Scoping Environmental Assessment Worksheet:
Otter Tail to Wilkin CO₂ Pipeline Project

April 2023

Docket No. IP7093/PPL-22-422
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List of Acronyms

AADT  Annual Average Daily Traffic
AC  alternating current
API 5L  American Petroleum Institute 5L Pipe Specification
AQI  Air Quality Index
ASME  American Society of Mechanical Engineers
ATWS  additional temporary workspace
BDSWD  Bois de Sioux Watershed District
BGEP A  Bald and Golden Eagle Protection Act
BMP  best management practices
BNSF  Burlington Northern Santa Fe
BRRWD  Buffalo-Red River Watershed District
BWSR  Minnesota Board of Water & Soil Resources
CARB  California Air Resources Board
CCS  Carbon Capture and Sequestration
CFR  Code of Federal Regulations
CI  carbon intensity
CO  carbon monoxide
CO₂  carbon dioxide
CO₂e  carbon dioxide equivalent
CP  cathodic protection
CWA  Clean Water Act
dB  decibels
dBA  decibels on the A-weighted scale
DC  direct current
DCH  designated critical habitat
DEED  Department of Employment and Economic Development
DOC-EERA  Minnesota Department of Commerce-Energy Environmental Review and Analysis
DWSMA  Drinking Water Supply Management Area
ECD  erosion control device
EI  environmental inspector
ERP  Emergency Response Plan
<table>
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<th>Description</th>
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<tr>
<td>ESA</td>
<td>Endangered Species Act</td>
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<tr>
<td>FTE</td>
<td>full-time equivalent</td>
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<td>GAP</td>
<td>Gap Analysis Program</td>
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<td>GHG</td>
<td>greenhouse gas</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>Green Plains Ethanol Plant</td>
<td>Green Plains Otter Tail LLC Ethanol Plant</td>
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<td>HAP</td>
<td>hazardous air pollutant</td>
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<tr>
<td>HDD</td>
<td>horizontal directional drill</td>
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<td>HUC</td>
<td>hydrologic unit code</td>
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<td>IBA</td>
<td>Important Bird Area</td>
</tr>
<tr>
<td>ICCP</td>
<td>impressed current cathodic protection</td>
</tr>
<tr>
<td>IPaC</td>
<td>Information for Planning and Consultation</td>
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<tr>
<td>IRS</td>
<td>Internal Revenue Service</td>
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<tr>
<td>LCFS</td>
<td>low carbon fuel standard</td>
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<td>LGU</td>
<td>local governmental unit</td>
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<td>MBS Site</td>
<td>Minnesota Biological Survey Site of Biodiversity Significance</td>
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<td>MBTA</td>
<td>Migratory Bird Treaty Act</td>
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<tr>
<td>MCE</td>
<td>Midwest Carbon Express</td>
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<td>Minnesota Department of Agriculture</td>
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<td>Minnesota Department of Health</td>
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<td>Minnesota Department of Natural Resources</td>
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<td>Minnesota APP</td>
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<td>Minnesota ECP</td>
<td>Minnesota Environmental Construction Plan</td>
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<tr>
<td>MLV</td>
<td>mainline valve</td>
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<tr>
<td>MMTPA</td>
<td>million metric tons per annum</td>
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<tr>
<td>MNDOT</td>
<td>Minnesota Department of Transportation</td>
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<tr>
<td>MnRISKs</td>
<td>Minnesota Statewide Screening of Health Risks from Air Pollution</td>
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<tr>
<td>MOP</td>
<td>maximum operating pressure</td>
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<tr>
<td>MP</td>
<td>milepost</td>
</tr>
<tr>
<td>MPCA</td>
<td>Minnesota Pollution Control Agency</td>
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<tr>
<td>MPUC or Commission</td>
<td>Minnesota Public Utilities Commission</td>
</tr>
<tr>
<td>MRV</td>
<td>monitoring, reporting, and verification</td>
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<tr>
<td>MWI</td>
<td>Minnesota Well Index</td>
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<tr>
<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
</tr>
<tr>
<td>NHIS</td>
<td>Natural Heritage Information System</td>
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<tr>
<td>NLEB</td>
<td>northern long-eared bat</td>
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<tr>
<td>NO₂</td>
<td>nitrogen dioxide</td>
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<tr>
<td>NOₓ</td>
<td>nitrogen oxides</td>
</tr>
<tr>
<td>NPC</td>
<td>Native Plant Community</td>
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<tr>
<td>NPDES</td>
<td>National Pollutant Discharge Elimination System</td>
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<td>Natural Resources Conservation Service</td>
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<td>NRHP</td>
<td>National Register of Historic Places</td>
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<td>NSR</td>
<td>noise sensitive receptor</td>
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<td>NWR</td>
<td>National Wildlife Refuge</td>
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<tr>
<td>O&amp;M</td>
<td>Operating and Maintenance</td>
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<td>OCC</td>
<td>Operations Control Center</td>
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<tr>
<td>PCBs</td>
<td>polychlorinated biphenyls</td>
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<tr>
<td>Abbreviation</td>
<td>Definition</td>
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<tr>
<td>PEM</td>
<td>Palustrine emergent</td>
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<tr>
<td>PFO</td>
<td>Palustrine forested</td>
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<tr>
<td>PHAs</td>
<td>polycyclic aromatic hydrocarbons</td>
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<tr>
<td>PHMSA</td>
<td>Pipeline and Hazardous Materials Safety Administration</td>
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<tr>
<td>Plant</td>
<td>Green Plains Otter Tail LLC Ethanol Plant</td>
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<tr>
<td>PM$_{10}$</td>
<td>particulate matter equal to or less than 10 microns in diameter</td>
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<tr>
<td>PM$_{2.5}$</td>
<td>fine particulate matter equal to or less than 2.5 microns in diameter</td>
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<tr>
<td>ppm</td>
<td>parts per million</td>
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<tr>
<td>Project</td>
<td>Otter Tail to Wilkin Project</td>
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<tr>
<td>PSS</td>
<td>Palustrine scrub-shrub</td>
</tr>
<tr>
<td>RGP</td>
<td>Regional General Permit</td>
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<tr>
<td>ROC</td>
<td>region of comparison</td>
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<tr>
<td>ROI</td>
<td>region of influence</td>
</tr>
<tr>
<td>ROW</td>
<td>right-of-way</td>
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<tr>
<td>RR ROW Prairies</td>
<td>Railroad Right-of-way Prairies</td>
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<tr>
<td>RTTM</td>
<td>Real Time Transient Model</td>
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<tr>
<td>SCADA</td>
<td>supervisory control and data acquisition</td>
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<tr>
<td>SDS</td>
<td>Safety Data Sheet</td>
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<tr>
<td>SHPO</td>
<td>State Historic Preservation Office</td>
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<td>SO$_2$</td>
<td>sulfur dioxide</td>
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<tr>
<td>SSM</td>
<td>startup, shutdown, and malfunction</td>
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<td>SSURGO</td>
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<td>SWPPP</td>
<td>Stormwater Pollution Prevention Plan</td>
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<td>Summit Carbon Solutions, LLC</td>
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<td>tpy</td>
<td>tons per year</td>
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<tr>
<td>UDP</td>
<td>Unanticipated Discoveries Plan</td>
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<tr>
<td>UIC</td>
<td>Underground Injection Control</td>
</tr>
<tr>
<td>USACE</td>
<td>U.S. Army Corps of Engineers</td>
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<tr>
<td>USC</td>
<td>United States Code</td>
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<td>USDOT</td>
<td>U.S. Department of Transportation</td>
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<tr>
<td>USEPA</td>
<td>U.S. Environmental Protection Agency</td>
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<td>U.S. Fish and Wildlife Service</td>
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<td>USGS</td>
<td>U.S. Geological Survey</td>
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<tr>
<td>VOC</td>
<td>volatile organic compounds</td>
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<tr>
<td>WAN</td>
<td>Wildlife Action Network</td>
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<tr>
<td>WCA</td>
<td>Wetland Conservation Act</td>
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<tr>
<td>WIMN</td>
<td>What’s in My Neighborhood</td>
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<td>WMA</td>
<td>wildlife management areas</td>
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<td>WMD</td>
<td>Wetland Management District</td>
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December 2022 version

ENVIRONMENTAL ASSESSMENT WORKSHEET

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board’s website at: https://www.eqb.state.mn.us. The EAW form provides information about a project that may have the potential for significant environmental effects. Guidance documents provide additional detail and links to resources for completing the EAW form.

**Cumulative potential effects** can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

**Note to reviewers:** Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1 **PROJECT TITLE**

The Summit Carbon Solutions, LLC (Summit Carbon) Otter Tail to Wilkin Project (the Project).

2 **PROPOSER**

Name: Summit Carbon Solutions, LLC
Contact person: John Satterfield
Title: Director, Regulatory Affairs and Environmental, Social, and Governance
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City, State, ZIP: Ames, IA 50010
Phone: (515) 620-2146
Fax: N/A
Email: jsatterfield@summitcarbon.com

3 **RGU**

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Contact person: Scott Ek
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Phone: (651) 201-2255
Fax: (651) 297-7073
Email: scott.ek@state.mn.us

4 **REASON FOR EAW PREPARATION**

(check one)

Required: ☒ EIS Scoping
☐ Citizen petition
☐ Mandatory EAW
☐ RGU discretion
☐ Proposer initiated
If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):

 Pipelines subject to the full route selection procedures under Minnesota Statutes, Section 216G.02, qualify under the mandatory environmental review category pursuant to Minn. R. 4410.4400, subp. 24.

5 PROJECT LOCATION

County: Otter Tail, Wilkin
City/Township: Fergus Falls, Carlisle, and Orwell townships (Otter Tail County); Foxhome, Sunnyside, and Breckenridge townships (Wilkin County)
PLS Location (¼, ¼, Section, Township, Range): See detailed route maps in Appendix A.
Watershed (81 major watershed scale): Otter Tail River (Hydrologic Unit Code [HUC]-8: 09020103); Bois de Sioux River (HUC-8 09020101).
GPS Coordinates: N/A
Tax Parcel Number: See tax parcel list in Appendix B. Information is provided for parcels that intersect the 500 to 1,808-foot-wide requested route width centered on the Project centerline.

At a minimum attach each of the following to the EAW:
- County map showing the general location of the project.
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable).
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.
- List of data sources, models, and other resources (from the Item-by-Item Guidance: Climate Adaptation and Resilience or other) used for information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the project during the life of the project (as detailed below in Item 7. Climate Adaptation and Resilience).

Figure 5-1 presents a Project Overview Map which depicts the counties crossed by the Project and Figure 5-2 displays the watersheds crossed. The Project includes construction of approximately 28.1 miles of 4-inch nominal diameter carbon steel pipeline and associated facilities, which include:

- a carbon dioxide (CO₂) capture facility located at the Green Plains Otter Tail Ethanol Plant (Plant; a capture facility site plan is included in Appendix C);
- a pipeline pig/inspection tool launcher located at the Green Plains Ethanol Plant (a launcher facility site plan is included in Appendix C);
- four mainline valves (MLV) and an impressed current cathodic protection (ICCP) system within the pipeline permanent right-of-way (ROW) (a MLV site plan is included in Appendix C); and
- temporary and permanent access roads.

1 Outside diameter is 4.5 inches.
Summit Carbon Solutions, LLC (SCS) is requesting a 500 to 1,808-foot-wide route width centered over the pipeline. Appendix A presents three sets of detailed route maps as follows:

- **Topographic Maps (Appendix A.1):** This map set presents Project components listed above and the requested route width and environmental survey area overlain on a U.S. Geological Survey (USGS) 7.5 minute, 1:24,000 scale topographic base map as required by the EAW filing criteria. The map set depicts Project components, pre-construction conditions, as well as the boundaries of environmental resources crossed by and in the vicinity of the Project.

- **Aerial Maps (Appendix A.2):** This map set presents Project components listed above and the requested route width and environmental survey area overlain on a USGS 1:12,000, aerial base map. The map set also depicts Project components, pre-construction conditions, as well as the boundaries of environmental resources crossed by and in the vicinity of the Project.

- **Wildlife Maps (Appendix A.3):** This map set presents Project components listed above and the requested route width and environmental survey area overlain on a USGS 1:12,000, aerial base map. The map set also depicts Project components, pre-construction conditions, as well as the boundaries of wildlife and natural resource communities crossed by and in the vicinity of the Project.

The following data sources were used to gather information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the Project. Also see Section 7, Climate Adaptation and Resilience.

- Minnesota Department of Natural Resources (MDNR) Climate Trends Website (MDNR, 2023a)
- Risk Factor – Flood Factor Website (Risk Factor, 2023)

### 6 PROJECT DESCRIPTION

**6.a EQB Monitor Project Description**

The Otter Tail to Wilkin Project consists of approximately 28.1 miles of 4-inch diameter CO₂ pipeline and associated facilities in portions of Wilkin and Otter Tail counties. The Project would capture CO₂ from the Green Plains Ethanol Plant near Fergus Falls and transport it to the North Dakota and Minnesota border south of Breckenridge. The Project would interconnect to a larger proposed CO₂ pipeline network, referred to as the Midwest Carbon Express Project, to transport the CO₂ to a sequestration area in North Dakota.

**b) Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal, or remodeling of existing structures, and 4) timing and duration of construction activities.**
6.b Project Description

The Project would involve construction and operation of a 4-inch nominal diameter (4.5-inch outer diameter) high-strength steel pipeline that crosses approximately 28.1 miles in Fergus Falls, Carlisle, and Orwell townships in Otter Tail County (10.8 miles in Otter Tail County) and Foxhome, Sunnyside, and Breckenridge townships in Wilkin County (17.3 miles in Wilkin County). SCS would construct the capture facility equipment at the Green Plains Ethanol Plant and would be connected to the vent from the CO₂ fermentation scrubber at the Green Plains Ethanol Plant. The pipeline would originate at milepost (MP) 0.0 at the capture facility and transport the captured CO₂ westerly across Otter Tail and Wilkin counties to the Minnesota and North Dakota border and the Bois de Sioux River at MP 28.1 (see Figure 5-1).

SCS would utilize temporary construction workspace that typically varies from 25 to 100 feet wide, plus additional temporary workspace (ATWS), to facilitate construction. SCS would use temporary roads to access the construction workspace. SCS is not proposing to use any construction or staging yards in Minnesota for the project.

Following construction, land would be restored to pre-construction conditions and would remain suitable for farming, pasturing, and other activities. Structures and trees over the permanent ROW would be restricted. SCS would retain a 25 to 50-foot-wide permanent ROW centered over the pipeline for inspection and maintenance access during operations. Permanent roads would also be established to access aboveground MLV sites.

Typical ROW configurations are found in Appendix A of the Project’s Minnesota Environmental Construction Plan (Minnesota ECP) (see Appendix D of this EAW). The Minnesota ECP and Minnesota Agricultural Protection Plan (Minnesota APP; Appendix E) identify generally recognized best management practices (BMPs) and Project-specific procedures that would be implemented to minimize and mitigate construction impacts, particularly impacts on wetlands, waterbodies, and agricultural areas, as well as to increase the success and efficiency of revegetation and restoration methods on lands crossed by the Project.

The capture facility consists of piping, valves, vessels, electrical and instrumentation components, dehydration equipment, compressors (housed in a structure), a cooling system, a pump (housed in a structure), metering equipment, and other components. The high purity CO₂ (i.e., greater than 96% CO₂) would be captured from the ethanol fermentation process near ambient temperature and pressure.

A pipeline internal inspection tool launcher would be installed within the capture facility and at the beginning of the pipeline to allow SCS to insert internal inspection tools that can travel down the pipeline and gather information regarding pipeline integrity. MLVs would be installed. An ICCP system designed to protect the pipeline from corrosion would be installed. These systems would have some minor aboveground components. The aboveground facilities would be designed and constructed to minimize permanent surface impacts while ensuring safe operations. Aboveground facilities would be surrounded by a chain-link, locked fence to limit physical access by the public.

The Project would have a normal planned capacity to capture and transport 524 metric tons per day of CO₂ (approximately 0.19 million metric tons per annum [MMTPA] assuming a 355-day operational year). The Project would interconnect to a larger five-state CO₂ system known as the Midwest Carbon Express (MCE) Project. The MCE Project includes approximately 2,000 miles of pipeline for the capture and transportation of CO₂ from 32 ethanol plants across five states to permitted underground sequestration facilities in North Dakota (see Figure 6-1). This project is under development.
SCS proposes to commence construction of the Project pipeline and capture facility in the second quarter of 2024. SCS plans to complete pipeline construction in the third quarter of 2024 and capture facility construction in the third/fourth quarter of 2024. SCS proposes to place the complete Project in service in fourth quarter 2024. Construction would occur over a period of approximately 6 to 9 months. Construction timing is contingent on receipt of all required permits and authorizations.

The design life of the Project is 25 years; however, the physical life of the pipeline could extend beyond this time with SCS’s operations, inspection, and maintenance procedures. SCS has prepared a Decommissioning Plan that would be put into effect should the Project cease operations.

**Pipeline**

The pipeline would be constructed of high-strength carbon steel pipe that meets the American Petroleum Institute 5L Pipe Specification (API 5L). API 5L is the industry standard specification for the seamless and welded steel line pipes used in pipeline transportation systems, including the energy industry. It would be manufactured in the United States using a high-frequency longitudinal welded process. The proposed pipeline and associated facilities would be designed, constructed, inspected, tested, and operated in accordance with applicable requirements and regulations, including the USDOT regulations in Title 49 Code of Federal Regulations (CFR) Part 195, Transportation of Hazardous Liquids by Pipeline, American Society of Mechanical Engineers (ASME) Standard B 31.4, and API Standard 1104 Welding of Pipelines and Related Facilities, and other standards, practices, and guidelines referenced by the USDOT and ASME.

SCS’s Contractor would apply an external fusion bonded epoxy coating to the pipeline prior to installation to protect against corrosion. The horizontal directional drill (HDD) crossings at Pelican River, Otter Tail Valley Railroad/Highway 210, Otter Tail River, Burlington Northern Santa Fe (BNSF) Railroad/State Highway 9, and Bois de Sioux River would also have an Abrasion Resistant Overcoat installed as a secondary coating prior to installation. SCS’s Contractor would also install an ICCP system and AC/DC mitigation along the pipeline to protect the pipeline from the corrosive impacts of soil.

The typical dimensions of the pipeline trench would be approximately 5.4 feet (65 inches) deep and 16 to 24 inches wide at the bottom.\(^2\) Depending on soil properties, which affect ditch slope requirements, the top of the trench may be wider (approximately 28 to 30 inches wide). Based on the typical trench dimensions and the total length of the Project (28.1 miles), SCS estimates approximately 61,820 cubic yards\(^3\) of soil would be excavated in association with trenching activities.

The U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) establishes minimum depth of cover requirements in 49 CFR 195.248 at certain inland areas, including the following depths at normal excavation (non-bedrock) areas:

- 36 inches in industrial commercial, and residential areas;
- 48 inches at crossings of inland bodies of water with a width of at least 100 feet from high water mark to high water mark;
- 36 inches at drainage ditches at public roads and railroads; and
- 30 inches at any other area.

\(^2\) These trench dimensions and cubic yardage estimates vary from information provided in the Route Permit Application based on updated information from SCS.

\(^3\) This represents a conservative estimate of the pipeline trench being needed for the full 28.1 miles. The actual cubic yardage would be less than this number due to sections of the pipe installed via bore or HDD methods.
SCS’s Contractor would install the pipeline to allow for a minimum of 54 inches depth of cover, measured from the top of the pipe to ground surface, in accordance with MDA agricultural area standards at Minnesota Statutes Section 216G.07 or landowner agreements. The minimum depth of cover would be increased to 60 inches at waterbody and drainage ditch crossings as well as private road crossings as measured at the bottom of the road ditch.

The pipeline would be collocated with existing rights-of-way for approximately 53 percent of its route: two underground utility rights-of-way (a natural gas pipeline in two locations) and four types of aboveground rights-of-way (powerline, road, trail, and railroad).

**Capture Facility**

SCS would construct a CO\textsubscript{2} capture facility at the Green Plains Ethanol Plant. The purpose of the capture facility is to collect the CO\textsubscript{2} gas produced during the ethanol fermentation process and subsequently compress, dehydrate, and cool the gas to form CO\textsubscript{2} in a dense phase for transportation. Capture facility compressors and associated vessels would be located indoors; the blower, scrubbers, compressor intercoolers/aftercooler, and dehydration equipment would be located outdoors. The outdoor area containing capture facility equipment would be graveled. All vessels and pipes that are placed outdoors would require heat tracing and insulation. Electricity would be the only source of power, and the capture facility would include instrumentation to allow metering as well as onsite and remote operation. A plot plan of the capture facility is provided in Appendix C.

**Mainline Valves and ICCP System**

SCS plans to construct four MLVs along the Project; one at the capture facility and three along the pipeline. The purpose of an MLV is to isolate segments of the pipeline to contain the dense phase CO\textsubscript{2}, during normal and abnormal operations. MLVs would be 4-inch sectionalizing block valves constructed within a 50-foot-wide by 50-foot-long footprint, which would be wholly located within the permanent ROW. A drawing of a typical MLV is provided in Appendix C. Each MLV site would be graveled and fenced. MLVs would be located at MPs 0.0, 18.7, 20.3, and 27.4. The MLV at MP 0.0 would be within the Green Plains Ethanol Plant footprint, all others would be located within the permanent ROW. SCS would be able to operate all MLVs manually and remotely. All remotely operated valves would be powered by either solar or utility power and connected to the Operations Control Center (OCC) in Ames, Iowa through the best available public communications network.

SCS’s Contractor would install an ICCP system along the buried pipeline to mitigate the threat of corrosion on the pipe. Except for a junction box and small diameter vent pipe posted above deep well ground beds (see typical drawing in Appendix C), the ICCP system would be buried. The ICCP system components would be located within the capture facility, MLV footprints, or permanent ROW. The ICCP system would be continuously monitored and maintained for the life of the pipeline system.

AC/DC mitigation would be installed where necessary to protect the pipeline and the ICCP system from corrosive electromagnetic voltage and stray current from nearby electric powerlines. AC/DC mitigation systems, if required, would be installed within the permanent ROW.
Tool Launcher

A permanent\(^4\) tool launcher would be installed at the beginning of the pipeline at the capture facility (see typical launcher drawing in Appendix C). The launcher would allow for insertion of internal maintenance and inspection devices (commonly referred to as “pigs”), which are designed to travel through the pipeline to detect internal and external anomalies in the pipe such as corrosion, dents, and other irregularities or to clean the pipeline and remove liquids.

Access Roads

Existing public roads and private driveways would be used to access the construction workspace. In addition, SCS’s Contractor would build four temporary access roads to access the construction ROW where existing public roads do not exist. SCS’s Contractor would build four permanent access roads; three to MLVs along the pipeline and one to the capture facility/MLV. Permanent access roads would be short turn-offs from public roads. Permanent roads would also be used during construction.

Project Construction

The Project would be constructed using the following high-level steps, which are described in the following sections. One Calls would be completed prior to any ground-disturbing activity that might occur as part of these steps. A drawing showing the typical pipeline construction sequence is included as Figure 6-2.

- Construction survey and staking;
- Clearing, grading, and site preparation;
- Topsoil segregation;
- Stringing, bending, welding, coating, and inspecting;
- Trenching and lowering in of the pipeline, or completing trenchless crossings;
- Backfilling the trench;
- Hydrostatic testing and final tie-in; and
- Cleanup, restoration, and revegetation.

Construction Survey and Staking

First, construction/civil survey crews would flag/stake the exterior boundary of the construction workspace, associated facilities, and access roads. Civil survey crews would also mark the centerline with staking. Access points from existing public roads would be marked and flagged, fences would be cut and gated with landowner permission to control access to the construction workspace. Civil survey crews would also flag environmental features such as wetlands, sensitive resource sites, and waterbodies to ensure contractors are aware of their presence to follow the permit requirements. Environmental survey crews or environmental inspector(s) [EI(s)] would place signage at wetland and waterbody boundaries as well as any other locations where environmental constraints or restrictions (e.g., eligible cultural resources) are required.

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\(^4\) Since submittal of its Route Permit Application, SCS has changed the design of the tool launcher from a temporary to a permanent structure. There were no other design changes related to the launcher. This change has been reflected on the drawings in Appendix C.
Figure 6-2: Typical Construction Sequence
Clearing, Grading, and Site Preparation

Following the surveys, the construction workspace would be cleared of vegetation. All clearing and grading work would be conducted in accordance with applicable permits. Cleared vegetation within the construction workspace would be disposed of in accordance with applicable regulations and landowner requests. Agricultural areas with crops present would be mowed or disced to ground level unless the landowner requests to remove the crops themselves. Bushes and trees would be felled or sheared while preventing damage to adjacent trees and structures. Tree stump removal and grading activities would be limited to areas directly over the trench or where necessary to ensure a safe and level work area. Bushes and trees may be disposed of, burned, or chipped and spread over the construction workspace outside of wetlands and active agricultural fields. Burning, if necessary, would be conducted in accordance with permits, regulations, and approvals.

For HDDs and bores of waterbodies where there would not be a travel lane within the ROW (i.e., no use of a bridge) there would be no clearing over the HDD path.

SCS’s Contractor would establish a travel lane within the construction workspace, which might include the use of construction mats when crossing wetland areas. Bridges, when permitted, would be installed at waterbody crossings to create a single travel lane up and down the construction workspace. SCS’s Contractor would identify locations of 50-ft buffer zones adjacent to wetlands and waterbodies as defined in the Construction Stormwater permit and would properly install temporary erosion control devices (ECDs) and/or maintain redundant sediment control measures immediately after clearing and prior to initial ground disturbance within these zones. SCS’s Contractor would install perimeter sediment controls at least 5 feet apart unless limited by lack of available space. Redundant controls would not be installed adjacent to road ditches, judicial ditches, county ditches, stormwater conveyance channels, storm drain inlets, sediment basins, and agriculturally farmed wetlands. Temporary ECDs and sediment barriers would remain in place and be maintained or replaced until the area is revegetated.

Topsoil Segregation

SCS’s Contractor would segregate topsoil after clearing is complete and prior to trenching activities. Topsoil would be segregated in wetlands in accordance with the conditions of the U.S. Army Corps of Engineers (USACE) Section 404 Utility Regional General Permit (RGP) authorization. Topsoil and subsoil piles would be placed so that at least 1 foot of separation would be maintained between the piles to prevent mixing. If a 1-foot separation gap cannot be maintained, the Contractor may utilize a physical barrier such as a silt fence, geotextile fabric, or a thick layer of mulch. SCS’s Contractor may use a soil tackifier in excessive wind conditions.

Stringing, Bending, Welding, Coating, and Inspecting Pipe

SCS’s Contractor may choose to string, or lay-out, the pipe segments either before or after trenching. This would depend on the rate of construction progress. The pipe would be laid out within the construction workspace and would be laid parallel to the trench. Once pipe segments are in place along the construction workspace, pipe lengths would be aligned, bends fabricated, and joints welded together on temporary supports called skids. Welding would be performed in accordance with Title 49 CFR Part 195 and API Standard 1104 Welding of Pipelines and Related Facilities, and contractor welding specifications. All welds would be inspected with non-destructive methods (real-time radiography and/or ultrasound) to ensure there are no defects. Tested and approved welds would be epoxy coated for corrosion protection.
Trenching and Lowering In of the Pipeline

When the pipeline is ready to be installed, if the trench was not excavated ahead of pipe stringing, SCS’s Contractor would excavate a pipeline trench and store topsoil and subsoil separately within the construction workspace. Some features would be crossed with trenchless crossing methods (i.e., bore or HDD).

Trenching would be completed using a trenching machine, backhoe, or similar equipment. Trenching may include crossings of wetlands, waterbodies, and other features. Trench spoil would be deposited adjacent to the trench within the construction work areas separate from the topsoil. If needed, groundwater that accumulates in the open trench would be removed and the water discharged to a dewatering structure or a filter bag as required by applicable permits. Trench dewatering procedures are discussed in detail below.

It is possible that sheet piling may be used on one or both sides of the trench wall to provide stability in unstable or highly saturated soils, at waterbody crossings to create a dry workspace, or to strengthen an excavation that may need to remain open for a period of time. Sheet piling consists of steel sheets that can be interlocked and driven into the ground in sequence to provide lateral support along the trench wall. SCS’s Contractor can control the depth to which the sheets are driven. In addition, SCS’s Contractor can use prefabricated trench boxes to provide trench wall stability. Trench boxes are set inside an excavation, but do not go deeper than the area already excavated.

SCS does not believe that there are any locations along the Project where blasting must be used to create a trench through consolidated bedrock. SCS’s Contractor would install the pipeline to allow for a minimum of 54 inches depth of cover, measured from the ground surface to top of the pipe. The minimum depth of cover would be increased to 60 inches at waterbody and drainage ditch crossings as well as private road crossings as measured at the bottom of the road ditch. Additional depth of cover may be implemented if requested by local, state, or federal agencies or landowners; in areas adjacent to wetlands or waterbodies or in sensitive habitat; or should a construction method (e.g., bore or HDD) result in additional depth of installation. SCS would complete an as-built civil survey to record the depth of cover during construction by taking measurements from the top of the pipe. This would ensure that the depth of the pipeline meets state and federal requirements before the trench is backfilled.

Trenching procedures would be followed to minimize the length of trench that is left open. SCS’s Contractor would limit the amount of excavated open trench in uplands to a maximum of 15 days of anticipated welding production, or 15 miles. For locations along the Project where the USACE Section 404 Utility RGP applies (i.e., water of the U.S.), this would be limited to 5,280 linear feet of open trench. Site-specific activities that are typically conducted independently with separate crews, such as HDDs, bores, and MLV installation may be performed independent of open trench work. To allow the passage of wildlife, livestock, and to facilitate natural drainage patterns, spoil piles would have gaps that align with the breaks of strung pipe that are lying along an open trench. Bridges may also be constructed to allow the passage of wildlife and livestock.

Prior to lowering-in the pipe, the trench bottom may be padded if needed, although SCS does not anticipate the need for trench bottom padding at this time. If necessary, sandbags and/or clean fill would be used to pad the trench before lowering the pipeline. The trench would be visually inspected to ensure that it is free of rock and other debris that can damage the pipe or the pipe coating and free of wildlife; any animals present would be removed. Completed sections of pipe would be lifted off the temporary supports by side boom tractors or similar equipment and placed into the trench. Tie-in welding and pipeline coating would occur within the trench to join the newly lowered-in section with the previously installed sections of pipe. These welds would be tested and epoxy coated.
**Dewatering**

For dewatering open excavations, including the trench, SCS’s Contractor would use a hose which is attached to a portable pump. The number and size of pumps used during trench dewatering would depend on the volume of water needed to be removed from the trench. Pumps used during dewatering would be placed within secondary containment if within 100 feet of a wetland, waterbody, water supply well, or sensitive habitat. Pumps would be controlled and monitored to ensure that the discharge does not overwhelm the dewatering structure. The hose would be a floating suction hose or have a floating intake to prevent sediment from being sucked from the bottom of trench (see Figure 19 from the Minnesota ECP (Appendix D) provided below).

All water pumped from an open excavation would be directed through a discharge hose to a dewatering structure or a filter bag as described below and depicted in construction typicals (see Figure 20 (sheet 1 of 2) and Figure 21 from the Minnesota ECP (Appendix D) provided below). Ideally, these would be placed in well-vegetated uplands. The placement of the dewatering structure would be coordinated with the EI to ensure that structures are placed to avoid sensitive resources. The EI would consult pre-construction environmental resource survey data for lands adjacent to and outside of the construction workspace when siting the dewatering structure. Dewatering structures would be placed to avoid sensitive habitats or other environmental resources that may be affected by the discharge. Erosion and sediment control BMPs would be installed at the discharge point to mitigate impacts to waterbodies, wetlands, or sensitive habitats. The EI would monitor the installation of erosion and sediment BMPs at trench dewatering outfalls to ensure proper construction and configuration to minimize the potential of water containing sediment from reaching a waterbody or wetland.

