoxide (CO); and sulfur dioxide (SO<sub>2</sub>)) and incomplete products of combustion are also emitted and formed from the combustion of diesel, biogas or other fuels.

In addition to primary emissions, certain air pollutants are formed through chemical processes in the atmosphere known as secondary formation processes. The secondary pollutants have significant effects. Ammonia reacts with SO<sub>2</sub> and nitrogen oxides (NO<sub>x</sub>) to form PM<sub>2.5</sub>. VOC and NO<sub>x</sub> react to form ozone. Nitrogen containing compounds such as ammonia and NO<sub>x</sub> result in increased nutrient loading and acidification of soils and waters.

Both quantity and the types of air contaminant emissions from animal agricultural operations are challenging to estimate, making off-site air quality impacts difficult to predict. This is due to diurnal and seasonal temperature variation, varying number and type of animal species present (which may change over time), type of housing and manure handling system, feed type, and chosen management practices.

Large amounts of nitrogen are excreted in the production of all animal feces, including dairy, and most excess nitrogen



is in a form that is easily transformed into ammonia. Most ammonia is produced when the urea contained in urine comes in contact with the urease enzyme contained in feces (also on barn floors and in soil). Much smaller amounts of ammonia are produced during the decomposition of feces. Nitrogen occurs as both unabsorbed nutrients in animal feces and as either urea (mammals) or uric acid (poultry) in urine.

After contaminants are generated, they can be emitted through animal housing ventilation systems (if used) or emitted from any number of sources including animal housing and production areas, feed preparation and storage, manure management/storage facilities, mortality composting, land application sites and dispersed by atmospheric processes. Air contaminant travel distance varies due to size of particles, weather conditions and surrounding topography and vegetation. These variations make it challenging to form a clear picture of the expected emissions and emission-related effects from animal agricultural operations.

Regulatory dispersion modeling is predicated on the steady-state nature of the release. Gaussian plume models have been developed to replicate monitored concentrations attributed to industrial or commercial operations, for example a large industrial boiler for generating steam and/or electricity. The release of farm emissions comes from locations (i.e. barns, lagoons) that are unlike a smoke stack. These “fugitive” emissions are able to be modeled, but there is more uncertainty associated with establishing release parameters. The time-varying nature of farm emissions is even more difficult to model. Regulatory models generally assume steady-state emission generation. This implies that over the course of one hour, the emission rate will not significantly change, and that any changes from hour-to-hour are under the control of the operator. Farm emissions vary between hours, within a given hour, and more importantly this variation is chaotic and unpredictable.

Despite the variability of emissions from animal agricultural operations, the nitrogen balance (and ammonia as a part of the balance) has been studied extensively in dairy operations which have integrated cropping systems. Nitrogen excretion from animals varies based on nitrogen feed rates, the nutritional needs of the dry or lactating cows, and how much nitrogen ends up in milk. In Wisconsin and elsewhere, research points to an average annualized total nitrogen loss of 15 percent from freestall housing and losses of incoming nitrogen into uncovered manure storage from 10 to 30 percent loss of nitrogen as ammonia. Estimates based on farm component ammonia losses are presented in the table below. Wisconsin DNR is currently working with an agricultural waste advisory group to examine and recommend beneficial practices that reduce ammonia and hydrogen sulfide air emissions and will work for Wisconsin farms.

The facility is proposing practices which are expected to mitigate air emissions. This includes a floating geomembrane waste facility storage cover combined with a biofilter treating exhaust air from under the cover. Covering the waste facility storage with a properly designed geomembrane cover may reduce air emissions and odors by 90% from the waste storage facility. Appropriate land application techniques should be combined with waste facility storage covers to ensure that air contaminants (and beneficial nutrients) which are prevented from volatilizing with waste facility covers are not lost during the land application process.

### **Air Quality Regulations Overview**

Richland Dairy, as with any source of air pollution, is required to evaluate existing information, determine its air emissions, and comply with any air regulatory requirements that apply.

Federal air permit requirements are incorporated into state air permit rules in chs. NR 405, 406, and 407. In addition, chs. NR 406 and 407 also include air permit requirements for minor sources. Emissions associated with animal feeding operations are not, categorically, exempt from these requirements. However, the revisions to chs. NR 406 and 407 published in July 2004 established an exemption period ending in July 2007 for sources of hazardous air contaminant emissions from agricultural waste. The exemption period was extended, again, in February 2008 for chs. NR 406 and 407 and how they relate to NR 445.

