

August 19, 2021

Lyon County Drainage Authority c/o
John Biren, Lyon County Planning & Zoning
E. J. Moberg, Lyon County Auditor/Treasurer

Re: Final Engineer's Report (FER) for the Proposed Improvement of Lyon County Ditch 14

Lyon County Drainage Authority,

Thank you for the opportunity to review the proposed improvement of Lyon County Ditch 14 (CD14). We offer comments in accordance with Minn. Stat. §103E on behalf of the Commissioner of the Minnesota Department of Natural Resources (DNR). Please read this letter at the Hearing, and include it in the official Final Hearing record.

Project Summary

This project proposes to enhance the tile drainage network in the 2,874 acre CD14 watershed with a larger, deeper, and steeper tile network. The improvements are within approximately the downstream third of the CD14 watershed, including the outlet and a limited number of branches. CD14 outlets into an unnamed creek, and then in approximately a half mile, into the Cottonwood River. The CD14 watershed is a headwater's region of the Cottonwood River major watershed.

The current system provides a maximum outlet drainage coefficient of 0.03 in/day but is believed to be delivering less due to its age and condition. Options 1a (single pipe outlet) and 1b (dual pipe outlet) provide an outlet drainage coefficient of 0.56 and 0.51 in/day, increasing the drainage coefficient by roughly 20 fold. Option 2 provides an outlet drainage coefficient of 0.29 in/day and includes 93 acre-feet of temporary water storage to offset the reduced drainage coefficient. Option 1 is estimated to cost \$2.7-\$3.7 million, and option 2 is estimated to cost \$2.9 million. A \$1 million separable benefits cost is estimated to reduce the project's net cost. The engineer has recommended Option 1, with flexibility to make the final selection (1a or 1b) based on current pipe costs.

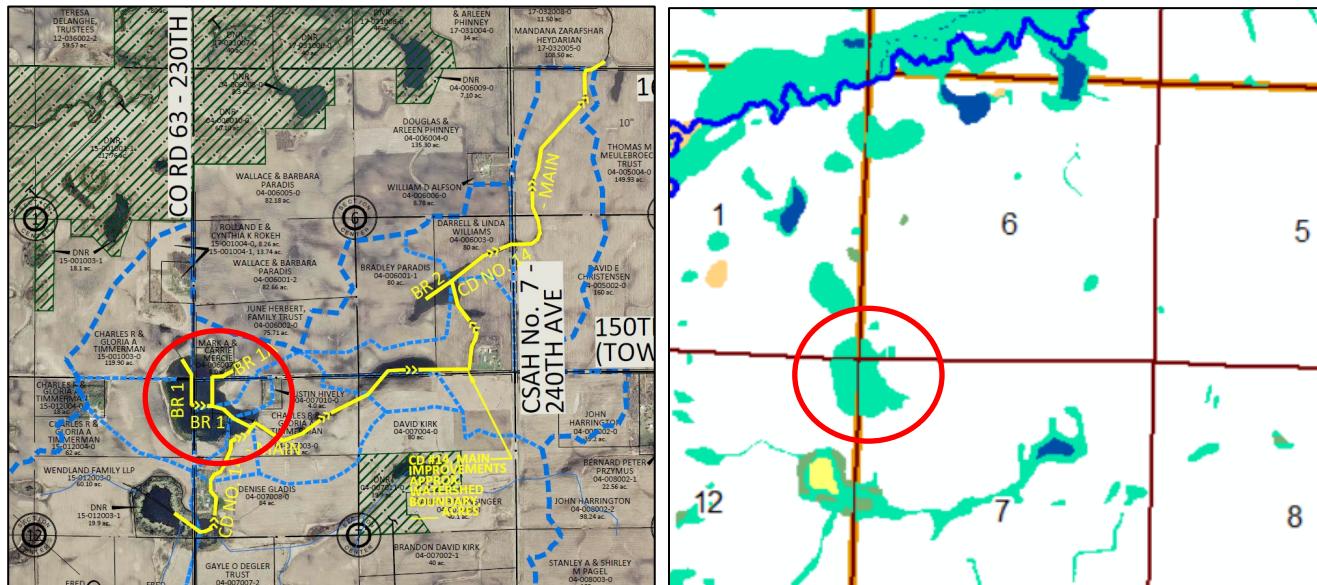
Environmental Considerations

Per Minn. Stat. §103E.34, the drainage authority must dismiss the proposed drainage project if it determines that the project is not practicable after considering the environmental, land use, and multipurpose water management criteria in Minn. Stat. §103E.015, subdivision 1. The following provides a summary of the DNR concerns about these environmental considerations:

Wetlands

The FER states that the project necessity is to reduce extended ponding in portions of the watershed. Ponding is often indicative of wetlands, which are legally protected by state and federal laws. The applicable laws and guidance are presented in the [Minnesota Public Drainage Manual, Wetlands section](#). The FER does not provide sufficient information on the impact to wetlands nor is there documentation that the Wetland Conservation Act Technical Evaluation Panel (WCA TEP) was consulted. **WCA TEP must be consulted on this project.** Upon completion, provide the DNR the WCA TEP documentation as part of an amended FER. More specific wetland concerns are detailed below.

In addition to significantly increasing the drainage capacity of this system, this project proposes to substantially improve drainage in several observable water holding areas on the landscape (see below image, left, yellow lines). Some of these areas are identified in the National Wetlands Inventory (see below image, right), particularly the large wetland shown circled below in both images. The FER plans call for perforated pipe to be installed under this circled NWI wetland (page C5.07). Perforated pipe would drain this NWI wetland.



These two images show roughly the same area. The image on the left shows the CD14 boundary with a blue dashed line and the proposed improved tiles with yellow lines. The image on the right shows the National Wetland Inventory (NWI) over this same area. Both images have a large NWI wetland circled for reference.

The FER states that no impacts to wetlands will occur from this project due to the use of non-perforated pipe “through, and near, these wetlands”. However, as mentioned above, this design includes perforated pipe under the circled NWI wetland in addition to under other observable water storage areas as well as open intakes in potential wetland areas. The FER needs to be revised to include a map illustrating WCA protected wetlands and specifically where non-perforated pipe is required. Non-perforated pipe must be used within the lateral drainage effect zone of the tile on any wetlands, and engineering analysis (i.e. Van Schilfgaarde equation) needs to be completed to identify and map these areas. In lieu of additional analysis, non-perforated pipe can be used throughout the project. The design should also review the use of open intakes, and ensure no open intakes or other drainage system features will impact wetlands.

The effect of private tile on wetlands is also regulated. We encourage the Drainage Authority to seek information from landowners showing that by connecting their private tile line to the county system (which is part of this project), that wetlands will not be compromised, and all applicable wetland laws are met. Whether a wetland is impacted by the county drainage system or by private tile incorporated into the design of and connected to the county system, drainage authorities have an obligation to protect wetlands.

Water Quality & Fish and Wildlife Resources

The FER does not sufficiently summarize and analyze impacts to the Cottonwood River water quality and aquatic life. The MPCA has published [water quality and aquatic life monitoring and assessment information](#) for the Cottonwood River just downstream from the improvement (note that the outlet for this project, the unnamed creek, has not been monitored). At this location, the Cottonwood River is impaired for aquatic life and aquatic recreation. However, altered hydrology is the most commonly identified stressor throughout the MN River Valley watersheds. The root drivers of altered hydrology are drainage, land use, and climate change.

If the MN River Valley rivers are to begin healing from the impacts of altered hydrology, the landscape must maintain and increase the amount of water storage, slow the movement of water off the land, and reduce the total amount of water that flows to streams by increasing the evapotranspiration from the landscape. This proposed project will accelerate altered hydrology conditions as it reduces water storage, increases the speed of water leaving the land, and increases the total amount of water leaving the landscape. This will contribute to further degrading the already impaired Cottonwood and Minnesota Rivers.

Alternative measures to reduce downstream peak flows and flooding, reduce erosion and sedimentation, and protect or improve water quality

Unless this project is designed to maintain the existing peak and total discharge from this watershed, this improvement will contribute to flood flows, erosive rivers, and degraded water quality. Option 2, which would partially mitigate peak flows and add at least temporary storage in the system, appears to no longer be under consideration. Within a headwater's region of an impaired River, this watershed would be an ideal place to implement wetland enhancement to the existing water storage areas rather than work to drain them. We recommend that this option is further pursued rather than quickly dismissed as it was in the FER. We also recommend that the drainage authority and landowners in this system consider farming practices that add water storage and evapotranspiration from within their farmed soils, namely cover crops, conservation tillage, alternative crops, etc.