Discharges would be monitored to ensure they are not causing flooding damage to agricultural land, crops, and pastures or result in visible turbidity, material discoloration, or other nuisance conditions\(^5\), or violations of other applicable water quality standards in receiving waters beyond the treatment area. If SCS’s Contractor observes that such conditions exist, SCS’s Contractor would stop the discharge and would implement alternative or supplemental actions.

**Backfilling the Trench**

After lowering-in the pipeline, the trench would be backfilled with the previously excavated material with the subsoil first. Topsoil would be re-spread over the trench line and/or construction workspace where it was stripped after hydrostatic testing and decompaction of the subsoil is complete. Backfill padding (e.g., a sand base) can be used to protect the pipeline from rocks or debris; however, SCS does not anticipate the need for backfill padding on the Project.

Any damaged drain tiles would be repaired prior to backfilling the trench. SCS’s Contractor may need to dewater the pipeline trench prior to backfilling in accordance with permit requirements and dewatering BMPs.

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\(^5\) Minnesota Administrative Rules 7050.0210, subp. 2.
NOTES:
1. WATER PUMPED OUT OF TRENCH SHALL NOT BE DISCHARGED DIRECTLY INTO WATERWAYS. WATER SHALL BE DISCHARGED INTO A FILTER BAG OR DEWATERING STRUCTURE.
2. PUMP SHALL BE CONTROLLED SO THAT DISCHARGE DOES NOT OVERFLOW DEWATERING STRUCTURE.
3. PUMP SUCTION HOSE MUST NOT BE ALLOWED TO COME IN CONTACT WITH TRENCH BOTTOM. PROVISIONS MUST BE MADE TO ELEVATE THE SUCTION HOSE TO AT LEAST ONE FOOT ABOVE THE BOTTOM OF THE PIPE TRENCH UNTIL BOTTOM DEWATERING IS NECESSARY.
4. DEWATERING SHALL NOT OCCUR DURING TIMES OF HEAVY RAINFALL EXCEPT AS REQUIRED TO PREVENT FLOODING OF CONSTRUCTION EQUIPMENT LOCATED IN BORE PITS AND TRENCHES.
5. PUMPS UTILIZED DURING DEWATERING SHALL BE PLACED WITHIN SECONDARY CONTAINMENT IF POSITIONED WITHIN 100 FEET OF A WETLAND, WATERBODY, WATER SUPPLY WELL, OR SENSITIVE HABITAT. SECONDARY CONTAINMENT STRUCTURES WILL BE LINED WITH SUITABLE PLASTIC SHEETING, PROVIDE A CONTAINMENT VOLUME OF AT LEAST 150 PERCENT OF THE STORAGE VESSEL AND ALLOW FOR AT LEAST 1 FOOT OF FREEBOARD.

ECP FIGURE 19
STAKE THROUGH CONSTRUCTION FENCE TO RESTRAIN, IF SLOPE IS GREATER THAN 5 PERCENT.

2" X 2" STAKES

PUMP DISCHARGE HOSE

SEE NOTES FOR CONNECTION OF HOSE TO FILTER BAG (NOTE 6)

24" MIN

WINDNIN STAKE

CONSTRUCTION SAFETY FENCE FOR RESTRAINT AND AID IN LIFTING USED BAG.

WATER AND MORTAR

5% TO 10% SLOPE

NOTES:

1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS. ENVIRONMENTAL INSPECTOR TO APPROVE PLACEMENT OF FILTER BAG.

2. THE FILTER BAG MUST BE STAKED IN PLACE IF THE FILTER BAG IS PLACED ON A SLOPE GREATER THAN 5 PERCENT.

3. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS OR SEDIMENT PARTICLE SIZE GREATER THAN NOTED BY MANUFACTURER.

4. CONTRACTOR SHALL PROPERLY REMOVE AND PROPERLY DISPOSE OF USED FILTER BAGS IMMEDIATELY UPON COMPLETION OF Dewatering OPERATIONS. UNDER NO CIRCUMSTANCES SHALL USED FILTER BAGS BE LEFT IN PLACE FOR A PERIOD OF TIME GREATER THAN 48 HOURS AFTER DewaterING DISCHARGE OPERATIONS ARE COMPLETE.

5. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA WITHIN THE CONSTRUCTION CORRIDOR AND THE AREA SHALL BE STABILIZED AND REVEGETATED.

6. TO ATTACH HOSE, CUT OPEN CORNER OF FILTER BAG. GATHER UP MATERIAL AND CLAMP TO A SHORT SECTION OF STEEL PIPE. CLAMP HOSE TO OTHER END OF PIPE. BOTH CONNECTIONS SHALL BE WATERTIGHT.

7. CONTRACTOR SHALL ONLY INSTALL ONE DewaterING HOSE PER FILTER BAG.

ECP FIGURE 21

GULF INTERSTATE ENGINEERING

SUMMIT CARBON SOLUTIONS

MIDWEST CARBON EXPRESS
PROPOSED PIPELINE
FILTER BAG FOR DewaterING

DRAWN BY:          DATE: 08/17/23
CHECKED BY:        DATE: 08/17/23
SCALE: NONE        W.O.

SUMMARY OF ROADWORK

D: DESIGNED FOR USE 08/17/22
D: DESCRIPTION DATE

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Hydrostatic Testing and Final Tie-In

SCS’s Contractor would conduct hydrostatic testing of the pipeline after backfilling to comply with PHMSA pipe testing requirements in accordance with 49 CFR Part 195, Subpart E. Hydrostatic testing involves filling installed segments of the new pipeline with water, which would be appropriated from surface water, municipal, or groundwater sources in accordance applicable MDNR water appropriation permits, and then raising the internal pressure and holding that pressure for a specific period of time per PHMSA specifications. Hydrostatic pre-tests would be performed on pre-built HDD segments while the pipe is laid aboveground within the construction workspace prior to installation. HDD segments would be tested again post-installation/tie-in as part of the overall pipe testing segment. Prior to hydrostatic testing, SCS’s Contractor would prepare the pipe by removing accumulated construction debris, mill scale, dirt, and dust using a cleaning internal maintenance and inspection device (commonly referred to as a “pig”) that is moved by compressed air through the pipe. Any water and debris removed from the pipe would be disposed of off-site in accordance with applicable permits. SCS’s Contractor may trim vegetation using hand tools where necessary to access a water source to withdraw water for HDD operations and/or hydrostatic testing of the pipeline and/or to place the HDD guidewires on the surface of the drill path.

After the hydrostatic test is complete, SCS’s Contractor would depressurize the line and discharge water according to applicable Minnesota Pollution Control Agency (MPCA) discharge permits obtained by SCS. SCS’s Contractor would discharge the water back to the source in which the water was appropriated, or to an upland through an agency approved method (refer to the dewatering description above). The discharge of water used for cleaning would not be permitted. The hydrostatic test water would be completely removed from the pipeline using a series of pig runs, which would be propelled by compressed air. Pipe segments would be tied in, or welded together, to create one contiguous pipeline.

Dust Control

Dust control is used to help mitigate the effects of wind erosion and fugitive dust emissions during construction. Fugitive dust is especially a concern on the ROW or access roads near residential areas, farm dwellings, roads, or when strong wind conditions are present. The ground may be sprayed by watering trucks or sprinklers to control the dust. Water would not be applied in quantities to cause run off from the ROW or access roads.

Restoration and Revegetation

After construction and testing, the subsoil would be de-compacted, the topsoil respread over the construction workspace, and final grading completed to restore the ROW to preconstruction conditions to the extent practicable. Final grading would also involve removal of any remaining debris or construction material ahead of seeding and mulching. Temporary and permanent stabilization measures such as slope breakers, mulching, and seeding would be implemented where appropriate; fences removed for pipeline installation would be re-built or permanent gates would be installed, where required; and the land would be returned as close as practicable to its preconstruction use. Disturbed areas would be seeded with seed mixes appropriate to the existing land use and/or left unseeded if in active agricultural fields (according to landowner requests).

If any excess subsoil remains after the backfilling process, it would be removed and disposed of at an approved location. Grading would occur to ensure that the pre-construction contours are matched with the surrounding topography and that the disturbed area is stabilized. Cleanup would immediately follow the backfilling operation as weather conditions allow. Construction debris/excess materials would be disposed of in a manner that meets regulations. Temporary ECDs such as silt fence, temporary slope breakers, and coir logs and wattles would be removed once perennial vegetative cover or vegetation similar to natural
terrain is established with a density of 70 percent when compared to the native background vegetative cover, or areas are stabilized and permanent ECDs installed, if necessary.

**Post-Construction Monitoring and Maintenance**

SCS would conduct post-construction monitoring to minimize the potential for long-term adverse impacts on the environment. Operations and maintenance programs such as vegetation management, pipeline maintenance, integrity surveys, or other programs would occur over the life of the Project. To ensure that the integrity of the facility and land surface reclamation is maintained after completion of construction and that regulatory requirements are adhered to during operations, the following measures would be implemented in response to site-specific conditions or circumstances:

- In wetland areas, all construction mats would be removed upon completion of construction. SCS’s Contractor would replace topsoil, as applicable, and spread as closely to its original contours in the wetland as possible with no permanent crown over the trench. Any excess spoil would be removed from the wetland. SCS’s Contractor would stabilize wetland edges and adjacent upland areas by establishing permanent erosion control measures and re-vegetation, as applicable, during final clean up.

- Post-construction monitoring inspections would be conducted of disturbed non-cropland areas after the first growing season to determine the success of revegetation. Areas that have not been successfully re-established would be re-seeded by SCS or through compensation to the landowner to reseed the area. If, after the first growing season, revegetation is successful, no additional monitoring would be conducted.

- In non-agricultural areas, revegetation would be considered successful if, upon visual survey, vegetative cover consists of a uniform perennial vegetation with a density of 70 percent when compared to the native background vegetation cover. This cover must be achieved over all areas prior to submitting the MPCA Construction Stormwater National Pollutant Discharge Elimination System (NPDES) General Permit Notice of Termination. The density and cover of non-nuisance vegetation would be similar in density and cover to adjacent undisturbed lands.

- In agricultural areas, revegetation would be considered successful if crop yields are similar to adjacent undisturbed portions of the same field.

SCS would maintain communication with the landowners and/or tenants throughout the operating life of the pipeline to allow expedient communication of issues and problems as they occur. SCS would provide the landowners with contact information for these purposes. SCS would work with landowners to prevent excessive erosion on lands disturbed by construction.

SCS’s Contractor may utilize herbicides to manage terrestrial invasive and noxious species. Herbicides and pesticides would not be used in or within 100 feet of a wetland, waterbody, or native prairie remnant unless approved by the appropriate land management and state agency. SCS is not aware of any organic farming operations crossed by or adjacent to the Project; however, should one be identified over the life of the Project, SCS would follow provisions it has established to protect organic farms (e.g., herbicides and pesticides would be prohibited unless requested and approved by the landowner).

The success of wetland revegetation would be monitored after construction until wetland revegetation is successful, except in areas of permanent impact where a permanent access road has been constructed. Wetland revegetation would be considered successful if the cover of herbaceous and/or woody species complies with applicable permit conditions. If revegetation is not successful at the end of 3 years, a remedial
re-vegetation plan would be developed in consultation with a professional wetland ecologist to actively revegetate the wetland. Revegetation efforts would continue until wetland revegetation is successful.

After the pipeline is constructed, the permanent ROW would be maintained free of woody vegetation over 15 feet tall as part of SCS’s vegetation maintenance program. This would involve mowing or tree/shrub removal. However, some exceptions would apply in wetlands and at waterbodies.

**Operations and Maintenance**

The Project would meet or exceed state and federal safety requirements and, at a minimum, would be designed in accordance with 49 CFR Part 195 –Transportation of Hazardous Liquids by Pipeline because the MCE Project would be an interstate pipeline project.

**Normal Operations and Routine Maintenance**

The Project, as part of the larger MCE Project, would establish an OCC located in Ames, Iowa (primary location). The OCC would continuously monitor and control pipeline operations. A supervisory control and data acquisition (SCADA) system would communicate with all field sites and provide real time status from every facility and/or data collection point along the Project. Data such as pressure, temperature, and flow would be monitored to ensure pipeline operation is maintained within established, safe operating parameters. OCC personnel would have the capability to remotely shut down the capture facility and isolate pipeline segments via the Project’s MLVs in the event abnormal operating conditions are observed. A Real Time Transient Model (RTTM) leak detection system would be deployed. The RTTM is a real time hydraulic model of the pipeline system that runs in parallel with monitoring pressure and volume with system instruments. If the behavior of the pipeline does not match the hydraulic model, the OCC is notified that an issue must be analyzed. Alarms would be established for pipeline controllers when this analysis detects a potential abnormal operating condition. Operation and maintenance (O&M) procedures would be developed for OCC and field personnel prior to commencement of operation. These O&M procedures would include both normal and abnormal operating conditions.

Maintenance would include regular inspection and surveillance of the pipeline and aboveground facilities in accordance with the O&M procedures referenced above and requirements set forth in 49 CFR Part 195. The permanent ROW would be patrolled and visually inspected every 2 weeks, weather permitting, and not less than 26 times annually. Aerial patrol would check for abnormal conditions/appearances or dangerous activity (unauthorized excavation, unauthorized construction, etc.). Geohazards such as perpendicularly traversing slopes would be identified during planning of the Project and would be avoided in the final design and construction if necessary to minimize erosion or ground shifting.

**Abnormal Operations**

The Project would comply with federal Emergency Response requirements set forth in 49 CFR Part 195.402(e); a draft Emergency Response Plan (ERP), which would be finalized prior placing the Project in service. Field personnel would be trained in emergency response procedures and would coordinate with local first responders and local authorities to conduct training to ensure preparedness. SCS would conduct public education outreach programs, including damage prevention programs, that meet or exceed industry standards and regulatory requirements concerning public awareness of pipelines and pipeline operations.

Potential incidents vary in type, scope, size, and risk. Therefore, an ERP has been drafted to provide guidance and structure for a quick, effective, and coordinated response to protect the public, all responders, and the environment. The National Incident Management System Incident Command System would be used to manage SCS’s emergency response activities because it is a response tool that is readily adaptable to incidents of varying magnitude. SCS’s staffing levels would be adjusted to meet specific response team
needs based on incident size, severity, and type of emergency. Local agencies and first responders would be trained on SCS’s final ERP and may fill roles during a coordinated response effort. SCS would sponsor the training and provide necessary equipment.

c)  Project magnitude:

6.c  Project Magnitude

Table 6-1 below outlines the magnitude of the proposed Project.

| Total Project acreage | The sum of Project construction impacts (350.1 acres) includes the acres of construction workspace and ATWS, the capture facility, MLVs/ICCP system and temporary and permanent access roads. The sum of Project operations impacts (170.7 acres) includes the acres for pipeline ROW, the capture facility, MLVs/ICCP system and permanent access roads. Pipeline Construction: 345.5 acres
|                       |   • Includes construction workspace, which is inclusive of the permanent ROW footprint as well as ATWS. | Pipeline Operation: 168.6 acres
|                       |   • Includes permanent ROW within construction workspace, which is inclusive of three MLV footprints across the pipeline. | Capture Facility: 1.0 acre
|                       |   • Includes footprint of launcher as well as the MLV located at the capture facility. An additional 0.6 acre of ATWS may also be used during construction of the capture facility. Capture facility construction acreages are already accounted for under pipeline construction. |
|                       | MLVs/ICCP System: 0.2 acre
|                       |   • Located within the permanent ROW. |
| Linear Project length | 28.1 miles (pipeline) |
| Number and type of residential units | N/A |
| Residential building area (in square feet) | N/A |
| Commercial building area (in square feet) | N/A |
| Industrial building area (in acres) | Capture Facility: 1.0 acre |
| Institutional building area (in square feet) | N/A |
| Other uses – specify (in square feet) | N/A |
| Structure height(s) – Capture Facilities | up to 40 feet |

The total footprint of the pipeline construction workspace is 345.5 acres. The width of the construction workspace would range from 25 to 100 feet wide. Generally, a 100-foot-wide construction workspace would be used when crossing uplands and a 75-foot-wide construction workspace would be used when crossing wetlands and waterbodies. The construction workspace would be further reduced to 50 feet wide at HDD or bore crossings of waterbodies, roads, and railroads if a travel lane is not needed across the feature. The construction workspace would allow for temporary storage of soil excavated from the pipeline trench, staging of the pipe, and safe travel and operation of construction equipment. Once construction has ended, temporary workspace would be allowed to revert to prior vegetation and there would be no restrictions on its use.
Of the 345.5 acres initially disturbed for construction of the pipeline, SCS would retain 168.6 acres as the pipeline permanent ROW (including the footprints of the three MLV footprints located in the permanent ROW). The permanent ROW would be 25 to 50-feet-wide, centered on the pipeline and would be wholly contained within the construction workspace.

SCS would also use ATWS outside of the 25 to 100-foot-wide construction workspace to facilitate specific aspects of construction. ATWS is typically used to stage equipment near waterbody, wetland, road, railroad, and foreign utility crossings, steep slopes, and for staging equipment and materials for specialized construction methods. ATWS would be restored to the original land use following construction. Dimensions of each ATWS would vary according to site-specific needs.

The capture facility at the Green Plains Ethanol Plant would be owned and operated by SCS and would be within the site boundary of the Green Plains Ethanol Plant. The capture facility would result in 1.0 acre of impact during construction and operations. The acreage total also includes the footprint for the launcher and one MLV. An additional 0.6 acre of ATWS may be used during construction of the capture facility.

The three MLVs/the ICCP system would result in less than 0.2 acre of impact during operations. The MLV footprints would be located within the permanent ROW; as such, these land requirements are not additive to the area needed to construct the pipeline.

Temporary access roads would result in 2.5 acres of impact during construction. Temporary access roads would be 30 feet wide and would be restored after use. Permanent roads to the three MLVs and the capture facility (which includes the fourth MLV) would result in approximately 1.0 acre of impact during construction and operation. Permanent access roads would be 20 feet wide.

d) **Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.**

### 6.d Project Purpose

SCS is a privately held company that is proposing to build the Project to capture up to approximately 0.19 MMTPA of CO₂ from the existing Green Plains Ethanol Plant in Otter Tail County and transport the CO₂ to the North Dakota and Minnesota border south of the City of Breckenridge in Wilkin County. The Project would play a role in reducing greenhouse gas (GHG) emissions in Minnesota.

SCS has a CO₂ offtake agreement with the Green Plains Ethanol Plant. The Project would offer the Green Plains Ethanol Plant a viable option to capture, transport, and permanently store its CO₂ emissions and continue to be competitive with other ethanol facilities which have the ability to permanently store CO₂. Because the Project would capture the Green Plains Ethanol Plant’s CO₂ for permanent sequestration, the carbon intensity (CI) score, or carbon footprint, of the Green Plains Ethanol Plant’s ethanol would be reduced by an estimated 40 percent. Capturing the Green Plains Ethanol Plant’s CO₂ would reduce the environmental impact of the Green Plains Ethanol Plant’s ethanol product and improve the Green Plains Ethanol Plant’s ability to compete in low carbon fuel standard (LCFS) markets.

e) **Are future stages of this development including development on any other property planned or likely to happen?** ☒ Yes ☐ No

*If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.*
6.e Future Plans and Development

The Project would interconnect to a larger proposed CO₂ pipeline network, referred to as the MCE Project. The MCE Project would involve additional route permit applications in the state of Minnesota. Each of these additional projects would require construction of new CO₂ pipelines connecting to new capture facilities associated with ethanol plants in southern and south-central Minnesota. SCS points out that because each of the other projects would interconnect independent ethanol facilities to the broader MCE Project, timing and construction of these projects is not dependent on construction of the present Project, and the pipelines do not share common rights-of-way or other facilities in Minnesota. Additionally, each of these future projects independently meet the mandatory environmental review category threshold in Minn. R. 4410.4400, subp. 24 and would be subject to environmental review as part of a MPUC’s full route permit proceeding.

f) Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No

If yes, briefly describe the past development, timeline, and any past environmental review.

7 CLIMATE ADAPTATION AND RESILIENCE

a) Describe the climate trends in the general location of the project (see guidance: Climate Adaptation and Resilience) and how climate change is anticipated to affect that location during the life of the project.

7.a Climate Trends

Climate change is the change in global or regional climate patterns over time. Changes in average precipitation or temperature over years or decades may indicate a change in climate. According to MDNR’s Climate Trends website, Minnesota’s climate has been changing and continues to change. Minnesota’s average temperature has increased by 3.0 degrees Fahrenheit between 1895 and 2020. The state’s annual rainfall has increased by over 3 inches over that same time period. Heavy rains are more common in Minnesota and since 2000, more devastating large storms have occurred (MDNR, 2023a).

The Minnesota Climate Trends historical data shows that, for the Otter Tail and Wilkin counties, the temperature has risen by an average of 0.42 and 0.38-degrees Fahrenheit per decade, respectively, from 1895 to 2022. The Minnesota Climate Explorer website also shows that drought severity has increased starting in the late 1990s through 2022. Annual precipitation in Otter Tail and Wilkin Counties has shown relatively stable trends over the period of 1985 – 2022 (0.0-0.1 inch of increase/decade, respectively) (MDNR, 2023a).

Climate change could result in an increased risk of flooding in the Project area due to more frequent large storms. Using the Flood Factor website to look specifically at flood risk for the Project site based on climate change over the next 30 years, the data shows that 14% of Otter Tail County and 23% of Wilkin County have a greater than 26% chance of being severely affected by flooding over the next 30 years. In Otter Tail County, these areas are mostly to the north and east of Fergus Falls and are not concentrated near the Project area. In Wilkin County, these areas are concentrated near the Otter Tail and Bois De Sioux Rivers (see Figure 7-1). Overall, both counties have a minor risk of flooding, meaning flooding has the potential to impact day-to-day life in the community (Risk Factor, 2023).
Figure 7-1: Risk Factor Flood Map – Project Vicinity
b) For each Resource Category in the table below (see Table 7-1): Describe how the project’s proposed activities and how the project’s design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.

### 7.b Project Interaction with Climate Trends

The Project is not expected to interact with climate trends described above in any material way. Specifically:

<table>
<thead>
<tr>
<th>Resource Category</th>
<th>Climate Considerations</th>
<th>Project Information</th>
<th>Adaptations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Design (see Section 7)</td>
<td>Climate change could result in increased risk of flooding or drought conditions.</td>
<td>The pipeline is underground and the MLVs can be operated in flooded conditions and would not change floodplain elevations. Drought could affect the Project’s ability to appropriate water.</td>
<td>The capture facility would result in a decrease in CO₂ emissions from the Green Plains Ethanol Plant, thereby reducing GHG emissions in Minnesota. Contingency water sources would be required by permits should water not be available due to drought conditions.</td>
</tr>
<tr>
<td>Land Use (see Section 10)</td>
<td>Impacts could occur should the Project result in a change in land cover.</td>
<td>The Project would not result in a change in land cover; land would revert to its prior use following construction.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Water Resources (see Section 12)</td>
<td>Impacts could occur from increased chance of flooding or stormwater damage or should discharge of wastewater or appropriation of water cause watershed impacts. Water use may be limited.</td>
<td>The Project is mostly underground and MLVs can be remotely operated, protecting it from flooding. Stormwater would be managed under MPCA’s stormwater permit programs for construction and operation. Minimal use of water and discharge of water is planned. Drought could affect the Project’s ability to appropriate water. The loss of wetlands would be less than 0.01 acre, resulting in minimal change in water resource land cover.</td>
<td>Contingency water sources would be required by permits should water not be available due to drought conditions.</td>
</tr>
<tr>
<td>Contamination/Hazardous Materials/Wastes (see Section 13)</td>
<td>None identified</td>
<td>The Project is not expected to generate hazardous waste, and minimal hazardous materials are expected to be used/stored during construction and operation.</td>
<td>None proposed.</td>
</tr>
<tr>
<td>Fish, wildlife, plant communities, and sensitive ecological resources (rare features) (see Section 14)</td>
<td>Impacts could occur should the Project result in a change in land cover and therefore habitat.</td>
<td>Most activities would occur in land that is already actively farmed or developed, minimizing impact on habitat.</td>
<td>None proposed.</td>
</tr>
</tbody>
</table>

Climate change could result in an increased risk of flooding in the Project area. SCS has not proposed any specific changes in Project design to account for increased flooding; however, installation of the pipeline under waterbodies in accordance with depth of cover requirements would protect the pipeline from the effects of flooding. Following construction, the integrity of the pipeline is not expected to be impacted in flood prone areas because the pipeline would be below-ground and would not be impacted by flooding. Aboveground, permanent features that would be located in floodplains are MLV-321-04 and its associated permanent access road located near MP 27.4. These Project components would be constructed in
accordance with Wilkin County floodplain permitting requirements, and due to the small footprint (less than 0.1 acre), negligible impacts on the floodplain and floodplain elevations would be anticipated.

Climate change could result in drought conditions. Water availability is critical to growing corn, operating the Green Plains Ethanol Plant (e.g., process water, cooling water), and operating the Applicant’s capture facility (i.e., cooling system). Drought conditions could cause a reduction in CO₂ capture capacity or a temporary shutdown of the Project. Drought conditions could also impact the Project’s ability to appropriate water from preferred sources during construction should water appropriation permissions by MDNR be denied or revoked due to drought conditions, making the need for a contingency water source necessary.

Once operational, the capture facility would result in a decrease in CO₂ emissions from the Green Plains Ethanol Plant, thereby reducing GHG emissions in Minnesota.

8 COVER TYPES

Estimate the acreage of the site with each of the following cover types before and after development:

<table>
<thead>
<tr>
<th>Cover Types</th>
<th>Before (acres)</th>
<th>After (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands and shallow lakes (&lt;2 meters deep)</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Deep lakes (&gt;2 meters deep)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wooded/forest</td>
<td>1.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Rivers/streams</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Brush/Grassland</td>
<td>0.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Cropland</td>
<td>301.1</td>
<td>300.4</td>
</tr>
<tr>
<td>Livestock rangeland/pastureland</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lawn/landscaping</td>
<td>11.7</td>
<td>11.7</td>
</tr>
<tr>
<td>Green infrastructure TOTAL (from table below*)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Impervious surface</td>
<td>34.5</td>
<td>35.2</td>
</tr>
<tr>
<td>Stormwater Pond (wet sedimentation basin)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other (describe)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>350.1</td>
<td>350.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Green Infrastructure</th>
<th>Before (acreage)</th>
<th>After (acreage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructed infiltration systems (infiltration basins/infiltration trenches/rainwater gardens/bioretention areas without underdrains/swales with impermeable check dams)</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Constructed tree trenches and tree boxes</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Constructed wetlands</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Constructed green roofs</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Constructed permeable pavements</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Other (describe)</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>TOTAL*</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trees</th>
<th>Percent</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent tree canopy removed, or number of mature trees removed during development</td>
<td>0.2%</td>
<td>NA</td>
</tr>
<tr>
<td>Number of new trees planted</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Unless otherwise noted in the footnotes, data is based on the USGS Gap Analysis Program (GAP) data (USGS, 2022).

a Acres presented in the “Before” column represent land use category designations associated with the Project prior to construction.
b Acres presented in the “After” column represent land use category designations associated with the Project following construction, during the Project’s operational term. Changes between “Before” and “After” indicate conversions of cover types as a result of the Project.
c Based on field/desktop survey data, the Project would result in the conversion of approximately 0.1 acre of scrub-shrub and 0.1 acre of forested wetland to emergent wetlands within the permanent easement (due to clearing of woody vegetation). In addition, permanent access roads to two MLVs (MP 20.3 and 27.4) would result in permanent fill of 0.01 acre of emergent wetlands.
d Following the completion of construction, wooded/forested areas within the permanent ROW would be maintained in an herbaceous state and are captured in the brush/grassland category. Temporary construction workspace areas outside of the permanent ROW that were previously wooded/forested would be allowed to regenerate and are accounted for under the wooded/forested land category.
e Based on field/desktop survey data. Does not include HDD crossings or the move around bore at MP 25.
f Includes Developed, Open Space USGS GAP data (USGS, 2022)
g Includes Developed, Low Intensity, Medium Intensity, and High Intensity USGS GAP data (USGS, 2022). Includes 2.1 acres of impervious surfaces associated with Project MLVs, capture and proposed facilities, and permanent access roads (of which 1.4 acres of land cover were already classified as developed (low, medium, and/or high intensity)).
h Based on a 2022 Northern Long-Eared Bat (Myotis septentrionalis) Habitat Assessment conducted by SCS, approximately 1.6 acres, 0.5%, of mixed and large structure trees are crossed by the 350.1-acre Project. The Project has the potential to permanently impact 0.7 acre, or 0.2%, of the mixed and large structure tree coverage.

Note: The sum of addends may not total due to rounding.

9 PERMITS AND APPROVALS REQUIRED

List all known local, state, and federal permits, approvals, certifications, and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.

Table 9-1 provides a summary of all local, state, and federal permits and approvals that would be needed for the Project, except for those needed for the Green Plains Ethanol Plant capture facility (see Table 9-2). The Project would not require any local, state, or federal financial assistance.

Table 9-1
Permits and Approvals Required – Pipeline

<table>
<thead>
<tr>
<th>Unit of Government/Agency</th>
<th>Type of Application</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>USACE – St. Paul District</td>
<td>Section 10/404 – Utility RGP</td>
<td>Submitted October 2022</td>
</tr>
<tr>
<td></td>
<td>33 United States Code (USC) 408 (Section 408) Permission</td>
<td>Submitted January 2022</td>
</tr>
<tr>
<td>USDOT</td>
<td>Highway Crossing Permit</td>
<td>To be submitted</td>
</tr>
<tr>
<td>U.S. Fish and Wildlife Service (USFWS)</td>
<td>Section 7 Endangered Species Act (ESA) Consultation for federally listed threatened or endangered species</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Minnesota Public Utilities Commission (MPUC or Commission)</td>
<td>Pipeline Route Permit</td>
<td>Submitted September 2022</td>
</tr>
<tr>
<td>MDNR</td>
<td>Work in Public Waters Permit – Public Water Wetlands on Private Lands</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Utility License to Cross Public Waters</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Water Appropriation Permit for Trench Dewatering</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Water Appropriation Permit for HDD/Hydrostatic Testing</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Water Appropriation Permit for Dust Suppression</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Natural Heritage Information System (NHIS) Consultation; NHIS Review and Avoidance Plan</td>
<td>Initial NHIS consultation letter submitted April 2022; Ongoing</td>
</tr>
<tr>
<td>MDA</td>
<td>Minnesota APP</td>
<td>Draft Minnesota APP submitted to MDA in March 2022</td>
</tr>
<tr>
<td>Unit of Government/Agency</td>
<td>Type of Application</td>
<td>Status</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Minnesota Department of Transportation (MNDOT)</td>
<td>Road Crossing Permits</td>
<td>To be submitted</td>
</tr>
<tr>
<td>MPCA</td>
<td>Section 401 Water Quality Certification</td>
<td>Coverage granted under Section 404/10 USACE Utility Regional General Permit</td>
</tr>
<tr>
<td></td>
<td>Individual NPDES/State Disposal System (SDS) Permit – Hydrostatic Testing</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Construction Stormwater NPDES/SDS Permit – Pipeline (General Permit MNR.100001)</td>
<td>To be submitted</td>
</tr>
<tr>
<td>Minnesota State Historic Preservation Office (SHPO)</td>
<td>Section 106 Consultation</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Minnesota Department of Labor and Industry</td>
<td>Electrical Permitting</td>
<td>Pending applicability at the capture facility and remote operated valve sites</td>
</tr>
<tr>
<td>Bois de Sioux and Buffalo Red River Watershed Districts</td>
<td>Watershed District/Drainage Permits</td>
<td>To be submitted</td>
</tr>
<tr>
<td>Wetland Conservation Act (WCA) Local Governmental Units (LGUs), Minnesota Board of Water &amp; Soil Resources (BWSR)</td>
<td>Notification of Use of the Utilities Exemption</td>
<td>Concurrent with the USACE Section 10/404 Permitting if conditions of Utilities Exemption are met and followed</td>
</tr>
<tr>
<td>Wilkin County</td>
<td>Floodplain Permit</td>
<td>To be submitted</td>
</tr>
<tr>
<td>Otter Tail County</td>
<td>Ditch Crossing Permit</td>
<td>To be submitted</td>
</tr>
<tr>
<td>County and Township</td>
<td>Road Crossing Coordination</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

**Table 9-2**

Permits and Approvals Required – Capture Facility

<table>
<thead>
<tr>
<th>Unit of Government/Agency</th>
<th>Type of Application</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPCA</td>
<td>Air Quality Permit Applicability Determination</td>
<td>Submitted September 2022</td>
</tr>
<tr>
<td></td>
<td>Air Quality Permit – Option D Registration Permit</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Construction Stormwater NPDES General Permit (MNR.10000)</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Industrial Stormwater NPDES General Permit MNR050000 (new or modification of existing ethanol facility coverage)</td>
<td>To be submitted</td>
</tr>
<tr>
<td></td>
<td>Individual Industrial Wastewater NPDES Permit (modification of existing discharge ethanol facility permits, or stand-alone new permit)</td>
<td>To be submitted</td>
</tr>
<tr>
<td>MDNR</td>
<td>Water Appropriation Permit</td>
<td>To be submitted</td>
</tr>
<tr>
<td>Minnesota Department of Labor and Industry</td>
<td>Electrical Permitting</td>
<td>Pending applicability at the capture facility and remote operated valve sites</td>
</tr>
<tr>
<td>Otter Tail County</td>
<td>Building/Structure Permit</td>
<td>To be submitted</td>
</tr>
</tbody>
</table>

Cumulative potential effects may be considered and addressed in response to individual EAW Items 9-18, or the RGU can address all cumulative potential effects in response to EAW Item 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item 19.
10 LAND USE

a) Describe:

i) Existing land use of the site as well as areas adjacent to and near the site, including parks and open space, cemeteries, trails, prime or unique farmlands.