Chapter NR 445 establishes ambient air concentrations for ammonia and hydrogen sulfide, two pollutants associated with agricultural waste from animal feeding operations. These concentrations are 418 and 335 micrograms per cubic

meter, respectively, on a 24-hour average basis.

Similar to federal reporting requirements, state reporting requirements include the air reporting requirements in ch. NR 445 and the annual air emission reporting requirements of ch. NR 438. Air emissions from animal feeding operations are not categorically exempt from these reporting requirements.

Odors are addressed in ch. NR 429 (Malodorous Emissions), yet odor control practices contained in ch. ATCP 51 (Livestock Facility Siting) may be included with the proposed project.

Richland Dairy Specific Impacts

Using a variety of emission estimates, the total estimated emissions from Richland Dairy is listed.

	<b>Dairy Operations Liquid manure systems (4300 Milkers, 250 Beef)</b>
<b>PM<sub>10</sub></b>	9 tons/year <sup>1</sup>
<b>VOC (volatile organic compounds)</b>	> 140 tons/year <sup>2</sup>
<b>NH<sub>3</sub> (ammonia)</b>	299 tons/year freestall + top-loaded manure storage <sup>3</sup> 185 tons/year freestall + bottom-loaded manure storage > 191 tons/year freestall + covered manure storage + land application Other ammonia sources such as solids separation and solids storage not included
<b>H<sub>2</sub>S (hydrogen sulfide)</b>	22 tons/year <sup>4</sup> Other hydrogen sulfide sources such as solids separation and solids storage are not included
<b>CH<sub>4</sub> (methane)</b>	1,200 tons/year (including enteric) <sup>5</sup>
<b>N<sub>2</sub>O (nitrous oxide)<sup>6</sup></b>	7 tons/year <sup>7</sup>
<b>Acetaldehyde</b>	> 9 tons/year <sup>8</sup>

Even with the proposed (and unspecified “additional”) measures in place, the new facility and the large quantity of animals housed and manure generated may produce occasional or more frequent odors that may be objectionable to some neighbors. Other potentially affected odor receptors include the Village of Coloma (~3 miles northeast) and

<sup>1</sup> Oregon Technical Support Document (Table 6) to the Oregon Dairy Air Quality Task Force, July 1, 2008

<sup>2</sup> Based on National Air Emissions Monitoring Study (NAEMS) data (mean VOC and VOC speciation values) from “Emissions Data Two Freestall Dairy Barns in Wisconsin, July 22, 2010.” This data was for two monitored dairy freestall barns located in St. Croix County, Wisconsin. This estimate does not include emissions from other farm components such as manure storage, manure processing, and land application. Data made public January 13, 2011.

<sup>3</sup>Based on ASAE excretion standard of 0.83 lbs N for a 1,400-lb cow producing 70 lb milk; Rotz 2004; Wisconsin – based research on nitrogen losses from freestall housing; Rotz 2004 for manure storage (top, bottom and covered loaded basins) and land application (rapid incorporation). Only dairy cows (including dry) included with these estimates.

<sup>4</sup> University of Wisconsin Extension average (Erb/Holmes et al, 2009)

<sup>5</sup>Calculated using Tier 2 IPCC calculator with VS = 11.55 lb/hd-day, Bo=0.24, weighted MCF of 0.37 and IPCC Tier 1 enteric estimates (128 kg CH<sub>4</sub>/hd-yr)

<sup>6</sup> Does not consider the effect of limited semi-solid manure composting

<sup>7</sup> Oregon Technical Support Document (Table 6) to the Oregon Dairy Air Quality Task Force, July 1, 2008

<sup>8</sup> Based on National Air Emissions Monitoring Study (NAEMS) data (mean VOC and VOC speciation values) from “Emissions Data Two Freestall Dairy Barns in Wisconsin, July 22, 2010.” This data was for two monitored dairy freestall barns located in St. Croix County, Wisconsin. This estimate does not include emissions from other farm components such as manure storage, manure processing, and land application. Data made public January 13, 2011.

Pleasant Lake residents (~2 miles southeast).

## **Surface & Ground Water**

The proposed Richfield Dairy facility and wells are located approximately 1.1 miles west of the Mississippi River / Lake Michigan Surface water drainage divide and approximately 0.4 miles East of the Mississippi River / Lake Michigan groundwater divide. Surface water flows in a southwesterly direction and groundwater flows in a southeasterly direction. The area geology consists of sand over 300 feet of sandstone which is located at an approximated depth of 150-200 feet.

