Grindstone Dam Removal

Final Scoping Decision Document

1.0 INTRODUCTION AND PURPOSE

The Minnesota Department of Natural Resources (DNR) will prepare an Environmental Impact Statement (EIS) for the Grindstone Dam Removal Project (Project). The proposed Project is on the Grindstone River, located within the City of Hinckley, in Pine County, Minnesota. The Project proposer is the DNR Section of Fisheries.

The proposed Project is located largely within the Hinckley Aquatic Management Area (AMA), which is owned by the State of Minnesota and managed by the DNR. The dam was built in 1931 to provide a water supply for fish-rearing ponds that are located on an adjacent unit of the AMA. The dam impounds the Grindstone Reservoir, a designated DNR public water basin. In 1944, high water overtopped the right embankment of the dam, causing it to fail, resulting in the need for several repairs; high water again caused complete failure of the right embankment in 1954. In addition to repairs, the dam was raised by two feet to hold back high water. Numerous other repairs have been required throughout the years. The 2017 DNR site inspection stated that the dam was stable but in poor condition due to instability issues related to deterioration of aging infrastructure and inability to pass floods. Several repairs were recommended in the 2017 site inspection report.

The purpose of the proposed Project is to address public safety concerns from the dam due to the identified instability issues and inability to pass floods, as well as to allow for passage of fish and other aquatic wildlife and restore natural stream features, natural sediment transport and habitat diversity within this section of the Grindstone River.

An EIS is mandatory for this project pursuant to Minnesota Rules (Minn. R.) 4410.2000, subp. 2 (2019). The rule directs that an EIS shall be prepared if the project meets or exceeds the thresholds of any of the EIS categories listed in part 4410.4400. Minnesota Rules 4410.4400, subp. 20, identifies that projects that will eliminate a public water or public waters wetland requires preparation on an EIS. The EIS will meet applicable requirements of Minn. R. 4410.0200 to 4410.7800 (2019) (EQB Rules) that govern the Minnesota Environmental Review Program. The DNR is the responsible governmental unit (RGU) under the Minnesota Environmental Policy Act (MEPA). The DNR may engage the services of a consultant to assist in EIS preparation; however, the DNR will retain responsibility for EIS content.

This Final Scoping Decision Document (FSDD) is a companion to the Scoping Environmental Assessment Worksheet (Scoping EAW) prepared for the proposed Project. During development of the Scoping EAW and the FSDD, the Proposer provided information to the RGU. The RGU sought review and comment from technical staff at the DNR, as well as from staff from the Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency (MPCA). The purpose of the FSDD is to identify environmental effects and Project alternatives that will be assessed in the EIS. The FSDD also

identifies studies that will be required and presents a tentative schedule of the environmental review process.

2.0 PROJECT ALTERNATIVES

The Environmental Quality Board (EQB) rules require that an EIS include at least one alternative of each of the following types, or provide an explanation of why no alternative is included in the EIS (*Guide to Minnesota Environmental Review Rules*, page 12): alternative sites, alternative technologies, modified designs or layouts, modified scale or magnitude, and alternatives incorporating reasonable mitigation measures identified through comments received during the EIS scoping and draft EIS comment periods.

Minnesota Rules part 4410.2300 (2019), item G directs that an alternative may be excluded from the analysis in the EIS if, "it would not meet the underlying need for or purpose of the project, it would likely not have any significant environmental benefit compared to the project as proposed, or another alternative, of any type, that will be analyzed in the EIS would likely have similar environmental benefits but substantially less adverse economic, employment, or sociological impacts." Inclusion or dismissal of alternatives will be documented in the EIS.

2.1 PROPOSED PROJECT

The proposed Project is located on the Grindstone River, located within the City of Hinckley, in Pine County Minnesota, and lies within the Hinckley Aquatic Management Area (AMA), which is owned and managed by the DNR. The Project proposes to remove the Grindstone Dam, which would remove public safety concerns related to the aging dam and its inability to pass floods. Removal of the dam would also allow fish and other aquatic wildlife to move upstream, as well as allow natural sediment transport to occur. With the removal of the dam, the Grindstone Reservoir would be eliminated, which would allow for natural stream features and habitat diversity to be restored within this section of the river. To aid in restoration of the floodplain and upland habitat, planting vegetation within the former reservoir bed is also proposed.

