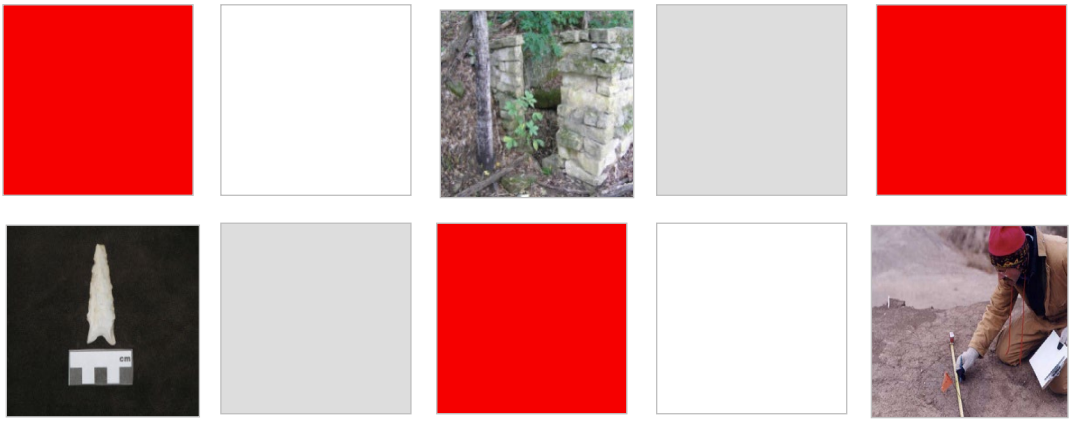

# HDR Engineering, Inc.

## Solway Solar Project

**Beltrami County, Minnesota**

PREPARED BY

Merjent, Inc.
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414

Fred Sutherland Ph.D., RPA.

**Fred Sutherland Ph.D., RPA.**
**Principal Investigator**

January 29, 2025

SHPO Number: 2024-1959

merjent®

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# APPENDICES

# ACRONYM LIST

| | |
|---|---|
| B.P. | Before Present |
| CFR | Code of Federal Regulations |
| GIS | Geographic Information System |
| Merjent | Merjent, Inc. |
| NRHP | National Register of Historic Places |
| Project | Solway Solar |
| cm/cmbs | Centimeters/Centimeters Below Surface |
| ft | Feet/Foot |
| GLO | General Land Office |
| HDR | Client, HDR Engineering, Inc. |
| RPA | Register of Professional Archaeologists |
| LiDAR | Light Detection and Ranging |
| TCPs | Traditional Cultural Properties |

## EXECUTIVE SUMMARY

Otter Tail Power Company (Otter Tail) has proposed to construct a new 50 MW AC solar facility north of the town of Solway in Lammers Township, Minnesota (Project). HDR Engineering, Inc. (Client) is assisting Otter Tail with engineering planning and environmental surveys. The Client contracted Merjent to do a cultural resource survey for the anticipated solar facility development on parcels surrounding Otter Tail's existing Combustion Turbine Generating Station near Solway, MN. The existing 115kV substation adjacent to the Solway Combustion Turbine Generating Station will be modified for interconnection to the Project. A literature review conducted by the Client in July of 2024 identified no previously known archaeological sites or architectural/historic properties within a one-mile radius of the Project area. However, research for the literature review noted a former river channel present in the northwestern corner of the Project area. On October 14-17, 2024, a cultural survey team led by Merjent's Fred Sutherland shovel tested the ridges and upland portions of the Project area and conducted a pedestrian survey of the crop fields and pastures present in the lowlands and plains. A Tribal monitor from the Upper Sioux Community (USC) conducted a survey for Traditional Cultural Properties (TCPs) alongside the team from Merjent. No archaeological sites were identified in this survey [redacted]

## 1.0 ENVIRONMENTAL SETTING

### 1.1 TOPOGRAPHY

Most of the Project area, about 350 acres out of just over 480 acres, is open plains with minimal variation in topography. The remaining portion, approximately 130 acres, is hilly upland representing the edge of a former riverbed and terraces. These riverbanks and terraces were noted in the literature review conducted by HDR as the place with the highest potential for pre-European contact Native American sites (Koski and Seidl 2024:6-8). These upland ridges extend across the northern and far western edges of the Project area (Figure 1).