Groundwater quality in the area is considered between fair to good. Samples taken within the township of Richfield had detectable levels of atrazine and other pesticides. Nitrate levels are high in many wells with 24% exceeding the Enforcement Standard threshold of 10 mg/l (ppm).

The proposed project is located within an area that has a relatively high water table, a high groundwater infiltration rate and a low surface water runoff rate. Based upon soil borings taken in May 2010, no groundwater was encountered at depths up to 32 feet below the ground surface.

Total water usage for Richfield Dairy has been estimated at ~52.5 million gallons / year, 143,846 gallons / day or 99.9 gallons / minute. Animal watering and cleaning accounts for 44 million gallons/year, with evaporative cooling of the livestock facility during hot weather accounting for the remaining 8.5 million gallons/year. To meet the water supply demand, Richfield Dairy will submit a high capacity well permit application to the DNR to construct two wells at a depth of ~150 feet. A high capacity well permit falls under the provisions within Ch. NR 820, Wis. Adm. Code, to assess potential impacts to trout streams, outstanding resource waters (ORW), exceptional resource waters (ORW) and springs. DNR Water Supply staff will assess the proposal to determine if the proposed wells would adversely affect any of these water resources.

There is a concern about nitrate contamination already present in the area. The applicant will be required to follow an approved NMP on all of the 16,429 acres under contract for manure application, which reduces the risk of over application and nitrate leaching. The NMP will limit nutrient application to crop need where there were no limits in the past. There is a reduced risk of nitrate leaching from manure then from commercial fertilizer. Unlike commercial fertilizer where all nitrogen components are immediately available, manure contains a significant amount of organic nitrogen which is neither available to plants nor mobile in the environment until converted to plant available ammonium, nitrite or nitrate by soil microbes. Among other requirements (see next section – Biological), the NMP must incorporate best management practices (BMP's), such as nitrogen inhibitors, changed crop rotation, etc. to reduce risk of increased nitrate leaching to groundwater. Changed crop rotation will include perennial forage crops such as grass, hay and alfalfa on at least 25% of the acres. The forage crops have greater rooting depth and can remove more nitrogen than most annual crops.

In addition, Department water supply staff is working with the applicant to assess the nitrate situation and some possible well construction modifications, such as completing the wells deeper in the sand aquifer or maybe into the sandstone bedrock aquifer.

Proposed private sewage and water supply systems designed at the site for all the human waste, office and employee water usage will have to comply with applicable siting, design and monitoring regulations.

## **Biological**

A review of the Natural Heritage Inventory records indicate no endangered and threatened species, natural areas or other sensitive biological resources are present or depend on the development site or within a one mile radius. A site

visit will be conducted by Department staff to determine if lupine is present on the property. If lupine is present, it will be referred to the regional ecologist for further evaluation. The immediate project area and proposed land spreading sites are existing cropland and would be expected to provide habitat primarily for common animal species acclimated to farm operations. Occasional visits/use by mobile rare species such as whooping crane or bald eagle may occur but will not be negatively impacted by such use.

Provided manure land-spreading is limited to existing croplands and application practices avoid increased nutrient loading to surface waters (see later discussion in this section), no serious threat to sensitive resources in the vicinity would be expected. Therefore, long-term significant impacts on terrestrial animals and vegetation are not expected.

No waterways, wetlands or other aquatic resources are present at the immediate farm site. Therefore, no ORW or ERW resource waters will be affected. An unnamed tributary to the Little Roche Cri Creek is located ~2.5 miles Northwest of the proposed Richfield Dairy facility and is the closest navigable water. The Little Roche Cri Creek is located within the Central Wisconsin River Basin. Pleasant Lake is located ~2.7 miles to the Southeast and is located in the upper reaches of Upper Fox River Basin and subject to seasonal fluctuations of water levels. This is mainly a result of natural influences due to its location rather than groundwater withdrawal from pumping. Pumping closer to the lake may have an effect; however, the groundwater use by the proposed dairy should not have any noticeable effects on Pleasant Lake's water elevations. Fordham Creek is ~4.7 miles to the Southwest and Little Roche Cri Creek is located 5.6 miles to the Northwest of the proposed Richfield Dairy site, both are trout streams and designation as ERW. The quantity of water flow in these streams is subject to similar influences that impact Pleasant Lake. The proposed groundwater pumping is not a major threat to flow. The greatest threat to these streams would be additional nutrients if permit-required BMP's are not implemented or maintained.