The EIS will describe the proposed Project, which would include removal of the Grindstone dam, as well as grade control in the channel in the area of the removed dam, and allowing the river channel to reform naturally. Restoration in the floodplain and upland is also proposed. The EIS will also describe the potential environmental effects outlined in Section 3.0.

2.2 NO ACTION ALTERNATIVE

The No Action Alternative will include discussion on leaving the current dam in place. The EIS will describe the expected condition if the Grindstone Dam is not removed, with respect to the potential environmental effects outlined in Section 3.0.

2.3 SITE ALTERNATIVES

The EQB rules allow the RGU to exclude alternative sites if other sites do not have any significant environmental benefit compared to the project as proposed, or if other sites do not meet the underlying need and purpose of the project. The EQB's *Guide to Minnesota Environmental Review Rules* lists a number of factors for the RGU to consider when deciding whether alternative sites would meet the underlying need for or purpose of the project.

The DNR *does not propose* to evaluate alternative sites for the proposed Project because the Project purpose is reliant on a specific dam in a specific location being removed due to instability and safety issues.

2.4 TECHNOLOGY ALTERNATIVES

The DNR *does not propose* to evaluate alternative technologies, as no alternative technologies exist.

2.5 MODIFIED DESIGNS OR LAYOUTS

The DNR *does not propose* to evaluate modification of the dam with a rock arch rapids in the EIS, since this design alternative would not satisfy all purposes of the proposed Project. Construction of a rock arch rapids would maintain the current full pool reservoir, remove the drowning hazards associated with the current dam, and allow for fish and wildlife passage; however, instability issues would remain near the earthen berm, normal sediment transport would still be disrupted and natural stream features and habitat diversity would not be allowed to establish with this design.

The EIS will describe the following two design modifications related to the restoration of the Grindstone River and the potential environmental effects outlined in Section 3.0.

2.5.1 Partially engineered restoration

The EIS will evaluate the effects of a project design that would include the same dam removal as the proposed Project, but rather than letting the river channel naturally restore, this alternative would restore the resultant stream channel with some engineering. The engineered portions of the stream would steer channel formation in a specific pattern and path at key locations. The remainder of the stream would be allowed to naturally restore. This alternative may include some bank stabilization efforts.

2.5.2 Fully engineered restoration

The EIS will evaluate the effects of a project design that would include the same dam removal as the proposed Project, but rather than letting the river channel naturally restore, this alternative would restore the resultant stream channel with full engineering. In this alternative, the resultant stream would be manipulated along much of its distance within the AMA to design specifications that would ensure channel stability.

2.6 SCALE OR MAGNITUDE ALTERNATIVES

The DNR *does not propose* to evaluate reconstruction of the dam as a scale or magnitude alternative in the EIS. While rebuilding the dam would satisfy one purpose of the proposed Project (to address the aging infrastructure and safety concerns related to needed repairs and the inability to pass floods of the current dam), over the long-term these concerns would remain since the continuous need for maintenance and repairs would still exist and would be costly and the risk of dam failure would remain. Rebuilding the dam would not satisfy additional purposes of the proposed Project, which is to allow for fish and wildlife passage into upper reaches of the river and restore natural stream features and sediment transport within this section of the Grindstone River. Additionally, concerns for drownings caused by the hydraulic roller of the dam would remain. Since reconstruction of the dam would not satisfy all purposes of the proposed Project, this alternative will not be carried forward for additional analysis in the EIS.

2.7 INCORPORATION OF MITIGATION MEASURES IDENTIFIED THROUGH PUBLIC COMMENTS

The EQB rules require consideration of mitigation measures identified through comments on the scope or the draft EIS, informally called the "fully mitigated alternative." The EIS will consider all mitigation suggested through public comment, and will recommend incorporation of reasonable mitigation measures into project design and permitting. EIS preparation will identify mitigative measures, which will be recommended as warranted.

