DEPARTMENT OF NATURAL RESOURCES

Record of Decision

In the Matter of the Determination of the Need for an Environmental Impact Statement for the Nolte Family Irrigation Project in the Township of North Germany, Wadena County, Minnesota

FINDINGS OF FACT, CONCLUSIONS, AND ORDER

FINDINGS OF FACT

1. The proposed project, the Nolte Family Irrigation Project (Project), is located in North Germany Township in Wadena County. The project area is included within the Pineland Sands Area of Central Minnesota. The Project proposes to convert 303 acres of formerly privately owned and managed timberland to irrigated agriculture for livestock grazing and commodity/staple crop production. Between approximately 2014 and 2018, much of the timber in the proposed project area was harvested. The property's current land cover is: 165 acres of cropland, 132 acres of brush/grassland, and 6 acres of wooded/forest. The conversion would consist of the removal of remaining standing timber and associated stumps, land cultivation, and the operation of three groundwater-supplied center pivot irrigation systems.

2. The Pineland Sands Area of Minnesota is an area of approximately 770 square miles of a surficial glacial outwash deposit in Becker, Cass, Hubbard, Todd and Wadena Counties.

3. The Project proposer is Mr. Timothy Nolte (Proposer). "Proposer" means the person or governmental unit that proposes to undertake or to direct others to undertake a project. *See* Minnesota Rules (Minn. R.) 4410.0200, subp. 68. The Proposer is an agricultural land owner and is not connected to any other projects in the Pineland Sands area. The Proposer is not formally associated with the R.D. Offutt Company (RDO). Their project proposals are independent of each other.

4. On or about June 24, 2019, the Minnesota Environmental Quality Board (EQB) assigned the Minnesota Department of Natural Resources (DNR) as the Responsible Governmental Unit (RGU) to consider a citizen petition requesting preparation of an Environmental Assessment Worksheet (EAW) for continued potato field expansions that include forest-to-field conversions, chemical applications and water appropriations in and around the Pineland Sands Area. The petition specifically identified projects proposed by the Proposer and by RDO.

5. Minnesota Rules 4410.0200, subp. 65, defines a "Project" as a governmental action, the results of which would cause physical manipulation of the environment. The petition identifies the Project as Mr. Tim Nolte's/R.D. Offutt Company's continued potato field expansions using water appropriated under a DNR permit and forest-to-field conversions and chemical applications in and around the Pineland Sands Area.

6. An action can only be considered a "Project" under Minn. R. 4410 if the action requires a governmental approval. DNR approval authority for the project identified in the petition is limited to its authority to issue water appropriation permits pursuant to Minn. Stat. §103G.271, subd. 1.

7. The DNR considered (1) the content of the petition, (2) additional information known to the DNR and (3) the rule requirements for RGUs to grant or deny a citizen petition. The DNR determined that there may be the potential for significant cumulative environmental effects associated with nitrate contamination of groundwater. DNR issued Findings of Fact, Decision and Order on April 10, 2019 ordering preparation of an EAW. As a result, the DNR prepared an EAW. *See* Minn. R. 4410.1100, Subp. 6.

8. The DNR is the RGU for preparation of the EAW for the Nolte Family Irrigation Project. *See* Minn. R. 4410.0500, Subp. 3.

9. When preparing the EAW the DNR relied upon internal expertise, as well as expert input from the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Agriculture (MDA), and the Minnesota Department of Health (MDH). This Interagency Review Team focused on the potential cumulative effects portion of the EAW. The Interagency Review Team met six times between November 2019 and February 2020.

10. The DNR prepared an EAW for the Project. *See* Minn. R. 4410.1400.

11. DNR filed the EAW with the EQB. A notice of its availability was published in the EQB *Monitor* on April 6, 2020. A copy of the EAW was sent to all persons on the EQB Distribution List, to those persons known by DNR to be interested in the proposed Project, and to those persons requesting a copy. A statewide press release announcing the availability of the EAW was sent to newspapers, radio, and television stations. Digital copies of the EAW were distributed to the DNR Library, the DNR Northwest Region Headquarters, Minneapolis Central Library, Kitchigami Regional Library, and Wadena City Library for public review and inspection. The EAW was also made available to the public by posting on the DNR's website. *See* Minn. R. 4410.1500.

Public Comment Period

12. The 30-day EAW public review and comment period began on April 6, 2020 and ended on May 6, 2020. Written comments on the EAW could be submitted to the DNR by U.S. mail, facsimile, or via email. *See* Minn. R. 4410.1600.

13. During the 30-day EAW public review and comment period, the DNR received more than 300 letters requesting the DNR to extend the public comment period. DNR denied the requests to extend the 30-day public comment period.

14. During the 30-day public review and comment period, the DNR received comment letters from 98 individuals and agencies listed in Attachment A.

Responses to Comments

15. Minnesota Rules 4410.1700, subp. 4 indicates that the Record of Decision (ROD) must include specific responses to all substantive and timely comments on the EAW. All comments and issues raised in comment submittals were reviewed to determine if they addressed the accuracy or completeness of the

material contained in the EAW or environmental impacts that may warrant further investigation prior to the final ROD. Comment letters are available upon request.

16. Responses to all substantive comments are summarized below in ¶¶20 to 32. Each submittal was given an identification number. *See* Attachment A. Many submittals contained more than one comment. In those cases, each comment was assigned a unique comment identification number (comment ID). Similar comments were grouped together, each group was analyzed, and a single response to comment was developed for the category. *See* Minn. R. 4410.1700, subp. 4.

17. Many commenters provided non-substantive comments in support of or opposition to the proposed Project, personal opinion on whether the proposed Project could be permitted, general concerns on topics that were fully addressed in the EAW and/or non-substantive comments. These comments did not address the accuracy or completeness of the material contained in the EAW or environmental impacts and did not warrant further investigation prior to the final ROD. In accordance with Minn. R. 4410.1700, subp. 4, these comments did not receive a specific response.

    a. Fifty-eight commenters expressed support for the proposed Project, stating that because of the proposed mitigation for the Project (e.g., nitrogen management plan), there is not a potential for significant environmental effects. These commenters generally supported a negative declaration on the need for an Environmental Impact Statement and approval of the water appropriation permits. These comments did not raise specific substantive issues and, therefore, did not receive a specific response. *See* Minn. R. 4410.1700, subp. 4 (requiring the preparing agency to provide response to comments for all substantive comments received during the public comment period).

    b. Ten commenters requested approval of water appropriation permits. These comments did not address the accuracy or completeness of the material contained in the EAW or environmental impacts that may warrant further investigation prior to the final ROD. The purpose of the EAW is to determine whether a project has the potential for significant environmental effect requiring the preparation of an EIS and to provide information to the permit decision makers as they analyze whether the Project permit application meets applicable permit requirements. The purpose of an EAW is not to approve permits which may be applicable to the Project. These comments were not deemed to be substantive and, therefore, did not receive a specific response. *See* Minn. R. 4410.1700, subp. 4 (requiring the preparing agency to provide response to comments for all substantive comments received during the public comment period).

    c. Nine commenters provided non-substantive comments, including personal opinion regarding the cost of environmental review, Minnesota Rules, the Citizen's Petition process, and assertions that DNR's permitting and regulatory authority were either too strict or not strict enough. A few individuals provided resources but did not include a comment letter specifying how DNR was to consider the information. These comments did not address the accuracy or completeness of the material contained in the EAW or environmental impacts that may warrant further investigation prior to issuance of the final ROD. In accordance with Minn. R. 4410.1700, subp. 4, these comments did not receive a specific response.

18. Comments that did address the accuracy and completeness of the EAW and/or potential impacts that may warrant further investigation prior to issuance of the final ROD are categorized and detailed in ¶¶20 to 32. *See* Attachment A. In accordance with Minn. R. 4410.1700, subp. 4, any comments included in these letters that did not address the accuracy and completeness of the material contained in the EAW or

potential impacts that may warrant further investigation prior to final ROD did not receive a specific response.

19. Many commenters raised vague and/or general concerns on topics that were addressed in the EAW. These comments were not specific enough to assess whether they were addressing the accuracy or completeness of the material contained in the EAW or environmental impacts of the Project that may warrant further investigation prior to the issuance of a final ROD. Thus in accordance with Minn. R. 4410.1700, subp. 4 these comments did not receive a specific response.

20. Substantive public comments on the EAW covered a wide range of topics from water quality and mitigation sufficiency to cumulative potential effects (CPE). The most prevalent topics identified by commenters are identified below and discussed in detail in ¶¶22 to 32.
    - Aquifer test/Groundwater
    - Cover types and land use
    - CPE
    - EIS need
    - Geology and soils
    - Health impacts
    - Mitigation sufficiency
    - Relationship of Project to RDO
    - Straight River
    - Water quality
    - Wildlife and habitat

21. DNR consulted with the Interagency Review Team when analyzing and developing responses to substantive comments received for some topics including soil; health impacts; fertilizers, pesticides and nitrates; and water quality.

22. Aquifer Test/Groundwater. Eleven commenters expressed a variety of concerns related to groundwater appropriation, flow, and the effect on nearby wells and water bodies. Some commenters said more information was needed on well construction, well depths, and connectivity of aquifers. Several of these commenters expressed concern that an aquifer test was not conducted as part of the EAW, indicating that this missing information is needed to assess groundwater connectivity to nearby wells and water bodies. *See* ROD Attachment A.

    Response: Minnesota Statute § 116D.04, subd. 1a(c) (2019), defines an EAW as a brief document that is designed to set out the basic facts necessary to determine whether an EIS is required for a proposed action. Minnesota Statute §116D.04, subd. 15 (2019), calls for environmental review and permitting efficiency and provides that: "[t]o the extent practicable and so as not to conflict with other requirements of this section, the board shall not require, unless necessary, information in an environmental assessment worksheet for a proposed action when the information is also required as part of any necessary permitting process for the proposed action." Furthermore, Minn. R. 4410.1700, subp. 7, provides that in determining whether a project has the potential for significant environmental effects the RGU shall consider the extent to which those impacts are subject to mitigation as a result of ongoing government regulation. Minnesota statute and rules provides an extensive regulatory framework for addressing the concerns raised by the commenters in the water appropriation permitting process.

The EAW did assess potential impacts to groundwater using available information such as numerous United States Geological Survey (USGS) studies and the County Geologic Atlas. Existing regional aquifer data (references provided in EAW Attachment F) was sufficient to assess the water resources available for appropriation in the geographic area of the proposed Project, and was described in EAW Items 10a, 11 and 19. *See* Minn. Stat. § 116D.04, subd. 16 (2019). Furthermore, because the proposed Project was concurrently undergoing permit application review, in accordance with Minn. Stat. § 116D.4 subd. 16, and because an aquifer test was a requirement of the permit review, a separate aquifer test was not requested for the EAW. The proposer, however, did elect to complete an aquifer test concurrently with environmental review. The aquifer test started on March 24, 2020. The pump shut off on March 31, 2020 and monitoring ended on April 10, 2020. It was available for review prior to issuance of the ROD and analyzed in the context of public comments.

As outlined below, the aquifer test provided additional, site-specific information about the connectivity between buried artesian aquifers, the Redeye River and the water table aquifer. The information gained from the aquifer test allowed DNR permitting staff to calculate the risk to domestic wells and potential impacts to wetlands and the Redeye River from pumping from the confined aquifers. It was also use to evaluate whether the proposed appropriation would exceed the confined aquifer's safe yield.

The aquifer test was conducted for appropriation permit applications 2017-4235 (NW Irrigation well), 2017-4236 (Production well), and 2017-4237 (East Irrigation well). The testing data indicated:

- All three irrigation wells would draw water from leaky confined aquifers.
- The wells are capable of providing the requested rate and volume listed in the permit applications.
- Several nearby domestic wells are at high risk for well interference when the irrigation wells are pumped individually or all at the same time. This would need to be addressed by adding a permit condition(s) that would prevent interference.
- The effect of pumping the northwest irrigation well on the nearby surface water bodies cannot be evaluated at this time. This would need to be addressed by adding a permit condition that would require additional testing or monitoring to determine if the Project would have an adverse effect to water flow in nearby surface water bodies. Any potential negative impact identified by this monitoring should be addressed by permit modifications limiting the volume pumped or other measures up to and including cancelation of the permit.