The most significant possible long-term biological impact is associated with the production of manure at the site. It is anticipated that approximately 59.3 million gallons of liquid manure / process wastewater and 8,552 tons of solid manure will need to be stored and land applied on an annual basis. Nutrients associated with manure can have detrimental impacts on groundwater (nitrogen) and surface waters (nitrogen and phosphorus) if not properly land applied. Biochemical oxygen demand associated with manure can reduce dissolved oxygen levels in surface waters. In addition, ammonia in the manure can be toxic to fish and aquatic life.

Livestock at the proposed Richfield Dairy facility will be confined within roofed buildings. Manure generated within these buildings will be transferred to a storage facility, long-term nutrient impacts on wetlands and surface waters from the cattle housing area are not expected. The two planned manure storage facilities will be designed to meet appropriate USDA-Natural Resources Conservation Service (NRCS) design standards to ensure that groundwater impacts do not occur, and the proposed facility will have to meet these guidelines as well.

The land application of manure on area cropland poses the greatest risk of environmental impact if it is not done properly. Impacts from nutrient loadings, biochemical oxygen demand and ammonia are water quality concerns with surface waters. Since this operation will require coverage under a WPDES permit due to its size, landspreading of its manure is regulated in accordance with a Department approved NMP. The NMP can be an effective tool to proactively address possible problems that would otherwise be associated with poor manure landspreading activities. Following conditions in the NMP for setback distances, appropriate application rates, timing and record keeping should result in direct benefits to the environment.

The draft permit includes injection and incorporation requirements based on proximity to surface waters which are intended to ensure that manure does not runoff to surface waters and cause short- or long-term impacts associated with biochemical oxygen demand and ammonia.

Under normal circumstances, manure application rates are based on the nitrogen needs of the crop. Crops utilize more nitrogen than phosphorus and if manure is applied to meet nitrogen needs, phosphorus soil levels will become elevated over time. In order to protect against increased phosphorus loadings to area surface waters, the WPDES permit, if

issued, would require that the operation's NMP address phosphorus loadings from fields where the operation landspreads manure. While phosphorus is a critical component of ensuring healthy crop growth, excessive phosphorus that is applied on land can make its way to surface waters where it contributes to excessive algal growth. Excessive algal growth contributes to such problems as low dissolved oxygen in surface waters. The permittee will need to implement field specific restrictions and practices as part of their NMP submitted to the Department for review and approval. These restriction and practices will need to take into account existing soil nutrient levels, buffers, crop rotations, and other relevant factors. Specific restrictions would also be placed in the WPDES permit to address phosphorus impacts associated with the operation's landspread manure.

Once approved by the Department, all landspreading activities must be completed in accordance with the NMP. A certified crop consultant must develop and sign-off on the plan.

Landspreading manure in accordance with an acceptable NMP is advantageous to both the farmer and the environment. The nitrogen and phosphorus from the manure provides nutrients for crop growth and lowers the need for commercial fertilizer application. In many instances, the net nutrient application will not change, only the type of fertilizer. When manure is spread in suitable amounts and promptly tilled into the soil, the potential of runoff causing off-site problems is minimized. The proposed WPDES permit will regulate the application rates, applied acreage, spreading techniques and other specifications through the NMP. The operation will also be required to conduct manure and soil sampling to determine appropriate application rates, depending on soil and crop types.

If the operation conducts landspreading in accordance with an approved NMP, maintains an adequate land base for landspreading, and properly inspects and maintains manure storage facilities and runoff control systems, the threat to groundwater and surface water should be minimal under normal operating and climatic conditions.

### Cultural

No historical, archeological or other cultural resources are known to be present at the farm site or expected to be impacted. No zoning changes (currently A-1 agricultural) will be required for the new farm and operation. Since the farm and landspreading sites are currently used for agriculture the proposed land use will not change significantly as a result of the issuance of the WPDES permit. The physical appearance of the site will change and activity level, noise, traffic, etc. at the farm and surroundings (roads, etc.) will be greater. The applicant does not expect the project to impact neighboring property values, but acknowledges there is no reliable data to accurately predict such impacts. DNR has not done a study to examine if or how property values may have changed after confined animal feeding operation permits have been issued elsewhere.

The proposed operation construction will also have indirect effects. The area's economy will change through an estimated 40 jobs created (projected \$1.5M annual payroll) and an increase in the area's tax base from farm improvements. It is also estimated that \$16M will annually enter the local economy as a result of added business such as the purchase of services, equipment and feed.