10.a.i Existing Land Uses and Ownership

The Project is wholly located on private land. Land in the vicinity of the Project is primarily used for agriculture. Farmsteads are scattered throughout the Project area. In addition to agricultural uses, there are commercial and industrial land uses in the area, primarily associated with the City of Fergus Falls and the Green Plains Ethanol Plant. Using USGS Gap Analysis Program (GAP) data (USGS, 2022), the Project would result in impacts on the following land types: 301.1 acres of the crop land cover type; 1.6 acres of the forest land cover type (1.0 acre based on review of aerial photography); 1.2 acres of the wetland/open water land cover type; approximately 0.1 acre of the open land cover type; and 46.2 acres of the developed land cover type (of which 11.7 acres is developed, open space [e.g., lawn/landscaping]). Figure 10-1 presents land cover types impacted by construction of the Project.

The Project would not cross any federal lands or easements, including USFWS grassland or wetland easements, National Wildlife Refuges (NWRs), Waterfowl Production Areas; national parks; national forests; national landmarks; national scenic trails; wilderness areas; wildlife refuges; migratory waterfowl feeding and resting lakes; or national wildlife management areas (WMAs). The Project does cross one parcel near MP 0.3 with USFWS interests administered by the Fergus Falls Wetland Management District (WMD). USFWS staff confirmed the conservation easement is limited to the wetlands on the parcel, and the Project avoids all wetland impacts on the parcel.

The Project would not cross any state lands such as scientific and natural areas, state WMAs, state designated wild, scenic and/or recreational rivers, state aquatic management areas, forests, or parks. There are no state parks or WMAs within 0.5 mile of the Project. The Project would not cross any county land, including county parks. SCS’s consultation with BWSR regarding state conservation easements confirmed that the Project would not cross any presently executed easements. The Project would cross the King of Trails State Scenic Byway (U.S. Highway 75) and the Otter Tail River, which is a state-designated water trail and is the location of a stream restoration project sponsored by the Buffalo-Red River Watershed District (BRRWD) and the USACE.

The Project crosses land privately owned and managed by the Fergus Falls Game and Fish Club near MPs 6.6 to 6.8. The Project does not cross any Tribal lands. There are no local parks, gathering open spaces, or cemeteries crossed by the Project.

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing crops and is also available for these uses (the land can be cropland, pasture, woodland, or other lands). Prime farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods and is not subject to frequent or prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., by draining or irrigating). The Natural Resources Conservation Service (NRCS) also recognizes farmlands of statewide importance, which are defined as lands other than prime farmland that are used for production of specific high-value food and fiber crops.
The Project would impact approximately 319.2 acres (91 percent of the Project footprint) of prime farmland soils or prime farmland soils if limiting factors are mitigated. Additionally, 18.0 acres (5 percent of the Project footprint) would cross soils that are classified as farmland of statewide importance. Table 11-1 presents the soil characteristics of the Project, including soils crossed by the Project that are classified as prime farmland and farmland of statewide significance soils.

Construction of the pipeline would have short-term and temporary impacts on prime farmland soils, which would be restored to their pre-construction conditions. SCS’s Contractor would implement several mitigation measures to minimize impacts on all agricultural lands, including areas designated as prime farmland or farmland of statewide importance. These measures would include but are not limited to topsoil segregation, compaction minimization and alleviation, removal of excess rock, restoration of agricultural drainage systems, and installing and maintaining erosion and sediment control structures during construction. Each of these measures would be used to return the construction workspace to its original state and to promote the long-term productivity of the soil for future farming activities. Crossed agricultural land would be removed from production for at least one growing season to construct the Project. As such, landowners would be compensated for lost crops due to construction. Following construction, agricultural land would revert to prior use and operational impacts on agricultural soils would be limited. Agricultural practices would not be impacted by operational activities, except for limited instances where operations and maintenance activities occur. These activities would be coordinated with the landowner.

**ii) Plans.** Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

**10.a.ii Local and Regional Planning**

Otter Tail County is mainly comprised of water, wooded areas, and agricultural production with historically more agricultural production in the western part of the county where the Project route crosses (Otter Tail County, 2022). The Land Use Plan was developed in the late 1960s to encourage proper land use planning, maintaining agricultural production, facilitating population and economic development such as manufacturing, and to promote local protection of natural resources. The Land Use Plan was also established to promote policy around the county’s economic base, environment, land use, public facilities, transportation system, recreation, and open space resources. The County does not have a general land use ordinance but has implemented the Otter Tail County Shoreland Management Ordinance to regulate development within areas designated as Shoreland Management Districts (Otter Tail County, 2021). The County’s Shoreland Management Ordinance serves as the primary zoning ordinance in the County. The County has also developed a Local Water Management Plan to address “development patterns and economic growth” related to surface water and groundwater resources (Otter Tail County, 2014).

Wilkin County is primarily agricultural with 82 percent of its land use dedicated to cropland (Wilkin County, 2017). The county adopted the Wilkin County Zoning Ordinance to serve many purposes. For example, creating compatibility of different land uses, determining appropriate use of land, protecting, and preserving the economic viability of land, and protecting public health, safety, and the general welfare of the people (Wilkin County, 2022). The vast majority of the Project falls within the agricultural zoning district. A Floodplain Ordinance serves to minimize flood losses and protect the public health and safety of the county, and the Wilkin County Local Water Management Plan has regulated water resources in the County at least as of 2017 (Wilkin County, 2017).
The Project would cross the boundaries of two Minnesota Watershed Districts: the BRRWD and Bois de Sioux Watershed District (BDSWD). The BRRWD Comprehensive Watershed Management Plan implements measures to conserve soil and water resources through the implementation of practices, programs, and regulatory controls that effectively control or prevent erosion, sedimentation, and siltation in order to reduce damages caused by floods, protect the tax base, protect water quality, preserve and conserve natural resources, and ensure continued soil productivity; protect public land and waters (BRRWD, 2020). The BDSWD has joined with the Mustinka River Watersheds to develop the joint Bois de Sioux-Mustinka Comprehensive Watershed Management Plan (Bois de Sioux, 2021). This plan outlines environmental programs, conservation districts, and management of erosion, soil, and water conservation programs.

   iii) Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

10.a.iii Zoning

Shoreland and floodplain areas managed by Wilkin and Otter Tail counties are discussed in Section 10.a.ii, above. The Project does not cross any federal or state wild and scenic rivers, designated critical areas, or agricultural preserves. The Project would not result in zoning changes.

Based on a review of Federal Emergency Management Agency floodplain Zone A/AE data, the pipeline route would cross 100-year floodplains near MPs 19.5, 25.1, and 28.1 in Wilkin County (MNGeo, 2022). In addition, one temporary access road would be in a Zone AE floodplain near MP 20.0 in Wilkin County. Lastly, MLV-321-04 and its associated permanent access road located near MP 27.4 in Wilkin County would be in a Zone A floodplain.

   iv) If any critical facilities (i.e. facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity.

There are no critical facilities located in areas identified as at risk for localized flooding. Most of the Project is located underground. Small volumes of hazardous materials may be stored at the capture facility within the Green Plains Ethanol Plant during operations. The Green Plains Ethanol Plant capture facility is not located within an area at risk of flooding. As stated in Section 10.a.iii, MLV-321-04 near MP 27.4 in Wilkin County are in a Zone A floodplain.

SCS would coordinate with Wilkin County to secure a permit for the portions of the Project that would be constructed within designated floodplains. The pipeline and temporary access road impacts within these floodplains would be limited to temporary construction impacts; following construction, the pipeline would be below-ground and would not be impacted by flooding. Aboveground, permanent features that would be in floodplains are MLV-321-04 and its associated permanent access road located near MP 27.4. These Project components would be constructed in accordance with Wilkin County floodplain permitting requirements, and due to the small footprint (less than 0.1 acre), negligible impacts on the floodplain and floodplain elevations are anticipated. In addition, flooding would not impact the operation of this facility. The facility can be operated remotely, and even should the MLV be submerged during a flood event this would not affect its ability to operate safely.
b) Discuss the project’s compatibility with nearby land uses, zoning, and plans listed in Item 10a above, concentrating on implications for environmental effects.

10.b Compatibility with Land Use Plans

Generally, the existence of a pipeline easement can be compatible with future private landowner desires to continue activities on their property. Landowners would be restricted from some activities within the pipeline easement, such as planting of trees or building structures. Present agricultural practices can continue during operation of the Project. In forested areas, SCS has reduced the width of the construction workspace or has committed to trenchless crossing methods to minimize impacts on forest land. Trees would not be cleared along the permanent ROW during construction or operations where trenchless waterbody crossing methods are used. Only limited hand clearing would occur at these waterbodies where necessary to access a water source to withdraw water for the HDD operations, placing the HDD guidewires, and/or testing of the pipe segment. After construction, tree regeneration would be permitted to occur naturally within the portion of the construction workspace cleared for construction that is located outside of the permanent ROW. In forested areas near waterbodies that have not been crossed with a trenchless method, post-construction vegetation maintenance within the permanent ROW would be limited to a 10-foot-wide corridor centered over the pipeline.

The county land use plans and corresponding zoning ordinances place an emphasis on maintaining and developing strong agricultural economies in the counties affected by the Project. Both Wilkin and Otter Tail counties have enacted zoning and shoreland ordinances that accommodate essential service networks and other commercial and industrial uses, such as wind and solar development, biofuel production, oil, gas, sewer and drainage pipelines, electrical transmission and substations, and telecommunication towers (Otter Tail County, 2014 and 2021; Wilkin County, 2017 and 2022).

The Project would result in both temporary and permanent changes to current land uses, although most land use impacts associated with the Project would be temporary because most land uses would be allowed to revert to prior uses following construction, for example, agriculture. Because the Project would not impair the counties’ ability to effectuate the orderly development and use of land and water resources, impacts to local zoning due to the Project are anticipated to be minimal.

SCS has initiated consultation with the BRRWD and the BDSWD regarding permitting needs and would obtain all necessary permits prior to construction. These permits would ensure that Project activities are compatible with the plans of the Watershed Districts.

c) Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.

10.c Mitigation Measures

As there are no anticipated incompatibilities with land use, local and regional planning, zoning, or land use plans, no mitigation measures have been identified.

Project Interaction with Climate Trends

Because negligible changes to land use would result from the Project, the Project would have no land use-related interactions with Climate Trends.
11 GEOLOGY, SOILS AND TOPOGRAPHY/LANDFORMS

a) Geology – Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

11.a Geology

Bedrock geology consists of Cretaceous-aged sedimentary and Paleozoic-aged igneous metamorphic rocks (see Figure 11-1). Regional maps and local well records indicate that depth to bedrock throughout the Project area generally exceeds 50 feet and can exceed 450 feet. Surficial geology in the Project area is characterized by unconsolidated deposits from Pleistocene continental glaciation (see Figure 11-2). There is no karst terrain located in the Project area (E. Calvin Alexander Jr. et al., 2006; USGS, 2014), and there are no areas of shallow limestone formations. There is a low probability of earthquakes of significant intensity or other seismic events. The area is not prone to sinkholes. The Project would not impact any non-metallic/industrial (e.g., peat; aggregate [sand, gravel], and crushed stone) or metallic (e.g., iron ore, copper, nickel, and titanium) mineral resource areas.

Trench excavation and the use of sheet piling, which typically is installed to depths greater than the pipeline trench, may present an opportunity to intersect surficial water systems due to these activities intersecting naturally occurring high water tables. Sheet piling is commonly used in areas of unstable or saturated soils, or at waterbody crossings to create a dam and allow for a dry/non-flowing workspace. It is possible for sheet piling to intersect aquifer confining layers under pressure, and then when the sheet piling is removed, the void created can act as a flow path and uncontrolled flow of water can occur. SCS does not anticipate that extensive sheet piling use would be needed to construct the Project because of the small, 4-inch diameter pipe and the resulting narrow trench width. If needed, however, SCS’s Contractor would drive sheets to depths of 10 to 15 feet below the ground surface. This depth is above any confined groundwater aquifers in the area.

The pipeline would be installed to provide a minimum of 54 inches depth of cover over the top of the pipe. The trench depth would be a minimum of 58 inches deep. The minimum depth of cover would be increased to 60 inches at waterbody and drainage ditch crossings as well as private road crossings as measured at the bottom of the road ditch. Given the depth of the trench compared to the depth of bedrock in the Project area, there is a low likelihood that the Project would result in impacts on bedrock geology. When pipeline construction is in areas of shallow, consolidated bedrock, blasting is commonly employed to create a pipeline trench. As described in Section 11.b, none of the soils crossed by the Project are considered to have shallow depth to bedrock and SCS does not anticipate the need for blasting.

In areas where the HDD is used, SCS would conduct geotechnical studies to understand the makeup of subsurface geological conditions. SCS would develop contingency plans to address the unintended release of drilling mud to the environment during the execution of each HDD.
b) Soils and topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

11.b Soils and Topography

Topography across the Project area varies widely given the variable nature of glacial deposition and can be of low relief, including wetlands, lakes, and gently rolling to undulating hills and ridges, as well as hummocky areas of high relief with steep hills and ridges. A slope map is presented below as Figure 11-3. Elevations in the Project area range from approximately 961.1 to 1,241.3 feet above mean sea level. Construction of the Project would result in minor and temporary impacts on topography. Primary impacts would consist of temporary alteration of minor slopes on the construction workspace due to grading and trenching operations. These disturbances would be necessary to create a level and safe construction area. After the pipe is installed, SCS’s Contractor would backfill the trench with native material, spread topsoil, and return the ground to pre-construction conditions.

Most soils impacts would be temporary during pipeline trenching or grading activities. The typical dimensions of the pipeline trench would be approximately 5.4 feet (65 inches) deep and 16 to 24 inches wide at the bottom. Depending on soil properties, which affect ditch slope requirements, the top of the trench may be wider (approximately 28 to 30 inches wide). Based on the typical trench dimensions and the total length of the Project (28.1 miles), SCS estimates approximately 61,820 cubic yards of soil would be excavated in association with trenching activities.

To minimize the potential for topsoil/subsoil mixing associated with construction, SCS’s Contractor would typically grade the full extent of the construction workspace in agricultural lands. In other areas, grading outside the trench would only be allowed where required to ensure safety or to address potential wet weather conditions, with prior approval from SCS.

There would be negligible impacts on soils of any type during the Project’s operational phase. The pipeline ROW would be allowed to revert to prior use in most instances, and no soil disturbance would occur over the pipeline, except for periodic maintenance activities, which would be limited in scope and short in duration.

The following NRCS Soil Survey Geographic Database (SSURGO) database classifications (Soil Survey Staff, 2022) are present across the Project and are discussed in the following sections: prime farmland, farmlands of statewide importance, hydric soils, compaction-prone soils, water and wind erodible soils, soils with revegetation concerns, presence of stones and shallow bedrock, percent slope, and depth of topsoil. Table 11-1 provides a summary of Project impacts according to the SSURGO classifications.
<table>
<thead>
<tr>
<th>County</th>
<th>Total Footprint Acreage</th>
<th>Prime Farmland b</th>
<th>Farmland of Statewide Importance c</th>
<th>Hydric Soils d</th>
<th>Compact Prone e</th>
<th>Highly Water Erodible f</th>
<th>Highly Wind Erodible g</th>
<th>Reveg. Concerns h</th>
<th>Stony/Rocky i</th>
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<td>3.3</td>
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<td><strong>Total</strong></td>
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<td>0.2</td>
<td>0.2</td>
<td>5.7</td>
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</table>

Note: Sum of addends may not equal total due to rounding.

a Soil may have more than one characteristic.
b Includes soils that are classified as prime farmland or prime farmland if a limiting factor is mitigated.
c Includes soils that are classified as farmland of statewide importance.
d Includes soils that are classified as hydric by SSURGO.
e Includes soils in somewhat poor to very poor drainage classes with surface textures of clay loam and finer.
f Includes soils with a slope >15% or soils with a K value of >0.35 and slopes >5%.
g Includes soils in wind erodibility group designation of 1 or 2.
h Includes soils with a non-irrigated land capability classification of 3 or greater.
i Includes soils with a cobbley, stony, boulder, shaly, very gravelly, or extremely gravelly modifier to the textural class of the surface layer and/or that have a surface layer that contains greater than 5 percent by weight rock fragments larger than 3 inches.
j Includes total Project footprint including areas that would be permanently impacted by operations (i.e., capture facility, permanent access roads, MLVs/ICCP system).
k Includes Project components that would be permanently converted to gravel or similar (capture facility, permanent access roads, and MLV/ICCP system).
l An additional 0.6 acre of ATWS may also be used during construction of the capture facility. This acreage is already accounted for under construction workspace.
Prime Farmland

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing crops and is also available for these uses (the land can be cropland, pasture, woodland, or other lands). Prime farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods and is not subject to frequent or prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., by draining or irrigating). The NRCS also recognizes farmlands of statewide importance, which are defined as lands other than prime farmland that are used for production of specific high-value food and fiber crops.

The Project would impact approximately 319.2 acres (91 percent of the Project footprint) of prime farmland soils or prime farmland soils if limiting factors are mitigated. Additionally, 18.0 acres (5 percent of the Project footprint) would cross soils that are classified as farmland of statewide importance.

Construction of the pipeline would have short-term and temporary impacts on prime farmland soils, which would be restored to their pre-construction conditions. SCS has developed a Minnesota APP (Appendix E), which identifies measures that the Project would implement to avoid, mitigate, or provide compensation for negative agricultural impacts that may result from pipeline construction. SCS’s Contractor would implement several mitigation measures to minimize impacts on all agricultural lands, including areas designated as prime farmland or farmland of statewide importance. These measures would include but are not limited to topsoil segregation, compaction avoidance and alleviation, removal of excess rock, restoration of agricultural drainage systems, and installing and maintaining erosion and sediment control structures during construction. Each of these measures would be used to return the construction workspace to its original state and to promote the long-term productivity of the soil for future farming activities. Crossed agricultural land would be effectively removed from production for at least one growing season to construct the Project; as such, landowners would be compensated for lost crops due to construction. Following construction, agricultural land would revert to prior use and operational impacts on agricultural soils would be limited. Agricultural practices would not be impacted by operational activities, except for limited instances where operations and maintenance activities occur. These activities would be coordinated with the landowner.

Hydric Soils

A hydric soil is typically indicative of areas with a high mean water table and are one of three indicators (along with wetland hydrology and vegetation) to determining the presence of wetlands, which provide ecological and recreational benefits, as well as improve water quality and assist in flood control. However, agricultural lands can contain hydric soils that are no longer saturated due to managed hydrology practices (e.g., drain tiling or ditching). Additionally, seasonal and precipitation factors can influence water tables and soil saturation and result in instances where soil characteristics do not resemble hydric soils. The Project would impact approximately 51.7 acres (14.8 percent of the Project footprint) of soils that are classified as hydric soils.

Construction of the pipeline would result in short-term and temporary impacts on hydric soils. Once in operation, no additional impacts on hydric soils are anticipated. SCS’s Contractor would install sediment and erosion control devices at the base of a sloped area near wetlands, waterbodies, and water conveyances. These devices would prevent or minimize sediment from ground disturbing activities from reaching downslope waterbodies and wetlands, which may contain hydric soils. Temporary ECDs would be maintain at site-specific locations identified in Project Stormwater Pollution Prevention Plans (SWPPPs) until the area is revegetated per the Minnesota Construction Stormwater General Permit.
Compaction Prone Soils

Compaction occurs when soil is subjected to heavy loads or traffic. Similarly, rutting is caused by the plastic deformation of soil when subject to an external load. The Project would impact approximately 209.2 acres (60 percent of the Project footprint) of soils that are classified as having a high potential for compaction.

Construction of the pipeline would result in short-term and temporary impacts on compaction prone soils. SCS’s Contractor would minimize compaction impacts by suspending certain construction activities on susceptible soils during wet conditions if the topsoil has not been stripped, constructing from timber mats in wetland areas, or using low-ground-weight equipment.

Water and Wind Erodible Soils

Soils most susceptible to water erosion are typified by bare or sparse vegetative cover, non-cohesive soil particles, low infiltration rates, and/or moderate to steep slopes. Soils more typically resistant to water erosion include those that occupy low relief areas, are well vegetated, and have high infiltration capacity and internal permeability. Susceptibility to wind erosion is less affected by slope angles and is more directly influenced by physical soil factors including moisture, texture, calcium carbonate content, and organic matter; and landform and landscape conditions including soil roughness factors, unsheltered distance, and vegetative cover. The Project would impact 7.5 acres (2 percent of the Project footprint) of soils considered susceptible to water erosion. The Project would impact approximately 5.7 acres (2 percent of the Project footprint) of soils that are considered susceptible to wind erosion.

Construction of the pipeline would result in short-term and temporary impacts on water and wind erodible soils. SCS’s Contractor would utilize BMPs and dust control measures such as mulch, sediment barriers, and water trucks to minimize soil erosion from occurring during construction. SCS would also restore, revegetate, and stabilize these soils in accordance with MPCA Construction Stormwater General Permit requirements and landowner agreements.

Revegetation Concerns

The vegetation potential of soils is based on several characteristics including topsoil thickness, soil texture, available water capacity, susceptibility to flooding, and slope. Other considerations included whether the soils are natural, human transported, or disturbed. Some soils have characteristics that cause a high seed mortality. These areas may need additional management and may be difficult to revegetate. The clearing and grading of soils with poor revegetation potential can result in a lack of adequate vegetation following construction and restoration. The Project would impact approximately about 11.5 acres (3.3 percent of the Project footprint) of soils that are classified as having poor revegetation potential.

Construction of the pipeline would result in short-term and temporary impacts on soils with poor revegetation potential. SCS’s Contractor would restore and revegetate these soils; vegetation in areas that are not returned to agricultural land uses would be monitored until vegetation reaches at least 70 percent when compared to the native background vegetation cover prior to closing out the Project’s Construction Stormwater General Permit.

Stony-Rocky Soil and Shallow Bedrock

Construction through soils with shallow bedrock can result in the incorporation of bedrock fragments into surface soils. Soils with textural classifications including stony, cobbly, gravelly, shale, slate, and droughty in any layer, or with stones larger than 3 inches in the surface layer in greater than 15 percent of the area, be characterized as stony or rocky soil. Shallow bedrock is considered prevalent where the depth of bedrock is less than 5 feet below the ground surface. The Project would impact approximately 0.2 acre (<0.1 percent
of the Project footprint) of soils that are classified as stony or rocky. None of the soils are considered to have shallow depth to bedrock.

SCS’s Contractor would remove excess rocks from the right-of-way. The topsoil, when backfilled, and the easement area shall be free of all rock larger than 3 inches in average diameter not native to the topsoil prior to excavation. Where rocks over 3 inches in size are present, their size and frequency shall be similar to adjacent soil not disturbed by construction. Rock that cannot remain in or be used as backfill would be disposed of at locations and in a manner mutually satisfactory to the company’s EI and the landowner. Soil from which excess rock has been removed may be used for backfill.

**Topsoil Depths**

Topsoil is the uppermost layer of soil and typically has the highest concentration of organic materials with generally greater biological productivity than subsurface soils. Microorganisms and other biological material found in topsoil, in addition to inorganic soil components, provide the bulk of the necessary nutrients to vegetation. Topsoil also has the highest concentration of plant roots and seeds. Topsoil preservation is important especially for restoration of natural vegetation and cropland as well as range or pasture lands, especially in areas where topsoil is limited in extent or depth. Less than 0.1 percent of the soils crossed by the Project have topsoil depth less than 6 inches, 97 percent of the soils have topsoil depths between 6 inches and 18 inches deep, and 3 percent have topsoil depths greater than 18 inches.

Topsoil and subsoil would be separated during construction. When separated, topsoil piles would be stabilized to reduce loss from erosion by utilizing measures such as sediment barriers, mulch, temporary seeding, or tackifiers, where necessary. When segregating topsoil, SCS’s Contractor would strip all topsoil. Topsoil depth would be determined onsite.

Trench spoil would be placed in a stockpile that is separate from topsoil. SCS’s Contractor would typically maintain a minimum 1-foot-wide separation or place a barrier between topsoil and subsoil piles to avoid mixing. During trench backfilling, subsoil material would be replaced and de-compacted first, followed by topsoil placement. Typical construction ROW plan and profile drawings that display topsoil segregation practices are provided in Appendix A of the Minnesota ECP and Minnesota APP. The method selected would be dependent on specific landowner approvals, agreements, field, or weather conditions, and/or regulatory authority or permit requirements. Implementation of proper topsoil segregation would minimize the loss of crop productivity, ensure successful post-construction revegetation, and minimize the potential for long-term erosion problems.

**Steep Slopes**

The slope gradient of a soil influences several characteristics such as the ability of a soil to retain water and the potential for accelerated erosion or subsidence. The slope gradient of a soil is used to assess soils with high water erosion potential and is a factor used to identify soils that may have revegetation concerns. Approximately 96.0 percent of the Project footprint has relative slopes less than 5 percent. Approximately 3.9 percent of the Project footprint contains slopes greater than 5 percent.

During the construction phase of the Project, steeper slopes would require additional mitigation to minimize erosion and to contain any surface spills. SCS’s Contractor would avoid storing materials, equipment, and vehicles on slopes greater than 5%, when possible. After construction, SCS’s Contractor would return surface contours to pre-construction conditions except where steep slopes need to be maintained at a more stable angle of repose on a permanent basis.

**NOTE:** For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased
risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 12 must be consistent with the geology, soils and topography/land forms and potential effects described in EAW Item 11.

12 WATER RESOURCES

a) Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i) Surface water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, shoreland classification and floodway/floodplain, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive species and the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

12.a.i Surface Water

12.a.i.i Surface Waters

SCS conducted waterbody surveys in 2021 and 2022. These surveys identified locations and widths of waterbodies including streams, rivers, and agricultural drainage ditches. In the Application, SCS stated it had completed surveys on 88.6 percent of the Project route as of July 2, 2022. Updated survey information will be included in the EIS. Where surveys have not yet been completed, SCS performed a desktop review to identify areas where waterbodies are assumed to occur.

SCS identified 12 waterbodies crossed by the Project route, including 5 perennial streams, 6 intermittent streams, and 1 ephemeral stream. Waterbodies crossed by the Project route are summarized in Table 12-1. A list of individual waterbodies, along with any special agency designations (i.e., public waters, waters infested with aquatic invasive species, impaired waterbodies, water trails, or USACE Section 10/408 waters) and the proposed crossing method for each feature is included in Table 12-2. Crossing methods are discussed in more detail in Section 12.b.iv.b. Locations of waterbody crossings are also displayed on the figures in Appendix A. One additional waterbody (an unnamed perennial agricultural ditch) is not crossed by the pipeline but is in the construction workspace. None of the associated facilities would impact waterbodies.

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<tr>
<th>County</th>
<th>Perennial</th>
<th>Intermittent</th>
<th>Ephemeral</th>
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<th>State Water Trails</th>
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<tr>
<td>TOTAL</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
# Table 12-2

## Waterbody Crossings

<table>
<thead>
<tr>
<th>County</th>
<th>Milepost</th>
<th>Waterbody Name</th>
<th>Flow Regime</th>
<th>Agency Designation</th>
<th>303(d) Impairment *</th>
<th>Proposed Crossing Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otter Tail</td>
<td>1.9</td>
<td>Pelican River</td>
<td>Perennial</td>
<td>Public Water (H-026-081-012); 303(d) Impaired; Infested water (zebra mussel)</td>
<td>E. coli</td>
<td>HDD</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>4.2</td>
<td>Unnamed Stream</td>
<td>Intermittent</td>
<td>--</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>4.7</td>
<td>Unnamed Stream</td>
<td>Intermittent</td>
<td>--</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>5.0</td>
<td>Unnamed Stream</td>
<td>Intermittent</td>
<td>--</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>5.5</td>
<td>Unnamed Stream</td>
<td>Intermittent</td>
<td>--</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>6.6</td>
<td>Unnamed Stream</td>
<td>Perennial</td>
<td>--</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>8.0</td>
<td>Unnamed Stream</td>
<td>Ephemeral</td>
<td>--</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>10.8</td>
<td>Judicial Ditch L 2</td>
<td>Perennial</td>
<td>County Ditch</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Wilkin</td>
<td>17.2</td>
<td>Unnamed Stream</td>
<td>Intermittent</td>
<td>--</td>
<td>--</td>
<td>Open Cut (Nonflowing/Flowing)</td>
</tr>
<tr>
<td>Wilkin</td>
<td>19.5</td>
<td>Otter Tail River</td>
<td>Perennial</td>
<td>Public Water (H-026-081); 303(d) Impaired; Infested water (zebra mussel); Section 408, State Water Trail</td>
<td>InvertBio; T</td>
<td>HDD</td>
</tr>
<tr>
<td>Wilkin</td>
<td>25.0</td>
<td>Unnamed Creek</td>
<td>Intermittent</td>
<td>Public Water (H-026-082); 303(d) Impaired; Public Water (H-026); 303(d) Impaired; Section 10</td>
<td>DO; E. coli; FishesBio; Hg-F; Nutrients; T</td>
<td>Bore</td>
</tr>
<tr>
<td>Wilkin</td>
<td>28.1</td>
<td>Bois de Sioux River</td>
<td>Perennial</td>
<td>Public Water (H-026-081-012); 303(d) Impaired; Infested water (zebra mussel)</td>
<td>E. coli</td>
<td>HDD</td>
</tr>
</tbody>
</table>


The Project does not cross any lakes, or the following federal or state special designated waters: MPCA-designated Outstanding Resource Value Waters, National Park Service “Nationwide Rivers Inventory” waters, MDNR trout streams or lakes, wildlife lakes, migratory waterfowl feeding/resting lakes, or federal- or state-listed wild and scenic rivers.