The requirements for a decision to issue a water appropriation permit are set forth in Minn. Stat. § 103G and Minn. R. 6115. Based on the information provided in this EAW, the aquifer test, and any additional information submitted during the permitting process, the DNR will determine whether the plans of the applicant are reasonable, practical, and will adequately protect public safety and promote the public welfare and whether the permit application meets applicable sustainability requirements as required by Minnesota law. If necessary to assure that a permit meets the requirements of state law and that any proper mitigation is undertaken by a permit holder, a permit may be conditioned to require both monitoring and remedial action. Minn. Stat. § 103G.315, subd. 6(b) and 11(a)(1). Failure to comply with these conditions may result in termination of a permit. At a minimum, based on preliminary analysis of the aquifer test and to

mitigate potential environmental impacts of the proposed Project, the following mitigation measures are recommended for inclusion as conditions in any permit issued for the Project:

- Aquifer thresholds should be established for the Deep Observation well (841474) and the threshold formalized as a condition for both the Project's Production and East Irrigation well permits (2017-4236 and 2017-4327, respectively).
- The Deep Observation well should be monitored using a data logger. This monitoring should be formalized as a monitoring condition for permits 2017-4236 and 2017-4237 and the data should be used to further condition the permit as necessary.
- The proposed irrigation wells should alternate pumping (wells should not pump at the same time) to mitigate risk to nearby domestic wells. If wells are allowed to pump at the same time, there is a potential for well interference to nearby domestic wells.
- Conditions to require the lowering of the pump intakes at the following domestic wells to minimize risk from single production well pumping based on ongoing monitoring:
    - Nolte (714382)
    - Roggenkamf (552894)
    - Pickar (123614)
    - Rucks (727163)
- Well construction information for the eleven domestic wells for which there is no information should be collected by the permittee and provided to DNR for appropriate resolution.
- Both a Redeye River August median base flow estimate and a stream depletion estimate from pumping irrigation well #805421 should be obtained prior to issuing a long-term appropriation permit. The impacts to the Redeye River from pumping the proposed irrigation wells can then be evaluated more completely and appropriate permit conditions should be included to minimize surface water impacts.
- An aquifer test or use-season test, designed by DNR, should be completed on the Northwest Irrigation well. The results from this test should be used to evaluate pumping impacts on nearby wetlands and the Redeye River and to verify the risk to domestic wells.
- Monitoring of the Deep (841474) and Shallow (841475) Observation wells near the Production well (805421) should be conducted to determine the specific impact to nearby domestic wells from the proposed irrigation. The data collected from this monitoring should be used to determine if permit revisions are needed to reduce volumes or rates of pumping, require additional monitoring, or to trigger other measures such as cancelation of the permit if the water use is determined to not be sustainable.

Additionally, as new information becomes available any permits should be amended to include new conditions or terminated if they fail to continue to meet the requirements of state law including environmental protections. Minn. Stat. § 103G.315, subd. 11. Finally, in addition to the regulatory controls afforded in the water appropriation permitting process, Minn. Stat. § 103G.315, subd. 11(b) provides that the commissioner may cancel a water appropriation permit used for agricultural irrigation upon the recommendation of the supervisors of the local Soil and Water Conservation District (SWCD).

Ground Water Sustainability. Some of the comments request an aquifer test to address the sustainability and safe yield requirements of Minn. Stat. § 103G.287, subp. 5 and Minn. R. 6115.0630, subp. 16.

Since publication of the EAW on April 6, 2020 an aquifer test has been completed and analyzed by the DNR. The aquifer test results indicate that the surficial and lower aquifers are connected, so impacts to one aquifer have the potential to influence the other. Aquifers are generally able to produce reliable water volumes in this part of Minnesota, so there is not a concern about breaching safe yield due to the Project's proposed water appropriation. If, however, safe yield becomes a concern, those impacts can be mitigated through the permitting process. *See* Minn. R. 4410.1700, subp. 7 (in determining whether a project has the potential for significant environmental the RGU shall consider the extent to which those impacts are subject to mitigation as a result of ongoing government regulation).

Minnesota statute and rules provide an extensive regulatory framework for addressing the concerns raised by the commenters. Minnesota Statute § 103G.287, subd. 5, requires the DNR to determine whether "groundwater use is sustainable to supply the needs of future generations and the proposed use will not harm ecosystems, degrade water, or reduce water levels beyond the reach of public water supply and private domestic wells." One measure of groundwater sustainability applied by the DNR is the safe yield for artesian aquifers. DNR defines the safe yield for an artesian aquifer as "the amount of groundwater that can be withdrawn from an aquifer system without degrading the quality of water in the aquifer and without the progressive decline in water pressures and levels to a degree which will result in a change from artesian condition to water table condition." Minn. R. 6115.0630, subp. 16. If water appropriations draw an aquifer system below this level, DNR considers it unsustainable because it undermines the state's ability to assure water for future generations. Likewise, if waters fall below this level they are more likely to affect surface water bodies in a manner that will harm ecosystems and degrade water in violation of the state's sustainability standard. Minnesota Rule 4410.1700, subp. 7 permits the RGU, in determining whether a project has the potential for significant environmental impacts, to consider the extent to which those impacts are subject to mitigation as a result of ongoing government regulation. Minnesota statute and rules provide an extensive regulatory framework for addressing the concerns raised by the commenters in the water appropriation permitting process. As discussed above, the state has a robust regulatory program for considering groundwater appropriation permit applications and the authority to condition, amend and terminate water appropriation permits. This regulatory system is used by the agency to assure that newly issued and amended groundwater appropriation permits comply with the sustainability standard for water appropriations.

The potential for and degree of effects on the Redeye River and/or nearby wetlands from pumping the northwest irrigation well cannot be determined without additional information on river flow and the connectivity of the wetland hydrology to the aquifer proposed for use by the Project. Assessment of potential effects to the Redeye River can be estimated using available data (1972 USGS Hydrologic Atlas 380 - Water resources of the Crow Wing River watershed, central Minnesota). River flow data from this report has been reviewed by DNR hydrogeologists and this review has indicated that the potential for impact to the Redeye River is moderate. Collection of additional data to verify DNR's review should be accomplished by requiring another aquifer test during consideration of the permit application or by requiring a use test in conjunction with

evaluation of the August median base flow for the River. Alternatively, the permitting staff should consider issuance of a permit for a one year duration, require collection of the additional data as a permit condition, and then use this data to refine permit conditions, as needed, to protect surface water bodies and assure groundwater sustainability. These conditions should include modifications such as reduced pumping volumes, reduced pumping rates, relocation of pumping wells, or adoption of a pumping schedule to mitigate impacts. *See* Minn. Stat. § 103G.315, subds. 5 and 11.

Another manner in which Minnesota assures groundwater sustainability is through the water allocation priorities set forth in Minn. Stat. § 103G.261. Under the statutory scheme, domestic water supply has been designated as the highest priority water use by the Minnesota legislature. This means that if agricultural water use conflicts with domestic water supply, the domestic water supply must be ranked higher and given preferential access to water over agricultural use. *See Crookston Cattle Co. v. DNR,* 300 N.W. 2d 769,775 (Minn. 1980)(holding that water is allocated according to priority and lower priority users cannot be provided water to the detriment of higher priority users). There is insufficient data to determine whether the proposed Project, if authorized, would interfere with wells providing domestic water supply. In such situations monitoring requirements are included as conditions on a permit to help determine if there is interference with wells providing domestic water supply. If well interference is identified, appropriate steps must be taken to assure that domestic well owners and public water suppliers have access to water. *See* Minn. R. 6115.0730 (setting forth process to resolve water conflicts). In addition, Minn. Stat. § 103G.315, subd. 5 and 11 authorizes the DNR to reopen permits to impose any necessary conditions to assure that the requirements of state law, including sustainability and water priority provisions, continue to be met. Alternatively, these same provisions authorize the DNR to terminate a water appropriation permit for, among other reasons, failure to comply with state law.

Based on DNR's analysis of the aquifer test for the proposed Project and the ongoing regulatory controls that allow the inclusion of conditions in a permit, the DNR has concluded that any potential adverse effects of the Project on the groundwater system, ongoing groundwater sustainability, surface water bodies, and adjoining wells and appropriators can be mitigated with regulatory controls.[1]

23. Cover types and land use. Seven commenters expressed opposing concerns related to cover types, land conversion, and potential impacts. Some commenters asserted that land cover conversions are not a problem, not as widespread as described in the EAW, and that the agricultural community is being unfairly targeted. Other commenters expressed concerns that the land cover description was inaccurate or misleading, that the land conversion trend from pine forest to agriculture creates adverse environmental impacts, including increased groundwater contamination, and that the evaluation should have considered

[1] The DNR is aware that pumping water for aquifer tests does not go directly to a beneficial use. However, aquifer tests are required if the technical review identifies uncertainty or concerns about water sustainability, potential water use conflicts, or potential negative water quantity impacts to surface waters.

historic and forecasted trends. One commenter said that information was needed to assess the compatibility of the proposed Project with the Wadena County Local Water Resource Management Plan. *See* ROD Attachment A.

Response: The project description included, in part, the following description of land cover at the project site:

> Mr. Timothy Nolte (the proposer), is proposing to convert 303 acres of previously, privately owned and managed commercial timberland and agricultural land (dryland crops and grazing) to irrigated agriculture land use for crop production and livestock grazing. Between approximately 2014 and 2018, much of the timber in the proposed project area was harvested to its current land cover (165 acres of cropland, 132 acres of brush/grassland and 6 acres of wooded/forest). The proposed land use includes 303 acres of irrigated land for hay production, forage for cattle grazing, and periodic row crop production with pre-plant and after-harvest livestock grazing. To prepare the land, the remaining six acres of timber, resulting stumps and undergrowth from previous timberland management activities would be removed.

Land conversion from commercial timber to agricultural land use has already occurred on the majority of the project area with six acres remaining that still have standing woods/forest.

Some commenters seem to question the statement in the EAW that the "before" development cover type consists of 132 acres of brushland and 165 acres of cropland. Instead they assert that the "before" cover type should be listed as forested pineland. It is true this acreage does not reflect the forested pine and brush cover type that existed on this property prior to 2014. The primary conversion (timber clearing) occurred several years before the proposer acquired the property.

The description of site's land use, as well as that of adjacent lands, is predominantly dryland crop production, forage for livestock grazing, and conventional silviculture (the growing and cultivation of trees). These lands also include wetlands, shallow marsh, shrublands, and a portion of the Redeye River. It is correct that row crop agriculture may be less prevalent than other parts of Wadena County but this description still accurately describes this site and some of the adjacent land use.

Some commenters asserted that the EAW improperly suggested there is a potential for future massive expansion of irrigation in Wadena County. These comments are incorrect. The commenter's assertions about a trend of decreases in irrigated agriculture is inconsistent with DNR's own data on recent water appropriation requests in the Pineland Sands Area. DNR has documented an unprecedented number of requests for new water appropriation permits for irrigated crop production on existing non-irrigated, hayland and pasture cropland, as well as on previously-forested parcels.

DNR's Forestry Resource Assessment program collects information on changes in forest cover type. The forest disturbances identified as part of these changes could be the result of any number of activities including both timber harvest and land use changes involving the conversion of forestlands to other uses. There have been approximately 69,000 acres (or approximately 10.8%)

of forest disturbances documented in the Pineland Sands Area from 2000 to 2016. *See* 2019 Pineland Sands Nolte/Offutt Water Appropriations Record of Decision, ¶54.

Conversely, a number of commenters expressed concern about the large scale conversion of pine forest to agriculture across the Pineland Sands and associated environmental effects, including groundwater contamination. The Pineland Sands and surrounding area is a large regional area where, as noted above, the conversion of forested areas to irrigated agriculture is occurring. DNR recognizes that the cumulative nature of the conversion of lands in this area is not conducive to a project specific assessment and needs to be considered and addressed at a broader scale. This perspective was the basis for the DNR's proposed Pineland Sands Area Special Study in 2016. Although there have been efforts to secure the needed funding for this broader study, no funding has been secured. The DNR still believes there is a need for a broader study. The type of analysis needed to address this issue is more appropriate for a broad based study rather than a project specific EIS. *See* EAW Attachment E.