## **2. Significance of Cumulative Effects**

**Discuss the significance of reasonably anticipated cumulative effects on the environment (and energy usage, if applicable). Consider cumulative effects from repeated projects of the same type. Would the cumulative effects be more severe or substantially change the quality of the environment? Include other activities planned or proposed in the area that would compound effects on the environment.**

There is a trend in the livestock industry towards larger-scale facilities of this kind. Large scale operations have rapidly become an economic necessity due to changing pricing structures and the need to reduce capital inputs while maximizing production. Economies of scale associated with CAFOs have allowed producers to increase production

without increasing costs. If numerous projects of this type are proposed in this area, there is a concern that the land base available for landspreading manure could be overwhelmed and would make a number of such projects nonviable, primarily with respect to costs associated with hauling manure long distances for landspreading. There are currently two other WPDES permitted CAFO facilities located within a twelve-mile radius of the proposed Richfield Dairy Facility. Opitz Custom Heifers is located ~ 1 mile South of the proposed Richfield Dairy site and New Chester Dairy is located ~ 12 miles to the Southwest. Nutrient Management plans submitted to the DNR by each of these facilities demonstrate that there is currently an adequate land base available for land application of all of the manure and process wastewater that is to be generated by these operations. The Department is not aware of additional projects of this type in the vicinity in which the availability of land for manure application would be inadequate.

Any proposed future projects will be examined at the appropriate time. With each new operation or expansion proposed, cumulative effects such as impacts from manure landspreading activities are considered. Unless these facilities are poorly sited or concentrated in a small area, the cumulative impacts to the environment should not be significant.

### **3a. Significance of Risk**

**Explain the significance of any unknowns which create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analysis would eliminate or reduce these unknowns?**

Current regulations require that there be no discharge of pollutants from any manure storage facilities, outdoor animal lots, composting and leachate containment systems, milking center wastewater treatment/containment systems, raw material storage areas, or other area of the operation to navigable waters, except in the event of a 25-year, 24-hour rainfall event, or chronic rainfall event. In addition, current regulations prohibit (1) overflow of manure storage facilities, (2) direct runoff from a feedlot or stored manure to waters of the state, (3) unconfined manure piles/stacks in water quality management areas, and (4) unlimited access by livestock to waters of the state in locations where high concentrations of animals prevent maintenance of adequate sod cover.

Proposed manure storage and runoff control facilities at the proposed operation must be built in accordance with currently accepted engineering standards to minimize the risks of ground and surface water contamination. Plans and specifications for proposed facilities must be reviewed and approved by Department staff prior to construction.

The operation must comply with its WPDES permit and associated Nutrient Management Plan. Consequently, the landspreading of manure should not yield any substantial increase in risk to the environment. The NMP will include acres that may not have previously been managed in accordance with a NMP, which could mean environmental benefits compared to existing manure application practices.

The nutrient content of manure temporarily stored in the storage facility may vary. Unidentified variations in nutrient content may result in over-application of nutrients (nitrogen in particular) that could impact groundwater. If a WPDES permit is issued for this operation it will require manure and soil testing to ensure this does not occur.

As previously noted, the two proposed Waste Storage Ponds, feed storage pad and separated manure solids stacking area, will have an 8" compacted clay liner in addition to a concrete base. The sweet corn feed pad consists of a 24" compacted clay liner under an 8" drainage layer which is under 8-inches of concrete. The applicant has not yet determined where the estimated ~ 32,000 cubic yards of clay needed for these structures will be acquired. Richfield Dairy will follow any natural resource laws that may pertain to how and where the clay is obtained.

**3b. Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.**

Possible operating problems that could impact the environment include failure of manure handling and storage facilities, poor manure land application practices that lead to nutrient runoff to surface waters or leaching of nutrients to groundwater.

Department review of any proposed manure storage facilities (for example, berm slopes and storage volume) makes the probability of failure of storage facilities highly unlikely. In addition, the operation will need to address small-scale manure spills as part of their operation and maintenance plan (as part of the review process of manure storage facilities or as part of the proposed WPDES permit). This plan typically addresses spills associated with general operation and maintenance of the operation. These small "spills" may not represent an immediate environmental impact but may need to be addressed by the operation (e.g., scraping areas where small amounts of "spilled" manure have collected, changing operating procedures to avoid small "spills") to ensure that impacts to waters of the state, primarily through runoff resulting from storm events, do not occur. Massive failure of the manure storage facility would likely be formally defined as a spill under Ch. NR 706, Wis. Admin. Code. Chapter NR 706 describes requirements for immediate notification of the Department in the case of a spill. A requirement to follow Ch. NR 706 would be included if a WPDES permit is issued. Inappropriate or inadequate responses (i.e., time frame of response and action taken to eliminate or mitigate environmental impact) to spills and associated environmental impact are subject to Department enforcement. However, Department and permittee action is contingent on a case-by-case evaluation of actual environmental impact and corrective actions taken by the operation.