As discussed in Sections 10.a.ii and 10.a.iii, Otter Tail County has implemented the Otter Tail County Shoreland Management Ordinance to regulate development within areas designated as Shoreland Management Districts (Otter Tail County, 2021). Wilkin County has a Floodplain Ordinance as well as the Wilkin County Local Water Management Plan which regulates water resources in the County (Wilkin County, 2017). The pipeline route would cross 100-year floodplains, a Zone AE floodplain, and a Zone A floodplain in Wilkin County. There are no FEMA-mapped floodplains crossed by the Project in Otter Tail County.

Section 303(d) of the Clean Water Act (CWA) requires that each state review, establish, and revise water quality standards for all surface waters within the state. Waters that do not meet their designated beneficial uses because of water quality standard violations are considered impaired. The U.S. Environmental Protection Agency (USEPA) approved the MPCA’s 2022 Inventory of Impaired Waters on April 29, 2022 (MPCA, 2022a). As presented in Table 12-2, the Project crosses four impaired waters, which are designated as Class 1 (domestic consumption) and Class 2 (aquatic life and recreation) waterbodies. The following list...
presents waterbodies that are included on the Impaired Waters list and are within 1 mile of the Project (see Appendix F for additional detail):

- Otter Tail River (MP 1.7);
- Pelican River (MP 2.1);
- Judicial Ditch 2 (MP 10.9);
- Otter Tail River (MP 19.3);
- Doran Slough (MP 26.1); and
- Bois de Sioux River (MP 28.1).

12.a.i.ii Wetlands

SCS conducted wetland surveys in 2021 and 2022. Wetlands were identified and mapped in accordance with the Great Plains and Midwest Regional Supplements of the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987). In the Application, SCS stated it had conducted wetland surveys on 88.6 percent of the Project route as of July 2, 2022. Updated survey information will be included in the EIS. Where field-verified survey data were not yet obtained, SCS used publicly available data sources to perform a desktop analysis of potential wetlands that would be crossed by the Project route.

Based on a combination of desktop and field data where obtained, the Project pipeline would cross approximately 0.7 mile of wetlands (see Table 12-3; refer to the Table 12-4 for a detailed inventory of all wetlands crossed by the Project). Wetlands within the Project environmental survey area, including type and ID number, are shown on the maps in Appendix A.

**Table 12-3**

<table>
<thead>
<tr>
<th>County</th>
<th>Wetland Type</th>
<th>Crossing Length by Pipeline Centerline (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otter Tail</td>
<td>PEM</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>PSS</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td></td>
<td>PFO</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Wilkin</td>
<td>PEM</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>PSS</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td></td>
<td>PFO</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>0.7</strong></td>
</tr>
</tbody>
</table>

a PEM = Palustrine Emergent. This wetland type is characterized by rooted herbaceous and grass-like plants which stand erect above the water or ground surface (excluding mosses or lichens). Vegetation is present for most of the growing season in most years.

PSS = Palustrine Scrub-Shrub. This wetland type is dominated by woody vegetation less than 20 feet tall. Plant species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions.

PFO = Palustrine Forested. This wetland type is dominated by woody vegetation 20 feet or taller. Forested wetlands generally include an overstory of trees, an understory of young trees and shrubs, and an herbaceous layer.

Note: The sum of addends may not total correctly due to rounding.

Source: Cowardin et al. 1979.

**Table 12-4**

<table>
<thead>
<tr>
<th>County</th>
<th>Temporary Impacts (acres)</th>
<th>Permanent Impact (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PEM</td>
<td>PSS</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>3.7</td>
<td>--</td>
</tr>
<tr>
<td>Wilkin</td>
<td>1.8</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5.5</td>
<td>0.2</td>
</tr>
</tbody>
</table>

a PEM = Palustrine Emergent; PSS = Palustrine Scrub-Shrub; Palustrine Forested (Cowardin et al. 1979).

b Area of wetland impact within the permanent ROW of the Project where PSS and PFO wetland functions would be permanently converted and maintained as PEM. Permanent fill impacts would occur in PEM wetlands along two permanent access roads to MLVs at approximate MPs 20.3 and 27.4.

Note: The sum of addends may not total correctly due to rounding.
As summarized in Table 12-4 above, approximately 5.5 acres of emergent wetland and 0.2 acre of forested wetland (1.6 percent of the route) would be temporarily impacted by construction. Forested wetland cleared outside of the permanent ROW for the Project would be allowed to regenerate post-construction.

The Project would result in the functional conversion of approximately 0.1 acre of scrub-shrub and 0.1 acre of forested wetland to emergent wetlands within the permanent ROW (due to clearing of woody vegetation as part of post-construction vegetation management). These impacts are permanent. In addition, permanent access roads to two MLVs (MPs 20.3 and 27.4) would result in permanent fill of 0.01 acre of emergent wetlands due to the installation of permanent culverts. Both access roads cross wetland ditches adjacent to public roads that must be crossed to be able to access the MLV; flow would be maintained by installing a culvert under the road.

In Minnesota, wetland crossings are regulated by the USACE, MPCA, MDNR, and BWSR LGUs through Minnesota’s WCA. SCS would acquire all required wetland permits for the Project from local, state, and federal agencies. As part of the permitting requirements, SCS’s Contractor would avoid and minimize impacts on wetlands to the extent possible and restore temporary impacts following construction.

SCS has submitted its application to request Section 404/10 coverage under the Utility RGP from the USACE, a permit that has been certified by the MPCA under Section 401 of the CWA.

The Project falls under the WCA Federal Approvals Exemption for Utilities, which is overseen by BWSR. This exemption applies to utilities, as defined by the USACE, as “any pipe or pipeline for the transportation of any gaseous, liquid, liquefiable, or slurry substance, for any purpose, and any cable, line, or wire for the transmission of electrical energy, telephone, electronic data, and radio or television communication.” In accordance with Minn. Stat. § 103G.2241.subd. 3 and Minn. R. 8420.0420, subp. 4, a replacement plan is not required for wetland impacts resulting from the construction, maintenance, or repair of utility lines, including pipelines, and associated facilities when such a project is authorized by the USACE under Section 404 of the CWA. SCS submitted a Notice of Intent to use this exemption to the Otter Tail and Wilkin County LGUs concurrent with the USACE application and would keep BWSR and the LGUs apprised of the USACE permitting process.

Wetlands designated as Public Waters are subject to MDNR’s Public Waters Work Permit process. The Project would not impact any public water basins.

Through consultation with the BRRWD, SCS learned of a potential proposed wetland mitigation bank in the vicinity of the Project near MP 9.7. The proposed wetland mitigation bank is in the early planning phase; the conservation easement has not been finalized. SCS would continue to work with the landowner(s) and BRRWD to ensure the Project is compatible with proposed future mitigation plans.

The Project would cross one parcel near MP 0.3 with USFWS wetland interests administered by the Fergus Falls WMD. USFWS staff confirmed the wetlands on the parcel are the only features subject to the conservation easement and the Project avoids wetland impacts on the parcel.
ii) **Groundwater – aquifers, springs, seeps. Include:** 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

12.a.ii **Groundwater**

Unconsolidated permeable glacial deposits and recent alluvial deposits are the most important groundwater sources in the Project area. These deposits consist primarily of glacial sand and/or gravel outwash, ice-contact deposits, or sand and gravel alluvium that was deposited along existing streams. Most glacial aquifers are classified as “surficial aquifers” because the water table is in these deposits. The surficial glacial aquifers vary in thickness from a few feet to over 300 feet and can produce water up to 3,000 gallons per minute or more, depending on the thickness and extent of the saturated deposits. In some areas near the Project there may be “buried” glacial aquifers. Buried glacial aquifers are unconsolidated, permeable sand and gravel deposits that are separated from the ground surface or from overlying surficial glacial aquifers by a laterally continuous layer of lower permeability silt and/or clay that functions as an aquitard. Buried glacial aquifers are typically confined, and in some cases wells that are installed in buried glacial aquifers flow freely without pumping. The likelihood of encountering surficial and buried sand and gravel aquifers varies across the Project.

The MDNR has commented that the Project crosses a beach ridge in Otter Tail County, which could indicate the presence of near-surface groundwater. This beach ridge area identified by MDNR is located generally between MPs 4.8 and 7.7. MDNR’s review of aerial photos shows a groundwater upwelling signature down slope from the beach ridge, and MDNR stated that the area is prone to significant groundwater discharge.

Cretaceous age aquifers are present throughout the western half of the Project area. Cretaceous age aquifers are typically 200 to 350 feet below ground surface and are overlain by glacial deposits. Because they are thin and of relatively low permeability, the Cretaceous aquifer near the Project yields only fairly low quantities of water (i.e., 10 to 25 gallons per minute) and is used only in some rural locations for domestic purposes. The eastern half of the Project is located over Precambrian aquifers which can yield limited supplies of water to rural domestic and livestock wells where fractures, faults, and weatherized zones provide porosity and permeability. Wells in these aquifers are generally completed at depths ranging from 30 to 400 feet and generally yield between 1 and 25 gallons per minute (Adolphson et al., 1981).

Groundwater springs or seeps are a common indicator of surficial groundwater sources. Minnesota has established a spring inventory to track the location of springs across the state. Based on a review of the Minnesota Spring Inventory, the nearest groundwater spring (Kennedy Park Spring) is located approximately 3.7 miles southeast of MP 1.5 (MDNR, 2022).

Based on the Minnesota Department of Health’s (MDH’s) Minnesota Well Index (MWI) database, a total of 189 locatable water wells are located within 2 miles of the Project. These wells are completed in confined aquifers (e.g., buried sand and gravel aquifers, deep bedrock aquifers) and would not be indicative of the depth to water that would be encountered by pipeline excavation.

SCS compiled depth-to-water table data for eight likely water table wells within 2 miles of the Project. These wells include those explicitly identified as water table wells in the MWI database. Based on the data available, the depth to the water table for these eight wells ranges from 4 to 12 feet within 2 miles of the Project (refer to Table 12-5). It is also possible that shallow water tables may also exist across the Project area for which data are not available. Based on the MDNR Depth to Water Table Map, the Project area in

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6 [https://mnwellindex.web.health.state.mn.us/](https://mnwellindex.web.health.state.mn.us/)
7 [https://files.dnr.state.mn.us/waters/groundwater_section/mapping/mha/hg03_plate2.pdf](https://files.dnr.state.mn.us/waters/groundwater_section/mapping/mha/hg03_plate2.pdf)
Otter Tail County has a depth to water table typically less than 20 feet below ground surface and in Wilkin County, the depth to water table is typically less than 10 feet below ground surface (MDNR, 2016b).

Table 12-5
Depth to Water Table within 2 Miles of the Project

<table>
<thead>
<tr>
<th>County</th>
<th>Milepost</th>
<th>MWI Log Number</th>
<th>Distance from Centerline (feet)</th>
<th>Direction from Pipeline</th>
<th>Depth to Water Table (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otter Tail</td>
<td>1.1</td>
<td>476701</td>
<td>7,370</td>
<td>Southeast</td>
<td>8</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>1.2</td>
<td>476702</td>
<td>7,419</td>
<td>Southeast</td>
<td>7</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>1.1</td>
<td>476703</td>
<td>7,421</td>
<td>Southeast</td>
<td>10</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>1.1</td>
<td>496040</td>
<td>7,173</td>
<td>Southeast</td>
<td>7</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>1.1</td>
<td>496042</td>
<td>7,293</td>
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<td>7.4</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>4.9</td>
<td>789414</td>
<td>1,715</td>
<td>North</td>
<td>12</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>1.1</td>
<td>496039</td>
<td>7287</td>
<td>Southeast</td>
<td>5.8</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>1.2</td>
<td>496041</td>
<td>7,328</td>
<td>Southeast</td>
<td>3.9</td>
</tr>
</tbody>
</table>

The Project does not cross any Drinking Water Supply Management Areas (DWSMAs) or Wellhead Protection Areas, which are units within DWSMAs that are managed by local jurisdictions along with the MDH. The closest DWSMA to the Project is associated with the City of Fergus Falls and is approximately 4 miles east of the capture facility at MP 0.0 (see Figure 12-1).
b) Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i) Wastewater – For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

(1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

(2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system. If septic systems are part of the project, describe the availability of septage disposal options within the region to handle the ongoing amounts generated as a result of the project. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion.

(3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects.

12.b.i.1 Effects of Wastewater Discharge

The Project would generate wastewater during construction of the pipeline (discharge of hydrostatic test water to land or water is considered a wastewater for MPCA permitting purposes), and through construction and operations of the capture facility.

Prior to pipeline operations, SCS’s Contractor would conduct hydrostatic testing of the pipeline after backfilling to comply with PHMSA pipe testing requirements in accordance with 49 CFR Part 195, Subpart E. Hydrostatic testing involves filling installed segments of the new pipeline with water, which would be appropriated from surface water, municipal, or groundwater sources in accordance with applicable MDNR water appropriation permits (also see Section 12.b.iii), and then raising the internal pressure and holding that pressure for a specific period of time per PHMSA specifications. Hydrostatic pre-tests would be performed on pre-built HDD segments while the pipe is laid aboveground within the construction workspace, prior to installation. HDD segments would be tested again post-installation/tie-in as part of the overall pipe testing segment. SCS is currently anticipating the need to use approximately 110,000 gallons of water for the execution of hydrostatic testing.

After the hydrostatic test is complete, the line would be depressurized, and the water discharged according to applicable MPCA discharge permits obtained by SCS. SCS’s Contractor would discharge the water back to the source in which the water was appropriated, or to an upland through an agency approved method. State requirements would be followed regarding movement or reuse of water prior to finalization of a hydrostatic testing plan. Discharge locations would be determined and approved by applicable agencies prior to use. Energy dissipation devices may be used to help mitigate the possibility of erosion while discharging, suspended sediments in the waterbody or wetland, or scour.

SCS is currently exploring options for appropriation and discharge of water used for hydrostatic testing, including volumes, appropriation location(s), and discharge location(s). These details, including appropriation and discharge points, necessary treatment methods, and any effluent limitations have not been determined at this time, but would be reviewed and managed by the MDNR and MPCA through their respective permitting processes to mitigate impacts. Effects associated with discharges to surface or groundwater are expected to be minimal as MPCA’s permitting process requires the development of an...
Infiltration Management Plan for upland discharges and compliance with Minnesota’s antidegradation rules for surface water discharges. Should a discharge structure rupture greater impacts at that location would be expected. In addition, MPCA will not permit discharge of any water used for cleaning pipe. Such cleaning water would be disposed of by licensed waste haulers.

Following hydrostatic testing activities of the capture facility, hydrostatic test discharge water would be routed to a local wastewater treatment facility for treatment or discharged back to the source in which the water was appropriated, or to an upland through an agency approved method in accordance with the MPCA Individual NPDES Industrial Wastewater permit obtained by SCS for the capture facility.

The capture facility would also produce a continuous stream of industrial wastewater during operations that would be generated from cooling tower blowdown and condensate from blower and compressor skids. The wastewater would contain some volatile organic compounds (VOCs) that would be removed from the incoming CO₂ stream, trace amounts of oil, and dissolved solids. SCS estimates this wastewater stream would typically range from 8 to 10 gallons per minute. SCS is currently exploring options for managing this wastewater. These options include treatment and reuse, combining it with the Green Plains Ethanol Plant’s wastewater stream, routing it to the Green Plains Ethanol Plant for use in their process, sending the wastewater to a local wastewater treatment plant for treatment, or discharging directly to waters of the state as an independent, separate stream. If the volume of water is routed to a local wastewater treatment plant, the volume would not necessitate expansion of existing facilities. If SCS pursues an independent discharge to a water of the state, it would seek coverage under a new MPCA Individual NPDES Industrial Wastewater permit.

The Project would not result in any new sanitary facilities that would need connection to a subsurface sewage treatment system. Wastewater generated by use of portable toilets during construction would be transported via truck to a licensed facility for proper disposal.

**Project Interaction with Climate Trends**

Wastewater discharges generated as a result of construction or operation of the capture facility would be permitted by the MPCA; because this discharge is approximately 8-10 gallons per minute, it would not be impacted by, nor would it impact, climate trends such as increased chance of flooding. Any water discharged during hydrostatic testing of the pipe (approximately 110,000 gallons) would be generally equivalent to the volume appropriated, it would not be impacted by, nor would it impact climate trends by removing or increasing water within a receiving waterbody. Therefore, the Project would not be expected to have significant wastewater resource-related interactions with Climate Trends.

**ii) Stormwater** — Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post construction including how the project will affect runoff volume, discharge rate and change in pollutants. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments or are classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.
12.b.ii Stormwater

Prior to construction, SCS would obtain coverage under MPCA’s Construction Stormwater NPDES General Permit MNR100001, which applies to construction activities with over 1 acre of ground disturbance. SCS would develop a Construction SWPPP(s), which would direct management of stormwater to prevent adverse effects. As described in Section 10.a.i, the Project would result in impacts on the following land types: 301.1 acres of the crop land cover type; 1.6 acres of the forest land cover type (1.0 acre based on review of aerial photography); 1.2 acres of the wetland/open water land cover type; approximately 0.1 acre of the open land cover type; and 46.2 acres of the developed land cover type. There would be no significant change to surface hydrology as a result of the Project’s impacts on land cover. The only facilities that would result in a change in permeability of the ground surface would be the MLVs, the capture facility, and permanent access roads that aren’t constructed on previously developed land cover types. When considering previously disturbed land cover types, the Project is not expected to create a net increase of at least one acre of cumulative impervious surface. As such, SCS does not expect a permanent stormwater management system would be required.

In accordance with the MPCA Construction Stormwater NPDES General Permit, SCS’s Contractor would utilize erosion and sediment control BMPs during construction and restoration activities to minimize sediment and other contaminants from entering nearby waterbodies, including those with special designations. ECDs and sediment control BMPs such as riprap, matting, slope breakers, and silt fence would be installed during or immediately following removal of vegetation, as seasonal conditions warrant. If disturbance activities occur at the base of a sloped area near wetlands, waterbodies, water conveyances, or roads, ECDs and sediment control BMPs would be installed prior to any ground disturbing activity to prevent erosion and siltation of roads, waterbodies, and wetlands downslope. As described in Section 6.b, SCS’s Contractor would identify locations of 50-ft buffer zones adjacent to wetlands and waterbodies as defined in the Construction Stormwater permit and would properly install and maintain temporary ECDs and/or redundant sediment control measures immediately after clearing and prior to initial ground disturbance within these zones. SCS’s Contractor would install perimeter sediment controls at least 5 feet apart unless limited by lack of available space. Redundant controls would not be installed adjacent to road ditches, judicial ditches, county ditches, stormwater conveyance channels, storm drain inlets, sediment basins, and agriculturally farmed wetlands. Sediment barriers would be installed at the following locations:

- At the base of slopes where wetlands, waterbodies, or roads are located at a lower elevation;
- At the edge of the construction ROW adjacent to a wetland, waterbody, or road;
- Between topsoil/spoil stockpiles and streams or wetlands, as needed and if adequate separation cannot be achieved;
- Where dewatering or discharge locations were required; and
- As directed by the EI.

During construction, SCS indicates the length of time the trench is left open would be minimized to the extent practicable. Except at boreholes and tie-ins, SCS’s Contractor would limit the amount of excavated open trench in uplands to a maximum of 15 days of anticipated welding production per spread, or 15 miles per spread. SCS’s Contractor would maintain ECDs and sediment control BMPs during all phases of construction as required by permits, regulations, and plans. ECDs would be inspected at least once every 7 calendar days and within 24 hours of a rainfall event of 0.5 inch or greater. ECDs unable to function properly would be repaired or replaced within a reasonable time, as specified in Project SWPPPs, or as soon as conditions allow. The inspection frequency may be reduced to at least once per month if the entire site is temporarily stabilized or runoff is unlikely due to weather conditions (e.g., site is covered with snow, ice, or the ground is frozen). Temporary ECDs would be maintained at site-specific locations identified in the Project SWPPPs until the area is revegetated. The construction stormwater permit would remain open.
until restoration achieves uniform perennial vegetation with a density of 70 percent when compared to the native background vegetation cover.

A list of receiving waterbodies within 1 mile of the Project route that could potentially receive runoff is included in Appendix F.

**Project Interaction with Climate Trends**

Annual precipitation in Otter Tail and Wilkin Counties has shown relatively stable trends over the period of 1985 – 2022 (0.0-0.1 inch of increase/decade, respectively) (MDNR, 2023a). Climate change could result in an increased risk of flooding in the Project area due to more frequent large storms. Using the Flood Factor website to look specifically at flood risk for the Project site based on climate change over the next 30 years, the data shows that 14% of Otter Tail County and 23% of Wilkin County have a greater than 26% chance of being severely affected by flooding over the next 30 years. In Otter Tail County, these areas are mostly to the north and east of Fergus Falls and are not concentrated near the Project area. The Project would not result in notable changes to land cover or impervious surfaces or change the area’s ability to naturally manage stormwater. Land impacted by construction would be allowed to revert to its prior use. In addition, the Project would plan for and obtain coverage under MPCA’s Construction Stormwater NPDES General Permit, which would require planning for storm events, the use of BMPs, and inspections to ensure that BMPs continue to function properly. The Project would therefore not be expected to have significant stormwater-related interactions with climate trends.

**iii) Water appropriation – Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should the appropriation volume increase beyond infrastructure capacity or water supply for the project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.**

**12.b.iii Water Appropriation**

Execution of HDDs, hydrostatic testing, and dust control to construct the pipeline may involve appropriations from surface water or groundwater sources if permitted by the MDNR. The use of water for HDDs and hydrostatic testing would be single-event appropriations, while dust control appropriations would be variable as needed based on conditions. SCS is currently anticipating the need to use approximately 125,000 gallons of water for the execution of HDDs, hydrostatic testing, and dust control for the Project, of which 110,000 gallons would be used for pipeline hydrostatic testing. SCS is currently exploring options for appropriation of water, including duration of use, volume, and appropriation location(s). These could be private, municipal, or surface water sources. Once proposed/prefersed and contingency sources and volumes are finalized, these details would be reviewed by the MDNR. SCS would obtain coverage under an individual or general MDNR water appropriation permit(s) for any surface or groundwater appropriated for these activities. These permits would contain BMPs for water withdrawals. Water appropriation permits from the MDNR would inform the locations used, any seasonal restrictions to account for low-flow conditions, volume and measurement requirements, and BMPs to be used during appropriation activities. If SCS ultimately appropriates from surface waters, SCS’s Contractor would use
the following BMPs during surface water appropriations: the use of a 3/16-inch mesh intake screen to reduce impingement and entrainment of aquatic life, managing flow rates, and reporting.

Minnesota law sets standards for non-depletion, reasonable use and non-degradation of water resources in striving to prevent negative impacts (EQB, 2008). The MDNR, through its water appropriation permitting process, would ensure that water appropriations would not deplete or degrade the water source (e.g., the permit would specify maximum surface water withdrawal rates to protect aquatic life and allow for downstream uses). SCS would include a contingency plan as part of the appropriation permit application because it is challenging to predict how changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons would impact proposed water resources. The contingency plan would include identification of potential alternate water supply sources and/or a statement that SCS agrees in advance to a suspension of withdrawals following MDNR request, when necessary. Of the 125,000 gallons estimated to be needed for construction of the pipeline, the largest appropriation is expected to be around 110,000 gallons for pipeline hydrostatic testing.

Trench dewatering is also considered an appropriations activity regulated by MDNR and would be conducted according to permit requirements. Trench dewatering activities are described in more detail in Section 6.b. SCS is evaluating the need to appropriate water for dewatering, dust control, and hydrostatic testing during construction of the capture facility. A specific water source has not been determined at this time; however, SCS plans to obtain water from either a local surface water source or groundwater well directly, or indirectly, from the Green Plains Ethanol Plant or the City of Fergus Falls.

During operations, the capture facility would have estimated water supply needs ranging from 8.2 gallons per minute (gpm) in winter months and 40.9 gpm in summer months, for an average water usage of approximately 13 million gallons per year. The water is expected to be obtained from the Green Plains Otter Tail Ethanol Plant’s onsite wells.

The MDNR reported over 35.3 billion gallons of permitted water use in Otter Tail and Wilkin counties in 2021 (MDNR, 2023b). Due to the volume of current permitted appropriations in the counties crossed by the Project, the relatively small volume likely needed by the Project in comparison, and the measures and conditions outlined above, environmental effects from the Project’s water appropriation activities are expected to be minimal.

**Project Interaction with Climate Trends**

The Project would require the use of approximately 125,000 gallons of water for construction and 13 million gallons per year during operation, which represents a statistically insignificant percentage of the 35.3 billion gallons of permitted water use in Otter Tail and Wilkin counties in 2021. The use of this small volume of water would not impact climate trends by reducing availability of water for other purposes. The MDNR’s permitting process also accounts for the potential drought conditions due to rising temperatures experienced as part of future climate trends. Even if water appropriation permits are issued by the MDNR, the agency has the ability to suspend withdrawal permissions if the watersheds within which the appropriations are to occur experience drought conditions. In this instance, water would need to be obtained from locations that are not under drought restrictions. Therefore, SCS would be required to plan for contingency appropriation locations. SCS would not exceed permitted appropriation volumes without additional MDNR permitting efforts. The Project would therefore not be expected to have significant water appropriation-related interactions with climate trends.
iv) Surface Waters

(a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

12.b.iv.a Surface Waters - Wetlands

As part of the USACE Section 404 and MPCA Section 401 permitting requirements, SCS’s Contractor would avoid and minimize impacts on wetlands to the extent possible and would comply with all General Conditions. SCS would acquire all necessary wetland permits from applicable federal and state agencies prior to construction.

Where feasible, SCS narrowed the construction workspace width from 100 feet to 75 feet at wetland crossings to reduce wetland impacts from the Project and re-routed the Project to minimize impacts on a MDNR Public Water Wetland. SCS also located all ATWS outside of wetlands, with the exception of two locations that were unavoidable. The placement of the pull-back sections in wetlands was unavoidable as it is needed to string pipeline segments to complete HDD crossings.

SCS continues to evaluate crossing methods based on the results of environmental, civil, and geotechnical surveys near wetlands, as well as agency coordination, as described above. The Project would be subject to permit conditions related to wetlands in the USACE’s Section 404/10 Utility RGP authorization (and associated MPCA 401 Water Quality Certification), MDNR’s Work in Public Waters permit, and MPCA Construction Stormwater NDPES permits. Compensatory wetland mitigation may be required in certain circumstances to accommodate for permanent loss of wetland acreage due to permanent access roads to MLVs (currently estimated to be 0.01 acre).

Typical construction in most wetlands would follow the same general construction steps as in uplands: clearing, trenching, dewatering, installation, backfilling, cleanup, and revegetation as described in Section 6.b. Wetlands that have saturated soils, but do not have standing water would utilize a standard wetland crossing method. This method would use pre-assembled and positioned pipe lined up adjacent to a trench and lowered into the pre-cut trench. The dry crossing method would be utilized when crossing wetlands that have no standing water and no water present below the surface so that topsoil can be segregated easily. Pipe-stringing may occur within the wetland or adjacent to the wetland depending on site conditions and designated workspace.

In addition, where a wetland cannot support construction equipment (e.g., in wetlands with saturated soils), construction activities would be accomplished from construction mats or using low ground pressure equipment, thus limiting disturbance to the wetland. If used, construction mats would be removed upon Project completion. To help mitigate the flow and deposition of sediments into wetlands, SCS’s Contractor would properly install and maintain redundant sediment control measures immediately after clearing and prior to initial ground disturbance at wetlands located within 50 feet of the Project and where stormwater flows to a wetland.

Construction across wetlands would result in temporary impacts and, in a few situations, minor changes in plant species composition. Temporary impacts may include loss of wetland vegetation because of clearing.
and other construction activities, soil disturbance associated with clearing, trenching, and equipment traffic; and increases in turbidity and alterations of hydrology as the result of trenching, dewatering, and soil stockpiling activities. SCS’s Contractor would minimize the long-term impacts from riparian clearing in wetlands by only maintaining a 10-foot-wide corridor centered over the pipeline for ongoing maintenance visual inspections of the pipeline and allow corrosion and leak surveys to occur. At HDD and bore crossings where there is no travel lane, SCS’s Contractor would not clear riparian wetland vegetation during construction or operations. Vegetation management would be limited to hand clearing necessary to set the HDD guidewires or a pump for water withdrawal.

Trenching procedures would be followed to ensure the length of time the trench is left open is minimized to the extent practicable. In wetlands, this would be limited to 5,280 linear feet of open trench. After the pipe has been installed, the trench would be backfilled, and pre-construction contours would be restored to the extent practicable. In areas where the topsoil has been segregated, the topsoil would be replaced after backfilling to facilitate the natural revegetation process. A slight crown would be left over the pipe to allow for settling. If any excess subsoil remains after the backfilling process, it would be removed and disposed of at an approved location to ensure contours are restored to the pre-construction condition. Once the trench has been backfilled, permanent ECDs, if required, would be installed within 24 hours of backfilling the crossing. Disturbed wetland areas would be revegetated unless standing water is prevalent or as otherwise directed by permit conditions or landowner requirements. Project seed mixes would be developed based on Minnesota BWSR seed mixes.

Post-construction mowing and clearing of other wetland areas would be limited. A limited amount of forested and scrub-shrub wetlands would require post-construction vegetation maintenance to assist in future aerial monitoring of the pipeline. Wetland vegetation between HDD entry and exit points and bores where there was no travel lane would not have routine clearing or mowing.

Additional temporary impacts on wetlands may result from future maintenance activities on pipeline segments that require excavation for inspection and/or repairs as result of integrity inspections.

**Project Interaction with Climate Trends**

Approximately 5.5 acres of emergent wetland and 0.2 acre of forested wetland (1.6 percent of the route) would be temporarily affected by construction. The Project would result in the conversion of approximately 0.1 acre of scrub-shrub and 0.1 acre of forested wetland to emergent wetlands along the construction workspace (due to clearing of shrub vegetation). In addition, permanent access roads to two MLVs (MPs 20.3 and 27.4) would result in permanent fill of 0.01 acre of emergent wetlands. Because the impacts on wetlands would not be significant, and the loss of wetlands would be 0.01 acre, the Project would not be expected to have wetland-related interactions with climate trends.

(b) *Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.*
12.b.iv.b Other Surface Waters

The Project would be subject to conditions contained in the USACE’s Utility RGP and Section 408 permits, MDNR’s Utility Crossing Licenses and MPCA-issued Construction Stormwater NPDES General Permit and Hydrostatic Discharge NPDES Individual permit, which would have conditions in place to minimize potential impacts on all waterbodies, including those with special designations. SCS, in coordination with the MDNR, would determine the need for construction and restoration plans for each public water crossing, including those that would be crossed via a trenchless (i.e., HDD) method, as part of the License to Cross Public Waters permitting process.

This section describes typical construction procedures, including impact minimization measures, that would be used to install the pipeline across waterbodies, such as clearing and grading activities and temporary equipment bridge placement. SCS conducted a detailed environmental and engineering review of the advantages and disadvantages of each possible crossing method before selecting, in its opinion, the most environmentally appropriate and constructible method to use to cross a waterbody. These crossing techniques would be reviewed and approved during consultation with environmental permitting agencies such as the USACE, MPCA, and MDNR. Any specific construction work window requirements would be included as part of SCS’s License to Cross Public Waters to be issued by MDNR.

After the initial clearing and grading is completed where necessary, the pipeline would be installed at waterbodies crossed by the Project using one of the following methods:

- nonflowing or flowing open cut;
- dry crossing methods such as flowing dry flume or flowing dry dam and pump;
- the trenchless bore method; or
- the trenchless HDD method.