Information on the compatibility of the Project with local land use plans was requested by one commenter. Specific to Comment 87e, the Wadena County Soil and Water Conservation District has approved an irrigation conservation plan with specific best management practices for soil and water health including irrigation, nutrient and water quality management. These practices include water conservation measures, tillage and farming practice including cover crops and soil health. The County Water Plan provides many of the same practices outlined in the irrigation conservation plan. The DNR Water Appropriation Permit, if granted, would consider if the Project complies with the County Water Plan and any other local plans.

24. Cumulative potential effects. Commenters shared additional distinctions and recommendations related to the CPE of the proposed Project. Specific to the groundwater CPE scope, some of the commenters assert that the EAW used an overly narrow geographic scope and that the analysis should have included baseline nitrate levels from manure application over the greater Pineland Sands area.

    More generally, other commenters agreed that based on the geographic area and timeline for the proposed Project, the overall cumulative nature of CPE to surface water from the proposed Project are expected to contribute minimally to any contamination of surface water, *if all recommendations included in the EAW are followed and no unexpected conditions occur* [emphasis added]. Additionally, commenters noted that though the likelihood of significant contamination is low, the potential is substantially greater than it was under historic land use conditions.

    Specific to wildlife and habitat CPE, one commenter stated that some pesticide impacts are felt beyond the application area and have the potential to impact pollinators. Another commenter expressed concern related to greenhouse gas emissions. *See* ROD Attachment A.

    Response: The EAW evaluated the Project's CPE in EAW Item 19. CPE is defined in Minn. R. 4410.0200, Subp. 11a as:

    > "…the effect on the environment that results from the incremental effects of a project in addition to other projects *in the environmentally relevant area* that might reasonably be expected to affect the same environmental resources, including future projects actually planned *or for which a basis of expectation has been laid,*

regardless of what person undertakes the other projects or what jurisdictions have authority over the projects..." (*Emphasis added)*

DNR does not believe the groundwater geographic scope boundary was overly narrow. As explained in EAW Items 10a and 19a, the Pineland Sands aquifer extends across a significant geographic area and the flow of groundwater is variable across the aquifer. The groundwater CPE boundary was selected by analyzing the groundwater flow in the vicinity of the proposed Project to determine the entire geographic area in which the proposer's operation (in combination with other uses) could plausibly (albeit conservatively) have an effect on groundwater quality. This became the geographic scope for the groundwater CPE assessment. In reaching its determination of the geographic boundary of the area that could be affected by the proposed Project (project area) DNR considered soils data, groundwater flow directions, and surface water features. The DNR considered whether a larger boundary would be appropriate and found that a larger boundary for the groundwater CPE assessment was not supported by the data.

The DNR concluded that the geographic scope or the environmentally relevant area for groundwater and surface water quality impacts (related to manure/nitrogen loss impacts) in which the Project is expected to contribute is smaller than the Pineland Sands Area. The proposed Project is not expected to contribute to potential impacts in the entire Pinelands Sands Aquifer area; therefore, it is not appropriate to consider the incremental effects of the proposed Project in combination with all feedlots in the Pineland Sands Area.

Within the geographic scope for groundwater and surface water, the proposed Project is expected to have a minimal contribution to CPE due to the nature and location of their operation and the proposed mitigation. The Project proposer is proposing to integrate cattle in his row crop production as a mechanism to mitigate the adverse environmental impact of row group production. Because the introduction of cattle on this landscape is intended to mitigate the adverse environmental impacts of row crop production best practices requires that the project Proposer not confine his cattle as is typical with feedlots; rather, the cattle will be pastured. In general, the integration of livestock into the landscape (cattle grazing cropland) is one of the Natural Resources Conservation Service's (NRCS's) five principles of soil health, intended to improve soil quality. The benefits of this practice can include reduced nutrient export from the field, reduced herbicide use, and the ability to better manage water quality and nutrient management concerns associated with livestock confinement. For more information please refer to the United States Department of Agriculture (USDA) Natural Resources Conservation Service Soil Health webpage.

Regarding the surface water geographic scope, DNR agrees with the commenter's addition of "*if all recommendations included in the EAW are followed and no unexpected conditions occur.*"

The geographic scope for visual impacts and wildlife and habitat impacts was conducted in a manner that is not species-specific. Impacts to pollinators are addressed in EAW Items 12c, 13c, 16c, and 19. Individual impacts to aesthetics and habitat from the Project will be limited removal of six acres of trees and shrubs. This amount of impact within the geographic scope of visual and habitat impacts is very small. Any impacts are expected to be localized such that it is not anticipated that these environmental effects have any potential to overlap or accumulate.

Overall, the contribution to greenhouse gases (GHGs) emissions or loss of carbon storage from the Project would be minimal in comparison with other greenhouse gas sources in the region or the State. Six acres of jack pine in Minnesota stores about 427.5 metric tons of carbon (or 1567.6 metric tons carbon dioxide equivalent); of which, 134.1 metric tons carbon (491.9 metric tons CO2 equivalent) from tree removal would be lost pretty quickly (USDA, 2020). Soil carbon will not be lost entirely (only a small amount will be lost initially with the disturbance). The disturbed soil will slowly degrade and lose carbon over time if regrowth or other soil management does not occur. Thus, the carbon soil loss is not associated with the full conversion, but with leaving the site fallow. For more information please refer to the USDA Forest Service, Forest Inventory and Analysis Program, Thu Jun 04 20:42:59 GMT 2020. Forest Inventory EVALIDator web-application Version 1.8.0.01. St. Paul, MN: U.S. Department of Agriculture, Forest Service, Northern Research Station. This is available only via internet.

The exchange of the GHGs--carbon dioxide (CO2), nitrous oxide (N2O), and methane (CH4)--constitute the net global warming potential (GWP) of a crop production system (Robertson et. al, 2000). A cropping system that increases the production of the CO2, N2O, and CH4 gases released to the atmosphere has a larger net global warming potential (GWP). The Project proposes incorporating irrigation and no-till practices that tend to reduce the GWP attributed to cropping. Carbon accrual rates in soil (carbon sequestration) are higher for irrigated land with a higher amount of atmospheric C02 captured by plants as biomass that is later decomposed to organic matter (humus) incorporated into the soil. Irrigation cropping systems have up to three times the capacity to sequester organic carbon in soils as compared to common crop production practices (conventional tillage on rainfed lands). The GWP of an irrigated farming operation is reduced because of the reduced CO2 released to the atmosphere (Mosier et al, 2005).

No Till soil management increases the rate of carbon sequestration in soils (Grassini and Cassman, 2012; Halvorson et al, 2008; Mosier et al, 2006). The Project proposer is planning to use irrigation and No Till soil management in tandem on the agricultural fields within the Project area. The Project proposer is proposing to use a four- to five-year crop rotation, regular seasonal irrigation, and No Till intercropping of perennial grasses or legumes on the second, third, and possibly fourth year. The grass or legume rotation is No Till and the first and fourth or fifth year are planned row cropping rotations (corn, potatoes, or edible beans) also potentially no till rotations. The extra moisture from irrigation and the No Till soil management will collectively contribute to increasing the storage of atmospheric CO2.

Crop management also affects the rate of nitrous oxide release. Irrigation studies in Nebraska indicate the largest sources of GWP is soil N2O emissions associated with applied Nitrogen (N) fertilizer (34%), fuel use for irrigation (29%), manufacture and transportation of N fertilizer (17%), and fuel use for drying grain and field operations (13%). The proposition that N losses from applied fertilizer tend to be small when the N supply is balanced by crop uptake is scientifically robust and supported by published data (Grassini and Cassman, 2012). The energy used for irrigation was the dominant GWP source in the irrigated system but the effect from increased yield remained positive with the improved capability to sequester carbon under irrigation managed crop systems (Mosier et al, 2005).

Typically, agricultural soils are minor emitters of CH4 and generally small sinks for atmospheric CH4. Therefore methane is of less importance in the GWP equation for farmland management (Mosier et al, 2006). However, a large amount of methane is collectively emitted from livestock

production worldwide (Grossi et al, 2019). The proposer operates under similar animal husbandry conditions as many other cow-calf operations and their livestock produce similar CH4 emissions as operations proportionate to their herd size. The Project does not include an increase in cattle. The Project proposer intends to allow existing cattle to the fields within the Project area.

A Michigan study concluded that when appropriate crop production levels are achieved, net CO2 emissions are reduced. Economic viability of a farming operation and environmental conservation can be achieved by minimizing tillage and using appropriate levels of fertilizer (Halvorson et al, 2008). Irrigation systems achieve a larger positive energy balance, as measured in higher yields, while compensating for the negative effects of increased energy inputs of pumping, N fertilizer use, and operations. Even with the increased fossil fuel inputs from embodied energy in N fertilizer and from fuel use for irrigation pumping, irrigated lands have proportionally greater productivity that offset the increased energy inputs. This translates to a reduction in GWP when compared to conventional rain-fed cropping system (Mosier et al, 2006). Soils managed under conventional rainfed cropping systems are a source for CO2 while irrigated soils are a sink that reduces C02 production. With the increased productivity from irrigated lands, the improved sequestration of carbon under no till operations, perennial grass/legume rotations, and the proper application of N fertilizer, the GWP of the Nolte Farm operation compares favorably with other farming operations in Minnesota. For more information please refer to:

Grassini, P., and K. G. Cassman. 2012. High-yield maize with large net energy yield and small global warming intensity. Proceedings of the National Academy of Sciences. 109:4 1074-1079.

Grossi, G., P. Goglio, A. Vitali, and A. G. Williams. 2019. Livestock and climate change: impact of livestock on climate and mitigation strategies. Animal Frontiers 9:1 69-76.

Halvorson, A. D., S. J. Del Grosso, and C. A. Reule. 2008. Nitrogen, tillage, and crop rotation effects on nitrous oxide emissions from irrigated cropping systems. Journal of Environmental Quality 38:5 1337-1344.

Mosier, A. R., A. D. Halvorson, G.A. Peterson, G.P. Robertson, and L. Sherrod. 2005. Measurement of net global warming potential in three agroecosystems. Nutrient Cycling in Agroecosystems 72: 67-76.

Mosier, A. R., A. D. Halvorson, C. A. Reule and X. J. Liu. 2006. Net global warming potential and greenhouse gas intensity in irrigated cropping systems in northeastern Colorado. Journal of Environmental Quality 35:4 1584-1598.

Robertson, G. P., E. A. Paul, and R. R. Harwood. 2000. Greenhouse gases in intensive agriculture: contributions of individual gases to the radiative forces of the atmosphere. Science 289: 1922-1925.

Robertson, G. P., and P. R. Grace. 2004 (updated March 2016). Greenhouse gas fluxes in tropical and temperate agriculture: the need for a full-cost accounting of global warming potentials. Environment, Development and Sustainability 6: 51–63.

Minnesota has not developed a formal threshold for determining what constitutes a significant GHG emissions. Minnesota Rule 4410.4300, subp. 15.B. identifies a threshold of 100,000 tons per year of GHG from a stationary source as an amount that would warrant further evaluation to determine significance. Emissions from the proposed Project would be well below this amount of GHG.

25. EIS need. Several comment letters addressed the need for an EIS, arguing an EIS should be prepared for the proposed Project. A few of these commenters cited general land use and water quality concerns over the greater Pineland Sands Area and requested that a broader EIS be prepared, perhaps at a regional scale or on the Pineland Sands Area. Other commenters were more specific, stating the information presented in the EAW indicated the need for an EIS for the proposed Project. One commenter asserted that a mandatory EIS should be required because the proposed Project is a connected and/or phased action of other RDO projects. This commenter relied on Minn. R. 4410.2000, subp. 4 (Connected or Phased actions). One commenter requested a contested case hearing on the permit. *See* ROD Attachment A.