Department inspections based on complaints or general compliance efforts will help to serve to evaluate whether the operation is properly addressing minor "spills." In addition, the operation will be required to conduct inspections of storage facilities to ensure that more significant problems are addressed prior to any sort of massive facility failure.

Manure will be landspread in accordance with a Department approved Nutrient Management Plan, which will not allow poor land application practices; thus, operating practices should have minimal impacts on the environment.

#### **4. Significance of Precedent**

**Would a decision on this proposal influence future decisions or foreclose options that may additionally affect the quality of the environment? Describe any conflicts the proposal has with plans or policy of local, state or federal agencies. Explain the significance of each.**

No. All future projects will be evaluated by their own specific adverse and beneficial impacts. There are other similarly sized operations in Wisconsin. Each individual project is considered separately based on its own merits. In fact, permitting CAFO's has become a fairly common practice, that the Department has prepared EAs that will be signed in April to place certain sized CAFO's in the general permit realm. Thus reducing the number of EAs prepared for CAFO's. A map is attached showing the number of CAFO's in the state.

The Department primarily considered issues that fall under its regulatory authority as part of this analysis. The project is not known to conflict with plans or policy of local, state, or federal agencies. The operation will need to apply for and receive the appropriate approvals from all involved agencies prior to operating. Permitting this operation would not foreclose future options for taking necessary actions to protect the environment (i.e., revocation, modification of the permit). In actuality, through enforcement of the WPDES permit, the Department has a means to avoid or address possible environmental impacts associated with the operation.

#### **5. Significance of Controversy Over Environmental Effects**

**Discuss the effects on the quality of the environment, including socio-economic effects, that are (or are likely to**

**be) highly controversial, and summarize the controversy.**

There is the possibility that public controversy may be generated as a result of the permitting of this operation. State and local area residents may express concerns about the environment such as possible air and water quantity/quality issues. The Department has some authority under NR 429, Wis. Administrative Code to address odor complaints, should they arise. The Department is starting a process to study and address odor and air toxics issues from livestock operations on a statewide basis. This study is expected to develop standards and voluntary best management practices to reduce or minimize potential problems from CAFOs. Water quantity issues can be addressed under the high capacity well approval. However, neither of these issues is addressed by the issuance of the proposed WPDES permit, which is strictly intended to address the water quality concerns.

There may also be socio-economic concerns such as animal treatment issues, the trend towards large-scale farming in the state, impacts larger-scale farming may have on the viability of smaller operations and concerns of smaller operations and non-farming rural inhabitants regarding changes in the agricultural landscape associated with CAFOs. The following is taken from the Large Dairy CAFO EA.

**Economics**

Property values of CAFO facilities will go up due to the physical improvements to the site, and should hold that value as long as a farm is in operation and is maintained. The value of land needed for raising crops, and perhaps more importantly, acreage needed for manure spreading may increase due to the demand for suitable sites close to a CAFO.

The tax base in local areas may go up in response to the increase in property values and improvements at production sites. Property values may also go up for parcels used for growing crops and application of manure. The value of nearby residential properties may go down due to the close proximity of CAFO's. On a large scale there may be little or no change in the tax base due to the presence of CAFO's (Purdue Extension Guide AY-318-W <http://www.ansc.purdue.edu/cafo/>).

Property values on adjacent residential parcels may decrease due to proximity to the farm operation and associated concerns about odor, noise, traffic, groundwater degradation, viewscape, *etc.* If a farm is properly managed and uses the best available technologies for dealing with waste and odor the drop in value may be short-term (Purdue Extension Guide AY-318-W <http://www.ansc.purdue.edu/cafo/>).