Open Trench Crossings

The nonflowing open cut method can be utilized at waterbody features that have no flow or when flow is unlikely between initial disturbance and final stabilization. Figure 9 from the Minnesota ECP (Appendix D) provided below depicts the construction method in plan and profile view for the nonflowing open cut crossing method. If sufficient flow appears during the time of construction of the crossing, or where water flow is expected during construction across the waterbody, the flowing open cut construction method would be used (see Figure 10 from the Minnesota ECP (Appendix D) provided below). This method entails staging the crossing equipment outside the waterbody, weld the pipe segment for the crossing in adjacent uplands, trenching across the waterbody, carrying the made-up pipe into the trench, and then backfilling the trench and restoring the stream banks. SCS’s Contractor would complete in-stream construction activities as expediently as practicable.

Public use of waterbodies crossed using open cut methods would be interrupted for a short time to allow installation of the pipeline. In consultation with MDNR, SCS’s Contractor would post signs upstream and downstream of the crossings to notify the public of pipeline construction activities and will work with MDNR to arrange for other appropriate user notifications. After construction is complete and the area is safe, SCS’s Contractor would allow flow to resume and allow river users to cross the area.

Temporary impacts from in-stream trenching can include an increase in the sediment load downstream of crossing locations. All in-stream work activities will be minimized to the extent practicable on an area and time duration basis. SCS would adhere to the March 15 – June 15 work-exclusion dates for Minnesota Public Water Inventory non-trout stream fisheries that require in-channel work or would seek a waiver from MDNR.
Soil erosion associated with surface runoff and stream bank sloughing can also result in the deposition of sediments in waterbodies. To help mitigate the flow and deposition of sediments into waterbodies, SCS’s Contractor would properly install and maintain redundant sediment control measures immediately after clearing and prior to initial ground disturbance at waterbodies located within 50 feet of the Project and where stormwater flows to a waterbody. On portions of the Project where work would be occurring during applicable “work in water restrictions” for public waters, all exposed soil areas within 200 feet of the water’s edge, and that drain to that water, would be stabilized within 24 hours during the restriction period. Stabilization of all exposed soils within 200 feet of the public water’s edge, and that drain to that water, would be initiated immediately and completed within 7 calendar days whenever construction activity has permanently or temporarily ceased on any portion of the site outside of the restriction period. Stream banks would be protected from erosion through the use of temporary and permanent soil stabilization techniques. Examples of erosion control techniques include placement of erosion control blankets, mulch, straw bales, bio-logs, silt fence, and prompt seeding following construction activities.
Summit Carbon Solutions, LLC
Otter Tail to Wilkin Project: Environmental Assessment Worksheet
April 10, 2023

NOTES:

1. METHOD APPLIES TO CROSSINGS WHERE NO FLOWING WATER IS PRESENT AT THE TIME OF CROSSING.
2. CONTRACTOR MAY "MAINLINE THROUGH" THE CROSSING OR UP TO BOTH SIDES OF THE CROSSING; STRING, WELD, COAT, AND WEIGHT (IF NECESSARY), USING THE MAINLINE CREW WITH THE PIPE SHIPPED OVER THE CROSSING.
3. NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF DRY WATERBODY.
4. INSTALLATION OF TEMPORARY EQUIPMENT CROSSING IS OPTIONAL AT THE DISCRETION OF THE COMPANY'S REPRESENTATIVE.
5. IN AGRICULTURAL LAND, STRIP TOPSOIL FROM FULL CONSTRUCTION R.O.W. WIDTH, STORE TOPSOIL AND SPoil SEPARATELY. TOPSOIL AND SPoil WILL NOT BE STOCKPILED IN THE WATERBODY AND WILL BE PLACED A MINIMUM OF 10 FEET FROM THE BANKS WITHIN THE CONSTRUCTION R.O.W.
6. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. FOLLOWING CLEARING AND GRADING AND MAINTAIN UNTIL CONSTRUCTION OF THE CROSSING. EROSION CONTROL MEASURES SHALL BE REINSTALLED IMMEDIATELY FOLLOWING BACKFILLING OF TRENCH AND STABILIZATION OF BANKS. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
7. WATERBODY SPoIL TO BE STORED OUT OF THE CHANNEL A MINIMUM OF 10 FEET FROM THE BANK AND WITHIN THE CONSTRUCTION R.O.W. UNLESS DEPICTED OTHERWISE IN SITE SPECIFIC CROSSING PLANS.
8. BACKFILL WITH NATIVE MATERIAL.
9. RESTORE DRY WATERBODY TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
10. RESTORE BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.
11. ALL DIMENSIONS INDICATED SHALL BE DETERMINED BY ACTUAL CONSTRUCTION CONDITIONS.

ECP FIGURE 9

TEMPORARY SEDIMENT BARRIER OF Silt Fence.
NOTES:
1. METHOD APPLIES TO WATERSHEDS THAT ARE NOT STATE-DESIGNED FISHERIES WHERE FLUME CROSSINGS ARE NOT REQUIRED.
   - IF TOPOGRAPHY PERMITS TEMPORARY EQUIPMENT BRIDGE INSTALLATION, THE CONTRACTOR SHALL TRENCH, STRING, WELD, COAT, WEIGHT (IF NECESSARY), LOWER IN AND BACKFILL UTILIZING THE MAIN LINE CREW TRAVELING OVER THE BRIDGE.
   - IF TOPOGRAPHY PROHIBITS INSTALLATION OF A TEMPORARY EQUIPMENT BRIDGE, CONTRACTOR SHALL TRENCH UP TO BOTH SIDES OF CROSSING, STRING, WELD, COAT AND WEIGHT (IF NECESSARY) USING THE MAINLINE CREW. IN STREAM EXCAVATION, LOWER IN, AND BACKFILL WILL UTILIZE A CLAM OR HOES WORKING FROM THE BANKS.
2. SCHEDULE CROSSING DURING LOW FLOW PERIOD IF POSSIBLE.
3. COMPLETE ALL IN-STREAM ACTIVITIES WITHIN 24 HOURS FOR STREAMS 0–10 FEET IN WIDTH IF FEASIBLE.
4. NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF WATERBODY.
5. INSTALLATION OF TEMORARY EQUIPMENT CROSSING IS REQUIRED AT ALL STATE-DESIGNED FISHERIES AND IS OPTIONAL AT THE DISCRETION OF THE COMPANY'S INSPECTOR AT ALL OTHER CROSSINGS.
6. CONSTRUCT SEDIMENT BARRIERS ALONG THE SIDES OF STOCKPILES AND ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPILL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
7. WATERBODY SPILL TO BE STORED A MINIMUM OF 10 FEET FROM THE BANK AND WITHIN THE CONSTRUCTION R.O.W. UNLESS DEPOTED OTHERWISE IN SITE SPECIFIC CROSSING PLANS.
8. TRENCH THROUGH WATERCOURSE USING MAINLINE EXCAVATION EQUIPMENT WHERE PRACTICAL.
9. INSTALL SOFT PLUGS AT THE EDGE OF STREAM BANKS UNTIL JUST PRIOR TO PIPE INSTALLATION TO CONTROL WATER FLOW & TRENCH SLOSHING.
10. MAINTAIN STREAM FLOW THROUGHOUT CROSSING CONSTRUCTION.
11. RESTORE STREAM BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.

ECP FIGURE 10

<table>
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<tr>
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<tr>
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</tbody>
</table>
**Dry Crossings**

The flowing dry flume method can be utilized at flowing streams (see Figure 11 (sheet 1 of 2) from the Minnesota ECP (Appendix D) provided below). Flumes would be installed before trenching activity. Sandbags and plastic sheeting diversion structure, or an equivalent structure, would be utilized to create a seal and to divert stream flow through the flume. Flumes would be constructed in a way to prevent erosion and scour from occurring.

The flowing dam and pump method can also be utilized at flowing streams (see Figure 12 (sheet 1 of 2) from the Minnesota ECP (Appendix D) provided below). A dam would be constructed to provide a dry workspace. There would be sufficient pumps to be able to maintain the stream flow around the excavation area at the time of construction. Back up pumps would be available at the site of the crossing. Dams would be constructed to prevent sediment and other pollutants from entering the waterbody. Monitoring would occur throughout the construction of the crossing to ensure the crossing techniques are properly operating.

Trenchless crossing methods such the bore and HDD would be utilized for major and/or sensitive waterbodies and other features where surface disturbance is to be avoided or reduced.

**Trenchless Crossings**

The bore method would be employed at one public water crossing (see Table 12-2). This trenchless method is used for installation of small diameter pipelines under waterways, roadways, railways, existing structures, and in congested areas. A typical configuration of a bore crossing is provided in Figure 13 from the Minnesota ECP (Appendix D) provided below. The bore method uses a smaller footprint than a conventional HDD rig and is launched from either a small pit or the surface of the ground. Construction workspace on either side of the feature to be crossed would be utilized to establish the small pit, or launch area, and to provide area to string and stage the pipe and equipment. In some instances, based on length, depth, and diameter, pressurized water or drilling mud may be used to hold the hole open. The same contingency and monitoring measures would apply as for the conventional HDD, below.

The HDD method minimizes/avoids impacts on the streambed, banks, and associated riparian vegetation at waterbody crossings. For HDDs and bores of waterbodies where there would not be a travel lane within the ROW (i.e., use of a bridge), there would be no clearing over the HDD path. SCS’s Contractor may clear vegetation using hand tools where necessary to access a water source to withdraw water for HDD operations and/or hydrostatic testing of the pipeline and/or to place the HDD guidewires.

The HDD method requires ATWS on both sides of the drilled area for materials and equipment associated with the drilling operation and to fabricate the pipeline segment that would be installed under the waterbody. The feasibility of the HDD method is dependent on the geology along the length of the drill path, drill length, and site topography. SCS is in the process of conducting geotechnical investigations to evaluate the feasibility of using the HDD method at these waterbodies. If these investigations determine that potential installation problems exist in using the HDD method at the waterbody crossing at the proposed location, an alternate crossing angle or nearby location would be pursued.

The HDD method would be conducted in three general stages. The first stage would consist of drilling a small diameter pilot hole along a pre-determined path under the waterbody. The second stage would involve incrementally enlarging or “reaming” the pilot hole to a diameter that would accommodate the pipeline. The third stage would involve pulling a prefabricated segment of pipeline through the enlarged hole and then welding the pipe segment to the adjoining sections of pipeline.
SPOIL PILE (TYP.)

WATERBODY BANK

16" FLUME PIPE (FREE OF DENTS, HOLES, AND RUST).*

TRENCH PLUG (SEE NOTE 10)

MIN.

( TYP.)

SEDIMENT BARRIER (TYP.)

TRENCH PLUG (SEE NOTE 10)

PIPELINE TRENCH

SLOPE BREAKER (SEE NOTE 8)

INSTALL REMOVABLE SEDIMENT BARRIER OR DRIVABLE BERM ACROSS ROADWAY

* ACTUAL NUMBER OF FLUMES REQUIRED TO BE DETERMINED BY STREAM WIDTH.

ECP FIGURE 11

TEMPORARY SEDIMENT BARRIER OF SILT FENCE.
Throughout the process of drilling and enlarging the pilot hole, a bentonite clay slurry, known as “drilling mud,” would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and stabilize the open hole. The water used to create the drilling mud may be appropriated from surface or groundwater sources under water appropriation permits issued by the MDNR. Under certain conditions, an additive may need to be mixed with the drilling mud for viscosity or lubricating reasons. Only additives certified by the National Sanitation Foundation and approved by SCS would be used and a copy of the Safety Data Sheet for the drilling fluid would be maintained at the work site. Drilling fluids and additives utilized during implementation of a directional drill would be non-toxic to the aquatic environment and humans. The drilling additives are used to help maintain the integrity of the drilled hole for a successful installation (i.e., stiffen the drilling mud). Different additives are used at different times depending on the conditions encountered. If these certified additives are not used in the drilling mud, it can result in an increased chance of inadvertent releases and a higher potential for failed crossings.

Drilling mud would be recycled to the extent practicable and, after the pipeline is installed, the mud would be disposed of according to applicable regulations. During drilling, there may be weak areas in the ground where pressurized drilling mud can escape into the surrounding soil. Unconsolidated gravel, coarse sand, and fractured bedrock are all present pathways for the drilling mud to follow the path of least resistance. This path can run laterally or vertically. If mud moves laterally, the release may not be evident on the ground. For a release to be evident on the ground surface, there must be a weakness extending vertically from the drill hole to the surface of the ground. Even if a drilling mud release is not immediately visible on the surface, HDD operators can detect if drilling mud is escaping the bore hole by monitoring for pressure loss during drilling operations.
The volume of mud released is dependent on several factors, including the size of the weak area, the permeability of the geologic material, the viscosity of the drilling mud, and the pressure of the hydraulic drilling system. Releases to the ground generally occur above or near the drill path. If a wetland or waterbody is nearby, the mud may be released into that resource. In most circumstances, SCS’s Contractor would contain and clean up a release. However, when mud releases to a waterbody, it quickly disperses into the water and can migrate downstream.

SCS’s Contractor would develop a contingency plan to address inadvertent return or release of drilling fluid within wetlands, waterbodies, and areas immediately adjacent to wetlands and waterbodies, such as stream banks or steep slopes, where drilling fluid releases can quickly reach surface waters. Containment, response, and clean-up equipment would be available at both sides of an HDD crossing location and one side of a bore prior to commencement to assure a timely response in the event of an inadvertent release of drilling fluid.

**Bridges and Culverts**

Temporary bridges and culverts may be used when crossing waterbodies (see Figure 8 from the Minnesota ECP (Appendix D) provided below). Soil would not be used to construct or stabilize equipment bridges. Equipment crossing a bridge would be limited to one piece of equipment at a time. Bridges would be designed in a way to limit erosion, sediment into a waterbody, and to withstand the highest expected flow of the time the bridge is in place. At public waters, bridge headers would be placed at least 5 feet back from Top of Bank on either side of the waterbody. Bridges would be removed as soon as practicable after permanent seeding, except for if that period falls within an in-stream timing restriction for work within the ordinary high-water mark). Once the bridge is removed, SCS’s Contractor would conduct additional grading to restore the banks to as near as practicable to pre-construction conditions where disturbance occurred. Additional seeding and/or installation of erosion and sediment control measures would also be implemented as required.

Fording of waterbodies is prohibited (i.e., civil survey, potholing, or other equipment are not permitted to ford waterbodies prior to bridge placement).

**Restoration and Revegetation**

Permanent trench breakers would be installed, where needed, before the trench is backfilled. These would most commonly be placed on steep slopes where trench line erosion has the risk of occurring and at slopes adjacent to wetlands and waterbodies. Once the trench has been backfilled and banks have been stabilized, ECDs would be installed within 24 hours of backfilling the crossing. A temporary seed mix and mulch and/or erosion control blankets would be installed within a 50-foot buffer on either side of the stream, with the exception of actively cultivated land. Project seed mixes would be developed based on Minnesota BWSR seed mixes. The species and types of seeds would be determined by consultations with applicable agencies, including the MDNR for seeding at public waters, and landowner preferences. Stream banks would be restored to pre-construction grades when practicable, or a stable angle of repose, and restored with appropriate vegetation.

Once in operation, the Project would have limited impacts on waterbodies, except for work associated with maintenance and repair, which would be rare and infrequent. Post-construction vegetation maintenance would be limited adjacent to waterbodies to promote the growth of the riparian filter strip (buffer). However, vegetation along a 10-foot-wide corridor centered over the pipeline would be maintained in an herbaceous state to facilitate visual inspection of the pipeline and allow corrosion and leak surveys to occur. Vegetation between HDD and bore entry and exit points where a travel lane was not used would not be routinely cleared or mowed.
NOTES:
1. TIMBER BRIDGES SHALL BE ADEQUATELY ANCHORED AT BOTH ENDS.
2. MAINTAIN BRIDGE INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS ON BRIDGE.
3. MATERIALS PLACED ALONG WATERBODY SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THE STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
4. FLUME PIPE USED IF ADDITIONAL SUPPORT IS REQUIRED AND/OR TO FACILITATE FISH MIGRATION.
5. RAMP APPROACHES CAN EITHER BE GRADED OR DUG INTO GROUND, IF NECESSARY, CRUSHED STONE CAN BE USED TO RAMP UP TO THE EQUIPMENT PADS.

ECP  FIGURE 8
Special Designated Waterbodies

The Project would cross one waterbody listed as a State Water Trail (Otter Tail River at MP 19.5). This crossing is also the same location as the Lower Otter Tail Restoration Project. SCS is planning to cross this waterbody via the HDD method and would consult with the MDNR regarding appropriate crossing plans for this waterbody as part of the License to Cross Public Waters process. SCS is also coordinating with the BRRWD and USACE to ensure the HDD design avoids the oxbows that are proposed for reconnection, and to obtain permission under 33 USC § 408 (Section 408) for the crossing of the Lower Otter Tail Restoration Project.

All four impaired waterbodies would be crossed via the bore or HDD method, which would minimize water quality impacts by avoiding in-stream work. SCS’s Contractor would not clear trees within the riparian zones of these waterbodies, which would help to minimize the potential of construction-related sediment from reaching each feature. In addition, in accordance with the MPCA Construction Stormwater General Permit, SCS’s Contractor would also utilize erosion and sediment control BMPs during construction and restoration activities to minimize sediment and other contaminants from entering the waterbody. With these mitigation measures in place, the Project is not expected to contribute to a further impairment these waterbodies.

The Project would cross four Public Water watercourses listed on the MDNR Public Waters Inventory (see Table 12-1); all would be crossed using a trenchless (i.e., bore or HDD) crossing method. SCS has initiated consultations with the MDNR regarding these waterbodies and would continue to do so as part of the License to Cross Public Waters permitting process. This includes the need for any site-specific construction or restoration plans.

Although the Project would avoid known direct impacts on listed infested waters through use of the HDD method SCS would implement BMPs to avoid the spread of invasive aquatic species in compliance with Minnesota Statute 84D.10 Subd. 4 and current MDNR guidance.

There is no anticipated use of watercraft or an anticipated change in number of watercrafts on any waterbody during construction or operation.

Project Interaction with Climate Trends

Climate change could result in an increased risk of flooding in the Project area due to more frequent large storms, which could result in an increased possibility of soil erosion near waterbodies and therefore impacts to temporary surface water quality. The Project would plan for and obtain coverage under MPCA’s Construction Stormwater NPDES General Permit, which would require planning for storm events, the use of BMPs, and inspections to ensure that BMPs continue to function properly. The Project would therefore not be expected to have significant stormwater-related interactions with climate trends. Because no notable changes to waterbodies would be expected from the Project and impacts would be largely confined to the temporary impacts of construction, the Project is not expected to have notable water resource-related interactions with climate trends. Due to the Project being installed mostly below ground, there would be no expected impacts on Project operation from increased flooding. The pipeline and mainline valves could continue to operate normally under flooded conditions.
13 CONTAMINATION/HAZARDOUS MATERIALS/WASTES

a) Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

13.a Pre-Project Site Conditions

The MPCA’s What’s in My Neighborhood (WIMN) was used to identify potential environmental hazards within 0.5-mile of the Project centerline. The MPCA WIMN database includes federal regulatory listings, such as Comprehensive Environmental Response, Compensation, and Liability Information System, (or potential National Priority List sites); and Resource Conservation and Recovery Act sites. State listings include the: Permitted Solid Waste Facilities; Unpermitted Dumps; Closed Landfill Program; Contaminated Soil Treatment Facility; Leak Sites; and the State Assessment Program.

A total of 15 locations were identified within 0.5 mile of the Project centerline. Of the 15 sites, 5 sites were eliminated from further analysis because they were listed as inactive. Of the remaining 10 sites, the following types of sites were eliminated from further consideration as the listings alone are not indicative of a release to the environment: sites listed solely for construction stormwater discharge (3 sites); feedlots (3 sites); and air quality permits (1 site).

Table 13-1 summarizes the three remaining active sites with potential for environmental impact that were identified within 0.5-mile of the Project centerline. Of these sites, all sites were determined to be either more than 500 feet from the centerline.

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Site/Facility Name</th>
<th>Distance from Centerline</th>
<th>Listing Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otter Tail</td>
<td>Carlisle Township</td>
<td>Wayne Miller</td>
<td>0.4</td>
<td>Aboveground Tanks</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>Fergus Falls</td>
<td>Genevieve Strande</td>
<td>0.2</td>
<td>Solid Waste, Permit by Rule</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>Fergus Falls Township</td>
<td>Green Plains Otter Tail LLC</td>
<td>0.1</td>
<td>Aboveground Tanks; Air Quality; Hazardous Waste; Minimal quantity generator; Industrial Stormwater; Petroleum Remediation, Leak Site; Solid Waste, Permit by Rule; Toxics Reduction; Wastewater, Industrial</td>
</tr>
</tbody>
</table>

The Miller site contains licensed diesel fuel aboveground storage tanks are present and where no spills have been reported. The Strande property is registered as a short-term demolition debris site. Finally, the Green Plains Ethanol Plant is listed in WIMN for several permits which would not indicate the potential for contamination (air quality, hazardous waste, toxic release inventory reporting, solid waste, stormwater, tanks, and industrial wastewater). One petroleum spill was reported at the Green Plains Ethanol Plant in April 2016 and after MPCA review, the review was closed in 2016. The release notes indicate the source as a delivery problem/overfill, which was cleared up by excavation of approximately 2 cubic feet of soil.
The Project is collocated with an existing gas pipeline near Fergus Falls; however, the Project would not share a right-of-way with the foreign pipeline and would be sited in its own right-of-way.

Due to the location of these features, it is unlikely SCS’s Contractor would encounter existing contaminated sites during construction of the Project. However, a response action plan would be developed for incidents including, but not limited to, encountering contaminated sites along the Project. The procedures would address activities that take place on the construction ROW to avoid, minimize, and mitigate adverse effects from existing contamination hazards.

b) Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

13.b Solid Waste Generation and Storage

Construction activities would generate solid waste, including ECDs no longer in use, excess soils and rocks, timber slash, garbage generated by construction crews, timber mat debris, and other construction-related materials such as cardboard, plastic, and other packaging materials. No potential environmental impacts are anticipated from contamination, hazardous materials, or wastes because of the construction and operation of the Project. Solid waste would be disposed of using a licensed waste hauler.

Construction debris would be removed from the construction ROW and disposed of or recycled at regulated facilities as required by state and federal regulations. Waste would be disposed of at a licensed waste disposal facility. Waste that contains or has previously contained oil, grease, solvents, or other petroleum products would be segregated for handling and disposal of as a hazardous waste.

SCS’s Contractor would be responsible for ensuring all trash is removed from Project workspaces on a daily basis unless approved or directed by SCS. Extraneous vegetative, rock, and other natural debris would be removed before the completion of cleanup.

Woody debris would be mowed, chipped, grinded, or hauled off site to an approved location and would be managed in accordance with applicable permits and regulations. Woody debris may also be used as mulch, to stabilize slopes, or to stabilize construction ROW access entry or exit points. Burning within 100 feet of a wetland or waterbody is prohibited without site-specific approval from an EI and permitting regulations.

If concrete coating of the pipe is required, SCS’s Contractor would collect and retain the concrete washout water and solids in leak proof containment. Concrete wash water, grindings, or slurry would not contact the ground or be disposed of on the ground surface as prohibited in MPCA Construction Stormwater General Permit MNR100001.

SCS’s Contractor would develop a contingency plan to address an inadvertent return during a directional drill; these plans would identify BMPs for an inadvertent return and requirements following the incident. SCS’s Contractor would dispose of HDD drill cuttings and drilling mud at a SCS-approved location.

c) Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spill or release of
hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

13.c Use and Storage of Hazardous Materials

Chemicals potentially onsite during the construction of the Project would consist of construction equipment fuels and fluids, such as gasoline, diesel fuel, and mechanical lubricants. SCS has developed spill planning, prevention, and control measures to minimize impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of construction. For example, SCS has identified roles and responsibilities and agency notification procedures, as well as BMPs related to handling and storage of fuels and hazardous liquids, refueling procedures, equipment inspection and maintenance, and spill containment and remediation measures. The storage of petroleum products, refueling, maintenance, and lubricating operations would take place in upland areas that are more than 100 feet from wetlands; if this is not possible, additional storage precautions would be implemented.

Hazardous material leaks and spills can pollute groundwater and surface water as well as damage vegetation and habitat. In the event of a spill of a hazardous material, Contractor personnel would follow the procedures listed below if it is deemed safe to do so:

- Notify the identified SCS representative after making regulatory notifications;
- Identify the product hazards relating to the spilled material and implement appropriate safety procedures;
- Implement spill contingency plans and mobilize appropriate resources;
- Isolate or shut down the source of the spill;
- Block openings and culverts to limit the travel of the spill;
- Initiate containment procedures to limit the spill as much as possible;
- Commence recovery and cleanup of the spill; and
- Ensure hazardous material is disposed of properly.

Berms would be constructed with available equipment to physically contain the spill on land. Personnel entry and travel on contaminated soils would be minimized. If necessary, sorbent materials would be applied. Spills on pavement shall be absorbed with sawdust or kitty litter and disposed of with the trash. Contaminated soils, sorbent materials, and vegetation would be removed and disposed of at an approved facility.

If a spill has the potential to flow into a waterbody, berms, or trenches would be constructed to contain the spill prior to entry into the waterbody. If a spill reaches the water, the deployment of booms, skimmers, and sorbent materials would be utilized to contain the spill. The spilled product would be recovered, and the contaminated area would be cleaned up in consultation with the appropriate regulating agencies.

SCS would follow applicable regulations and guidelines following a spill to remediate and restore the site. Remediation of a site would vary depending on size, location, hazardous material involved, and current weather. SCS would make appropriate calls and reports to applicable agencies to ensure compliance is met on the site.

Due to the measures and conditions outlined above, impacts related to the use and storage of hazardous materials are not anticipated during construction or operation of the Project.
d) Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

13.d Generation and Storage of Hazardous Wastes

This Project is not expected to generate hazardous waste. As such, a chemical analysis and estimates of the composition and quantities are not included. As described in Section 13.c, minimal hazardous materials are expected to be used/stored during construction. A hazardous material spill that comes into contact with soils, would result in the generation of hazardous waste (i.e., contaminated soils). Cleanup materials from small construction-related leak responses would also generate hazardous wastes. Wastes would be classified as hazardous or non-hazardous as defined by applicable state and federal regulations. It is expected that the small amount of waste potentially generated and stored would be within the limits of a conditionally exempt small quantity generator under the provisions of 40 CFR 261.5. Hazardous waste generated during construction would be packaged, marked, labeled, and stored onsite and disposed of by licensed contractors in accordance with applicable federal and state regulations. In the event of a spill of a hazardous material, Contractor personnel would follow the procedures listed in Section 13.c. Due to the measures and conditions outlined above, adverse effects from the generation/storage of hazardous waste are expected to be minimal.

Project Interaction with Climate Trends

Because the Project is not expected to generate hazardous waste, and minimal hazardous materials are expected to be used/stored during construction and operation of the Project, Minnesota climate trends are not expected to influence the Project’s generation/use/storage of hazardous waste and materials.

14 FISH, WILDLIFE, PLANT COMMUNITIES, AND SENSITIVE ECOLOGICAL RESOURCES (RARE FEATURES)

a) Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

14.a Fish, Wildlife, Habitat, and Vegetation

The Project crosses land within one major (HUC-04) river basin (Red River of the North). The following characterization of the Red River of the North Basin from a fisheries perspective is based on MDNR’s Fishes of Minnesota Mapper (MDNR, 2017) except where otherwise noted. There are 100 fish species inhabiting the Red River of the North Basin. The Project crosses the HUC-08 watersheds of the Bois de Sioux and Otter Tail Rivers, which converge to form the headwaters of the Red River of the North (see Figure 5-2). More species of fish are found in the Otter Tail River Watershed than in any other watershed within the Red River Basin (MPCA, 2021), and the Otter Tail River itself has a renowned catch-and-release-only smallmouth bass (Micropterus dolomieu) fishery (MDNR, 2021). Due to variation in waterbody characteristics at these Project’s waterbody crossings, they differ in terms of potential habitat for fish. Habitat suitability depends on species-specific needs combined with factors such as the waterbody’s size, flow regime, water quality, aquatic and riparian vegetation, and the setting and geographic location of the watershed.

Of the 350.1 acres impacted by construction of the Project, cropland is the most prominent cover type at 301.1 acres (86.0 percent). The second most prominent type is developed land at 46.2 acres (13.2 percent). The remaining cover types are (in decreasing order of prevalence): forest, wetland/open water, and open land. Native vegetation generally does not occur on cropland and developed land. Given the predominance
of cropland and developed cover types in the Project construction workspace, habitat suitability for wildlife in the Project vicinity is largely limited to common and generalist species. Areas in and around agricultural and developed land use are generally inhabited by ubiquitous species such as white-tailed deer (*Odocoileus virginianus*), raccoons (*Procyon lotor*), voles (*Microtus* spp.), European starlings (*Sturnus vulgaris*), American crows (*Corvus brachyrhynchos*), and house sparrows (*Passer domesticus*). The Project does not cross any federal- or state-designated wildlife areas (e.g., National Wildlife Refuges, state Wildlife Management Areas).

SCS evaluated potential habitat for terrestrial wildlife within the construction footprint by using the occurrence of Minnesota Biological Survey Site of Biodiversity Significance Sites (MBS Sites), NPCs, and Railroad Right-of-way Prairies (RR ROW Prairies) as well as data from the following sources to serve as habitat indicators.

- MDNR’s Shallow Lakes layer (obtained from the Minnesota Geospatial Commons with a content date of February 13, 2019).
- The Wildlife Action Network (WAN), developed as part of Minnesota’s Wildlife Action Plan for 2015-2025 (MDNR, 2016a), which identifies significant aquatic and terrestrial biological areas across the state that can provide focus to conservation efforts.
- National Audubon’s Important Bird Areas (IBAs) (National Audubon Society, n.d.).

There is some potential habitat for terrestrial wildlife within the construction workspace in areas of occurrence of MBS Sites, NPCs, and RR ROW Prairies. There is one portion of the Project between MPs 0.4 to 11.7 that contains combinations of wildlife habitat indicators (MBS Sites, NPC, RR ROW Prairie, Shallow Lake, and WAN), along with one other location (MP 24.0) involving a MDNR-listed RR ROW Prairie crossing that smaller animals, such as insect pollinators, can utilize. These areas are shown in on the Wildlife Habitat Maps in Appendix A.3.

*b)* Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-) and/or correspondence number (MCE_) from which the data were obtained and attach the Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.
14.b Sensitive Ecological Resources

Federally Listed and Protected Species

SCS utilized the USFWS Information for Planning and Consultation (IPaC) online tool to obtain a list of federally protected species and their designated critical habitat (DCH) that may occur within the vicinity of the Project (see Table 14-1). IPaC includes species and habitats that are regulated under the ESA, the Bald and Golden Eagle Protection Act (BGEPA), and the Migratory Bird Treaty Act (MBTA). SCS is consulting with the USFWS Region 3 office regarding potential impacts on these species and habitats. Habitat and/or species surveys, when conducted, are discussed below.