    Response: Regional environmental concerns over the broader Pineland Sands region, such as water quality and land use changes, are fully and adequately described in EAW Items 9, 10 and Attachment E. A broader/regional EIS could be possible with a Generic EIS (GEIS) or special study conducted by the EQB (the entity that oversees Minnesota Environmental Review). This perspective was the basis for the DNR's legislative proposal in 2016 for a Pineland Sands Area Special Study. Although there have been efforts to secure the needed funding for this broader study, no funding has been secured. The DNR continues to recognize the need for this broader study but environmental review of any single project does not provide an adequate mechanism to reach broader region-wide concerns. *See* EAW Attachment E. The size of the Pineland Sands area combined with the number of different actions that can contribute to environmental effects in the area make it difficult for project specific review to substantively gather the needed information and develop recommendations that can be applied broadly across the region.

    Since the concerns in the Pineland Sands Area involve surface water, groundwater, agriculture, land use, land cover conversion, water quality and water appropriation, across 770 square miles and four counties, such an effort would be cross-jurisdictional involving the jurisdiction of multiple counties and state agencies. It is not even clear that the DNR is or would be the appropriate RGU for such an effort. A comprehensive multi-agency, coordinated effort is needed to ensure protection of public health and the environment in this geologically vulnerable region.

    This EAW was conducted in response to a Citizen's Petition to perform environmental review on potential cumulative effects of a single project, the Nolte Family Irrigation Project, on the Pineland Sands area. The Nolte's have represented that they have no agreement to grow potatoes for RDO and that they have no agreement to lease the land to RDO to grow potatoes on this land. If such an agreement existed the proposed Project would have to be analyzed as a phased or connected action. As it stands, without such a connection to RDO or other proposed projects, the DNR has no legal basis to view the Project as a phased or connected action. Minnesota Rules 4410.1000, subp. 9c, defines connected action as:

        Two projects are connected actions if a responsible governmental unit determines they are related in any of the following ways:
        "A. one project would directly induce the other;

B. one project is a prerequisite for the other and the prerequisite project is not justified by itself; or
C. neither project is justified by itself."

The proposed Project does not meet the criteria for a connected action. RDO operations are not inducing the Proposer to farm their fields. The existence of RDO in the region has not induced the Proposer to engage in farming – the Proposer has been cattle farming in this region of the state for several decades. Finally, the fact that the Proposer can farm this field and sell the resulting produce in the open market is an independent justification of this project notwithstanding the existence of RDO.

In addition, the proposed Project does not meet the definition of a phased action in relation to any of RDO's or any other agricultural operations in the area. Minnesota Rule 4410.1000 defines phased actions as an action being proposed by the same proposer. Information provided by the Project proposer has indicated that there is no existing agreement with RDO to conduct agricultural practices on the 303 acres that is the subject of the EAW. Any relationship of environmental effects from the proposed Project and agricultural operations from other entities are properly addressed as part of CPE. Environmental review is conducted on a proposed project and a decision about whether to prepare an EIS is based on what is known at the time of environmental review and cannot be premised on idle unsupported speculation. *Iron Rangers for Responsible Ridge Action v. IRRRB,* 531 N.W. 2d 874, 881 (Minn. Ct. App. 1995) (holding an RGU cannot be compelled to prepare an EIS based on speculative data).

A decision about whether to conduct a contested case hearing on the DNR's permitting decision is premature. Minnesota Statute § 103G.311, subd. 5 outlines when, how, and under what conditions a contested case hearing is granted on a water appropriation permit application. Any request for a contested case hearing must be raised through that process following a final decision by the DNR. The environmental review process is not the proper forum in which to request such a contested case hearing. The purpose of environmental review is to inform permit decision making. Environmental review is not the forum in which permit decisions (including whether to grant or deny a hearing) are made.

26. Geology and soil. Some commenters asserted that the geology and soil description in EAW Item 10 was inadequate, inaccurate, and/or inappropriately described and provided their professional/personal opinion of relevant information for consideration. Other commenters expressed general or vague concerns about environmental effects of farming on sandy soils that are vulnerable to leaching.

Response: Minnesota Statute § 116D.04, subd. 1a(c) defines an EAW as a brief document that is designed to set out the basic facts necessary to determine whether an EIS is required for a proposed action. An EAW is not used to initiate or complete studies. In this instance, the DNR used information available at the time of the EAW preparation, including, but not limited to numerous USGS reports on regional hydrogeologic assessment, surficial hydrogeology documentation, a groundwater appraisal, and data on groundwater availability. The EAW does identify that the Project is located in an area that has limitations for nutrients and other activities that could lead to leaching contaminants into the groundwater. Further citation and explanation of this factor was not necessary or warranted in the EAW. However, all risk and severity of all environmental effects from the soil limitations have been assessed and identified.

The Nutrient Management Standard (Practice Standard 590) from USDA NRCS was used to inform the EAW. This standard is widely used in Minnesota. It specifies the long-term annual relative nitrogen loss potential by soil type, nitrogen management practice, and region in the State (NRCS 2007). Based on this data the potential nitrogen loss is ranked as very high, high, moderate or low by soil type. The soils of the project area are considered coarse textured soils (NRCS 2007, 2020), which are predicted to have a high to very high nitrogen loss potential. Advanced nutrient management, of the type that the Project proposer will engage, reduces the nitrogen loss potential for this soil type to moderate or low (NRCS 2007). For more information please refer to:

NRCS. 2007. Nutrient Management, Conservation Practice Standard 590. Natural Resources Conservation Service, United States Department of Agriculture. 12 pp.

NRCS. 2020. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Online: http://websoilsurvey.sc.egov.usda.gov/. Last Accessed [05/18/2020].

27. Health impacts. Several commenters are concerned about potential health impacts, including cancer, related to pesticide and fertilizer use on the Project site. One commenter expressed concerns about pesticide drift and questioned the structure counts and distances in the EAW. Another commenter asserted that information about the extent and types of chemical inputs are needed. Yet another commenter stated that that no agency has discussed the issues regarding chemical exposure from RDO or other potato producers. *See* ROD Attachment A.

Response: In Minnesota, there are no pesticide notification laws with the exception of notification of pesticides used in/around schools.

The commenter's enclosed email communications mention two fungicides commonly used on potatoes that the commenter claims are of specific concern: mancozeb (Parkinson's disease) and chlorothalonil (cancer). At the federal level, the U.S. Environmental Protection Agency (USEPA) is the federal agency responsible for comprehensively addressing human exposure to pesticides and associated risks through its regulatory programs. At the state level, the MDA is the lead state agency responsible for pesticide environmental and regulatory functions. In this role, the MDA collaborates with the USEPA, U.S. Department of Agriculture (USDA), University of Minnesota (UMN) Extension Service, MPCA, MDH, and others to implement federal and state pesticide laws. Minnesota Statutes Chapter 17 and Minn. R. Chapter 1505 are the relevant laws and rules for regulating pesticides in Minnesota.

The commenter included data comparing overall Wadena County cancer rates to Minnesota rates and noted that for all cancer types combined category Wadena County cancer rates exceed Minnesota rates. In response to community concerns about the use of pesticides in the area, MDH recently evaluated cancer rates and other health outcomes for the counties in the Central Sands region in a 2018 Community Health Profile. None of the Central Sands counties had a significantly higher or lower all-cancer rate as compared to the state (2009-2013). Wadena County did have statistically significantly higher colorectal cancer and non-Hodgkin's lymphoma rates than the state rates but these cancers are not associated with the use of pesticides. For more information please refer to the Minnesota Department of Health Central Sands Community Health Profile webpage.

One commenter submitted emails that describe a pesticide misuse event that occurred in Wadena County. It appears from the enclosed email correspondence that the MDA has already responded with an investigation and took enforcement action.

DNR recognizes that off-target air movement of pesticides can present risks to humans and the environment. Pesticides of particular concern to the commenter for inhalation exposure include chlorothalonil, chlorpyrifos, and Telone®. EPA is the federal agency responsible for addressing this route of exposure and associated risk through its regulatory programs. MDA and MDH reviewed the most recent bystander risk assessments conducted by EPA for chlorpyrifos (2014) and Telone (2019). No unacceptable bystander inhalation risks were identified by EPA based on currently labeled uses and established buffers. An updated risk assessment for chlorothalonil, including bystander inhalation risks, is scheduled to be released by EPA during federal fiscal year 2020. For more information, please refer to the United State Environmental Protection Agency pesticide registration webpage.

DNR agrees with the commenter that this EAW is of limited scope (the proposed Project) and not appropriate or sufficient for tracking, monitoring, and addressing larger-scale regional human health impacts related to expansion of irrigated agriculture in the Pineland Sands and surrounding area. A comprehensive multi-agency, coordinated effort is needed to ensure protection of public health and the environment in this geologically vulnerable region.

28. Mitigation sufficiency. Several comments were received related to the sufficiency of the proposed mitigation. Many specifically mentioned enforceability concerns with the Minnesota Agricultural Water Quality Certification Program (MAWQCP) and/or Best Management Practices (BMPs). Other comments included assertions that the Byron Township Study shows that BMPs are ineffective at protecting groundwater from contamination. One commenter mentioned other programs and monitoring provided by MDA and MDH. Conversely, some commenters provided many areas of agreement and satisfaction with the proposer's mitigation measures. Two commenters noted that the conservation plan developed by the Wadena SWCD is no longer pending because it was completed. *See* ROD Attachment A.

    Response: The purpose of an EAW is to disclose potential impacts of a proposed project to determine whether an EIS is warranted. In the course of this analysis the DNR also reviews any proposed mitigation and the mechanisms to assure that mitigation is reasonably certain to occur to determine whether the proposed mitigation reduces the potential environmental effects of a project. This analysis is undertaken in accordance with Minn. R. 4410.1700, subp. 7.

    The Timothy Nolte MAWQCP certification, which was advanced as a mitigation measure, includes the entire 303 acre project site. MAWQCP certification is established by contract between the certified entity and the State of Minnesota. Under the terms of the contract with the State of Minnesota, the MAWQCP-certified entities agree to perform the management practices on all parcels as committed to in Exhibit A of the MAWQCP contract. Should management practices on certified parcels change, the entity must obtain assessment and certification of the new practices or be subject to breach of contract. If the contract is breached the MDA may recover reimbursement of any monetary benefit the producer may have received as a result of being a MAWQCP-certified farm. The contract may not be assigned nor may the certified member transfer contract rights, benefits, or obligations to any third party. Because the contract is a legally binding mechanism the breach of which results in financial detriment to the MAWQCP farm the DNR

considered the certification as a mitigation measure reasonably certain to occur and considered the mitigation measures contained therein in the EAW process.

Nitrate concentrations measured below those reported in the Byron study have been observed following the implementation of best management practices. While some nitrogen loss has been observed below the crop root zone at the Byron study it is important to note that zero nitrogen loss below the root zone in any row crop production system is not attainable. The Byron study provides some general reference regarding nitrogen concentration reductions that might be observed under similar fields. The behavior of nitrogen in the environment is, however, governed by a complex set of interrelated chemical and biological transformations including nitrogen inputs, pools, pathways, and losses to the environment. The Byron study provides important information that assists us to better understand cropping and nitrogen management practices that can minimize the loss of nitrogen below a crop root zone.

Pesticide products are thoroughly assessed and evaluated through a scientific process by the USEPA as a condition of registration. The USEPA evaluates and approves the language that appears on each pesticide label to ensure the directions for use and safety measures are appropriate to any potential risk. The MDA's water quality BMPs adopted by the Project proposer go beyond the label requirements and are designed to prevent and minimize the degradation of Minnesota's water resources while considering economic factors, technical feasibility, effectiveness, and environmental effects, as directed in Minn. Stat. § 103H.005, Subd. 4. The BMPs are based on science and are subject to a formal public science review process.

It is correct that Wadena County SWCD has completed an irrigation conservation plan for this Project, dated November 14, 2019. The plan includes soil and water management options and recommendations. A copy of plan is included in the EAW administrative record.

29. Relationship of proposed Project to the RDO. Several commenters assert that this is an RDO project and that past and/or future RDO projects should be included in the EAW and assessment. *See* ROD Attachment A.

Response: In the August 29, 2019 Pineland Sands Nolte/Offutt Water Appropriations Record of Decision, DNR concluded that the RDO Project water appropriation amendment requests for establishing cover crops (2013-0878, 2013-0879, 2013-0880, and 2013-0881) do not have the potential for significant environmental effects in response to a Citizen's Petition dated April 10, 2019. This determination was based on the small increment of nitrate that could be released from establishing cover crops and that cover crops are a recognized management practice to increase soil health and reduce nitrate leaching into groundwater.