3.0 EIS ISSUES

The purpose of scoping is "*to streamline the document, to identify only potentially significant and relevant issues and to define alternatives*," (EQB *Guide to Minnesota Environmental Review Rules*, page 24). Issues have been identified and described in the Scoping EAW and are categorized below by significance and amount of additional analysis required in the EIS. This information has been updated in the FSDD based on public comments. Mitigation measures that could reasonably be applied to eliminate or minimize adverse environmental effects will be identified in the EIS in both the section describing environmental effects and in a separate chapter for permitting reference.

3.1 TOPIC HAS BEEN ADEQUATELY ANALYZED IN THE SCOPING EAW.

Topic is not relevant or is so minor that it will not be addressed in the EIS. The Scoping EAW will be appended to the EIS for reference; the relevant EAW item number is provided in parentheses after each topic.

[*Listing of items by issue title and EAW Item number*]

Cover types and plans (Item 8 and 9)
Wastewater and stormwater (Item 11)
Hazardous materials/Wastes (Item 12)

Historic properties (Item 14)
Visual (Item 15)
Air (stationary source emissions, vehicle emissions, dust and odor) (Item 16)
Noise (Item 17)
Traffic (Item 18)
Cumulative potential effects (Item 19)
Socioeconomic effects (Item 20)

3.2 SIGNIFICANT IMPACTS ARE NOT EXPECTED BUT INFORMATION BEYOND THAT IN THE EAW WILL BE INCLUDED IN THE EIS.

[Listing of items by issue title and EAW Item number]

3.2.1 Wetland impacts (Item 11)

The EIS will discuss changes in wetland type and acreage loss attributable to the elimination of Grindstone Reservoir and construction areas. Information from the wetland study described in 6.1 below will inform this discussion.

3.2.2 Hydrological effects (Item 11)

The EIS will include the results of the hydrologic and hydraulic study (study discussed in 6.2 below) and will describe potential upstream and downstream impacts. The EIS will also discuss mitigation strategies, if warranted.

3.2.3 Sediment and contaminants (Item 12)

The EIS will include the results of the sediment study (study discussed in 6.3 below), describe soil types present within the reservoir, and potential impacts. It will also include the results of the contaminant study, if required.

3.2.4 Fish, wildlife, plant communities and sensitive ecological resources (Item 13)

The EIS will include the results of the mussel study (described in 6.4 below), describe potential impacts to state-listed mussel species, and identify potential mitigation, if warranted. The EIS will discuss impacts to other aquatic organisms, including impacts to the state-listed Blanding's turtle and mudpuppy, and fish species and suggest mitigation, if warranted. The EIS will also include a discussion on invasive species.

The EIS will evaluate potential impacts to federally- and state- threatened and endangered species, if present, and describe mitigation strategies for these species, as warranted.

3.3 POTENTIALLY SIGNIFICANT IMPACTS MAY RESULT; INFORMATION BEYOND THAT IN THE EAW WILL BE INCLUDED IN THE EIS.

[*Listing of items by issue title and EAW Item number*]

3.3.1 Geology (Karst) (Item 10)

The elimination of the Grindstone Reservoir could result in potentially significant impacts to land in the area should the area be prone to karst conditions and slumping or sinking occurs. The EIS will discuss results from the geology study (study discussed in 6.5 below) and describe any karst conditions that may be present.

3.3.2 Groundwater (private wells) (Item 11)

The EIS will discuss results from the private well study described in section 6.6 below and will discuss potential impacts the proposed Project may have on local private wells.

3.3.3 Public Waters and Riparian Rights (Item 11)

The EIS will also discuss potential impacts the proposed Project may have on the loss of public waters and the removal of a public water basin. As mentioned in the EAW, the corner of one private parcel abuts the shoreline of the Grindstone Reservoir. The EIS will discuss riparian rights laws (study discussed in 6.7 below).

3.4 SOCIOECONOMIC EFFECTS

The DNR *does not propose* to discuss socioeconomic effects of the proposed Project. As discussed in the Scoping EAW Item 20, the proposed Project is not expected to have economic effects on employment or the local economy. Social impacts are not likely to occur; recreational use, including angling, boating, hiking and biking would remain within the Hinckley AMA and the adjacent Willard Mungar State Trail.