### 1.2 HYDROLOGY

No major water bodies are within the Project area nor within one mile of the Project area's boundaries. The closest named body of water is Grant Creek approximately 1.1 miles northeast of the Project area. There are several small wetland areas and seasonal streams within the Project area to the north and east with a larger wetland and drainage canal located just to the southeast of the Project area boundary.

## 1.3 SOILS

The soils in this archaeological region, known as Region 5: Central Lakes Coniferous, are known to be generally coarse compared to those located in regions to the south (Anfinson 1990). Shovel testing in the north and northwestern areas of the Project reveal deep post-glacial sand, gravels, mixed with former riverine deposits consisting of cobbles down to fine silts and clay nodules. Organic topsoil was noted as relatively thin throughout shovel test profiles within the Project area consisting of about 10cm to 20cm at most in depth.

## 1.4 VEGETATION AND LAND USE

Field survey and records reviewed by HDR, such as Marschner 1895 vegetation maps, confirm the Project area was predominantly a mixture of hardwood forest and oak savanna prior to European-American agriculture modifying the landscape (Koski and Seidl 2024:4-6). Areas within the north-central portion of the Project area retain stands of white and red oaks, sugar maple, and hickory. Several 100+ year old cross-cut saw and axe-cut tree stumps indicate at least one previous logging episode occurred here, but the logging was either limited or the woodland has had enough time to fully regenerate (Figures 2.1-2.8). Woodlands in the far west and northwest of the Project area have been recently clear-cut in the last two years prior to Otter Tail acquiring the property (pers. communication with Otter Tail 2024; Photos 1-3). Woodlands in the northeast are primarily aspen and older paper birch trees which are receding as younger maple and oak trees are reaching maturity. Physical remains of barbed wire and can dumps from the 1970s indicate this land was a pasture about 45 to 60 years ago (Photos 4-5). The evidence found here suggests these woods are in the process of regenerating after the pasture was abandoned. The remaining portions of the Project area to the south and east are agricultural fields, pastures, or hay fields.

# 2.0 LITERATURE REVIEW

HDR conducted a literature search of Minnesota SHPO and OSA files in July 2024 (Koski and Seidl 2024). The literature search focused on areas for potential unidentified cultural resources within the study area, defined as the Project area plus a one mile buffer. Merjent reviewed this document in addition to archival resources including General Land Office (GLO) maps and historical aerial imagery to identify potential cultural features in the Project area.

## 2.1 HISTORIC MAP REVIEW

HDR reviewed data including prehistoric vegetation maps produced by Marschner, the 1875 General Land Office (GLO) map, and Light Detection and Ranging (LiDAR) elevational data (Koski and Seidl 2024:7-9). These show a landform which was mostly covered by hardwood forest along with a few localized wetlands. Based on the 1919 USGS map, it appears that by the early 20$^{th}$ century, many of these woodlands were cut to allow for agricultural development. Very little appears to change on later USGS maps except for the developments related to the Otter Tail Combustion Turbine Generating Station and gas line in the southern end of the Project area (TopoView 2024).

## 2.2 PREVIOUS SITES AND SURVEYS

According to the July 2024 review conducted by HDR, there are no known sites, nor have any previous archaeological surveys been conducted, within one mile of the Project area (Koski and Seidl 2024:6). HDR did identify several landforms with better potential for archaeological sites within the Project area.

## 2.3 IMPLICATIONS FOR SITE POTENTIAL

A review of the environmental setting and information on known cultural resources by HDR concluded the area with the best site potential for pre-European contact sites is in the northwestern portion of the Project area where remnants of a former river and terracing exist (Koski and Seidl 2024:8-10). Based upon their assessment of the landform to have potential for unrecorded archaeological sites, they recommended completion of a Phase I archaeological survey with shovel testing focused within the northwestern corner.

# 3.0 TRIBAL ENGAGEMENT

HDR completed Tribal outreach for the Project on behalf of Otter Tail during the summer and fall of 2024. This began with a Project introductory letter sent to all 11 federally recognized Tribes in Minnesota on July 2nd. After completion of the Phase Ia Cultural Resources Literature Review and Assessment (Koski and Seidl 2024) HDR contacted each Tribe and invited them to participate in the archaeological survey. This started with a phone call made to each THPO on August 9th, followed by emails with the literature review and additional Project information attached on August 19th. Responses were received via phone and email by the Leech Lake Band of Ojibwe (September 11th), Lower Sioux Indian Community (August 19th), the Shakopee Mdewakanton Sioux Community (August 19th), and USC (August 20th).