Information submitted with the Citizen's Petition, related to this EAW that is currently pending before the DNR, does not support the conclusion that the Project is in fact an RDO project. Nonetheless, the DNR requested that the Proposer provide DNR with any written agreement, lease agreement, or other documentation between RDO and the Proposer evidencing any promise or commitment on the part of the Proposer to permit RDO to farm the property or any agreement that would suggest a commitment on the part of the Proposer to farm for or exclusively sell potatoes to RDO. DNR was apprised that no such agreement or written documentation relating thereto exists. Absent such an agreement, DNR has no legal basis to assess the Proposer's Project as if it were an RDO project. Nor does DNR have any legal basis to reopen its August 29, 2019 decision regarding the Citizens Petition for environmental review of the 2019 RDO Project.

DNR does not simply select projects on which to conduct environmental review (EAWs or EISs); rather, environmental review is conducted under the circumstances outlined in Minn. R. 4410.1000 and 4410.1100. DNR cannot speculate on future lessees, nor does it analyze the CPE of speculative future projects. *Iron Rangers for Responsible Ridge Action v. IRRRB,* 531 N.W. 2d 874, 881 (Minn. Ct. App. 1995) (holding an RGU cannot be compelled to prepare an EIS based on speculative data). For a more detailed discussion of the issues of CPE, connected and phased actions see ¶¶24 through 25.

The process for determining future, reasonably foreseeable projects was outlined in EAW Item 19 and is summarized below in ¶35. The process did not identify any RDO permits within the environmentally relevant area; therefore, no RDO projects were included in the EAW analysis. DNR has received a Warranty Deed for the parcels included in the Nolte Project. These documents confirm that Tim and Rita Nolte own these parcels. RDO was the seller of the property and Mr. Nolte has confirmed that he has no side agreement with RDO either permitting RDO to farm the property or committing to sell produce raised on the property to RDO.

30. Straight River. One commenter expressed concern about groundwater discharge into the Straight River. *See* ROD Attachment A.

Response: The proposed Project's wells are in a different watershed that is not connected to the Straight River. The project site will not discharge to the Straight River.

31. Water quality. Several commenters expressed groundwater and surface water quality concerns. Some of the comments were general with respect to potential nitrate and pesticide contamination of nearby aquifers and domestic wells, surface water bodies and watersheds. One commenter asserted that groundwater contamination will be above the health risk limit within one to two years of row crop irrigation following land conversion, and that nutrient contamination will persist as long as annual crops are grown on the site. They stated that this would have a cumulative and irreversible impact on the groundwater. Another commenter asserted that the discussion of pesticides and their mitigation measures should have included baseline water quality from nearby wells and the proposed wells. They further claim that modeling should be completed.

Two commenters expressed location-specific groundwater quality concerns: one in the Ten Mile Lake Watershed and the other in Park Rapids. One commenter asserted that the EAW stormwater assessment is incomplete without assessing the water quality of the shallow groundwater recharge. Finally, several commenters questioned whether funding was actually available to mitigate Project contamination. Two commenters noted a typo that makes a statement in the EAW inaccurate. *See* ROD Attachment A.

Response: The scope of this EAW was the proposed Project and the environmentally relevant area (project area) examined for purposes as of the CPE analysis. The scope does not include the entirety of the surrounding regional area, the watershed, or other watersheds. DNR acknowledges the broad regional environmental concerns mentioned by many commenters in EAW Attachment E.

The geographic scope for assessment of CPE to groundwater quality was developed using available information. Numerous sources of regional groundwater water quality data were

reviewed and analyzed in prepare the EAW. A summary of the data that was used is identified in EAW Attachments E and F. Very few of the data points available for review are located within the geographic area set for considering the cumulative impact of this Project. The three irrigation wells referred to in this comment are within the geographic area set for groundwater quality analysis, however no existing water quality data from these wells is available. *See* EAW Attachment E. DNR's authority over water sustainability, found in Minn. Stat. § 103G.287, subd. 3, includes assuring long term water quality, but DNR does not retain sole or even primary jurisdiction over water quality in Minnesota. Jurisdictions over this issue is split between MDH, which is charged with safe drinking water quality, and the MPCA, which has primary jurisdiction over surface and groundwater quality more generally. MPCA also regulates wetland and stream contamination. *See* also comment and responses for Aquifer test/Groundwater at ¶22, Health Impacts at ¶27 and Mitigation Sufficiency at ¶28. The MDA also has jurisdictional authority over some water quality issues as it relates to nitrogen management and water contamination. All three of these agencies were consulted in preparing the EAW.

The MPCA has a groundwater network that is constructed as a sentinel system, which involves screening wells in near-surface sands to watch for the movement of contaminants into aquifers used for drinking water, irrigation, and other uses. There are five ambient observation wells located between four and fourteen miles of the Nolte proposed wells. The data for the two closest wells to the project area were reviewed for exceedances in chloride, nitrate, and phosphorus. MPCA staff has reviewed the data available near the Project and did not identify any contaminants of concern. In addition, MPCA has indicated that contaminated stormwater presents a low risk of contamination to the shallow groundwater recharge in this area. This assessment is based on topography and vegetation within and near the Project as well as the BMPs that are proposed as part of the MAWQCP Certification.

Additionally, MDA has recently completed a rule-making effort to protect groundwater from nitrate contamination. The Nolte Family Irrigation Project is subject to the requirements of this new groundwater protection rule.

While surface water-groundwater interaction was assessed as part of the aquifer test, the aquifer test is not a useful tool for assessing water quality impacts. The test does help inform our understanding of how ground water moves and the ability of contaminated ground waters to reach other wells distant from the contamination source. Aquifer tests can also shed light on the potential of contaminated water to leave surficial aquifers and move to lower aquifers. Given the number of variables involved in predicting groundwater quality in the environmentally relevant area, it is unlikely that a modeling exercise would produce definitive results that could be relied upon in decision making. An aquifer test was conducted for appropriation permit applications 2017-4235 (NW Irrigation well), 2017-4236 (Production well), and 2017-4237 (East Irrigation well) to evaluate the effects of high capacity pumping on nearby domestic wells, water resources, and the area aquifers. Results of the aquifer test indicate that the deeper Browerville Sand 3 aquifer is hydraulically connected to the shallower Browerville Sand 2 aquifers and that the water table aquifer is hydraulically connected to the Redeye River. The relatively small (303 acres) area of

potential nitrate application combined with the compliance to the MAWQCP certification indicate that the Project is not anticipated to significantly contribute to any increase in nitrate concentration in nearby wells or cause those wells to exceed the drinking water standard of 10mg/L.

DNR acknowledges the potential that nitrate and pesticide groundwater contamination could originate beneath the cropped project site and could migrate offsite into deeper aquifers and discharge to wetlands, streams, and the Redeye River. Broadly, contaminant transport and nitrate movement is hard to predict due to numerous variables, site differences and a high degree of uncertainty; models cannot predict this. Therefore, it is challenging to determine any measurable impact and CPE of a Project of this limited size. Larger, regional impacts are also challenging to assess because it is almost impossible to identify and quantify a pollutant source from a single operator. We know that the aquifers are connected, so impacts have the potential to transfer. However, the amount of contamination depends on many things, such as the amount of nitrate applied, the rate of nitrate application, hydrologic conditions (e.g., groundwater levels in each aquifer at the time of and after application), water column saturation, chemical conditions in soil (e.g., oxidizing and reducing conditions, bacteria presence), soil composition between point of application, and nitrate destination.

It is important to note that an expectation of zero nitrogen loss below any row crop production system is not attainable; however, the implementation of best management practices can minimize this loss. Water quality impacts can be managed through the MAWQCP, University of Minnesota fertilizer Best Management Practices and EPA fertilizer application guidelines. Through certification in the MAWQCP, the Project proposer contractually commits to operate the acreage for which the appropriation is requested using best management practices for nitrogen fertilizer and pesticides application to protect water quality.

With regard to pesticide mitigation measures to protect groundwater quality, the MDA has developed an extensive set of BMPs for pesticide use that minimize the risk to the environment. Through the MAWQCP certification that applies to these acres, the applicant has contractually committed to following these management practices.

Protecting the high quality of Ten Mile Lake is a state and local priority. Current threats to Ten Mile Lake include the potential of degrading water quality from surface water runoff associated with encroaching agricultural activities. There do not appear to be existing groundwater quality problems in the Ten Mile Subwatershed. The environmentally relevant geographic scopes for groundwater and surface water impacts associated with the Project do not intersect with the area around Ten Mile Lake or Park Rapids. Potential impacts from the proposed Project will not materially contribute to impacts in the Ten Mile Lake Watershed or in Park Rapids

The DNR notes the commenter's identified some EAW typos and clarifications, including the following typo that resulted in an incorrect statement based on the Red Eye River WRAPS Plan:

"Land conversion from forest to irrigated row crop agriculture has **not** been identified as a significant source of water quality concerns within the Redeye River Watershed."

The sentence should have read:

"Land conversion from forest to irrigated row crop agriculture **has** been identified as a significant source of water quality concerns within the Redeye River Watershed."

32. Wildlife and habitat. Two commenters expressed wildlife and habitat concerns; one disagreed with DNR's conclusion that endangered species would not be impacted by the proposed Project. Another believes that the proposed Project's land conversion will significantly impact wildlife and habitat by creating barriers to movement and edge effects. *See* ROD Attachment A

Response: On October 22, 2019, DNR Natural Heritage Information Services (NHIS) conducted a data search for endangered, threatened and special concern species within one-mile of the proposed site. The search found two species of special concern within one-mile of the proposed site, which is described in EAW Item 13b. Available data did not find any endangered or threatened species in the one-mile search radius. This doesn't dismiss the potential for impacts to endangered or threatened species; rather, it means that based on available data, there is no known occurrences of those species, therefore, it is unlikely that impacts to endangered or threatened species would occur within one-mile of the proposed site.

Following publication of the EAW, DNR received additional fencing details from the proposer. The boundaries of the electric fence would be along the outside perimeter of the irrigated circle of each parcel at the end of the reach of water discharge from the irrigation gun. The fencing would consist of two barbed-wire strands, with the bottom strand electrified and at a height of two feet above the ground and the top strand at a height of four feet from the ground. The northwest parcel fence would include four gates; the center parcel would include two gates; and the southeast parcel fence would include three gates.

EAW Item 12a recognized barriers to wildlife movement stating: "[t]he proposed Project is not expected to significantly impact wildlife in the area, but the permanent barbed wire fencing surrounding the project area and the portable electric fencing may alter their patterns of movement". The bottom-electrified, barbed-wire fence strand is unlikely to impact the movement of small wildlife, such as reptiles or small mammals; but, it could impact movement (e.g., entanglement) of larger wildlife, such as bears, wolves, and deer if they attempted to crawl below the wire. The proposer could use a smooth bottom fence strand and electrify the top strand, rather than the bottom strand, to minimize barriers to wildlife movement.

The three, circular fence plans will allow wildlife to move around the perimeter of the fence and between the parcels, which is less impactful over fencing the entire outer boundaries of the property. The proposer could also opt to leave open any gates not confining cattle, which would provide ingress/egress for wildlife and reduce the impact on wildlife movement.

The addition of forest-edge created by the Project would benefit some species (i.e., edge tolerant predators) and be detrimental to others (i.e., interior forest nesting birds). Removal of the remaining six acres of timber would not substantially increase edge effect impacts.

See also comments and response in ¶23 (cover types).

Record of Decision Preparation

33. Pursuant to Minn. R. 4410.1700, subp. 2b, the decision on the need for an EIS shall be made no later than 15 days after the close of the 30-day review period. This 15-day period shall be extended by the EQB chair by no more than 15 additional days upon request of the RGU. *See* Minn. R. 4410.1700, Subp. 2b.

34. On May 26, 2020 DNR requested a 15-day extension for making a decision on the need for an EIS for the proposed Project. On May 27, 2020, DNR was granted the extension by EQB. *See* Minn. R. 4410.1700, Subp. 2b.