4.0 IDENTIFICATION OF PHASED OR CONNECTED ACTIONS

As described in the Scoping EAW, the Hinckley AMA currently has a long-term water appropriations permit to appropriate water from the Grindstone Reservoir for three nearby fish rearing ponds. The proposed Project would result in the elimination of the reservoir and make the current water intake pipe for these ponds unusable. As a result, the AMA would need to redesign how they appropriate water for the three ponds. The Scoping EAW describes a process that is currently being discussed to solve this issue, which would be to appropriate water from the Grindstone River from a location near the ponds, in order to supply the water needs for rearing fish.

If any future components of the proposed Project are not adequately known over the course of the EIS, than those components would be evaluated to determine the need for supplemental EIS. Minnesota Rules 4410.2000, subp. 4 (2019) indicates where it is not possible to adequately address all the project components or stages at the time of the initial EIS, a supplemental EIS must be completed before approval and construction of each subsequent project component or stage. DNR is the designated RGU for the preparation of any supplemental EIS.

5.0 EIS SCHEDULE (TENTATIVE)

November 2020 - Scoping EAW and Draft Scoping Decision comment period (included a public meeting on November 5]
December 2020 - Final Scoping Decision Issued
February 2021 - EIS Preparation Notice published
December 2021 - Draft EIS issued for public review (includes public meeting)
January 2022 - Final EIS Issued
March 2022 - EIS Adequacy Decision

Pursuant to Minn. R. 4410.2100, subp. 9 (2019), the DNR will issue an EIS Preparation Notice within 45 days after receipt of payment for preparation of the EIS. The Notice will be published in the *EQB Monitor*, along with a summary of the scoping decision. The Draft EIS and Final EIS will be issued pursuant to Minn. R. 4410.2600 to 4410.2700 (2019).

6.0 SPECIAL STUDIES OR RESEARCH

Various reports and studies will be developed to support the assessment of environmental impacts from the proposed Project. The Project proposer will provide the following reports to the DNR for review and incorporation into the EIS. The content of these will be independently reviewed and confirmed by the DNR and/or the EIS contractor prior to being incorporated into the EIS.

6.1 WETLAND DELINEATION

A series of wetland delineations would be conducted to determine boundary and Type of wetlands present in areas adjacent to the Grindstone Reservoir and in areas that may be impacted by the proposed Project. As proposed, a level one wetland delineation would be conducted prior to any work in order to document wetlands present prior to the proposed Project taking place. If the proposed Project takes place, a second wetland delineation would be conducted to document if wetland loss or change in wetland Type has occurred. In compliance with the State of Minnesota Wetland Conservation Act and Sections 401 and 404 of the Clean Water Act, wetlands would be identified using methods described in the United States Army Corps of Engineers Wetland Delineation Manual (January, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. Wetland delineations would be conducted by an individual qualified to conduct wetland delineations within the State of Minnesota. Information gathered from this study would be used to inform discussion of wetland impacts in the EIS as well as wetland mitigation requirements if necessary.

6.2 HYDROLOGIC AND HYDRAULIC STUDY

A conceptual level hydrologic and hydraulic study (i.e., H & H study) will be undertaken on the proposed alternatives, which include the proposed Project, the No Action Alternative, the partially

engineered channel restoration and the fully engineered channel restoration. This study will involve a uniform steady flow model utilizing the U.S. Army Corp of Engineer's HEC-RAS model. Previously field gathered topographic data, supplemented with LIDAR topographic data, will be input into the model to represent the geometry of each alternative. Storm events ranging from the 5 year recurrence interval to the 500 year recurrence interval will be studied. For each of the alternatives, water surface profiles will be generated in a model for the natural stream condition, the existing condition, as well as the proposed condition. These water surface profiles will be calculated over a stream reach beyond the immediate project limits upstream and downstream to demonstrate and quantify potential impacts. The quantitative model will be calibrated with historic data, and tested for model sensitivity to assumed parameters.