Table 14-1
Federally Listed Species in the Vicinity of the Project

<table>
<thead>
<tr>
<th>Species Name</th>
<th>Federal Status</th>
<th>State Status</th>
<th>Habitat</th>
<th>Range and DCH Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Long-eared Bat (Myotis septentrionalis)</td>
<td>Threatened Until March 31, 2023, then, Endangered</td>
<td>Special Concern</td>
<td>Caves and mines during hibernation; forested areas during active season</td>
<td>Species range includes both counties. No DCH has been designated for this species.</td>
</tr>
<tr>
<td>Poweshiek Skipperling (Oarisma poweshiek)</td>
<td>Endangered</td>
<td>Endangered</td>
<td>Native prairie</td>
<td>Species range does not include either county. DCH is located in Wilkin County over 20 miles from the Project.</td>
</tr>
<tr>
<td>Monarch Butterfly (Danaus plexippus)</td>
<td>Candidate</td>
<td>None</td>
<td>Fields and parks where milkweed and native flowering plants are common</td>
<td>Species range includes both counties.</td>
</tr>
</tbody>
</table>

Suitable northern long-eared bat (NLEB) habitat is typically considered forest stands in riparian areas, forested ponds, and woodlots made up of potential roosts (i.e., snags and/or live trees greater than or equal to 3 inches diameter at breast height with exfoliating bark, cracks, crevices, and/or cavities). Wooded corridors and other linear features (such as fencerows) and non-forested habitats (including emergent wetlands and adjacent edges of agricultural fields and pastures) are also used for foraging and hunting (USFWS, 2015). The primary threat to NLEB populations is white-nose syndrome, a fungus associated with extremely high rates of mortality. NLEB numbers have declined substantially in the northeastern U.S. NLEB populations have experienced an approximately 99 percent decline at 54 hibernacula that had mortality from white-nose syndrome for at least 2 years. It is one of the species most heavily impacted by the disease (USFWS, 2015). On January 25, 2023, the USFWS announced that the effective date of the final rule to reclassify the NLEB as endangered will be March 31, 2023 (USFWS, 2023). SCS conducted a NLEB habitat assessment in 2022. Approximately 3.7 acres of potential NLEB habitat are crossed by the 350.1-acre Project, of which the Project has the potential to permanently impact 0.7 acre (designated as very low quality NLEB habitat). All high and moderate quality NLEB habitat is currently avoided (e.g., by HDD crossings).

Despite being a commonplace species in Minnesota, the monarch butterfly has become vulnerable to numerous threats in the state and across its range. Threats include habitat loss from conversion of grasslands to agriculture and urban development, exposure of milkweed and other plants to herbicides and of the monarchs themselves to insecticides, habitat degradation at overwintering sites, and effects of climate change (USFWS, 2022). USFWS determined that the monarch butterfly warranted listing as an endangered or threatened species under the ESA, but listing was precluded by higher priority listing actions (USFWS, 2020). Accordingly, since 2020, the species has been a candidate for listing. In its most recent annual review of candidate species, published on May 3, 2022, USFWS affirmed the monarch’s continued status as warranted but precluded (USFWS, 2022).
Historically, the Poweshiek skipperling ranged from Manitoba to the Dakotas and east to Minnesota, Iowa, Wisconsin, Illinois, Indiana, and Michigan. Habitat preferences of the Poweshiek skipperling include remnant (unplowed) native prairie fens, grassy lake and stream margins, moist meadows, and wet-mesic to dry tallgrass prairie. Adults rely on a variety of nectar plants for feeding, such as narrow-leaved purple coneflower (\textit{Echinacea angustifolia}) and smooth ox-eye (\textit{Heliopsis heliothids}); the preferred larval food plant for at least some populations of Poweshiek skipperling is prairie dropseed (\textit{Sporobolus heterolepis}) (USFWS, 2014; 2015). SCS engaged biologists who are approved MDNR Prairie Skipper Surveyors to assess habitat along the Project for the Poweshiek skipperling and another listed prairie butterfly, the Dakota skipper (\textit{Hesperia dacotae}). The Dakota skipper, which is federally threatened and state-endangered (but which is not listed in IPaC as outlined in Table 14-1, or in NHIS records as outlined in Table 14-2) has very similar habitat requirements. The biologists conducted a desktop assessment to identify areas of potentially suitable habitat and then conducted field habitat assessments, finding that one location had potential. At this location, the biologists conducted occupancy surveys during the flight period in early July 2022 using methods based on the Dakota Skipper North Dakota Survey Protocol (USFWS, 2018), as requested by the USFWS Region 3 office for surveys of adult Poweshiek skipperlings. The surveyors did not observe any adult butterflies of either species.

Bald eagles (\textit{Haliaeetus leucocephalus}) and golden eagles (\textit{Aquila chrysaetos}) are not listed under the ESA or in the state of Minnesota. The BGEPA, however, protects and conserves bald and golden eagles from intentional take of an individual bird, chick, egg, or nest, including alternate and inactive nests (USFWS, 2007). BGEPA prohibits disturbance that may lead to biologically significant impacts, such as interference with feeding, sheltering, roosting, and breeding or abandonment of a nest (USFWS, 2007). The disturbance distance for active bald eagle nests in Minnesota is 0.125 mile (USFWS, 2007). Bald eagles may occur and nest throughout Minnesota in areas with suitable habitat (Buehler, 2022). Bald eagles commonly nest in trees but may also nest in other tall structures, such as rocky outcrops, cliffs, utility poles, and communication towers. They typically nest near bodies of water. Bald eagle breeding pairs may have more than one nest and may alternate use of these nests from year to year. Bald eagles may roost communally during migration, winter, and summer (USFWS, 2007). There is also a state-level requirement regarding bald eagles. MDNR requires a permit for the removal of unoccupied eagle nests. Eagle nest removal permits are issued on a case-by-case basis. Suitable habitat for eagles may be present in forested areas near stream crossings along the proposed route. SCS conducted aerial nest surveys along the Project in March 2022 and identified two active bald eagle nests. Both nests were outside of the disturbance buffer of 0.125 mile as specified by USFWS.

The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, or nests. According to USFWS, the migratory bird breeding season begins on May 1 for most birds of conservation concern in the Project environmental survey area. Species that may breed prior to May 1 include bald eagles and other species of raptors.

**State-Listed Species**

MDNR recommends that project proposers evaluate NHIS records for state-listed species within 1 mile of Project impacts. A query of the NHIS database (MDNR license agreement LA-1066) resulted in NHIS records for one plant and four animal species within 1 mile on either side of the construction workspace (Table 14-2).
Table 14-2

State-Listed Species in the Vicinity of the Project

<table>
<thead>
<tr>
<th>Species</th>
<th>State Status</th>
<th>Life History and Habitat</th>
<th>County of Occurrence (Last Observed Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater Prairie-Chicken (Tympanuchus cupido)</td>
<td>Special Concern</td>
<td>Year-round resident utilizing open areas of upland prairie for courtship and foraging (including areas disturbed by burning, grazing, or haying) and low, dense cover for nesting and roosting.</td>
<td>Otter Tail (2000)</td>
</tr>
<tr>
<td>Lark Sparrow (Chondestes grammacus)</td>
<td>Special Concern</td>
<td>Migratory species occupying dry upland prairie and savanna habitats during the breeding season, typically where short grasses grow in sandy or gravelly soils with bare ground and scattered or patchy trees.</td>
<td>Wilkin (2012)</td>
</tr>
<tr>
<td>Marbled Godwit (Limosa fedoa)</td>
<td>Special Concern</td>
<td>Migratory species using upland prairie for nesting and wet prairie for foraging during the breeding season, including areas that have been burned, hayed, or moderately grazed, if in or near extensive grassland.</td>
<td>Otter Tail (2004)</td>
</tr>
<tr>
<td>Fluted-shell Mussel (Lasmigona costata)</td>
<td>Threatened</td>
<td>Primarily sedentary residents of medium to large rivers and streams, with waterbody characteristics including gravel substrates, swift currents, and water depths of at least 2 feet.</td>
<td>Otter Tail (2004) Wilkin (1991)</td>
</tr>
<tr>
<td>Small White Lady’s-slipper (Cypripedium candidum)</td>
<td>Special Concern</td>
<td>Long-lived perennial orchid inhabiting upland and lowland prairies, including sedge meadows and calcareous fens.</td>
<td>Otter Tail (2017)</td>
</tr>
</tbody>
</table>

Note: Exact location information regarding NHIS records is not provided due to license constraints.

SCS submitted a letter to MDNR on April 5, 2022, requesting consultation for the NHIS data. The MDNR’s May 13, 2022, response included MDNR’s recommendations for measures to avoid or minimize disturbance while working within or adjacent to MBS Sites and NPCs (see letters in Appendix G). MDNR did not request surveys for the bird or mussel species in Table 14-2 or for any other species and none were completed. Habitat and/or species surveys, when conducted, are discussed below.

Sensitive Plant Communities

Per standard MDNR practice, SCS used a buffer distance of 330 feet on either side of the Project’s construction workspace to evaluate the occurrence of calcareous fens, MBS Sites, NPCs, and RR ROW Prairies. The maps in Appendix A.3 show the locations of these features along the Project, along with the NHIS Review Area of 330 feet on either side of the Project.

- There are no calcareous fens located within 5 miles of the Project. The nearest calcareous fen, Aasted 23, is located over 10 miles to the southwest of MP 5.0.
- The Project crosses one MBS Site known as “Orwell 9” (ranked as Moderate) for a short distance near MP 6.9. The construction workspace follows along two separate sections of Orwell 9 from MPs 7.1 to 7.9. There are no other MBS Sites within 330 feet of the Project.
- One NPC type (UPn23b – Mesic Prairie [Northern]) was identified within 330 feet of the Project between MPs 7.5 and 7.9, within the southern section of the Orwell 9 MBS Site (see Appendix A.3). The Project construction workspace does not intersect or come within 330 feet of any other NPCs.
- The Project construction workspace crosses two RR ROW Prairies near MPs 3.3 and 24.5.

The April 5, 2022 letter to MDNR also included a proposed protocol for sensitive plant surveys, and MDNR concurred with this protocol in the May 13, 2022 response (see letters in Appendix G). SCS conducted surveys in 2022 using a MDNR-approved botanist on June 6-8, 2022. The surveys were conducted within a 300-foot survey corridor at locations identified in consultation with MDNR. Specific locations are not
provided here due to NHIS license constraints. The botanist documented 16 individuals of the small white lady’s-slipper at one of the three surveyed locations; all individuals were 100 feet or more from the Project construction workspace. At one location, the botanist also documented potentially suitable habitat for the western prairie fringed orchid (*Platanthera praeclara*), which is a federally threatened and state-endangered species (but which is not listed in IPAC as outlined in Table 14-1, or in NHIS records as outlined in Table 14-2). The habitat quality at this location had a rank of “fair,” meaning it had a mix of native tall-grass/lowland/mesic prairie and non-native vegetation, suitable hydrology was present, and the area may be hayed or lightly grazed approximately every year or two. The botanist did not observe any individual western prairie fringed orchids, including on a return visit on July 9, 2022, when this species of orchid is flowering and most identifiable.

c) Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

14.c Potential Project Effects

**Fisheries and Wildlife**

SCS indicates it designed the Project to limit intersection with sensitive features and by using trenchless crossing methods at specific locations and implementing construction BMPs throughout the Project. These BMPs include those recommended by MDNR for NPCs and MBS Sites (see Section 14.b), including:

- Do not park equipment, stockpile supplies, or place spoil within the MBS sites;
- Inspect and clean all equipment prior to bringing it to the site to prevent the introduction and spread of invasive species;
- Use effective erosion prevention and sediment control measures;
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; and
- Use only weed-free mulches and seed mixes.

Wildlife may be temporarily displaced by the noise and disturbance of construction; however, due to species mobility, the impacts would likely be small, highly localized, and short-term. As requested by MDNR in its May 13, 2022 Early Coordination Letter (Appendix G), SCS has committed to the use of wildlife-friendly erosion and sediment control BMPs that contain biodegradable netting (Category 3N or 4N natural fibers) and would avoid the use of plastic mesh to minimize wildlife mortality resulting from use of these materials.

Impacts on fisheries from pipeline construction would depend in part on the degree to which a given waterbody provides habitat for fish and on whether a waterbody is crossed using a trenchless (e.g., HDD) or open-cut method. In-stream impacts are largely avoided with the use of the HDD method (except for in the event of a release of pressurized drilling mud, in which the mud could enter the waterbody. Temporary impacts from in-stream trenching can include an increase in the sediment load downstream of crossing locations. Soil erosion associated with surface runoff and stream bank sloughing can also result in the deposition of sediments in waterbodies. Waterbodies with a perennial flow regime are the most likely to sustain fish populations, while intermittent or ephemeral flow regimes are less likely.
The impacts on fisheries from pipeline construction can be reduced with the implementation of waterbody crossing BMPs. SCS would seek to avoid or minimize impacts on fisheries by implementing specific BMPs during construction including but not limited to:

- Selecting a crossing technique that is most appropriate for each waterbody. SCS is currently planning an HDD of three of the five perennial waterbodies: the Pelican River, the Otter Tail River, and the Bois de Sioux River. One intermittent waterbody would be crossed using a bore. SCS is planning an open-cut method for two perennial, five intermittent, and one ephemeral waterbodies. Impacts on fisheries at these crossings are expected to be minimal or avoided due to the absence of suitable habitat for fish populations and/or low or absent flow at the time of construction.

- Completing in-stream work activities within time windows based on stream size and complying with MDNR in-water work restrictions to protect critical fish life phases.

- Hydroseeding, if used, would not occur within 100 feet of a waterbody.

- Properly installing and maintaining redundant sediment control measures immediately after clearing and prior to initial ground disturbance at waterbodies located within 50 feet of the Project and where stormwater flows to a waterbody. On portions of the Project where work would be occurring during applicable “work in water restrictions” for public waters, all exposed soil areas within 200 feet of the water’s edge, and that drain to that water, would be stabilized within 24 hours during the restriction period. Stabilization of all exposed soils within 200 feet of the public water’s edge, and that drain to that water, would be initiated immediately and completed within 7 calendar days whenever construction activity has permanently or temporarily ceased on any portion of the site outside of the restriction period. Stream banks would be protected from erosion using temporary and permanent soil stabilization techniques. Examples of erosion control techniques include placement of erosion control blankets, mulch, straw bales, bio-logs, silt fence, and prompt seeding following construction activities.

- Minnesota’s Buffer Law requires perennial vegetative buffers of up to 50 feet adjacent to lakes, rivers, and streams and buffers of 16.5 feet adjacent to ditches (BWSR, 2022). SCS would minimize the long-term impacts from riparian clearing by limiting post-construction vegetation maintenance to promote the growth of the riparian filter strip (buffer), and only maintaining a 10-foot-wide corridor centered over the pipeline for ongoing maintenance visual inspections of the pipeline and allow corrosion and leak surveys to occur. Vegetation between HDD entry and exit points would not have routine clearing or mowing. Clearing would be limited to hand trimming necessary to set the HDD guidewires or a pump for water withdrawal.

- SCS’s Contractor would develop a contingency plan to address inadvertent return or release of drilling fluid within wetlands, waterbodies, and areas immediately adjacent to wetlands and waterbodies. Containment, response, and clean-up equipment will be available to assure a timely response in the event of an inadvertent release of drilling fluid.

- The Project would be subject to conditions contained in the USACE’s Utility RGP and Section 408 permits, MDNR’s Utility Crossing Licenses, MPCA’s 401 Water Quality Certification, and MPCA-issued Construction Stormwater and Hydrostatic Discharge NPDES permits, which would have conditions in place to minimize potential impacts on all waterbodies. SCS, in coordination with the MDNR, would determine the need for construction and restoration plans for each public water crossing, including those that would be crossed via a trenchless (i.e., HDD) method, as part of the License to Cross Public Waters permitting process.

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8 Coverage granted under Section 404/10 USACE Utility RGP.
Waterbody impacts are not expected during Project operation, except for infrequent maintenance activities which may be required, such as pipeline integrity digs. The impacts from this work for infrequent maintenance activities would be permitted under separate processes. Even so, in-stream impacts during the operational period would be rare.

**Federally Listed and Protected Species**

SCS would continue to coordinate with USFWS to evaluate impacts on NLEB, monarch butterflies, and Poweshiek skipperlings, and to address any applicable conservation measures. SCS would continue to coordinate with USFWS regarding potential impacts on bald and golden eagles and their nests. SCS would identify conservation measures and practices to avoid, minimize, and mitigate adverse impacts on migratory birds and their habitats during the Project. If construction activities occur during the migratory bird breeding season, SCS would coordinate with USFWS concerning impacts and compliance with the MBTA.

**State-Listed and Protected Species**

There is one NHIS occurrence of the greater prairie-chicken crossed by the Project. Impacts on greater prairie-chickens that may occur in this area would be avoided or minimized due to the temporary nature of the construction process and the mobility of individuals of this species and their ability to relocate during the temporary disturbance of construction. Construction activities would be of short duration across this area, and disturbed areas would be restored to pre-construction conditions. There are three other NHIS occurrences of greater prairie-chickens within 1 mile of the Project, all of which are 2,000 feet or more from the construction workspace.

The NHIS occurrences for the two other bird species within 1 mile of the construction workspace in Table 14-2 are 3,000 feet or more from the workspace boundary, such that impacts on individuals occurring in the locations delineated by the NHIS polygons are not anticipated. The potential for impacts on these species is absent or low because there is minimal habitat for these species within the construction workspace. In addition, the general mobility of birds allows individuals to relocate during the temporary disturbance of construction. Construction activities would be of short duration in any given area, and all disturbed areas would be restored to pre-construction conditions. Similarly, the potential is low for impacts on other state-listed bird species.

The NHIS occurrences for the fluted-shell mussel are 1,200 feet or more from where the Project would cross the waterbodies in which the mussels occurred. The waterbodies would be crossed with HDD, such that construction impacts on fluted-shell mussels would be avoided. Similarly, the potential is low for impacts on other state-listed aquatic animal species.

One of the three NHIS occurrences for the small white lady’s-slipper is within approximately 200 feet of the Project construction workspace, and the other two occurrences are 1,200 feet or more. All portions of the route within 1 mile of the Project footprint where there was suitable habitat for state-listed plant species were surveyed in 2022. Because the small white lady’s-slipper individuals documented along the Project during SCS surveys in 2022 were 100 feet or more from the Project construction workspace, no impacts on this species are anticipated. No other individuals of state-listed plant species, including the western prairie fringed orchid, were observed.

Overall, the potential for impacts from construction on other state-listed plant species is low due to the predominance of agricultural land within the construction workspace and thus the overall lack of suitable habitat for such plants. The impacts of construction would be limited to the boundaries of the construction workspace, which would be clearly marked in the field, and operational activities would be restricted to the 50-foot-wide permanent ROW.
**Sensitive Plant Communities**

As there are no calcareous fens within 5 miles of the Project, there would be no impact on these special plant communities.

The potential impact on sensitive plant communities from construction of the Project would be limited to the small area where the workspace overlaps a corner of the northern section of the Orwell 9 MBS Site; NPCs would be avoided by the Project. In its May 13, 2022, correspondence (see Appendix G), the MDNR presented several impact minimization measures for NPCs and MBS Sites; SCS has committed to the following:

- Do not park equipment, stockpile supplies, or place spoil within the MBS sites;
- Inspect and clean all equipment prior to bringing it to the site to prevent the introduction and spread of invasive species;
- Use effective erosion prevention and sediment control measures;
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; and
- Use only weed-free mulches and seed mixes.

The remaining areas of the two sections of the Orwell 9 MBS Sites, including the UPn23b NPC, do not intersect the construction workspace and would not be impacted by construction. SCS designed the Project in this location so that it minimizes the crossing of the northern section of Orwell 9 and completely avoids the southern section of Orwell 9, which coincides with both the UPn23b NPC. Both RR ROW Prairies would be avoided by HDD and would not result in surface impacts. No impacts on these sensitive plant communities are anticipated during Project operation.

**Noxious Weeds and Invasive Species**

SCS would minimize the potential for introduction and spread of noxious weeds and invasive species as follows:

- Prior to and during construction SCS would work with local weed management boards and landowners to determine locations of state-identified noxious or invasive species. SCS’s Contractor would clean all equipment prior to bringing it to construction workspace to prevent the introduction and spread of invasive species. The duration between final grading and permanent seeding would be minimized to reduce the potential growth of opportunistic nuisance species. Where required by weed control boards, infested topsoil can be stored separately from other topsoil and subsoil. SCS’s Contractor may use herbicides to address invasive species during construction of operation of the Project in accordance with applicable regulations.
- Weed-free hay or straw would be used for mulch and sediment barriers.
- Seed mixes would be previously tested and approved by the manufacturer to be certified weed free.

Most of the Project crosses land either classified as agricultural or developed, where noxious and invasive weeds are more likely to be controlled by the landowner. The potential for spread of noxious weed and invasive species is anticipated to be minimal during operation of the Project. The capture facility and MLVs/ICCP system sites would be graveled and fenced, which would minimize the likelihood for weeds to grow.
If future maintenance activities are required in non-farmed portions of the Project, SCS would control the spread of noxious weeds and invasive species. Herbicides and pesticides would not be used in or within 100 feet of a wetland, waterbody, or native prairie remnant unless approved by the appropriate land management and state agency. Herbicides and pesticides would be prohibited on organic agricultural land unless requested and approved by the landowner.

**Project Interaction with Climate Trends**

Because of the temporary nature of Project construction and because most activities would occur in land that is already actively farmed or developed, the Project is not expected to have fish, wildlife, habitat, or vegetation resource-related interactions with climate trends.

\[ d \) Identify measures that will be taken to avoid, minimize, or mitigate the adverse effects to fish, wildlife, plant communities, ecosystems, and sensitive ecological resources.

**14.d Impact Mitigation**

Measures taken by SCS to avoid, minimize, and mitigate the adverse effects to fish, wildlife, plant communities, ecosystems and sensitive ecological resources are discussed under Section 14.c.

**15 HISTORIC PROPERTIES**

*Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.*

If a cultural resource site has integrity and meets at least one of the criteria for listing in the National Register of Historic Places (NRHP), it is considered significant and termed a “historic property.” The Project was designed to consider and avoid impacts on cultural sites that may meet the criteria as historic properties.

SCS initiated Phase 1 cultural survey investigations in Fall 2021 and continued until weather conditions inhibited surveys. Cultural resources surveys resumed in April 2022 and again continued until weather conditions inhibited surveys. The cultural surveys for the Project covered a generally 300-foot-wide environmental survey area, a 50-foot-wide corridor for access roads, and the total footprint of any aboveground facilities (i.e., MLV/ICCP System, and the capture facility).

In the Application, SCS stated it had completed archaeological inventories for approximately 89.7 percent of the Project workspaces. SCS has since completed all archaeological inventories (100 percent of the Project route) as of the end of 2022. SCS plans to provide all completed survey data results during the scoping process, so it is available for inclusion in the EIS.

The Minnesota SHPO was initially notified of the Project via a file search request in August 2021 followed by an introductory letter requesting coordination with their office regarding the Project. A meeting was held between SCS and SHPO staff in October 2021 regarding the survey strategy and protocols, which were provided to SHPO on August 27, 2021. SHPO replied by letter dated October 14, 2021, agreeing that the proposed survey strategy and protocols are appropriate for the Project. A copy of the October 14, 2021 letter is in Appendix G. The survey report detailing the results of the 2021 survey was submitted to SHPO on May 27, 2022, for courtesy technical review, and a report detailing results of the 2022 survey was
submitted on October 3, 2022. SHPO responded with the results of its technical review on December 5, 2022; a copy of this letter is in Appendix G.

Presently, three sites identified by field survey occur within the environmental survey area associated with the Project in Otter Tail County. The sites consist of two Pre-contact isolated flakes, both of which are recommended as not eligible for inclusion in the NRHP, and one historic railroad, which is recommended as unevaluated for inclusion in the NRHP.

Eight sites identified by field survey occur within the environmental survey area in Wilkin County. The sites consist of Pre-contact flake and fragmentary faunal remains, a projectile point, and a lithic scatter that are recommended as not eligible for inclusion on the NRHP. A Pre-contact artifact scatter (not identified in the environmental survey area) and three drainage ditches are unevaluated for inclusion in the NRHP. The BNSF Railroad near MP 24.5 is within the environmental survey area and is recommended unevaluated for inclusion in the NRHP. SCS is proposing to cross the railroad and adjacent ditches via HDD, which would avoid impacts.

Sixty-two (62) Native American Tribes were contacted and offered the opportunity to participate in cultural field surveys to provide Tribal input and knowledge to the fieldwork and routing. These Tribes would also be provided with an opportunity to review the cultural reports from the Project. Nine Tribes agreed to participate in the archaeological field studies; in the Project area thus far has included the Mille Lacs Ojibwe; the Rosebud Sioux; the Yankton Sioux; and Sisseton, Wahpeton, Oyate of the Lake Traverse Reservation, all four of which also participated in surveys of the Project. Tribes did not identify features or areas of concern regarding the Project during surveys.

The Project has prepared a Minnesota Unanticipated Discoveries Plan (UDP) (Appendix H) that would be implemented should an unanticipated cultural discovery (i.e., archaeological find or human remains) occur during the construction phase of the Project. Training would be provided to all construction personnel on unanticipated discovery procedures and notification protocols. In the event an unanticipated discovery is encountered, SCS’s Contractor would immediately halt all construction activities within a 100-foot radius; notify the EI; and implement the notification procedures listed in the UDP (Appendix H).

The Project would avoid impacts on all archaeological sites and historic structures eligible for listing on the NRHP through adoption of reroutes or construction methodology (e.g., HDD). If additional eligible sites, identified after surveys completed in 2022, cannot be avoided through design or construction efforts, the Project would conduct formal evaluations in consultation with the SHPO and develop avoidance or treatment plans to minimize or mitigate effects to those sites that meet the eligibility criteria for listing on the NRHP.

16 VISUAL

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The Project crosses predominantly rural agricultural lands and occurs near roadways, overhead transmission lines, and other developments. Desktop reviews of archival data on file at the Minnesota Office of the State Archaeologist portal did not identify scenic views or vistas near the Project area. There are no previously identified specific scenic views or vistas near the survey area.

A scaled determination of contrast measured by comparing the anticipated features of the Project with the major elements within the natural existing setting including topography, vegetation, horizon, skyscape, and
human-made features. The existing and anticipated elements of form, line, color, and texture and the contrast was scaled as presented below:

- No Contrast: The undertaking cannot be seen at all.
- Weak Visual Contrast: The elements of the undertaking, or positions of the elements, can be seen but will not dominate the setting or attract the attention of the casual observer.
- Moderate Contrast: The elements of the undertaking tend to stand out in the setting.
- Strong Contrast: The elements of the undertaking clearly dominate the setting.

The above scaled contrast rating was applied to the foreground, midground, and background of each viewshed. For cumulative effects, historical sites were assessed using the following categories:

- Compatible: Multiple or large industrial features or developments have appeared in the surrounding landscape. These features dominate the setting, feeling, and association; the undertaking does not create a striking contrast.
- Moderately Compatible: Single or small industrial features or developments have appeared in the surrounding landscape. These other features are visible on the landscape but the undertaking dominates the setting, feeling, and association.
- Incompatible: No other industrial or developmental features appear in the surrounding landscape. The undertaking creates a striking contrast that is incompatible with the setting, feeling, and association.

The aboveground facilities that would be built include MLVs/the ICCP system, a launcher, and a capture facility. The MLVs would be a maximum of 9 feet 6 inches tall and have an approximate footprint of 50 feet by 50 feet. The MLVs would be moderately compatible. The launcher would not be noticeable as it would be applied to the Project pipeline at the capture facility. Except for a junction box and small diameter vent pipe posted above deep well beds (maximum height would be 9 feet 5 inches), ICCP systems would be buried, and the area disturbed for construction would be maintained in an herbaceous state like the permanent ROW. As these are located along the pipeline route, they would be moderately compatible. The capture facility would be located adjacent to or within the footprint of the existing Green Plains Ethanol Plant and would constitute a compatible use of the facility and surrounding viewshed. The thermal plume resulting from operations would be comparable or less than the corresponding, existing ethanol plant thermal plume. The capture facility would be considerably smaller in vertical and horizontal scale compared to the ethanol plant. Impacts at the ethanol facility would be compatible.

Tree clearing associated with construction and maintenance of the Project is not expected to introduce any substantial visual impacts because the Project does not cross larger forested areas. In addition, trees within HDD paths would not be cleared.

These analyses indicate that predominantly no contrast at the ethanol plant and weak to moderate visual contrast would occur along the pipeline. Visual resource impacts associated with construction of the Project and associated facilities would be temporary. The presence of construction equipment and materials; removal of existing vegetation; exposure of bare soils; earthwork; and grading would be incompatible. However, impacts from construction activities are transitory with no long-term impacts.
17. AIR

a) Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project’s effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

17.a Stationary Source Emissions

The Clean Air Act (42 USC 7401 et seq. as amended in 1977 and 1990) is the principal federal statute governing air pollution. The Clean Air Act empowered the USEPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. These pollutants are called “criteria” air pollutants and include carbon monoxide (CO), ozone, nitrogen dioxide (NO$_2$), sulfur dioxide (SO$_2$), lead, particulate matter equal to or less than 10 microns in diameter (PM$_{10}$), and fine particulate matter equal to or less than 2.5 microns in diameter (PM$_{2.5}$). The NAAQS includes primary standards designed to protect human health and secondary standards to protect public welfare, including visibility and damage to crops and vegetation.

Regions of the country that do not meet the NAAQS are designated as “nonattainment” areas. Certain rural parts of the country do not have extensive air quality monitoring networks; these areas are considered “unclassifiable” and are presumed to be in attainment with the NAAQS. Both Wilkin and Otter Tail counties are designated as in attainment or unclassifiable for the NAAQS (40 CFR Part 81.324).

The existing air quality in the Project area can be described using data from air pollution control monitors and from predictive models. The USEPA and the MPCA operate a series of air pollution control monitors throughout the state. These monitors collect data on criteria pollutants which are used to calculate the daily Air Quality Index (AQI). The AQI scores are divided into five air quality categories: good, moderate, unhealthy for sensitive groups, unhealthy, and very unhealthy. The air monitor station nearest to the Project area is in Detroit Lakes, Minnesota. Prior to 2021, a second air monitoring station was located in Moorhead, Minnesota. The AQI shows good air quality for the majority of days over the past 3 years. In 2021, the Detroit Lakes station recorded 5 days of unhealthy AQI and 6 days of unhealthy AQI for sensitive groups. All of these events were due to PM$_{2.5}$ (including dust) pollution and occurred during the months of July and August in an extended period without rain.

The MPCA developed the Minnesota Statewide Screening of Health Risks from Air Pollution (MnRISKS) tool to compare existing air pollution levels against health benchmarks and estimate the potential for negative health effects. MnRISKS calculates an air pollution score for each U.S. Census block in the state. An air pollution score equal to one means that air pollution levels are at the health benchmarks. A score less than one means that air pollution levels are below the health benchmarks and that health effects are unlikely to result after a lifetime of exposure. A score greater than one means that air pollution levels are above the health benchmarks and there may be potential for negative health effects.

The Project area covers four census blocks, each of which has an air pollution score below one. The top MnRISKS pollutants predicted in the Project area are acetamide, ammonia, benzene, 1,3-butadiene, polycyclic aromatic hydrocarbons (PHAs), polychlorinated biphenyls (PCBs), and NO$_2$. These pollutants result mainly from agriculture and farm equipment; traffic, boats, and recreational vehicles; burning of yard or agricultural waste or wood; and permitted industrial activities.
Air quality impacts for the Project would include potential temporary air emissions during the construction of the pipeline facilities. Emissions from operation of the pipeline would include dust and exhaust emissions from occasional worker vehicles at MLVs/ICCP system sites and the capture facility, and CO₂ from leaks at aboveground facilities such as MLVs. During operation of the capture facility, emissions would include stationary source emissions from the carbon capture facility and fugitive emissions from equipment leaks. These emissions are not expected to impact the air pollution score in the Project area.

From an operational perspective, the pipeline portion of the Project would not include any stationary sources of emissions of criteria pollutants or hazardous air pollutants (HAPs). During operation, the capture facility would include the following potential new sources of emissions:

- startup, shutdown, malfunction vent;
- dehydration unit vent;
- cooling tower;
- space heating; and
- fugitives from equipment leaks.

The Project would employ the following measures to avoid, minimize, or mitigate adverse effects from stationary source emissions: The startup, shutdown, malfunction vent would be used only during periods of facility startup, shutdown, and unforeseen equipment malfunctions. The cooling tower would be equipped with mist eliminators to control emissions of PM₁₀ and PM₂.₅. Space heating would occur only on an as-needed basis during cold weather conditions. Stationary source emissions would be minimized by operating and maintaining the equipment according to manufacturer specifications.