Environmental Effects

35. Based upon the information contained in the EAW and received as public comments, the DNR has identified the following potential environmental effects associated with the Project:

    a. Cover Type Conversion/Land Use
    b. Geology and Soils
    c. Water Resources
    d. Contamination and Hazardous Materials
    e. Wildlife Resources and Habitat
    f. Air/Dust
    g. Noise
    h. Cumulative Potential Effects
        i. Groundwater
        ii. Surface Water
        iii. Visual, Habitat and Ecological Resources

    Each of these environmental effects is discussed in more detail below.

    a. Cover Type Conversion/Land Use: This topic was addressed in EAW Item(s) 7, 9, 11, 19 and cover type response to comment ¶23.

    Cover Type Conversion: Cover type reflects vegetation and land uses within the 303-acre Project site and includes approximately 6 acres of wooded/forest land, 132 acres of brush/grassland and 165 acres of land currently cultivated for agricultural production. The Project would include a net increase of approximately 138 acres of cropland, converting the 6 acres wood/forest and 132 acres of brush/grassland to cropland. All 303 acres would become irrigated agricultural cropland. The Project-related conversion of cover type to irrigated agricultural cropland is considered permanent.

    Land Use: The majority of land cover type in Wadena County is cultivated farmland, grassland and forested. The project site has been used for dryland crop production, forage for livestock grazing, and historically for commercial timber production. Adjacent land has historically been managed for commercial timber production for the forest industry, dry-land crop production, and livestock grazing. It includes wetlands, shallow marsh and shrubs, and a portion of the Redeye River. Small, private unpaved roadways are present between sections of cultivated forest. There is one parcel of county

tax forfeit land, but otherwise, there are no other public lands, parks, or trails adjacent to or near the proposed project area.

The project site is zoned by Wadena County for mixed agriculture and forestry (A-2) and shoreline overlay (S-1). Both zones allow for all agricultural land uses without a variance, conditional use or other permit. The proposed project area is not located within a floodplain, wild and scenic river corridor, critical area or agricultural preserve.

The proposed Project is compatible and consistent with the land uses, zoning, and management plans applicable to the defined project area as described in EAW Item 9.

b. Geology and Soils

Geology: This topic was addressed in EAW Item 10a and response to geology comment ¶26. The geology of the proposed project area is described as glacially deposited layers of sand and gravel separated by silt and clay layers. There are two aquifer systems in the geographic area of the Project. These aquifers are connected. The first aquifer is an unconfined aquifer referred to as the Pineland Sands surficial aquifer. The second aquifer is a system of buried confined sand aquifers. Based on the well construction logs for the three proposed irrigation wells, the wells appear to be in the confined buried sand aquifer. Potential environmental effects and proposed mitigation related to geology are discussed below in ¶35(c), (d) and (h) and in the geology and groundwater and water quality response to comments ¶¶22, 26 and 31.

Soils: This topic was addressed in EAW Item 10b. The project area is predominately flat with gentle slopes (0-8%). The major soil type around the project area is loamy sand. According to the NRCS, light soils such as this are considered highly erodible. The NRCS Web Soil Survey indicates that less than 2.5% of the 303-acre project area is sensitive to runoff. The majority of the soils have high nitrate leaching potential if manure or commercial fertilizer is applied and from mineralization of soil organic matter. The Wadena SWCD identified that increased sediment and high bacteria levels are the main concerns related to soil erosion.

The Wadena SWCD recommended mitigation measures that the Project proposer has agreed to in order to reduce the risk of erosion and nitrate leaching losses in the proposed project area, including a four- to- five-year cropping rotation (including a deep-rooted perennial crop), no-fall tillage, and cover crops. The Project proposer also intends to incorporate cattle grazing among the irrigated fields. The cattle would be fenced to preclude them from accessing the Redeye River.

The proposer has acquired certification by the MDA of its MAWQCP for the project area. This plan requires the proposer to implement nutrient management practices in a manner that is in accordance with University of Minnesota fertilizer Best Management Practices, including nitrates. Additionally, the Project is subject to Minnesota's Groundwater Protection Rule, which restricts the application of nitrogen fertilizer in the fall and on frozen soils in vulnerable groundwater areas. Because the proposer is certified through the MAWQCP, the Project would be deemed compliant with the Groundwater Protection Rule for the duration of their certification. Minn. R. 1573.0080.

c. Water Resources

i. **Groundwater**: This topic was discussed in EAW Items 10.a and 11.a.ii response to groundwater comment ¶¶22 and 31. Potential impacts of the proposed Project on groundwater quality include groundwater contamination from nutrient (fertilizer and pesticide) leaching.

Proposed mitigation for potential groundwater impacts from nutrient leaching include a four- to-five-year cropping rotation (including a deep-rooted perennial crop), no-fall tillage, and cover crops. The Project proposes to incorporate cattle grazing among the irrigated fields.

The proposer has acquired certification by MDA under the MAWQCP, which requires the proposer to follow University of Minnesota fertilizer Best Management Practices for a 10-year certification.

The MAWQCP certification also contractually commits the proposer to following Standard-level Integrated Pest Management criteria.

The Project is subject to Minnesota's Groundwater Protection Rule, which restricts the application of nitrogen fertilizer in the fall and on frozen soils in vulnerable groundwater areas. Because the proposer is certified through the MAWQCP, they are deemed compliant with the Groundwater Protection Rule for the duration of their certification. Minn. R. 1573.0080 (deeming property owners certified through the Minnesota Agricultural Water Quality Certification Program to be in compliance with the groundwater protection requirements imposed by Minn. R. Ch. 1573).

In order to prevent detrimental effects to the environment related to the contamination of groundwater with nitrates from nitrogen-derived fertilizers as a consequence of agricultural production, DNR includes conditions in permits governing: responsible water use, implementation of adequate soil and water conservation measures, and adherence to BMPs, including nitrogen BMPs. DNR has used these types of conditions on a number of irrigation water appropriation permits to assure implementation of adequate mitigation. DNR has the authority to impose these conditions as necessary to protect against potential impacts to land and water resources from the high-nitrogen-need crops, such as corn and potatoes, that the Applicant intends to irrigate. *See* Minn. Stat. § 103G.315, subds. 5 and 11, *In the Matter of Water Appropriation Permit 2015-20785, Jason Cunning Ham, Recommendation on Cross Motions for Summary Disposition,* OAH No. 8-2002-36388 slip op. at 6-7 (May 6, 2020)(finding DNR could condition water appropriation permit to limit the appropriation in response to data indicating that the appropriation may be impacting a surface water body), and 2019 Pineland Sands Nolte/Offutt Water Appropriations Record of Decision, ¶66. Potential impacts to groundwater can be managed through operational conditions in a DNR water appropriation permit. *See* ¶22 (aquifer test/groundwater).

ii. Stormwater: This topic was addressed in EAW Item 11.b.ii and response to comment ¶31 (water quality). The Wadena SWCD determined that increased sediment and high bacteria levels are the main concerns related to runoff (soil erosion) from the project site. Due to the relatively flat topography of the proposed project area and presence of sandy soil, little runoff is expected into the Redeye River and nearby wetlands.

To reduce the risk of stormwater runoff in the proposed project area, proposed mitigation include measures to control runoff, erosion, and sedimentation, including a four- to- five-year cropping rotation (including a deep-rooted perennial crop), no-fall tillage and cover crops. These mitigation measures should be incorporated in any permit that would be issued for the Project. Adjacent parcels owned by the proposer would have green cover (such as hay) or mature trees and shrubs. The Project proposes to incorporate cattle grazing among the irrigated fields. The cattle would be fenced to prevent cattle from accessing the Redeye River.

The proposer has acquired MDA certification under the MAWQCP, which required to proposer to implement nutrient management practices applied in a manner which is in accordance with the University of Minnesota fertilizer Best Management Practices. Because the proposer is certified through the MAWQCP, they are deemed compliant with the Groundwater Protection Rule for the duration of their certification. Minn. R. 1573.0080 (deeming property owners certified through the Minnesota Agricultural Water Quality Certification Program to be in compliance with the groundwater protection requirements imposed by Minn. R. Ch. 1573).

Water appropriation: This topic was addressed in EAW Item 11.b.iii and response to comment ¶22 (aquifer test/groundwater). The combined maximum requested appropriation of the proposer's three permit applications equate to approximately 100 million gallons per year. The EAW noted that an aquifer test would be needed to determine whether there is leakage between aquifer systems, as well as to determine impacts to nearby wells and surface waters. Since publication of the EAW, an aquifer test was completed on the three proposed wells as part of the water appropriation permit review. The aquifer test evaluated pumping impacts on area water resources and is described in ¶22 (aquifer test/groundwater). Potential impacts to water quantity can be managed through operational conditions in a DNR water appropriation permit. *See* ¶22 (aquifer test/groundwater).

iii. Wetlands: This topic was addressed in EAW Item 11.b.iv.1 and response to comment ¶22 (aquifer test/groundwater). There are no wetlands within the proposed project area. Direct physical effects or alterations to wetland features are not anticipated. Due to the relatively flat topography of the proposed project area and presence of sandy soil, little runoff is expected to nearby wetlands.

Since publication of the EAW, an aquifer test was completed on the three proposed wells as part of the water appropriation permit review. The aquifer test and proposed mitigation is described in ¶22 (aquifer test/groundwater).

Potential impacts to nearby wetlands can be managed through operational conditions in a DNR water appropriation permit. *See* ¶22 (aquifer test/groundwater).

iv. Surface water: This topic was addressed in EAW Item 11.b.iv.2 and response to comment ¶22 (aquifer test/groundwater). There are no surface water features within the proposed project area. Physical effects or alterations to nearby surface water features are not anticipated. Potential indirect impacts to the nearby Redeye River could include fertilizer and pesticide runoff and leaching. The aquifer test conducted as part of the water appropriation permitting process evaluated pumping impacts on nearby surface waters and is described in ¶22 (aquifer test/groundwater).

Proposed mitigation for potential surface water impacts from fertilizer and/or pesticide runoff and leaching include measures to control runoff, erosion, and sedimentation, including a four- to-five-year cropping rotation (including a deep-rooted perennial crop), no-fall tillage and cover crops. The Project proposes to incorporate cattle grazing among the irrigated fields. The cattle would be fenced from accessing the Redeye River.

The proposer has acquired MDA certification under the MAWQCP, which requires the proposer to follow the University of Minnesota fertilizer Best Management Practices for a 10-year certification. The proposer would focus on using the lowest recommended inputs and

appropriate timing of application. This certification also contractually commits the proposer to following Standard-level Integrated Pest Management criteria.

The proposer has acquired MDA certification under the MAWQCP, which require the proposer to implement nutrient management practices that ensure nutrients are applied in a manner that is in accord with the University of Minnesota fertilizer Best Management Practices. Because the proposer is certified through the MAWQCP, they are deemed compliant with the Groundwater Protection Rule for the duration of their certification. Minn. R. 1573.0080 (deeming property owners certified through the Minnesota Agricultural Water Quality Certification Program to be in compliance with the groundwater protection requirements imposed by Minn. R. Ch. 1573).

Potential impacts to nearby surface waters can be monitored and managed through operational conditions in a DNR water appropriation permit. *See* ¶22 (aquifer test/groundwater).

d. Contamination and Hazardous Materials: This topic was addressed in EAW Items 11, 12, 13, 15 and 19 and response to comments at ¶22 (aquifer test/groundwater), ¶27 (health impacts), ¶28 (mitigation sufficiency), and ¶31 (water quality).

There are no known sites of potential environmental hazardous materials and no generation of or storage of solid waste within the proposed project area. The proposer would use fuels and oils needed for equipment used to remove trees/stumps and farming. Spills or leaks could occur during fueling, equipment operations, or mechanical failure. Equipment would be regularly inspected and if necessary, repaired to prevent inadvertent loss of fuels, oil, or other hazardous fluids. Spills would be promptly reported to MPCA.

Agrichemicals, such as insecticides and herbicides, would be used, but not stored, in the proposed project area for agriculture crop production. Unused portions of agrichemicals are returned to the provider shortly after application but in no event would they be stored on the project area. In addition to the pesticides use, the proposer would also use corn seed treated with a neonicotinoid insecticide.