The value of housing is based on both the value of the land and the value of the buildings and other improvements to the land. Between 1940 and 2000, median home values in Wisconsin increased from \$33,600 to \$112,000. Generally, Wisconsin housing values have been consistent with national trends. Land values have gone up primarily due to general demand, but also due to the demand for vacation property. Residential improvements have also increased in value because of increasing house sizes and building quality, both for new houses and for renovations. (Housing Megatrends, UW Extension)

A 2003 study of property values in Berks County, Pennsylvania sheds some light on the effects of CAFOs on nearby residential properties. The following summary is from the executive summary of the report (Ready and Abdalla, 2003, *The Impact of Open Space and Potential Local Disamenities on Residential Property Values in Berks County, Pennsylvania*. Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University. See: <http://landuse.aers.psu.edu/study/BerksLandUseShort.pdf>).

*Several potential local disamenities were found to have a negative impact on nearby house prices. Of the potential local disamenities investigated, the impact of landfills on house price was largest, and extended the farthest (up to 3200 meters). A landfill located 800 meters from a house decreases that house's sale price by an estimated 6.9%. The impact of a large-scale animal production facility (over 200 animal equivalent units or aeu's) on house price was about one half to two thirds as large as that from a landfill (4.1% at 800 meters), and did not extend as far (up to 1600 meters).*



*The impacts on house price from mushroom production and from the regional airport were much less (0.4% and 0.2%, respectively, at 800 meters). The impact from high traffic roads was small, and extended only a short distance. No significant impact was found for sewage treatment plants.*

*Additional analysis attempted to investigate whether different types of animal production facilities had different impact on nearby house prices. Differences in the impact due to differences in the size of the operation (number of aeu's) were not statistically significant. Further, medium-sized production facilities (200 to 300 aeu's) were found to have a statistically significant negative effect on house prices when considered apart from larger facilities. Similarly, the impact did not vary significantly by species (poultry, swine, and beef/dairy). An analysis of proximity of animal production facilities and residential properties showed that the density of single family homes around animal production facilities was lower than the average for rural parts of the county. An implication is that some potential for conflicts is avoided due to the way in which these land uses are located on the land.*

*The total impact on surrounding house prices was calculated for a landfill, the regional airport, and an animal production facility. The average impact on the value of 3342 houses located within 3200 meters was \$2442 (all values are in 2002 dollars). The total impact on all houses was \$8,162,000, which is 2.6% of the assessed value of the affected properties. The average impact of the regional airport on 2256 houses located within 1600 meters of the airport runway and its flight paths was \$104, and the total impact on the value of these properties was \$235,000, or 0.1% of the assessed value of the affected properties. This calculation does not include 2391 properties located near the airport within the City of Reading. The average impact of a single animal production facility on 119 single family residences located within 1600 meters of the facility \$1,803. The total impact on all 119 houses is \$215,000, or 1.7% of the assessed value of the affected houses. These figures are intended as illustrations, and should not be considered averages for similar facilities. The impact from any given landfill, airport, or animal production facility will depend on the number of houses located near the site, and on the market value of those houses absent the facility."*

There are typically positive short-term economic effects to contractors and vendors during the construction phase of CAFOs.

Long-term positive effects are also generated by wages and additional economic activity with vendors, suppliers, and maintenance contractors over the length of CAFO operations.

Several studies presented in the Pew Commission study on Industrial Farm Animal Production indicate that local purchasing patterns of large dairy operations in Wisconsin result in declining rural communities, and the percentage of dairy feed purchased locally decreased as herd size increased. So, while large dairies may add significantly to the economy in Wisconsin, there may be little or no positive impact on local economies other than those resulting from wages and field crops.

A recent CAFO applicant provided information from the Wisconsin Milk Marketing Board which found a 5x multiplier effect on dairy investments. The applicant claims that each dairy cow generates more than \$17,000 a year in economic activity (Rosendale Dairy WPDES permit application).

The tendency for dairy farming operations to become larger (and some to enlarge to the point they must be permitted as CAFOs) in order to remain economically viable, may help to maintain the dairy-based economies of the state."

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## **ALTERNATIVES**

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**Briefly describe the impacts of no action and of alternatives that would decrease or eliminate adverse**

**environmental effects. (Refer to any appropriate alternatives from the applicant or anyone else.)**

### APPLICANT ALTERNATIVES

Three alternatives were considered by the applicant:

- 1) No build. The “no build” alternative does not meet the applicants’ economic development goals.
- 2) Expand at one of their other existing dairy facilities. With current manure handling technologies and the need to secure additional cropland, expansion at other facilities was not considered feasible.
- 3) Construct at a new site. The applicant indicated that they have investigated sites in both northeast and north central Wisconsin. Other sites were eliminated due to presence of other large dairies, lack of available cropland for feed production or manure application, topography or other reasons.