Maximum potential emissions from the wet scrubber at the Green Plains Ethanol Plant are shown in Table 17-1. The values shown in Table 17-1 represent the maximum potential emissions of the ethanol plant operating at the maximum production rate allowed by the current air permit (MPCA air permit number 11100077-101). Actual ethanol production would vary but would not exceed the permitted amount. Annual estimated operating emissions for the capture facility are shown in Table 17-2. The values shown in Table 17-2 represent the maximum, worst-case emissions from the capture facility. Actual operating emissions would not exceed these numbers.

### Table 17-1
**Green Plains Ethanol Plant Wet Scrubber Emissions Summary**

<table>
<thead>
<tr>
<th>Description</th>
<th>NOx</th>
<th>CO</th>
<th>VOC</th>
<th>SO₂</th>
<th>PM₁₀</th>
<th>PM₂.₅</th>
<th>CO₂e (tpy)</th>
<th>CO₂e (metric tpy)</th>
<th>Acetaldehyde</th>
<th>Total HAPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet Scrubber</td>
<td>--</td>
<td>--</td>
<td>49.41</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>204,428</td>
<td>185,454</td>
<td>3.68</td>
<td>4.36</td>
</tr>
</tbody>
</table>

---

a Source: Green Plains Otter Tail LLC Air Permit (permit number 11100077-101).

b Carbon dioxide equivalent (CO₂e) emission rates based on a conversion factor of 6.2901 pounds of CO₂ per gallon of ethanol produced and assume a maximum production rate of 65 million gallons of ethanol per year. [CO₂e (pounds) = 3,785.41 grams ethanol/gallon ethanol *0.789 / (46.07 grams ethanol/44.01 grams CO₂)*0.0022046 pounds CO₂/gram CO₂]. To convert from U.S. tons to metric tons, multiply by 0.907185.

NOx = nitrogen oxides.

The capture facility may need to bypass the capture system and vent emissions directly to the atmosphere during periods of startup, shutdown, and malfunction (SSM). The SSM emissions would be vented out a separate stack located on the capture facility site referred to as the SSM stack. These emissions would not be generated by the capture facility; rather, this exhaust stream would come directly from the Green Plains...
Ethanol Plant to be vented in a new location. The emissions summary in Table 17-2 includes potential emissions from the SSM stack.

Table 17-2
Capture Facility Operating Emissions Summary and Air Permit Thresholds

<table>
<thead>
<tr>
<th>Description</th>
<th>Criteria Pollutants</th>
<th>GHGs</th>
<th>Hazardous Air Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOₓ</td>
<td>CO</td>
<td>VOC</td>
</tr>
<tr>
<td>Startup, Shutdown, Malfunction Vent</td>
<td>--</td>
<td>--</td>
<td>1.81</td>
</tr>
<tr>
<td>Dehydration Unit Vent</td>
<td>--</td>
<td>--</td>
<td>32.33</td>
</tr>
<tr>
<td>Space Heating ᵖ</td>
<td>0.17</td>
<td>0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Cooling Tower</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Equipment Leaks</td>
<td>--</td>
<td>--</td>
<td>3.83</td>
</tr>
<tr>
<td>Total</td>
<td>0.17</td>
<td>0.07</td>
<td>37.99</td>
</tr>
<tr>
<td>Air Permit Thresholds ᵇ</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

a Operating emission calculations, assumptions, and methodology are shown in Appendix I.
b To convert from U.S. tons to metric tons, multiply CO₂ₑ in U.S. tons by 0.907185.
c Note: Space heating emissions assume usage of natural gas. The final facility design may utilize electric space heating, which would not produce emissions at the capture facility. Space heating emissions assume year-round use.
d Source: Clean Air Act and Minnesota Administrative Rules 7007.0250.

As presented in Table 17-2, potential emissions from the capture facility would be below Title V air permit thresholds. As shown in Table 17-1, potential emissions from the Green Plains Ethanol Plant CO₂ₑ scrubber are 204,428 tpy. MPCA requires an air permit for stationary facilities with potential emissions of CO₂ₑ above 100,000 tpy. An Air Permit Applicability Determination Request was submitted to MPCA in September 2022, and MPCA provided a response on December 9, 2022. MPCA’s determination was that the capture facility would be required to limit CO₂ emissions to below 100,000 tpy through an air permit. On February 8, 2023, SCS submitted an Option D registration permit application for operation of the capture facility.

b) Vehicle emissions - Describe the effect of the project’s traffic generation on air emissions. Discuss the project’s vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

17.b Vehicle Emissions

Activities associated with the construction of the Project would result in temporary and intermittent combustion emissions from construction equipment. Emissions would include criteria pollutants, GHGs (including CO₂, methane, and nitrous oxide), and HAPs from internal combustion engines. In addition, traffic would temporarily increase on paved and unpaved public and private roads during construction due to the hauling of materials and transportation of workers to the construction sites. This temporary increase in traffic is not expected to have an effect on peak hour traffic, and vehicular emissions are not expected to
cause or significantly contribute to a violation of an applicable ambient air quality standard. Earthmoving activities during construction would result in temporary and intermittent particulate emissions.

Emissions from gasoline and diesel engines from worker, delivery, and construction vehicles would meet the standards for mobile sources established by the USEPA’s mobile source emission regulations codified in Title 40 CFR Part 85. In addition, the USEPA stipulates that the maximum sulfur content of diesel fuel for highway vehicles is 15 parts per million. Emissions generated from construction of the pipeline and capture facility are summarized in Table 17-3. Construction emissions would occur only during construction activities. Upon completion of construction, emissions from construction equipment would cease.

**Table 17-3**

**Pipeline and Capture Facility Construction Emissions Summary**

<table>
<thead>
<tr>
<th>Description</th>
<th>Emissions (tpy)</th>
<th>Criteria Pollutants</th>
<th>GHGs</th>
<th>Hazardous Air Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO\textsubscript{X}</td>
<td>CO</td>
<td>VOC</td>
</tr>
<tr>
<td>Off-Road Engine Emissions</td>
<td>75.46</td>
<td>17.15</td>
<td>5.72</td>
<td>0.04</td>
</tr>
<tr>
<td>Unpaved Roads</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Earthmoving</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>75.46</strong></td>
<td><strong>17.15</strong></td>
<td><strong>5.72</strong></td>
<td><strong>0.04</strong></td>
</tr>
</tbody>
</table>

a Construction emissions calculations, assumptions, and methodology are collected in Appendix I.
b “Carbon dioxide equivalent” or “CO\textsubscript{2}e” is a term for describing different GHGs in a common unit. For any quantity and type of GHG, CO\textsubscript{2}e signifies the amount of CO\textsubscript{2} which will have the equivalent global warming impact. CO\textsubscript{2}e equals the sum of the individual GHG multiplied by its global warming potential listed in 40 CFR 98 Table A-1.

during operation, SCS anticipates to staff one full-time equivalent (FTE) position at the CO\textsubscript{2} capture facility, for approximately one additional commuter vehicle per day. This additional vehicle would be primarily limited to existing driving and parking areas at the Green Plains Ethanol Plant. Additional vehicle emissions may be required for future maintenance activities for the pipeline, aboveground facilities such as MLVs, and capture facilities; however, these would be infrequent, short-term, and temporary in nature.

c) **Dust and odors -** Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 17a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

17.c Dust and Odors

The quantity of fugitive dust emissions from soil-disturbance activities would depend on the moisture content and texture of the soils that would be disturbed, the type of construction equipment utilized, and the frequency and duration of precipitation events. As described in Section 6.b, dust control is used to help mitigate the effects of wind erosion and fugitive dust emissions during construction. Fugitive dust emissions are especially a concern near residential areas, farm dwellings, roads, or when strong wind conditions are present. Dust control measures would include periodically spraying the ground with watering trucks or sprinklers and placing curtains to prevent wind-blown particles from reaching residences or public buildings. Most pipeline construction activities in any given area would be completed within a 30-day period. Therefore, fugitive dust emissions during construction would be restricted to the brief active construction period along each segment of the Project pipeline route, with construction impacts diminishing
once construction activities end and after disturbed areas are reclaimed. Fugitive dust from construction activities are expected to be short in duration and intensity and would be managed by watering the areas of exposed soil as needed. SCS’s Contractor would monitor dust activity. During operation of the Project, dust related impacts are not expected. The pipeline and associated aboveground facilities would not generate dust emissions. Only a small number of SCS operational staff would access the MLVs on an as-needed basis for routine operations and maintenance activities. Vehicle traffic would be primarily limited to public roads and permanent access roads.

Any odors from construction would be associated with the operation of construction equipment and would be negligible and temporary. Carbon dioxide is odorless; any fugitive CO\textsubscript{2} emissions at the capture facility from equipment leaks during operation or blowdowns which may occur during periods of SSM as described in Section 17.a are not expected to cause a nuisance. Therefore, the proposed Project is not expected to result in any appreciable effects from odors.

18 GREENHOUSE GAS (GHG) EMISSIONS / CARBON FOOTPRINT

a) GHG Quantification: For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to come to that conclusion and any GHG emission sources not included in the total calculation.

18.a GHG Quantification

Construction of the Project would produce short-term GHG emissions as described in Section 17. The CO\textsubscript{2} capture facility would not employ a fire suppression system or fire suppression chemicals on site. CO\textsubscript{2} is not a flammable chemical. Therefore, no GHGs would be emitted from fire suppression. Small amounts of lubricants may be used as part of the facility’s normal operations and preventative maintenance program on an as-needed basis and are not expected to produce significant emissions.

The Green Plains Ethanol Plant can produce approximately 0.19 MMTPA of carbon dioxide equivalent (CO\textsubscript{2}e) from fermentation based on permitted production capacity. Construction of the Project would produce some short-term GHGs as described in Section 18.a. However, as the purpose of the Project is to remove the ongoing annual operations emissions from the Green Plains Ethanol Plant, the overall GHG impacts of the Project would be a net annual decrease of GHGs, as shown in Table 18-1.
Table 18-1
Overall Project Greenhouse Gas Impact

<table>
<thead>
<tr>
<th>Description</th>
<th>CO₂e (metric tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1 Estimate (Construction only)</strong></td>
<td></td>
</tr>
<tr>
<td>Project construction emissions</td>
<td>3,114</td>
</tr>
<tr>
<td><strong>Ongoing Annual Operations Estimate</strong></td>
<td></td>
</tr>
<tr>
<td>Annual CO₂ captured from Green Plains Otter Tail</td>
<td>(185,454)</td>
</tr>
<tr>
<td>Annual capture facility operating emissions</td>
<td>15,624</td>
</tr>
<tr>
<td>Annual indirect emissions from electricity use</td>
<td>26,893</td>
</tr>
<tr>
<td><strong>Total Project Impact, Ongoing Annual Estimate</strong></td>
<td>(139,823)</td>
</tr>
<tr>
<td><strong>Total Project Lifetime Impact (25-Year Operational Period)</strong></td>
<td>(3,495,575)</td>
</tr>
</tbody>
</table>

a) To convert from U.S. tons to metric tons, multiply by 0.907185.
b) Conservatively assumes that all construction occurs in one year and that no carbon capture occurs in the same year as construction.
c) See Table 17-1.
d) CO₂ emissions generated from the operation of the capture facility or from the fermentation process not captured due to system maintenance, repairs, or upset conditions. See Table 17-2.
e) Calculated using California Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (CA-GREET) Model emission factor of 684.35 gCO₂e/kWh for the Midwest Reliability Organization (MRO) West region, which includes Wilkin and Otter Tail counties. Annual Project electricity use is 39,297,360 kWh. [CO₂e (metric tpy) = 39,297,360 kWh * 684.35 gCO₂e/kWh * 0.0022046 lbCO₂/gCO₂ / 2000 lb/ton * 0.907185 metric ton/ton]
f) Note: Does not include fugitive CO₂ emissions which may occur from leaks at MLVs.

b) GHG Assessment

i) Describe any mitigation considered to reduce the project’s GHG emissions.

ii) Describe and quantify reductions from selected mitigation, if proposed to reduce the project’s GHG emissions. Explain why the selected mitigation was preferred.

iii) Quantify the proposed project’s predicted net lifetime GHG emissions (total tons/# of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

18.b GHG Assessment

The Project would comply with a number of monitoring, reporting, and verification (MRV) requirements regarding its CO₂ emission reductions. These requirements can generally be classified into three broad categories: 1) regulatory requirements, 2) compliance carbon market requirements, and 3) voluntary carbon market requirements. SCS would develop and utilize a data collection system to comply with the wide range of MRV and GHG reporting requirements, which would be audited and verified by independent third parties.

SCS would implement a variety of MRV systems to comply with MRV regulatory requirements. The three primary existing MRV regulatory requirements applicable to the Project are:

- GHG Reporting (40 CFR Part 98 Subparts PP and RR): Subpart PP applies to suppliers of CO₂ and outlines the reporting requirements for the capture facility. Subpart RR applies to injection of CO₂ into geological storage and outlines the reporting requirements for CO₂ storage. The reporting in Subpart RR must be consistent with 45Q IRS reporting (eCFR, 2022a; 2022b). SCS would comply with the monitoring and reporting requirements of Subparts PP and RR.

- Underground Injection Control (UIC) Program Class VI Implementation Requirements: The UIC program outlines the permitting and MRV requirements for a Class VI well permit, which is required prior to any injection of CO₂ into geological storage facilities. These requirements will provide for the measurement and permanence monitoring of stored CO₂ (USEPA, 2018). SCS
would comply with the applicable requirements of the UIC Program Class VI Implementation Requirements.

- **45Q Internal Revenue Service (IRS) Reporting:** The IRS requires reporting for any claims made for 45Q tax credits (IRS, 2021). SCS would comply with the applicable 45Q IRS Reporting requirements.

SCS would also comply with various low carbon fuel markets. Current markets exist in California, Oregon, and British Columbia. Regulations have been approved for implementation of new markets in 2023 by Washington and across all of Canada. SCS would be required to monitor, report, and verify its activities to meet the requirements of all compliance markets utilized by the Plant, potentially including:

- **California:** The California Air Resources Board (CARB) has detailed methodologies for their Carbon Capture and Sequestration (CCS) protocol, which includes MRV and permanence requirements (California Air Resources Board, 2018).

- **Oregon:** Oregon does not yet have a published methodology for CCS and SCS is currently working with the state government to define their requirements (Oregon Department of Environmental Quality, 2022).

- **Washington:** Washington does not yet have a published methodology for CCS and SCS is currently working with the state government to define their requirements. However, Washington has indicated that they will accept CARB’s results (Washington State Department of Ecology, 2022).

- **British Columbia:** British Columbia does not yet have a published methodology for CCS and SCS is currently working with the state government to define their requirements (Province of British Columbia, 2022).

- **Canada:** Canada has defined CCS reporting requirements when attached to projects in Canada for fossil fuels and the regulations allow for U.S. based projects tied to ethanol production. However, they do not yet have a defined protocol for these U.S. projects (Government of Canada, 2022).

In addition, SCS would seek to sell carbon removal credits into the Voluntary Carbon Market. SCS is working with leading registries (i.e., Verra, American Carbon Registry, and The Gold Standard) to develop an independent methodology appropriate for the Project, as one does not currently exist. Methodologies implemented are expected to have robust MRV requirements for GHG impact quantification as well as CO₂ storage permanence monitoring.

The Minnesota Next Generation Energy Act requires the state to reduce GHG emissions in the state by 80 percent between 2005 and 2050, from 174.6 million tpy (158.4 MMTPA) of CO₂e down to 34.9 million tpy (31.7 MMTPA). It should be noted that the Minnesota Next Generation Energy Act emissions goals do not include biogenic emissions (i.e., emissions for fermentation). As such, this Project would not technically benefit state-wide GHG reduction goals as stated in the Minnesota Next Generation Energy Act. However, the proposed CO₂ capture facility would capture the majority of the Green Plains Ethanol Plant’s CO₂ releases, thereby reducing the CO₂ emissions in Minnesota.
19 NOISE

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Existing noise levels/sources in the Project area include the Green Plains Ethanol Plant. Other sources of noise along the pipeline route include sources of residential and agricultural noise (e.g., cars, highway noise, railroads, farm equipment). EPA estimates that day-night average levels currently are approximately 40 to 45 decibels (dB) on the A-weighted scale (dBA), with higher baseline levels in more developed areas or when heavy agricultural machinery is working (USEPA, 1978).

Based on examination of aerial photographs, there are approximately 80 noise sensitive receptors (NSR) within 1,600 feet of the Project construction workspace in Minnesota. There are 35 NSRs within 0.5 mile of HDD entry and exit sites. A list of the Minnesota NSRs located within 1,600 feet of the construction workspace and 0.5 mile of each HDD entry or exit site can be found in the tables in Appendix J. Locations of NSRs are displayed on the maps in Appendix A.

The Minnesota Noise Standards set forth in Minn. R. 7030.0040 define permissible noise levels based on noise area classifications and the amount of time a standard is exceeded. The $L_{10}$ standard cannot be exceeded for more than 6 minutes during a 1-hour period (10 percent of the time) and the $L_{50}$ standard cannot be exceeded for more than 30 minutes during a 1-hour period (50 percent of the time). Minnesota state noise standards are summarized in Table 19-1. SCS expects the Project to conform to state noise standards and not impact quality of life.

<table>
<thead>
<tr>
<th>Noise Classification</th>
<th>Daytime (7AM-10PM) (dBA)</th>
<th>Nighttime (10PM-7AM) (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L_{10}$</td>
<td>$L_{50}$</td>
</tr>
<tr>
<td>Area 1 (Residential)</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>Area 2 (Commercial)</td>
<td>70</td>
<td>65</td>
</tr>
<tr>
<td>Area 3 (Industrial)</td>
<td>80</td>
<td>75</td>
</tr>
</tbody>
</table>

Nuisance noise ordinances exist in both counties crossed by the Project. These municipal noise ordinances prevent noise from becoming a nuisance beyond the property line. No separate or more restrictive quantitative standards exist for these areas; therefore, compliance with local noise ordinances would be assured through compliance with the state standard.

Construction of the pipeline, and the use of construction equipment which generates noise, would occur primarily in rural agricultural areas. MPCA guidance states that the human ear can usually tell the difference when sound changes by 3 dBA and a 5 dBA change is clearly noticeable (MPCA, 2015). The heavy equipment needed to construct the pipeline would have a temporary and short-term impact on noise levels in the vicinity of the Project. Typical pipeline construction equipment (e.g., bulldozers, loaders, backhoes, and side boom tractors) generate between 70 and 90 dB at 50 feet distance from the equipment when operating at full load (USDOT, 2006); members of the public would not experience this level of noise due to their distance from operating equipment.

During construction, residences within 1,600 feet of the construction workspace may experience short-term noise from construction equipment intermittently for up to 30 days. Construction equipment noise would be expected to decrease to levels below state daytime residential standards (less than 60 dBA) within 500
to 1,600 feet, depending on initial source level. Construction-related noise impacts would be minimized by
limiting pipeline construction activities to daylight hours (except for HDD crossings, which can require 24-
hour work to complete the drilling process, and hydrostatic testing), maintaining equipment in good
working order, and utilizing manufacturer-supplied silencers including mufflers when available.

SCS’s Contractor would use the HDD method to construct some waterbody, road, and railroad crossings.
Typically, drilling equipment operates at these crossings for 5 to 6 days; however, more time may be needed
depending on length and depth of the drill. The HDD crossings for the Project are in rural locations with
ambient noise levels that are generally low.

The mainline hydrostatic test is expected to take 8 hours once the pipeline test segment is at the desired
pressure. Getting the pipeline test segment to the necessary pressure can take several hours. Once the test
is complete, the blowdown process (when the internal pressure is reduced prior to discharge) would result
in increased noise levels; however, the increased noise levels are not expected to last longer than one hour.

The CO₂ capture facility would be located at the Green Plains Ethanol Plant. The primary noise-generating
activities at the CO₂ capture facility are related to the operation of compressors and pumps, which would
be housed inside buildings. The Green Plains Ethanol Plant operates compressors and pumps that produce
noise like the capture facility equipment; however, the Green Plains Ethanol Plant operates additional
equipment that produce higher levels of noise, including the distillation system and dryer. Compared to the
distillation system at the Green Plains Ethanol Plant, the CO₂ capture facility would produce less noise.

SCS does not anticipate the use of blasting on the Project; therefore, there would be no noise impact from
blasting activities.

There would be some increased noise during the blow-down phase of pressure testing. During this process,
the internal pressure of the pipeline would be raised to the “test pressure” and held for a period of time
before the pressure is reduced and released, creating noise. This occurs during the construction phase of the
Project; the noise would not last longer than an hour. There would be no increase in sound level during
operation of the pipeline, MLVs, launcher, or the ICCP system. During operation of the pipeline, activities
such as mowing on the permanent ROW, MLV maintenance, and periodic pipeline maintenance activities
may generate temporary and intermittent noise emissions in isolated areas. Overall, these activities are not
expected to have a noticeable impact on the ambient sound level.

The CO₂ capture facility located at the Green Plains Ethanol Plant would generate noise through the
operation of associated equipment. The CO₂ capture facility is anticipated to operate at a lower dBA range
compared to the Plant. Noise from the operation of the CO₂ capture facility is not expected to have a
perceptible increase on the sound levels experienced at NSRs near the capture facility and would not be
distinguishable from the noise already produced at the Plant. No operational noise related mitigation is
proposed.

20 TRANSPORTATION

a) Describe traffic-related aspects of project construction and operation. Include: 1) existing and
proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated
maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation
rates used in the estimates, and 5) availability of transit and/or other alternative transportation
modes.
20.a Project-Related Traffic

AADT on a roadway length for any given day of the year is expressed in vehicles per day (MNDOT, 2022). Table 20-1 lists annual traffic numbers on major highways and roads crossed by the Project.

<table>
<thead>
<tr>
<th>County</th>
<th>Road Type</th>
<th>Road Name</th>
<th>Milepost</th>
<th>AADT (vehicles per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otter Tail</td>
<td>County Road</td>
<td>116</td>
<td>0.4</td>
<td>1,000 to 4,999 (1,150)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>State Highway</td>
<td>210</td>
<td>3.2</td>
<td>1,000 to 4,999 (3,400)</td>
</tr>
<tr>
<td>Wilkin</td>
<td>U.S. Highway</td>
<td>75</td>
<td>24.5</td>
<td>1,000 to 4,999 (1,600)</td>
</tr>
</tbody>
</table>

Source: MNDOT, 2022.

Construction is expected to take approximately 6-9 months, with construction crews generally working 6 days a week. The Project would require approximately 200 vehicles to support construction. Vehicles would include stringing trucks; welding rigs; water trucks; fuel trucks; mechanic trucks; flatbed and lowboy trailer trucks; motor graders; hydrostatic equipment trucks; and construction staff vehicles. SCS estimates that once in the Project vicinity, vehicles would travel approximately 0.5 mile along the construction workspace per day during construction. Not all vehicles would be in one place at the same time; they would be generally spread over the 28.1-mile route, with more concentrated activities in some areas depending on the type of activities occurring. Many vehicles would deliver materials to the right-of-way and would then not return. Contractors would drop off equipment and materials at the desired location and then move to a different location along the construction workspace. Construction would generally progress in a linear fashion, with levels of traffic rising when work is in each area and falling as the progress of construction moves on.

Construction workers would drive personal or company vehicles directly to the Project area and park in designated areas such as along the construction workspace, or on landowner property with landowner permission. The daily commute of construction workers and the delivery of equipment and materials to the Project would add an incremental increase in the traffic found along existing transportation networks at specific locations (intersections and locations where the pipeline crosses a road). Increased vehicle traffic would be encountered during morning and evening peak times corresponding to normal workday hours. Except for HDD crossings, which may require continuous work over 5 to 6 days, most construction activities and associated road use would take place during daylight hours. However, construction would move along the pipeline route as progress allows and therefore, traffic flow impacts would be temporary on any given section of roadway.

The need for parking, and the decision of where workers park would vary over time depending on the location and accessibility of the work area and the available space on the construction workspace. Workers who support construction of the capture facility would park on-site at the Green Plains Ethanol Plant.

There would be no permanent parking needs along the pipeline ROW because of the Project. If maintenance work is required, adequate parking space is available for workers that may need to temporarily park along the permanent ROW or in safe locations as agreed to with local landowners.

The CO₂ capture facility would be staffed with one FTE and operated full-time. During the operation of the Project, it is estimated that two vehicle trips per day would be necessary. There is adequate existing parking at the Green Plains Ethanol Plant to accommodate parking related to capture facility operations.
b) **Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary.** The analysis must discuss the project’s impact on the regional transportation system. If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation’s Access Management Manual, Chapter 5 (available at: http://www.dot.state.mn.us/accessmanagement/resources.html) or a similar local guidance.

20.b **Potential Traffic Impacts**

The major roads where AADT is established would be able to handle the minor and temporary increase of vehicles. Local roadways would also experience a temporary increase in traffic during construction activities. This increase would be more noticeable on some of the lesser travelled roads crossed by the Project; however, the increase would be less than 30 days in most locations. After construction activities have commenced, traffic levels are anticipated to return to pre-construction conditions quickly. The Project would not exceed the EAW threshold for a traffic impact study.

c) **Identify measures that will be taken to minimize or mitigate project related transportation effects.**

20.c **Impact Mitigation**

To mitigate impacts on short-term congestion and disruption to traffic flow during construction, SCS would assign traffic control personnel in areas of temporary lane closures (e.g., when construction equipment is pulling off the construction workspace and onto a public road) or heavy traffic. There can also be localized impacts from deterioration of gravel or stone surfaced roads, which can require grading, patching, and/or replenishment of the surface material. Normal road functions would be restored after the completion of construction including, but not specifically limited to:

- Vehicular traffic that may have been impeded during construction would resume normal flow;
- Damage to the road surface caused by construction would be restored to pre-existing conditions;
- Access points installed to facilitate ingress/egress to the construction workspace would be removed and the affected area would be restored.

Transportation routes utilized during construction would be established by SCS prior to construction to support pre-construction roadway use permitting. Highways and roads crossed by the Project may fall under the jurisdiction of USDOT, MNDOT, or county/township/local road departments. SCS would work with applicable regulatory agencies and permitting entities regarding transportation-related permits necessary to accommodate construction vehicles and traffic and comply with seasonal load restrictions.

The CO₂ capture facility is located at the existing Green Plains Ethanol Plant, which already experiences notable daily vehicle and truck traffic from employees, vendors, and farmers with corn deliveries. The CO₂ capture facility is anticipated to take approximately 6 to 7 months to construct with crews working 6 days a week. An increased number of vehicles on principal roadways would be encountered due to worker commuting traffic (generally prior to and after peak morning and afternoon/evening workday rush-hour times). Materials and equipment delivery traffic would be dispersed throughout normal workday hours. The Green Plains Ethanol Plant is located close to U.S. Interstate 94, State Highway 210, and County Road 116 on the outskirts of the city of Fergus Falls. These roads can easily accommodate construction access needs

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9 SCS is proposing to conduct road surveys prior to construction to document pre-existing conditions.
and daily access to the facility during operation of Project. SCS would construct a permanent access road to the CO₂ capture facility to allow for efficient travel to the construction site and subsequently, the operational CO₂ capture facility. Although traffic levels would increase as compared to baseline conditions, the additional traffic would not result in notable impacts.

SCS plans to HDD or bore all paved roads to minimize impacts on traffic. Using this construction technique would prevent the need for road closures and allow traffic to operate normally. The Project would be responsible for repairing damage to roads and restoring them to preconstruction or better condition. Additionally, SCS has met with county engineers and other road authorities to discuss crossing methods, construction traffic, use and repair of roadways and similar issues. SCS plans to develop and enter into road agreements with each county addressing these issues.

21 CUMULATIVE POTENTIAL EFFECTS

(Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a) Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

21.a Geographic and Temporal Scope

Cumulative potential effects are environmental effects that result from the Project in conjunction with other projects in a given area. The effects from any one project may be small; however, the aggregated effects from all the projects together may be significant.

The two counties crossed by the Project are the spatial boundary for this cumulative effects analysis; an approximately 6- to 9-month period roughly coinciding with construction activities (from the second quarter of 2024 to the fourth quarter of 2024) is defined as the time period in which cumulative effects could occur.

b) Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

21.b Reasonably Foreseeable Future Projects

The following reasonably foreseeable future projects may have cumulative potential effects with the Project (see Table 21-1). This list of projects was determined by conducting a review of various state, local, and federal agency websites, including USACE, MPCA, MDNR, DOC-EERA, watershed districts, and cities/counties.

a) Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

21.c Cumulative Potential Effects

One project in Table 21-1 has the potential for cumulative effects due to its distance within one mile of the Project: the Lower Otter Tail River Restoration Project. SCS is coordinating with the USACE regarding the Section 408 crossing of the Otter Tail River near MP 19.5. The crossing would pass under the Aquatic Ecosystem Restoration Project for Section 1135 of the Lower Otter Tail River (Lower Otter Tail Restoration Project) which the USACE is sponsoring. SCS is proposing to cross the Otter Tail River via the HDD
method, which would avoid in-stream impacts and should avoid any cumulative impacts with the USACE restoration project at this location.

While the construction schedules associated with the remaining five projects in Table 21-1 may overlap with the Project, there would be no anticipated cumulative effects due to their geographic distance (19.7 to 35.2 miles from the Project). Therefore, cumulative impacts are not expected.