All agrichemicals must be handled and applied in accordance with the product label requirements and would be applied by licensed applicators. Measures to avoid, minimize, or mitigate adverse effects from the use of agrichemicals in the project area would be implemented in accordance with the label requirements, respective Safety Data Sheets (SDS), and, when applicable, the MDA administered state chemigation rule and permit program.

Because the project area consists of sandy soils, water quality BMPs for pesticides would also be made a part of management practices and incorporated in permit conditions to mitigate adverse effects of potential leaching of chemicals. As discussed in item h. below, the proposer would follow seed treatment BMPs.

e. Wildlife Resources and Habitat: This topic was addressed in EAW Items 13 and response to comment at ¶32 (wildlife and habitat).

Habitat: The area surrounding the proposed Project includes wetlands, marshland, grassland, floodplain, grazing land, agricultural land, and commercially cultivated and natural forest habitats.

While no significant impacts to habitat are expected, the DNR does recommend an aquifer test or use test prior to issuing a long-term appropriation permit to determine any potential impacts from pumping the confined aquifer on surficial aquifers.

Wildlife: Wildlife species typical to the project area include deer, small mammals, birds, reptiles and amphibians.

Wildlife and habitat may be impacted by row cropping and the permanent barbed wire fencing within the portions of the project area and by the portable electric fencing by altering wildlife patterns of movement. No significant impacts to wildlife and habitat are expected from the conversion of the proposed project area to irrigated agriculture and overall project.

The Minnesota Natural Heritage Information System (NHIS) was queried in 2019 to determine what rare, threatened, or endangered plant or animal species or other significant natural features are known to occur within or near the project area, including federal and state listed species. The rare features that may be affected by the proposed Project are as follows:

State-Listed Species of Special Concern: The Creek Heelsplitter (*Lasmigona compressa*) has been documented in the Redeye River, which flows through properties that are adjacent to the project area. Mussels are particularly vulnerable to degradation of water quality, especially increased siltation. The proposer would implement effective erosion prevention and sediment control practices prior to and throughout the duration of the Project. This includes mechanisms to prevent livestock from accessing the river and river banks. Minnesota Statute § 103F.48 requires a fifty-foot buffer to protect public waters. There are grassy buffers, trees and shrubs that are at least 630 feet wide between the Redeye River and the proposed irrigated cropland.

Booming grounds of the Greater Prairie Chicken (*Tympanuchus cupido*) have been documented in a section adjacent to the project area. The Greater Prairie Chicken is listed as a Minnesota Species of Special Concern. Species of Special Concern are not at enough of a risk to have regulatory protection under the Minnesota Threatened and Endangered Species laws. Greater Prairie Chickens in particular are also allowed to be hunted in Minnesota. Booming grounds may move slightly from year to year. Depending on the specific crop being cultivated, the project area may become a less desirable or successful area for Greater Prairie Chicken booming grounds.

Sites of Biodiversity Significance: A small portion within the project area (the west part of parcel 08.004.3020) is within an area that has been preliminarily identified as a Minnesota County Biological Survey (MBS) Site of Moderate Biodiversity Significance.

Sites ranked as moderate contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. Potential Project-related effects to this area include physical disturbance, indirect impacts from surface runoff, or the spread of invasive species. The majority of the project area has already been converted from natural vegetation to agricultural cropland. Any remaining conversion is not anticipated to adversely affect the natural vegetation adjacent to the project area that is part of the Site of Moderate Biodiversity.

A Jack Pine Barrens native plant community (classification version 1.5) was documented in the southeast portion of the proposed project area. Because this area had been previously disturbed it was not included in the NHIS review letter as a concern. Proposed land clearing activities (removing timber, stumps, undergrowth, slash, disc, and raking) of 6 acres within the project area would remove the natural characteristics of this rare ecosystem.

The past and proposed future land clearing practices also increase the likelihood of invasive species introduction and spread. Run-off, drift and volatilization of pesticides may present a potential threat

to plant and pollinator species diversity throughout the remaining jack pine woodland native plant communities in the project area.

The Project would remove six acres of trees that may or may not be classified as a Jack Pine Barren native plant community. This small reduction in trees is not anticipated to materially impact the viability of this native plant community in Minnesota.

f. Air/Dust: This topic was addressed in EAW Item 16 and response to comment at ¶27 (health impacts).

Dust and Smoke. During planting, harvest and tilling, fugitive dust could be generated. Smoke would be generated during timber and stump removal. There are no long term effects anticipated from these activities.

Pesticide Use. Anticipated pesticide application would be dependent on crop rotation and could include volatilization in the air or greater risks of chemical exposure due to off-site air movement. The risk is dependent on type of pesticide, toxicity, physical and chemical properties, use pattern, and time of application. Risk to human health from off-site air movement of pesticides is considered negligible - low.

Air effects can be mitigated by the Proposer by following seed treatment BMPs, and following the standard level of Integrated Pest Management and BMPs as mandated by the MDA MAWQCP certification.

g. Noise: This topic was addressed in EAW Item 17. Under routine operations, it is expected that the noise generation from the proposed Project would be similar to farming operations in the area. Noise may increase during timber and stump removal. The proposer anticipates that the noise would generally be generated during daytime hours with the timber and stump removal occurring over a limited timeframe.

Noise from land clearing is not expected to exceed State of Minnesota Noise standards. Noise would be controlled by muffling saws, backhoes, and any other hand or heavy equipment during land preparation. The nearest sensitive receptors, nearest residences, in the northwest portion of the proposed project area, are not be expected to be adversely impacted by the noise, but land clearing would be limited to daytime hours in this area.

h. Cumulative Potential Effects: This topic was addressed in EAW Item 19 and response to comment at ¶24 (CPE).

Cumulative Potential Effects are the combined effects of the proposed project and past, present, and reasonably foreseeable future projects. *See* Minn. R. 4410.0200, Subp. 11a. The definition of CPE is found at Minn. R. 4410.0200, Subp. 11a, and reads, in part, "'Cumulative potential effects' means the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects. . . ."

Identification of Project Related Environmental Effects
The environmental effects that have the potential to contribute to CPE were identified as:

i. Contamination of groundwater, specifically due to nitrate and pesticides;
ii. Contamination of surface water, specifically due to nitrate and pesticides;
iii. Impacts due to chemical controls and deforestation, including
    - Habitat Loss due to chemical controls and deforestation; and
    - Impacts to Ecological features, such as pollinators, sensitive and rare resources, and native plant communities, and impacts from invasive species, due to use of chemical controls and deforestation.
    - Aesthetic impacts from tree removal

Identification of Geographic Scope and Timeframe for Environmental Effects

To conduct the analysis on these listed environmental effects, each of the effects was analyzed for likely geographic scope and timeline in which the environmental effect would occur. Because each of the above environmental effects are unique and influenced by different factors, the result was three different geographic scope boundaries as described below. The timeline of impacts for the proposed Project is ongoing as the proposer has indicated an intent to operate as irrigated agriculture for an undefined, unlimited period of time into the future.

i. Groundwater

To develop the geographic area and timeline associated with groundwater contamination, data and previous investigation data and information were evaluated to ascertain the most appropriate boundary for any potential environmental effects to groundwater. Sources included:

- Groundwater, aquifer and water table reports and analyses (Stark et al (1994), Helgesen (1977), LaBaugh et al (1981), Siegel (1980) and Walker et al (2009))
- Mapping of pollution sensitivity of near-surface materials (DNR, 2016, Methods to estimate near-surface pollution sensitivity PDF: Minnesota Department of Natural Resources, County Geologic Atlas program, GW-03)
- Presence, Distribution, and Potential Sources of Nitrate and Selected Pesticides in the Surficial Aquifer along the Straight River in North-Central Minnesota 1992-93 (Ruhl, 1995)

The resulting groundwater geographic scope is an oval-shaped boundary spanning approximately seven miles north to south, three miles east to west, and generally-aligned with the Redeye River. The boundary positions the proposed project area near the top third of the geographic scope boundary.

ii. Surface water

Data and information from investigations were evaluated to ascertain the most appropriate boundary for any potential environmental effects to surface water. Sources included:

- Aquifer tests and well logs from the Straight River Groundwater Management area (GWMA)
- Stream flow monitoring to identify groundwater and surface water interaction was reviewed, area well logs, observation well data and synoptic data were reviewed to further identify aquifer boundaries.
- Aquifer and contour maps (Helgesen (1977))
- water table elevations in wells from the Minnesota Well Index (MDH, MGS, 2019)

Watershed boundaries around the project area were used as the initial data source to determine the influence and contribution of the Project to CPE, in particular as related to surface water contamination. Based on the groundwater geographic area described above, the local sub-watershed level (HUC 12) within the groundwater geographic area was included, as well as the local sub-watersheds (HUC 12) abutting the Redeye downstream to the confluence with the Crow Wing River. This became the boundary for the geographic scope for the surface water contamination evaluation.

iii. Visual Impacts, Habitat Loss and Impacts to Ecological features

The Pineland Sands Aquifer Area is not an ecologically based geographic scope for visual impacts, habitat impacts, and associated impacts to sensitive and rare resources such as pollinators, sensitive and rare resources, and native plant communities, including impacts from invasive species due to use of chemical controls and deforestation. For these environmental effects, the DNR's Ecological Classification System (ECS) was used to establish a geographic area for assessment.

This geographic scope boundary included four Land Type Associations (LTAs): Nimrod Drumlin Plain, Park Rapids Sand Plain, Swan Creek Sand Plain and Wadena Drumlin Plain. To both reinforce the ecological values present within this geographic area and to account for nearby sensitive landscape features, DNR High Conservation Value Forest (HCVF) sites and Scientific and Natural Areas (SNA), within and adjacent to these four LTAs, were included in this geographic scope. The resulting boundary is larger than the Pineland Sands Aquifer Area; generally sharing boundaries on the north and east, yet extending approximately eleven miles further southwest than the Pineland Sands Aquifer Area.

Past and Present Conditions

To define the existing background of environmental conditions to which the proposed Project would potentially be contributing, the DNR reviewed existing use trends in the three environmental effect topic areas.

i. Groundwater

To define the existing background of environmental conditions to which the proposed Project would potentially be contributing, the DNR reviewed existing water appropriation permits for active agricultural crop irrigation. Four active permits occur within the groundwater contamination geographic scope. The appropriations are approximately three miles from the proposed Project locations.

ii. Surface water

Because of the interconnectivity between groundwater and surface water sources, the same data for assessing groundwater was used to define background conditions for surface water. There are twenty-one existing water appropriation permits within the surface water geographic scope; none of which are located within a mile of the proposed Project. The majority of these appropriations are in the southern-most section of the defined area. Also considered within the background conditions are existing lake and stream impairments. The Redeye River is currently impaired for E. coli. The Redeye/Leaf River system has aquatic life stressors, including dissolved oxygen, turbidity, and measures of fish and macroinvertebrate health to meet water quality standards. Water in this River system, and its downstream receiving watershed, the Crow Wing River, currently have low levels of nitrates but have shown signs of consistent, but modest increases.

iii. Visual Impacts, Habitat Loss and Impacts to Ecological features

The original conditions of the area within the geographic scope was a forested condition, with soils typically of sand or sandy loam soil with hardpans located within the subsoils. Pre-settlement vegetative communities in upland were dry pine forest and lowland hardwood conifer; and in lowland, it was conifer bog and swamp. The current assessment of land use shows the area is now composed of agricultural and forested cover with some wetlands and residential and community development. Also considered was the proximity of the Project to a number of High Conservation Value Forests (HCVFs) and Scientific and Natural Areas (SNAs).