### DNR ALTERNATIVES

#### REVIEW OF NEW FACILITIES

The Department’s alternatives for review of proposed runoff control and/or manure storage facilities either as part of processing a permit or the permit itself are:

- Deny the plans and specifications for the design of the proposed facilities based on water quality concerns and require resubmittal of plans and specifications.
- Approve the plans and specifications for the design of the proposed facilities without conditions.
- Approve the plans and specifications for the design of the proposed facilities, but with conditions requiring additional components to the facilities’ design or operation based on water quality concerns.

The selected alternative will be based on the information collected as part of this environmental analysis and further Department review.

#### REVIEW OF WPDES PERMIT

Within the constraints of the Department’s existing permitting authority for CAFOs, the Department has limited alternatives to the issuance of a WPDES permit for the operation. Based on the information available, the Department cannot justify denial of the proposed WPDES permit for the operation since it is expected that the operation will be able to comply with the conditions of the proposed permit and not cause an exceedance of water quality standards. The Department could require more stringent conditions in the permit if it determined such conditions were necessary to protect water quality. The Department will use the information collected as part of the environmental analysis as well as part of the public comment period associated with the issuance process of a WPDES permit to make its final determination on issuance of the permit and to determine if additional restrictions in the permit are necessary.

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### **SUMMARY OF ISSUE IDENTIFICATION ACTIVITIES**

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**List agencies, citizen groups and individuals contacted regarding the project (include DNR personnel and title) and summarize public contacts, completed or proposed.**

Various discussions occurred between DNR staff and the Applicant, its operations staff and its consultants regarding application materials, facility design, nutrient management plan, etc.:

Applicant/Operator: James Ostrom, New Chester Dairy and Milk Source Holdings, Inc.

Primary Consultants: multiple contacts within Conestoga-Rovers & Associates (application, design) and Polenske Agronomic Consulting (nutrient management plan)

Adams County Land and Water Conservation Department, Chris Murphy, county stormwater and animal waste storage

ordinance/regulations

Adams County Planning/Zoning Department conditional use permit for operation with 500 or more animal units (DATCP Livestock Siting Rule, per ATCP 51). County is required to hold a public hearing on the conditional use permit. Phil McLaughlin, Adams County P&Z Director.

Adams County Planning/Zoning Department Sanitary Permit, Phil McLaughlin, Adams County P&Z Director.

Town of Richfield building permit and culvert permits, Margaret Burrows, Town Chair.

DNR staff:

Regional CAFO Contact: Terence Kafka, Wastewater Specialist, Wausau

WPDES CAFO Permit Coordinator: Tom Bauman, Water Resource Engineer, Madison

Nutrient Management Plan: Andrew Craig, Water Resources Management Specialist, Madison

Facilities Plan Review: Jeff Kreider, Water Resources Engineer, Madison

Air Management: Jeff Johnson, Air Engineer, Eau Claire; Dave Panofsky, Air Engineer, Madison

High Capacity Well Permit: Paul Kozol, Water Supply Engineer; Rachel Greve, Hydrogeologist, Madison

Water Supply: Steve Janowiak, Peggy Norris, Wisconsin Rapids

Stormwater permit: Brad Johnson, Wastewater Specialist, Wausau

Environmental Analysis & Review: Russ Anderson, Supervisor, Fitchburg; Tony Fischer, Wisconsin Rapids

Hydrogeologist: Jim Boettcher, Eau Claire

Regional Water Management and General Water Issues: Scott Watson (Wausau), Bob Baczynski (Baldwin)

Wildlife: Paul Samerdyke, Wautoma

Water Quality Biologist, Scott Provost, Wisconsin Rapids



**DECISION (This decision is not final until certified by the appropriate authority)**

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s. 1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required   X  

The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department on this project.

B. Major Action Requiring the Full EIS Process \_\_\_\_\_

The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluator <i>Robert M. Voth</i>	Date Signed <i>May 11, 2011</i>
Noted: Regional Staff Specialist or Bureau Director	Date Signed

Number of responses to news release or other notice:

CERTIFIED TO BE IN COMPLIANCE WITH WEPA	
Regional Director or Director of BISS (or designee) <i>T. Anderson</i>	Date Signed <i>11/11/11</i>

**NOTICE OF APPEAL RIGHTS**

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes, administrative codes and case law establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department's decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. Such a petition shall be filed with the appropriate circuit court and shall be served on the Department. The petition shall name the Department of Natural Resources as the respondent.