The study will be conducted by DNR engineering staff. The product of this study will be a hydraulic design report signed by a Licensed Professional Engineer in the State of Minnesota. Information from this study would be used to inform discussion on upstream and downstream hydrology impacts in the EIS. It would also inform any mitigation requirements, if necessary.

6.3 SEDIMENT AND CONTAMINANT STUDY

To determine if the sediment within the reservoir is contaminated, and may cause health risks if contaminants are released into the water and not disposed of properly, a dredge material analysis would be conducted using the Minnesota Pollution Control Agency's (MPCA) Managing Dredge Materials in the State of Minnesota guidance document. Based on aerial and low water photos, cobble and boulders appear in the upper reaches of the Grindstone Reservoir. Compared to more agricultural watersheds, the amount of accumulated sediment within the reservoir appears to be relatively small, and volume and depth of sediment present is thought to be low. Pollutants do not generally adhere to coarse particles such as sand, gravel, and pebble, so sediment sampling would focus on areas where deposition of finer-grained materials is most likely to occur in order to identify potential contaminant concerns. Sediment deposition in the reservoir is likely greatest within the upper reaches of the reservoir since shear stress drops significantly as the steeper slope of the river meets the backwaters of the dam. A total of seven sediment samples would be taken from the following locations:

- 1 in the thalweg (deepest area of the river) of the upper reach of the South Branch of the Grindstone River
- 6 from the main channel stemming from the North branch of the Grindstone River:
    - 3 in the mid-channel in the upper reach of the reservoir
    - 3 in the lower reach of the reservoir.

Sample locations will be determined based on historic aerial imagery as well as determined by onsite visual assessments. One core sample and two sieve analyses would be obtained from each sample site following the process outlined in the MPCA's Managing Dredge Materials guidance document for baseline sediment analysis. According to the MPCA, if 93 percent of the sampled materials is determined to be coarser than silt, the dredged material is unlikely to be contaminated and would not require additional evaluation. However, if sampled materials do not fit into this category (93 percent of particles are not coarser than silt) the materials would be tested for baseline parameters identified in the MPCA guidance and polycyclic aromatic hydrocarbons (PAHs). Information from this study would

be used to inform discussion on release of contaminants from the reservoir sediments in the EIS. It would also inform any mitigation requirements, if necessary.

6.4 MUSSEL STUDY

In order to determine the potential for a take of state and federally protected mussels, a DNR-qualified surveyor (from the DNR or a private consultant) would conduct a mussel survey and/or relocation in any potential mussel habitat that may be impacted by the proposed Project. The extent of the mussel survey would include all areas of the lakebed or riverbed that would be directly impacted by excavation, pile driving, placing of fill or rip rap, driving of equipment, or dewatering; downstream areas that would receive sediment from proposed Project activities would also be surveyed. The surveyor would need to obtain a permit from the DNR before conducting any mussel surveys. Mussel survey protocols identified in the Minnesota Freshwater Mussel Survey and Relocation Protocol would need to be followed. Information from this study would be used to inform discussion on mussel impacts in the EIS and any mitigation requirements, if necessary.

6.5 GEOLOGY STUDY

Geophysical investigations would be conducted in areas adjacent to the Grindstone Reservoir in order to better understand depth of the Hinckley Sandstone and potential land subsistence risk from the elimination of the Grindstone Reservoir. Using the methods described by Peterson and Berg (2001) in Karst Mapping with Geophysics at Mystery Cave State Park, Minnesota, professional staff from the DNR County Geologic Atlas Program, or a qualified private consultant, would conduct surface resistivity surveys on up to ten lines in cleared terrestrial areas located within 250 meters of the reservoir edge. Rock type, soil type, air, and water all have different resistivity to electricity so this method can be used to identify horizontal and vertical changes in material type below the surface, and can identify bedrock anomalies present below the surface. If bedrock anomalies are identified by the resistivity study, shallow (approximately 5 to 25 feet) augured borings would be drilled from these locations in order to determine if these anomalies represent sinkholes or conduits associated with karst. The goal of these borings would be to characterize all accessible bedrock anomalies, especially those near built structures. Information gathered from this study would help inform mitigation recommendations, if necessary.