Reasonably Foreseeable Projects

Minnesota Rules 4410.0200, Subp. 11.a., states, in part, that future projects must be included in the cumulative potential effects analysis if they are, "*…actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects" (emphasis added).* Reasonably foreseeable future projects were identified within each of the geographic scope boundaries to complete the project-specific cumulative potential effects analysis.

i. Groundwater

There were no other water appropriation permit applications identified as pending within the groundwater geographic scope.

ii. Surface water

There were no other water appropriation permit applications identified as pending within the surface water geographic scope.

iii. Visual Impacts, Habitat Loss and Impacts to Ecological features

Land use decisions inform environmental effects to unique vistas, habitat loss and impacts to ecological features. Two projects were identified that met the criteria of "reasonably foreseeable, for which a basis of expectation has been laid" that also occurred within this geographic scope. One was the proposed Line 3 pipeline replacement project, which, if approved, would have an impact to land use due to the clearing of a 200-foot right-of-way for construction with a 50-foot permanent right-of-way maintained for pipeline operation. The other was a large feedlot intended to operate as a large-scale dairy, where land use impacts would be limited to the area in the immediate vicinity of the project.

Nature of the Cumulative Potential Effect

i. Groundwater

Based on the geographic area and timeline for the proposed Project, the overall cumulative nature of potential environmental effects to groundwater from the proposed Project, as mitigated, and those within the geographic area are expected to contribute very minimally to any nitrate or pesticide groundwater contamination. The Project proposer has included proposed mitigation measures in the form of BMPs and Water Quality Certification that are intended to mitigate Project impacts and diminish the potential for cumulative effects to groundwater.

The proposed nitrate and pesticide contribution from the Project, as mitigated, would be minimal. Additionally, there are very few other sources of nitrate and pesticides down gradient from the project area whose impact might accumulate with the Project. Attachment E of the EAW demonstrates the variable geographic distribution of agriculture irrigation as

sources of potential nitrate contribution to groundwater in the groundwater geographic area. The northern portion of the Pineland Sands area does have a higher density of agricultural irrigation. Groundwater from the Project does not flow in a northerly direction and, therefore, the Project will not contribute nitrate pollution to this portion of the Pineland sands area.

ii. Surface water
Based on the geographic area and timeline for the proposed Project, the overall cumulative nature of potential environmental effects to surface water contamination from the proposed Project, as mitigated, and those within the geographic area are expected to contribute very minimally to any contamination of surface water. The Project proposer has included BMPs and Water Quality Certification to address surface water quality impacts from the Project. Any surface water impacts from the proposed Project could combine with other land use practices downstream of the project areas. Potential contributions to surface water quality impacts from the Project would be small compared to the existing condition.

iii. Visual Impacts, Habitat Loss, and Impacts to Ecological features
Given the limited number of projects identified in the geographic area identified for the analysis, the overall cumulative nature of potential environmental effects to visual impacts, habitat loss, and impacts to ecological features from the proposed Project, as mitigated, and those within the geographic area are expected to contribute only minimally to the overall environmental effects.

While the potential cumulative environmental effects due to Project-related effects are likely negligible, there remains concern regarding groundwater contamination, surface water quality, and land use and habitat loss within the broader regional area. Discussion of these environmental concerns within the broader Pineland Sands area was discussed in EAW Attachment E.

36. The following permits and approvals are, or may be needed, for the project:

Unit of Government	Type of Application	Status
DNR	Water Appropriation Permits (3)	Pending
NRCS/SWCD	Soil and Water Conservation Plan	Obtained
MDA	Minnesota Agriculture Water Quality Certification	Obtained

CONCLUSIONS

1. Minnesota Rules part 4410.1700, subparts 6 and 7, set forth the following standards and criteria to compare the impacts that may be reasonably expected to occur from the project in order to determine whether it has the potential for significant environmental effects. The rule provides:

> In deciding whether a project has the potential for significant environmental effects, the following factors shall be considered:
>
> *A.* type, extent, and reversibility of environmental effects;
>
> *B.* cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is

significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the Proposer to minimize the contributions from the project;

C. the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project; and

D. the extent to which environmental effects can be anticipated and controlled as result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.

2. *Type, extent, and reversibility of environmental effects*.

   Based on Findings of Fact ¶¶20 through 32 and 35a-35h.iii, the DNR concludes that the following types of potential environmental effects, as described in the Findings of Fact, will be limited in extent, temporary, or reversible:

   - Cover Type Conversion/Land Use
   - Geology and Soils
   - Water Resources
   - Contamination and Hazardous Materials
   - Wildlife Resources and Habitat
   - Air/Dust
   - Noise

3. *Cumulative potential effects.* In determining whether a project has the potential for cumulative potential effect the RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the Proposer to minimize the contributions from the project. Minn. R. 4410.0200, subp. 11a.

   Based on the Findings set forth in ¶¶22, 24, 28, 31, 35c, and 35h, the DNR concludes that the cumulative potential environmental effects associated with groundwater and surface water are not significant when viewed in connection with: other contributions to the cumulative potential effect; the degree to which the Project complies with approved mitigation measures specifically designed to address cumulative potential effects; and the efforts the proposer has made to minimize contributions from the Project.

   DNR concludes that the cumulative potential environmental effects to groundwater and surface water, as described above, **are not** significant because there are limited past, present and future projects identified within the geographic scale of the proposed Project that would have overlapping environmental effects. The Project would contribute minimal environmental effects and would not materially contribute to the cumulative potential effect. The Project proposer has developed mitigation measures in the form of the MAWQCP to address the environmental effects.

   DNR concludes that the cumulative potential environmental effects to visual/habitat/ecosystem, as described above, **are not** significant because there are limited impacts to visual/habitat/ecosystem

resources within the geographic scale of the proposed Project. The Project would contribute minimal environmental effects and would not materially contribute to the cumulative potential effect.

4. *Extent to which environmental effects are subject to mitigation by ongoing public regulatory authority.* Based on the Findings of Fact set forth in ¶¶35a-35h-iii above and the information contained in the EAW, DNR concludes that there is sufficient ongoing public regulatory authority and specific measures identified that can be expected to effectively address the following environmental impacts:

    - Water Resources
        - Water Use: DNR Water Appropriation Permit – Groundwater and surface water quantity
        - Water Quality: DNR Water Appropriation Permit and Minnesota's Groundwater Protection Rule

    - Contamination and Hazardous Materials
        - All agrichemicals would be handled and applied in accordance with the product label requirements and respective Safety Data Sheets (SDS), would be applied by licensed applicators and administered via the MDA requirements.
        - Minnesota's Groundwater Protection Rule

    - Air/Dust
        - USEPA pesticides regulatory programs
        - MDA implementation of federal and state pesticide laws (Minn. Stat. Ch. 17 and Minn. R. Ch. 1505)

    Permits and Approvals: Prior to initiation of this Project, the permits and approvals identified in Finding 36 would be required. When applying the standards and criteria used in the determination of the need for an EIS, DNR finds that the Project is subject to these regulatory authorities to an extent sufficient to mitigate potential environmental effects through measures identified in the EAW and ROD.

5. *Extent to which environmental effects can be anticipated and controlled as a result of other environmental studies undertaken by public agencies or the project proposer, or other EISs*. The following documents were examined and set forth anticipated impacts and controls:

    - Tim Nolte Aquifer Test: Permits 2017-4235, 2017-4236 and 2017-4237. May 30, 2020. Prepared by DNR Groundwater Technical Analysis Unit.

    - Ekman, J.C. and Berg, J.A., 2002. Surficial Hydrogeology, Regional Hydrogeologic Assessment Otter Tail Area, West-Central Minnesota Series RHA-5, Part B, Plate 3: Minnesota Department of Natural Resources

    - Helgesen, John. O. 1977. Ground water appraisal of the Pineland Sands Area, Central Minnesota: U.S. Geological Survey Open-File Report 77-102

    - LaBaugh, J.W., G.E. Groschen, & T.C. Winter. 1981. Limnological and Geochemical Survey of Williams Lake, Hubbard County, Minnesota. U.S. Geological Survey Water-Resources Investigations Report 81-41.

- Lindgren, R.J., 2002, Ground-Water Resources of the Uppermost confined Aquifers, Southern Wadena county and Parts of Ottertail, Todd, and Cass Counties, Central Minnesota, 1997-2000, U.S. Geological Survey Water-Resources Investigations Report 02-4023

- Lusardi, Barbara, A., 2016. C-40, Geologic Atlas of Wadena County, Minnesota. Minnesota Geological Survey. Retrieved from the University of Minnesota Digital Conservancy, http://hdl.handle.net/11299/183206.

- Lusardi, Barbara, A., K. J. Marshall, 2016. C-40, Geologic Atlas of Wadena County, Minnesota. Plate 4-Quaternary Stratigraphy, Minnesota Geological Survey. Retrieved from the University of Minnesota Digital Conservancy, http://hdl.handle.net/11299/183206.

- Minnesota Department of Agriculture, July 2019. Minnesota Nitrogen Fertilizer Management Plan. https://www.mda.state.mn.us/pesticide-fertilizer/minnesota-nitrogen-fertilizer-management-plan

- Minnesota Department of Agriculture, 2020. Fertilizer as a Source of Nitrate in Groundwater https://www.mda.state.mn.us/fertilizer-source-nitrate-groundwater

- Minnesota Department of Agriculture, 2020. Central Sands Private Well Network. https://www.mda.state.mn.us/central-sands-private-well-network

- Minnesota Department of Agriculture, 2020. Groundwater Pesticide Water Quality Monitoring. https://www.mda.state.mn.us/node/2696

- Minnesota Department of Agriculture, 2020. Byron Township Water Quality Study www.mda.state.mn.us/protecting/cleanwaterfund/gwdwprotection/byrontownship

- Minnesota Department of Agriculture, June 2019. 2018 Water Quality Monitoring Report. https://wrl.mnpals.net/islandora/object/WRLrepository%3A3399/datastream/PDF/view

- Minnesota Department of Agriculture, 2020. Minnesota Agricultural Water Quality Certification Program. https://www.mda.state.mn.us/environment-sustainability/minnesota-agricultural-water-quality-certification-program

- Minnesota Department of Agriculture, 2020. Groundwater Protection Rule. https://www.mda.state.mn.us/nfr

- Minnesota Pollution Control Agency, May 2014. Redeye River Watershed Monitoring and Assessment Report. https://www.pca.state.mn.us/sites/default/files/wq-ws3-07010107b.pdf

- Reppe, T.H.C., 2005. Ground-water availability from surficial aquifers in the Red River of the North Basin, Minnesota: U.S. Geological Survey Scientific Investigations Report 2005–5204, 54 p.

- Ruhl, James F., 1995. Presence, Distribution, and Potential sources of Nitrate and Selected Pesticides in the Surficial Aquifer along the Straight River in North-Central Minnesota, 1992-93, U.S. Geological Survey Water-Resources Investigations Report 95-4151. https://pubs.usgs.gov/wri/1995 /4151 /report.pdf

- Siegel, D.I., 1980. Hydrologic Setting of Williams Lake, Hubbard County, Minnesota. Open-File Report 80-403, 62 p.

- Stark, J.R., D.S. Armstrong, D.R. Zwilling. 1994. Stream-Aquifer Interactions in the Straight River Area, Becker and Hubbard Counties, Minnesota. U.S. Geological Survey Water-Resources Investigations Report 94-4009

- United States Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey, July 2017. https://websoilsurvey.sc.egov.usda.gov/ App/HomePage.htm

- Walker, M., K. English, J. Leete and R. Bezek, 2009. Peysenske Lake Water Level Evaluation, Minnesota Department of Natural Resources-Water

6. As set forth in ¶¶1 - 36, DNR has fulfilled all the procedural requirements of law and rule applicable to determining the need for an EIS on the proposed Nolte Family Irrigation Project in the township of North Germany, Wadena County, Minnesota.

7. Based on consideration of the criteria and factors specified in Minn. R. 4410.1700, subps. 6 and 7 to determine whether a project has the potential for significant environmental effects, and on the Findings of Fact and Record in this matter, the DNR determines the proposed Nolte Family Irrigation Project **does not** have the potential for significant environmental effects.

ORDER

Based on the above Findings of Fact and Conclusions:

The Minnesota Department of Natural Resources determines that an Environmental Impact Statement **is not** required for the Nolte Family Irrigation Project in the township of North Germany, Wadena County, Minnesota.

Any Findings that might be properly termed Conclusions and any Conclusions that might be properly be termed Findings are hereby adopted as such.

Dated this 18TH day of June, 2020.

DEPARTMENT OF NATURAL RESOURCES

Jess Richards
Assistant Commissioner