The Project would interconnect to a larger proposed CO₂ pipeline network, referred to as the MCE Project. Once operational, the MCE Project would include approximately 2,000 miles of pipelines for transportation of CO₂ from 32 ethanol plants located across Minnesota, Iowa, Nebraska, North Dakota, and South Dakota. In total, the MCE Project would initially be capable of moving up to 12 MMTPA of CO₂ for permanent storage in sequestration facilities in North Dakota. In addition to the Project, the MCE Project would involve other route permit applications in the state of Minnesota. Each of these projects would require construction of new CO₂ pipelines connecting to new capture facilities associated with existing ethanol plants in southern and south-central Minnesota. Because each of the other projects would interconnect independent ethanol facilities to the broader MCE Project, timing and construction of these projects is not dependent on construction of the present Project, and the pipelines do not share common rights-of-way or other facilities in Minnesota.
Table 21-1
Reasonably Foreseeable Future Projects in Otter Tail and Wilkin Counties

<table>
<thead>
<tr>
<th>County</th>
<th>Project Name</th>
<th>Nearest Milepost</th>
<th>Approximate Distance to Project (miles)</th>
<th>Schedule</th>
<th>Project Summary</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otter Tail</td>
<td>Schlauderaff Enterprises</td>
<td>0.0</td>
<td>29.7</td>
<td>Unknown</td>
<td>Development of 9 total confinement barns to house 1,703 animal units with storage of liquid manure as well as storage of process water with manure applied to surrounding croplands.</td>
<td>MPCA Public Notice of Intent to Issue Permit MN0071684 (expired February 18, 2022)</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>Twin Spruce Farm North</td>
<td>0.0</td>
<td>35.2</td>
<td>Unknown</td>
<td>Application of manure on an additional 3,092 acres (modification of existing feedlot permit.</td>
<td>MPCA Public Notice of Intent to Modify Permit MN0067059 (expired May 28, 2021)</td>
</tr>
<tr>
<td>Wilkin</td>
<td>Whiskey Creek and Tributaries - Enhancements</td>
<td>18.6</td>
<td>20.0</td>
<td>Unknown</td>
<td>The stream restoration of Whiskey Creek will remove excess sediment from the streambed and re-establish the channel’s natural gradeline. The project proposes to strategically place side inlets and sediment basins to reduce nutrient and sediment loadings to the stream in the future. The project proposes to establish natural aquatic and wildlife habitat.</td>
<td>BRRWD Projects Website</td>
</tr>
<tr>
<td>Wilkin</td>
<td>Wolverton Creek Restoration</td>
<td>26.5</td>
<td>31.1</td>
<td>Unknown</td>
<td>Wildlife habitat and connectivity will be improved through the establishment of 770 acres of riparian wetland and prairie habitat. This will permanently protect a wildlife corridor ranging from around 200 feet to more than 750 feet in width and will provide wildlife connectivity from the Manston Slough WMA to the Red River of the North.</td>
<td>BRRWD Projects Website</td>
</tr>
<tr>
<td>Wilkin</td>
<td>South Branch Buffalo River Restoration</td>
<td>21.3</td>
<td>19.7</td>
<td>Unknown</td>
<td>Restoration of approximately 4.6 miles of the South Branch of the Buffalo River and up to 100 acres of associated riparian habitat.</td>
<td>BRRWD Projects Website</td>
</tr>
<tr>
<td>Wilkin</td>
<td>Lower Otter Tail Restoration Project (USACE)</td>
<td>19.5</td>
<td>0</td>
<td>Q1 2024 – Q4 2025</td>
<td>The proposed project, planned in collaboration with the BRRWD, the MDNR, and other partners, will reconnect oxbows and increase the lateral connectivity of the Lower Otter Tail River. The plan will include the implementation of overflow structures, rock riffles, toe wood sod mats and channel excavation, adding additional length and habitat to the Lower Otter Tail River.</td>
<td>BRRWD Projects Website</td>
</tr>
</tbody>
</table>
22 OTHER POTENTIAL ENVIRONMENTAL EFFECTS

If the project may cause any additional environmental effects not addressed by items 1 to 20, describe the effects here, discuss how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

22.1 MPUC Route Permit Application

SCS’s Route Permit Application also includes a detailed discussion of potential environmental impacts related to the Project. While much of the information has been included in this scoping EAW, additional information is available as follows:

- Route Permit Application Part 1 (eDockets ID no. [20229-189023-02])
- Route Permit Application Part 2 (eDockets ID no. [20229-189023-03])
- Appendix 1A Preferred Route Maps Topographic (eDockets ID no. [20229-189023-04])
- Appendix 1B Preferred Route Maps Aerial (eDockets ID no. [20229-189023-05])
- Appendix 1C Preferred Route Maps Wildlife Habitat Maps (eDockets ID no. [20229-189023-06])
- Appendix 2 Minnesota Environmental Construction Plan Part 1 (eDockets ID no. [20229-189023-07])
- Appendix 2 Minnesota Environmental Construction Plan Part 2 (eDockets ID no. [20229-189023-08])
- Appendix 3 Aboveground Facility Drawings (eDockets ID no. [20229-189023-09])
- Appendix 4 Safety Data Sheet (eDockets ID no. [20229-189023-10])
- Appendix 5 Minnesota Agricultural Protection Plan (eDockets ID no. [20229-189024-01])
- Appendix 6 Emergency Response Plan Draft (eDockets ID no. [20229-189024-02])
- Appendix 7 Decommissioning Plan (eDockets ID no. [20229-189024-03])
- Appendix 8 Agency Correspondence Part 1 (eDockets ID no. [20229-189024-04])
- Appendix 8 Agency Correspondence Part 2 (eDockets ID no. [20229-189024-05])
- Appendix 8 Agency Correspondence Part 3 (eDockets ID no. [20229-189024-06])
- Appendix 8 Agency Correspondence Part 4 (eDockets ID no. [20229-189024-07])
- Appendix 8 Agency Correspondence Part 5 (eDockets ID no. [20229-189024-08])
- Appendix 8 Agency Correspondence Part 6 Minnesota Department of Natural Resources(eDockets ID no. [20229-189025-01])
- Appendix 8 Agency Correspondence Part 7 (eDockets ID no. [20229-189025-04])
- Appendix 9 Noise Sensitive Receptors (eDockets ID no. [20229-189025-05])
- Appendix 10 Wetland Crossing Table (eDockets ID no. [20229-189025-06])
- Appendix 11 Unanticipated Discoveries Plan Diract (eDockets ID no. [20229-189025-07])
- Appendix 12 Air Quality and GHG Operating and Construction Emissions (eDockets ID no. [20229-189025-08])

22.2 Socioeconomics

U.S. Census Bureau and Minnesota Department of Employment and Economic Development (DEED) data were reviewed to obtain information regarding the current socioeconomic conditions of the counties crossed by the Project. Table 22-1 summarizes the current socioeconomic conditions in counties crossed by the Project.
Table 22-1
Demographic Data

<table>
<thead>
<tr>
<th>State/County</th>
<th>Population (Census 2020) a</th>
<th>Population Density (people/sq mile) a</th>
<th>Per Capita Income (dollars) b</th>
<th>Civilian Labor Force b</th>
<th>Unemployment Rate (percent) b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnesota</td>
<td>5,706,494</td>
<td>66.6</td>
<td>37,625</td>
<td>3,029,600</td>
<td>6.2</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>60,081</td>
<td>29.1</td>
<td>32,059</td>
<td>31,026</td>
<td>5.1</td>
</tr>
<tr>
<td>Wilkin</td>
<td>6,506</td>
<td>8.8</td>
<td>34,543</td>
<td>3,452</td>
<td>3.7</td>
</tr>
</tbody>
</table>

a U.S. Census Bureau, 2021a.
b DEED, 2021.

The average population density of counties crossed by the Project (Otter Tail and Wilkin counties) is 19.0 people per square mile. Neither county exceeds the Minnesota average population density of 66.6 people per square mile, reflecting the rural landscape surrounding the Project. Otter Tail County saw a population increase of 4.8 percent in the last decade, and Wilkin County saw a population decrease of 1.1 percent in the last decade (U.S. Census Bureau, 2021a).

Populations range from 6,506 (Wilkin County) to 60,081 (Otter Tail County). The Project generally avoids population centers, although the nature of the Project’s partnership with an ethanol producer necessitates proximity to the town where the Green Plains Ethanol Plant and CO₂ capture facility is to be located. Fergus Falls is the only municipality located within 0.5 mile of the Project.

Unemployment rates range from 3.7 percent (Wilkin County) to 5.1 percent (Otter Tail County), with both counties having lower unemployment than the state average of 6.2 percent. Manufacturing and educational, health, and social services are generally the largest economic industries by employment in the counties crossed by the Project. Per capita income is lower than the state average in both counties crossed, ranging from $32,059 in Otter Tail County to $34,543 in Wilkin County. Manufacturing and educational, health, and social services are generally the largest economic industries by employment in the counties crossed by the Project.

The Project would create construction and operation jobs, generate new tax revenue for local communities, support local suppliers of goods and services (e.g., lodging), and support the regional economy by enhancing the long-term economic and environmental sustainability of the local ethanol and agriculture industries. It is estimated that the Project operations would require two new FTE pipeline technicians and one new FTE capture facility operator. The total Project estimated direct capital cost or investment by SCS is $50 million between 2022 and 2024. Construction of the Project would benefit local economies. SCS plans to utilize a combination of union and non-union contractors for the Project depending on the scope of work and skills required. The primary pipeline contractor would be a union contractor. All contractors would be encouraged to hire local and Native American workers when they possess the appropriate skills.

Due to the low unemployment rates in the crossed counties, general labor shortages, specialized skill needs, and the relatively short construction schedule, additional labor may need to be sourced from other areas of the state or other states. Increased traffic through towns near the Project would bolster retail and service (e.g., restaurants, lodging) sectors during construction as well.
22.3 Environmental Justice

The USEPA defines environmental justice as the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income in the development, implementation, and enforcement of environmental laws, regulations, and policies,” and the USEPA’s environmental justice guidelines are intended to ensure that all people benefit from equal levels of environmental protection and have the same opportunities to participate in decisions that might affect their environment or health (USEPA, 2022).

An important step in an environmental justice assessment is identifying whether an environmental justice community is present within the Project’s region of influence (ROI). The term “environmental justice community” includes disadvantaged communities that have been historically marginalized and overburdened by pollution. Environmental justice areas of concern include, but may not be limited to minority populations, low-income populations, or indigenous peoples.

MPCA maintains an online mapping tool entitled Understanding Environmental Justice in Minnesota, which “allows users to identify census tracts where additional consideration or effort is warranted to ensure meaningful community engagement and to evaluate the potential for disproportionate adverse impacts.” The MPCA environmental justice screening tool allows users to identify census tracts where additional consideration or effort is warranted to ensure meaningful community engagement and to evaluate the potential for disproportionate adverse impacts using three criteria:

- At least 40 percent of people reported income less than 185 percent of the federal poverty level;
- 50 percent or more minority; and
- Federally recognized Tribal Areas.

One census tract crossed by the project is identified by the MPCA as an area of concern: Tract 9609 in Otter Tail County and Tract 130304.

A demographic assessment was conducted of the affected community to identify low-income and minority populations that might be present (see Table 22-2). U.S. Census data was used. Low-income and minority populations are determined to be present in an area when the low-income percentage or minority group percentage exceeds 50 percent or is “meaningfully greater” than in the general population of the larger ROC. In this analysis, a difference of 10 percentage points or more was used as the threshold to distinguish whether a “meaningfully greater” low-income or minority population resides in the ROC.

The ROI for this analysis is the census tracts that intersect the Project footprint (i.e., pipeline and associated facilities). These census tracts are the best approximation of the geographic area within which potential disproportionate adverse impacts from the Project can occur. Otter Tail and Wilkin counties, which contain the census tracts listed in Table 22-2, are representative of the general population in the Project area against which census tract poverty and demographic data can be compared. These counties served as the ROC.

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11 Id.
### Table 22-2

Environmental Justice Data for Census Tracts Crossed by the Project

<table>
<thead>
<tr>
<th>Area</th>
<th>Population</th>
<th>Percent Below Poverty Level</th>
<th>Percent Total Minoritya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnesota</td>
<td>5,706,494</td>
<td>9.3</td>
<td>23.7</td>
</tr>
<tr>
<td>Otter Tail</td>
<td>60,081</td>
<td>8.8</td>
<td>9.5</td>
</tr>
<tr>
<td>Wilkin</td>
<td>6,506</td>
<td>13.5</td>
<td>9.0</td>
</tr>
<tr>
<td>ROC</td>
<td>66,587</td>
<td>9.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Otter Tail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Census Tract 9608</td>
<td>3,149</td>
<td>5.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Census Tract 9609</td>
<td>5,853</td>
<td>12.1</td>
<td>11.0</td>
</tr>
<tr>
<td>Census Tract 9617</td>
<td>3,234</td>
<td>4.0</td>
<td>5.9</td>
</tr>
<tr>
<td>Wilkin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Census Tract 9501</td>
<td>3,080</td>
<td>7.6</td>
<td>6.2</td>
</tr>
</tbody>
</table>

* Minority refers to people who reported their ethnicity and race as something other than non-Hispanic White.

Note: Minority or low-income populations exceeding the established thresholds are indicated in bold type.

Sources: U.S. Census Bureau, 2021b; 2021c; DEED, 2021.

A census tract is determined to be at risk for disproportionate environmental effects when the percent of low-income or minority population exceeds 50 percent or is “meaningfully greater” than in the general population of the larger ROC. While a meaningful greater population was not identified, several census tracts near the Project are identified as areas of concern by the MPCA.

Project work within the MPCA identified environmental justice community includes construction and operation of approximately 0.25 mile of pipeline and the construction and operation of a CO₂ capture facility at the existing Green Plains Ethanol Plant. Factors that could affect the environmental justice community include traffic, noise, and air impacts from construction and operation.

Potential impacts on the environmental justice communities during construction of the Project may include traffic delays and heavier than normal traffic in the vicinity of the portion of the pipeline in the affected community and the capture facility. There would be a temporary increase in use of area roads by heavy construction equipment and associated trucks and vehicles. To mitigate impacts on short-term congestion and disruption to traffic flow during construction, SCS would assign traffic control personnel in areas of lane closures or heavy traffic. There can also be localized impacts from deterioration of gravel or stone surfaced roads, which can require grading, patching, and/or replenishment of the surface material. Normal road functions would be restored after the completion of construction. Operation of the CO₂ capture facility would create an estimated two vehicle trips per day in addition to the existing vehicle traffic due to the operation of the Green Plains Ethanol Plant. The roads used to access the Project facilities in the environmental justice community can easily accommodate construction access needs and daily access to the facilities during operation of Project and therefore no notable impacts on the environmental justice community are anticipated.
Noise levels above ambient conditions attributable to construction activities would vary over time and would depend upon the nature of the construction activity, the number and type of equipment operating, and the distance between sources and receptors. The increase would be temporary, lasting the duration of construction. During construction, nearby residences may observe short-term noise from construction equipment intermittently for up to 30 days. The nearest residence to Project facilities in the environmental justice community is approximately 1,750 feet southeast of the capture facility and pipeline. SCS would minimize construction-related noise impacts by limiting pipeline construction activities to daylight hours (except for some HDDs/hydrostatic testing), maintaining equipment in good working order, and utilizing manufacturer-supplied silencers when available. Based on the distance of the nearest residence in the environmental justice community to Project construction along with proposed mitigation measures, no noise impacts on the environmental justice community are expected during construction.

During operation, the CO\textsubscript{2} capture facility located at the Green Plains Ethanol Plant would generate noise through the operation of pumps, blowers, compressors, and cooling towers. Additional sustained noise from the CO\textsubscript{2} capture facility is not expected to have a perceptible increase on the sound levels experienced at residences in the environmental justice community near the facility and would not be distinguishable from the noise already produced at the ethanol plant. At this time, SCS has not identified any noise related mitigation because no noise impacts are anticipated to the environmental justice community due to operations of the Project facilities.

Construction emissions would occur over the duration of construction activity and would be emitted at different times throughout the Project area. Construction emissions in the form of particulate matter (e.g., dust) and equipment exhaust would result in short-term, localized impacts in the immediate vicinity of construction work areas. Efforts to mitigate exhaust emissions during construction would include using construction equipment and vehicles that comply with USEPA mobile and non-road emission regulations, and use of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations. Particulate emissions (e.g., dust) on roads and from earthmoving activities would be minimized by spraying the ground using watering trucks. With the proposed mitigation measures, no notable air impacts on the environmental justice community are expected during construction.

Emissions from operation of the pipeline would include particulate (e.g., dust) and engine exhaust emissions from occasional worker vehicles at MLVs and the CO\textsubscript{2} capture facility and CO\textsubscript{2} from leaks at aboveground facilities such as MLVs. During operation of the capture facility, potential emissions would include stationary source emissions and fugitive emissions from equipment leaks. These emissions are not expected to provide notable air impacts on the environmental justice community during operation of the capture facility.

Based on SCS’s analysis of Project impacts and mitigation measures and the evaluation of current low income and minority populations within the counties and local communities crossed by the Project, no impacts on these populations are anticipated to occur as a result of the construction and operation of the Project. The Project is not anticipated to have any environmental justice impacts, and no additional mitigation outside of the resource specific mitigation outlined above is proposed at this time.
22.4 Health and Safety

Emergency and non-construction and operations-related health and safety concerns are discussed in this section.

CONSTRUCTION-RELATED HEALTH AND SAFETY CONCERNS

Potential Non-Emergency Impacts

Construction of the Project has the potential to introduce non-emergency health and safety concerns like other large construction projects or agricultural activities. These potential impacts may include increased traffic, noise, and construction-related air emissions.

SCS would work with local road authorities through execution of a road use agreement or similar arrangements to ensure proper traffic control personnel are in place for lane closures or heavy traffic and to ensure road repairs are completed. Further, SCS would take steps to ensure employees and contractors are traveling safely on area roadways.

Nearby residences may also experience short-term increases in construction-related noise from construction equipment intermittently for up to 30 days. SCS would minimize construction-related noise impacts by limiting most construction activities to daylight hours (except for HDDs/hydrostatic testing), maintaining equipment in good working order, and utilizing manufacturer-supplied equipment silencers when available.

Construction emissions would occur over the duration of construction activity at different times throughout the Project area. Construction emissions in the form of particulate matter (e.g., dust) and equipment exhaust would result in short-term, localized impacts in the immediate vicinity of construction work areas. Efforts to mitigate exhaust emissions during construction would include using construction equipment and vehicles that comply with applicable federal and state air pollution control regulations. Dust on roads and from earthmoving activities (e.g., excavation, grading) would also be minimized by spraying the ground using watering trucks.

Potential Emergency Impacts

Construction is not expected to result in emergency health and safety impacts. The presence of additional construction personnel has the potential to affect law enforcement agencies, fire protection services, and health care facilities in the communities adjacent to the Project.

SCS would work with local and county emergency management to develop procedures for response to potential emergencies, natural hazards, hazardous materials incidents, and other incidents concerning Project construction. SCS and its Contractor would provide site maps, haul routes, schedules, contact numbers, training, and other requested information to local and county emergency management. Additionally, SCS’s Contractors would maintain a list of local emergency response providers and contact information in all construction vehicles. Certain personnel would also be trained in first aid and safety.

Remote medical units would be deployed in the field during construction, and local healthcare facilities would provide healthcare services to Project construction workers during construction only if required. It is anticipated that impacts on local facilities would be minor and that local healthcare facilities would be able to manage minor increases to healthcare needs during construction. The Project’s health and safety procedures and policies would seek to prevent workplace injuries that could occur, which would limit the need to utilize local healthcare facilities during the temporary increase of construction workers.
OPERATIONS-RELATED HEALTH AND SAFETY CONCERNS

Potential Non-Emergency Impacts

The Project is expected to have minimal non-emergency operational impacts on human health and safety. Once operational, the Project would generate noise at the capture facility through the use of pumps, blowers, compressors, and cooling towers. However, these noise levels are not expected to produce perceptible changes in noise levels at any nearby residences and would not be distinguishable from the noise already produced at the adjacent Green Plains Ethanol Plant.

Emissions from operation of the pipeline would include particulate (e.g., dust) and engine exhaust emissions from occasional worker vehicles for operation, inspection, and maintenance activities at MVL sites and the capture facility. During operation of the capture, MLV, and launcher facilities, potential emissions would include stationary source emissions and fugitive emissions from minor equipment leaks or inspection and maintenance activities. These emissions are not expected to result in notable air-related health and safety impacts. It is worth noting that most of the potential operating emissions that are associated with the Project are currently being emitted by normal Plant operations.

Potential Emergency Impacts

Similar to other pipeline infrastructure, the potential for emergency-related health and safety impacts from operation of the pipeline would primarily occur during unexpected and abnormal operating conditions, such as an unplanned release of CO₂. While CO₂ pipelines do not pose a heightened safety risk relative to other types of pipelines or modes of transportation, members of the public may be less familiar with the potential safety hazards related to a CO₂ release. The following sections provide additional information regarding the safety regulations applicable to the Project and address several common public concerns related to potential human health and safety impacts from a CO₂ pipeline release.

CO₂ Pipeline Performance

Based on USDOT, PHMSA annual reporting data, in 2020, there were 5,150 miles of CO₂ pipelines in the U.S. This includes 27 different systems in 11 states: North Dakota, Wyoming, Colorado, Utah, Montana, Kansas, Oklahoma, Texas, New Mexico, Mississippi, and Louisiana. In the U.S., there are over 40 years of experience with CO₂ pipelines.

PHMSA publishes data on leaks and spills from regulated pipelines. In the past 20 years, there have been a total of 102 leaks or releases from CO₂ pipelines and facilities. This includes pump stations, collection sites, and similar facilities. The number of leaks that occurred on CO₂ pipeline rights-of-way is 37.²² None of the CO₂ pipeline leaks or releases resulted in a fatality, injury to the public, impact on wildlife, or water contamination. Only one injury, a pipeline contractor, has been reported in the past 20 years.²³,²⁴

²³ Id.
²⁴ Prior to 2002, injuries were reported as “Bodily harm to any person resulting in one or more of the following: (1) Loss of consciousness, (2) Necessity to carry the person from the scene, (3) Necessity for medical treatment, (4) Disability which prevents the discharge of normal duties or the pursuit of normal activities beyond the day of the accident”. This definition was replaced by Amdt. 195-75, 67 FR 831 in January 2002 with “Personal injury necessitating hospitalization.”
This PHMSA release data includes data related to the Satartia, Mississippi release in 2020. It has been reported by the pipeline operator that 45 people sought attention at local hospitals with some complaining of long-term effects. However, the PHMSA Failure Investigation Report does not identify any injuries as a direct result of the Satartia release nor any harm to wildlife or water resources.  

According to the PHMSA, pipelines are the safest mode to transport products, including CO$_2$.  

**Safety Regulations and Minimizing the Potential for CO$_2$ Releases**  

The Project would incorporate design, construction, operational, maintenance, and inspection measures and requirements aimed at reducing the risk of an unplanned CO$_2$ release from the Project. The Project would be designed, built, operated, and maintained to PHMSA hazardous liquid pipeline regulations at 49 CFR Part 195. Federal regulations also incorporate a number of industry standards by reference. These are the same rigorous requirements that apply to gasoline, anhydrous ammonia, and propane pipelines.  

**Depth of Cover**  

Although rare, third-party strikes are the most common cause of pipeline failures. Pipeline safety regulations in the U.S. require 30 inches of cover over a pipeline in rural areas and 3 feet in other locations unless the pipeline is in rock.  

SCS would design the pipeline for a minimum 54 inches of cover (increased to 60 inches at waterbody and drainage ditch crossings as well as private road crossings), which would provide an additional safety measure to reduce the risk of third-party strikes.  

**Ductile Fractures**  

In addition to setting standards for all hazardous liquid pipelines, federal regulations include specific requirements that are applicable to CO$_2$ pipelines. For example, CO$_2$ pipelines must be designed to resist ductile fractures. Ductile fractures are running cracks that can originate at a failure. These types of fractures are caused by the decompression response of the CO$_2$ in the pipe and can affect pipe joints (i.e., where 40-foot sections of pipes are welded together). To comply with PHMSA’s design regulation and minimize this risk, SCS has committed to installing heavier wall pipe and including fracture arrestors throughout the system if needed in its design.  

**Pipeline Testing and Inspections**  

Prior to commissioning the Project, SCS’s Contractor would conduct a hydrostatic pressure test to confirm the design strength of the pipeline and verify that it is leak free. This test is conducted at 125% of maximum operating pressure (MOP) and is held for 8 hours. The pressure test serves as the pipeline’s baseline integrity assessment. In conjunction with the pressure test, an in-line caliper inspection tool is run to identify any dents or deformations indicative of construction damage.  

Following the start of operations, hazardous liquid operators, including SCS and all CO$_2$ pipeline operators, are required to conduct integrity re-assessment utilizing pressure testing or in-line inspection tools capable of finding metal loss and deformations that might result from corrosion or mechanical damage. SCS is also required to implement cathodic protection (CP) to guard the pipeline against external corrosion and  

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17 49 CFR § 195.248, Cover over buried pipeline.  
19 49 CFR § 195.452.
inspect the performance of the CP system annually.\textsuperscript{20} In addition, SCS would conduct an AC interference survey to ensure their CP design is adequate.\textsuperscript{21} SCS would also complete regular inspections of the pipeline right-of-way and participate in one-call and damage prevention programs to prevent third party damage.\textsuperscript{22}

Valve Placement

In the event of a breach in pipeline integrity, valve spacing can limit the total volume of product released and the duration of the release, and therefore the length of potential exposure. The spacing intervals between the MLVs were designed in accordance with 49 CFR Part 195, which requires the consideration of CO\textsubscript{2} release dispersion modeling, risk assessments, and the potential to impact populated areas, sensitive environmental areas, and other topographic and environmental considerations. SCS would comply with PHMSA’s newly adopted, more stringent valve spacing regulations that were released March 2022 (PHMSA, 2022). SCS is also conducting an Emergency Flow Restricting Device study to determine if additional remotely activated valves would be installed based on requirements of 49 CFR Part 195.452.

Because CO\textsubscript{2} disperses in the atmosphere, the potential distance a release travels is more significantly impacted by factors like weather and the surrounding land than the volume of the release. For example, a CO\textsubscript{2} release on a windy day will dissipate more quickly and travel a farther distance than a release on a calm day. The health effects of CO\textsubscript{2} exposure are determined by the concentration of CO\textsubscript{2} and how long a person is exposed.

Federal regulations require that CO\textsubscript{2} pipeline operators conduct an air dispersion analysis to determine how CO\textsubscript{2} released from the pipe would impact people and the environment. This analysis, which also incorporates local terrain, is prepared to comply with PHMSA’s liquid Integrity Management Program regulations.\textsuperscript{23} Dispersion and overland spread analysis allows the operator and emergency response agencies to understand the potential consequences of a CO\textsubscript{2} release. Under PHMSA’s Integrity Management regulations, SCS would complete and use this analysis to inform its selection of appropriate preventive and mitigative measures including valve locations, emergency response planning, and preparedness to reduce those potential consequences.

24/7 Monitoring

The Project would be monitored 24 hours a day, seven days a week, and 365 days a year from an OCC located in Ames, Iowa. The OCC would employ experienced and trained staff who would continuously monitor and control pipeline operations. A SCADA system would communicate with all field sites and provide real time status from every facility and/or data collection point along the Project. Data such as pressure, temperature, and flow would be monitored to ensure pipeline operation is maintained within established, safe operating parameters.

SCS would utilize a RTTM leak detection system. The RTTM is a real time hydraulic model of the pipeline system that runs in parallel with monitoring pressure and volume with system instruments. If the behavior of the pipeline does not match the hydraulic model, the OCC is notified that an issue must be analyzed. Alarms would be established for pipeline controllers when this analysis detects a potential leak profile and, in certain circumstances, valves would automatically close without human intervention. SCS would develop O&M procedures for OCC and field personnel prior to commencement of operation. These O&M procedures would include both normal and abnormal operating conditions. OCC personnel would have the

\textsuperscript{20} 49 CFR Part 195, Subpart H.
\textsuperscript{21} AC interference surveys identify areas of induced alternating current on the pipeline, such as from nearby high-tension power lines, that can cause corrosion.
\textsuperscript{22} 49 CFR §§ 195.412 and 195.442.
\textsuperscript{23} 49 CFR § 195.452.
capability to remotely shut down the capture facility and isolate pipeline segments via the Project’s MLVs in the event abnormal operating conditions are observed.

Potential Human Health and Safety Impacts of a Release

CO₂ is naturally occurring in the atmosphere, used in the food and beverage industry, and produced by the human body during ordinary respiration, so it is commonly perceived by the general public to be a relatively harmless gas. However, at concentrations of 4% by volume (40,000 parts per million [ppm]), CO₂ is Immediately Dangerous to Life or Health, and at concentrations of 8% by volume (80,000 ppm) can cause dimmed sight, sweating, tremor, unconsciousness, and possible death by asphyxiation (Food Safety and Inspection Service, 2020).

Because CO₂ is colorless, odorless, and heavier than air, a significant uncontrolled release may cause CO₂ to temporarily accumulate near the ground in low lying outdoor areas, and in confined spaces such as caverns, tunnels, and basements until it dissipates into the atmosphere. CO₂ is not flammable, combustible, or explosive.

Potential Environmental Impacts of a Release

In the event of a large-volume release of CO₂ over land, where a rapid phase change occurs at the soil surface or below ground, there is the potential for direct effects and secondary effects. Direct effects would likely result in a fluctuation in soil chemistry largely driven by a change in pH. Other direct effects would include a significant drop in soil temperature which could likely be measured in hours. Plants in the immediate area of the release would freeze and die.

Secondary effects, largely driven by the change in soil pH, would include alterations in microbial communities and soil enzymes, reduced availability of nitrogen and phosphorus, as well as other nutrients, and a change in total organic carbon. These effects would be spatially concentrated around the release site and could be mitigated largely by regrading of the landscape and soil amendments if required.

In the event of a large-volume release of CO₂ from the pipeline under a waterway, the CO₂ would seek equilibrium and move to lower pressure, resulting in the majority of the gas passing through the water column and into the atmosphere. CO₂ passing through the water may combine with water molecules and form carbonic acid (H₂CO₃) (National Energy Technology Laboratory, 2023). However, because the soils, rocks, and water in this part of Minnesota are naturally pH basic (MPCA, 2023), the small amount of carbonic acid formed would quickly revert to CO₂ and water in the abundance of the surrounding water column.

At the time of the release, the aquatic life present in the column of CO₂ would rush to the surface and may be injured and/or die due to turbulence. Following a release, the small increase in acidity in the water column would be unlikely to harm wildlife because the amount of CO₂ released would not be continuous (Saripalli et. al., 2003). Large scale fish mortality is not expected because, while CO₂ concentrations at high levels would be extremely toxic to fish, fish are mobile, and the CO₂ is expected to move downstream and dilute quickly, or in a larger body of water become diluted. Sessile species (e.g., mollusks) would be more vulnerable to increases in CO₂ levels in the water column because of their inability to move locations. However, the CO₂ increases would have to be sustained over a long period of time (months) for widespread impacts to cause widespread impacts to aquatic species (Pörtner, et. al., 2014).
Emergency Response Planning

SCS’s draft Emergency Response Plan (Application - Appendix 6) discusses the actions SCS and local first responders would engage in to minimize human health and safety impacts in the event of release of CO₂ from the Project.

Based upon the estimated volume of the release, topography, proximity of habitable structures, and weather conditions, SCS would work with the local emergency response agencies to effect orderly evacuation of the public. The safety of the public and the response team is the number one priority. Emergency agencies would be notified to help control traffic, establish danger zones to control sightseers, and determine if it is advisable to set up roadblocks. Roadblocks may be necessary for pedestrian, automotive, and train traffic.

Company employees, contractors, and agency responders would be equipped with tools, supplies, and equipment available to be used in cases of emergency conditions existing on or near the pipeline system. CO₂/oxygen monitoring devices should be used in the event of an accidental/uncontrolled release of CO₂. Self-contained breathing apparatus may be required pending results from on site-specific hazards and monitoring results. SCS has begun and would continue to engage in outreach and community education to ensure that local first responders and area residents are informed regarding the potential risks of a CO₂ release.

Although pipeline failures are unlikely, SCS would implement a damage prevention and public awareness program to educate the public, first responders, and other stakeholders, protect the pipeline from damage from third parties, and prevent or mitigate effects on public health and the environment.²⁴

POTENTIAL HUMAN HEALTH AND SAFETY BENEFITS

When considering the potential risks to human health and safety related to unexpected release of CO₂ from the Project, it is important to also consider the potential health and safety benefits associated with reducing the amount of CO₂ released into the atmosphere. Each year, during normal operations, the Project would capture and permanently store approximately 0.19 MMTPA of CO₂ from the existing Green Plains Ethanol Plant that would otherwise be released into the atmosphere under the Green Plains Ethanol Plant’s existing air permits.

CO₂ is a leading contributor to climate change. The World Health Organization states that “[c]limate change is the single biggest health threat facing humanity, and health professionals worldwide are already responding to health harms caused by this unfolding crisis” (World Health Organization, 2023). The Centers for Disease Control has identified the following health-related impacts of climate change in the Midwest, including in Minnesota: temperature-related death and illness, air quality impacts, extreme events, vector-borne diseases, water-related illness, and high risks for certain populations of concern (Centers for Disease Control and Prevention, 2021). The Project would contribute in a concrete and meaningful way to reducing CO₂ in the atmosphere, and, coupled with other CO₂ capture and clean energy projects and initiatives, is an important tool for slowing or reversing the human health and safety impacts related to climate change.

²⁴ See also 49 CFR §§ 195.402, 195.403, 195.440, and subpart G.
23 RGU CERTIFICATION

(The Environmental Quality Board will only accept SIGNED Environmental Assessment Worksheets for public notice in the EQB Monitor.)

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages, or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature ________________________________ Date ________________
Andrew Levi
Environmental Review Manager
Department of Commerce

Signature ________________________________ Date ________________
Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
24 REFERENCES


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