6.6 PRIVATE WELL STUDY

The removal of the Grindstone dam and the subsequent elimination of the Grindstone Reservoir is expected to lower the water table a maximum of 10.5 feet locally near the dam, which could affect local groundwater uses in the area. Records of private domestic wells in the Minnesota Well Index (MWI) indicate that the maximum decrease of 10.5 feet in the water table could result in a moderate to high risk of well interference in private wells near the reservoir. Other wells that may be at risk from dam removal include unverified wells in MWI (unverified wells are wells that appear in the MWI,

however locations of these wells may not be accurate) and private domestic supply wells that are not included in the MWI due to incomplete reporting. Further evaluation would be conducted to identify all wells located at least within 2,000 feet of the reservoir dam and to obtain the information on each necessary to evaluate their potential for impacts from dam removal. DNR staff or a hired consultant would conduct this evaluation by using aerial imagery, determining parcel ownership, and communicating directly with landowners. Information from this study would be used to inform discussion on private domestic water supply impacts in the EIS and mitigation recommendations, if necessary.

6.7 RIPARIAN RIGHTS

There are ongoing questions related to how the elimination of the Grindstone Reservoir would impact riparian rights of adjacent property owners. DNR legal counsel will consult relevant laws, information and/or legal opinions, and summarize/disclose in a formal memo. The information from the memo will inform the Public Waters and Riparian Rights section of the EIS.

7.0 MITIGATION AND MONITORING

Minnesota Rules 4410.2300 (2019) identifies that the EIS shall include mitigation measures that could reasonably eliminate or minimize any adverse environmental, economic, employment, or sociological effects of the project. To meet this requirement, the EIS will evaluate and discuss mitigation measures to address adverse effects identified as a result of analyses proposed in Sections 3.2 and 3.3 of the FSDD.

Specific mitigation measures have been identified, such as project timing to minimize potential impacts to Blanding's turtles and incorporation of erosion and sediment control best management practices to minimize concerns related to sediment release. Other mitigation needs are still conceptual, such as wetland replacement.

The following table summarizes all currently known mitigation measures proposed or required. These measures and any others added to the proposed Project during EIS development, or reasonable measures received from public comments, would be evaluated in the EIS and supplemented as needed to achieve environmental benefit.

Impact	Mitigation Type (Required, Voluntary, If needed)	Proposed Mitigation Action
Mussel impacts	required	Survey for state and federally listed mussel species; relocation of Listed mussels outside of the project impact area; erosion control Best Management Practices (BMPs)
Blanding's turtle impacts	required	Time drawdown of the Project to be completed by Aug. 31; use of wildlife friendly erosion control
Wetland impacts	Required	Wetland replacement
Water quality	Required	Erosion control BMPs as required with permits
Water quality	Voluntary	Sediment testing
Drinking Water Supply Management Area (DWSMA)	If needed	Re-zone of DWSMA by MDH
Riparian Rights	If needed	Design flow of river to particular point

The EIS will also provide information about the types of monitoring needed to verify predictions made in the EIS and ensure compliance with permit conditions. Specific monitoring plans will be developed and included in the permitting process, which may or may not occur simultaneously with preparation of the EIS. To the extent that specific monitoring plans are available, they will be included as part of the EIS. If a specific monitoring plan is not available, and has been recognized in the EIS process as needed, a conceptual monitoring plan will be developed as part of the EIS. Monitoring programs will provide a means to identify non-compliance with permit requirements, so that corrective action can be developed to minimize unforeseen impacts from the Project.

The concept of an adaptive management plan will be evaluated as part of the EIS. The EIS will assess the potential uncertainty of various environmental effects and determine the suitability of adaptive management as a mechanism to deal with this uncertainty. If an adaptive management program is determined suitable, the details of monitoring, reporting, consultation and corrective action will be developed.

8.0 GOVERNMENT PERMITS OR APPROVALS

The EIS will identify all permits and approvals required for this project. While some permit application review may occur concurrently with EIS preparation, the EIS will not necessarily contain all information required for a decision on those permits. No permits have been designated to have all information developed concurrently with the preparation of the EIS nor will any require preparation of a record of decision pursuant to Minnesota Rules 4410.2100, subparts 6(C) and (D).