Impact to Public Waters, Downstream Flooding, Adequacy of Outlet

The Cottonwood River and properties and communities near its shore are already stressed by more frequent flooding. With a roughly 20 times drainage capacity increase, we are also concerned about the cumulative impacts of this and other drainage projects to downstream properties and public waters. The FER does not discuss how this project will change the total discharge (annual and event based) coming from this watershed, which can be particularly concerning for downstream flooding.

Excessive erosion and resulting downstream deposition need to be assessed as part of the adequacy of outlet analysis. The FER documents a roughly doubling in the flow rate as well as a one-foot increase in the water

elevation at the outlet into the unnamed creek for the 2-year storm event. The 2-year storm event is referred to as the “channel forming flow” because the frequency and intensity of these events dictate stream geometry. When the 2-year storm event peak discharge is increased by 95 percent as is predicted for this improvement, the channel will almost certainly undergo an accelerated and unnatural erosion process to accommodate the larger flow. The FER does not discuss how the velocity at the outlet will be affected, which would further indicate the likeliness of excessive erosion. We are requesting that the engineer provide velocities for the 2, 5, 10, 25, 50 and 100 year events at the outlet.

We are requesting more information to assess the impact to public waters, flooding, and the adequacy of the outlet. We advise the Drainage Authority to provide a more detailed and transparent review of these factors by amending the FER with a modeling report and access to the model in accordance with Minn. Stat. §103E.101 which requires that “all maps, plats, charts, drawings, plans, specifications, and other documents that have been filed, received in evidence, or used in connection with a drainage proceeding or construction are subject to the provisions on public records in section 15.17”.

The modeling request includes: 1) a copy of the model, 2) all output files, and 3) a modeling report. We suggest that modeling information be presented in a detailed and comprehensive modeling report. Sufficient model information should be supplied to assess the model set-up and results. The modeling report needs to provide a narrative description and interpretation of the model assumptions, details, and nuances including but not limited to:

- A map indicating the modeled systems and the mapped locations corresponding to output data
- Any changes to the model in the current and proposed systems
- How the model is routing and storing water
- How private tile is/is not incorporated into the model
- References for what sources were used for input parameters to the model
- How optional modeling methods were selected (e.g. infiltration method)
- How the modeled storm events were determined, including the rainfall depth, distribution, and duration
- How the critical storm duration was determined
- Estimates for surface runoff, subsurface drainage, and total runoff volume, for the design storm events for the existing and proposed system
- Output hydrographs of the current and proposed systems for the design storm events
- Any errors or model discrepancies, including an interpretation and relevance to the project

Impact to Dayland WMA

As illustrated, the proposed improvement may affect Dayland WMA. We understand that discussion has occurred between DNR wildlife staff and John Biren about incorporating an outlet control structure to ensure that the Dayland WMA is not negatively impacted. However, the FER does not include information on this, and an agreement between the DNR and the County has not been drafted. DNR Wildlife Manager Wendy Krueger will contact County Planning and Zoning contact John Biren to work on this agreement. A formal agreement must be resolved and appended to the FER prior to the FER’s approval.

Conclusion

The potential impacts of this project include draining wetlands within the watershed, further degrading downstream water quality, contributing to downstream flooding, increasing downstream erosion and deposition, and adding cumulative impacts to downstream receiving waters, which are widely identified across Southwest Minnesota. We encourage the Drainage Authority and the project proposers to fully mitigate drainage improvements using management practices that reduce the total storm event and annual flow volumes.

Through this letter, the DNR advises the drainage authority on a number of perceived discrepancies in administering Minn. Stat. §103E requirements and contributing public waters and wetland impacts as a result from this project.

In accordance with Minn. Stat. §103E.301, we offer that:

- (1) The report is not complete; the incomplete portions are identified in this letter.
- (2) The proposed establishment will improve drainage for the properties in the project area.
- (3) As currently proposed, we do not believe that the proposed project is practicable after considering the environmental, land use, and multipurpose water management criteria in Minn. Stat. §103E.015, subdivision 1.
- (4) The drainage improvement does not provide public benefits to the landowners and communities located downstream of the outlet.
- (5) A soil survey is not necessary.

Please read this letter at the FER hearing and make it part of the official hearing record as DNR staff will not be attending the meeting. Please send a copy of the response to comments and/or revised document, meeting minutes, Finding of Fact, and any Order issued by the Drainage Authority regarding the proposed improvement to the DNR when they become available. Please submit these documents or any questions about this letter to Regional Drainage email at Region4Drainage.dnr@state.mn.us.

Sincerely,

Jim Sehl

DNR Ecological and Water Resources Division, Southern Region, North District Manager

cc:

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