The Tribal Historic Preservation Officer (THPO) of the Leech Lake Band of Ojibwe, reached out to state that they were not aware of any recorded historical properties within the Project area, and they had no concerns about the Project. The Shakopee Mdewakanton Sioux Community THPO stated they would be deferring consultation to the federally recognized Tribes closer to the Project area, but they would like to be informed. The Lower Sioux Indian Community THPO, expressed interest in a Tribal monitor accompanying the survey, however, contracting could not be finalized. The USC THPO, expressed interest in sending a Tribal monitor to accompany the survey. The USC THPO was able to send Sean Conteras. Conteras was present for all aspects of the archaeological survey.

[redacted]

This survey report should be submitted to the Lower Sioux Indian Community, Shakopee Mdewakanton Sioux Community, and USC to respond to their interest in the Project and keep them informed of results.

## 4.0 OBJECTIVES AND FIELD METHODS

The general objective of a Phase I archaeological survey is to identify archaeological resources within the survey area that are at least 45 years of age. Archaeological resource types considered for this investigation included both precontact and historic period archaeological sites including any earthworks that could provide information about human occupation.

The survey area comprised the entire Project area except for the existing Combustion Turbine Generating Station and natural gas pipeline corridor. The survey was led by Dr. Fred Sutherland, RPA, who was assisted by Merjent field technicians Paige Englehart and Sabin Wright. Sean Contreras, a Tribal monitor from USC, accompanied the Merjent field team to survey for Traditional Cultural Properties (TCPs). Areas exhibiting obvious disturbance, inundation, or exhibiting slope greater than 15 degrees were photo documented and avoided. The survey was geographically oriented using Geographic Information System data in conjunction with a Trimble R1 Integrated Global Navigation Satellite System receiver. Field observations including vegetation, ground surface visibility, slope, general topography, and areas of soil disturbance or inundation were described on field forms and with GIS shapefiles.

## 5.0 SURVEY RESULTS

Field survey was conducted by Merjent from October 14 to 17, 2024. Obvious ground disturbances including dragging of equipment and logs and stump pulling during clear-cut logging from the private landowner were photo documented in the northwestern Project area (Photos 1-3). This logging occurred prior to the property sale to Otter Tail Power. Agricultural activities in the open fields south of the logged woodland were noted in field documentation and with photographs (Photo 7). A total of 22 acres were shovel tested, primarily in the northwest and northeast along ridges and upland terraces (Figures 2.1-2.8). This was the area indicated in the literature review from HDR which may have contained site material related to a former river terrace. All shovel test transects (A to H) had shovel tests spaced 15 meters apart along ridges or other higher-probability landforms for containing buried cultural materials as determined by the field supervisor, Fred Sutherland.

A total of 97 shovel tests were dug and none were positive for cultural material. The typical shovel test profiles seen across each transect is represented in Table 1 and with photographic examples (Photos 8-9). A total of nine shovel tests along transects in the northwestern portion of the Project area could not be excavated or were off set in less than 15 meters due to unavoidable obstacles. Many of these obstacles were fallen trees and dense brush piles left behind from the recent clear-cutting episode conducted by the previous landowner before the land was sold to Otter Tail Power (Photo 3). The Project as currently planned will not include development in the very northern and northwestern portions of the Project area where obstructions prevented shovel testing. The remaining portions of the Project area were pedestrian surveyed with the Tribal monitor (Photo 6).

**Table 1. Representative Shovel Test Profiles Across Project Area**

| Test # | Depth (cmbs)* | Horizon | Munsell | Soil | Notes |
|---|---|---|---|---|---|
| A02 | 0-10 | A | 10YR 3/3 | Silt Loam | -Southern Former Shoreline |
| | 10-23 | B | 10YR 5/4 | Gravelly Silt | |
| | 23-31 | C1 | 10YR 8/3 | Silt | Rock Frequency increases after 25cm |
| | 31-40 | C2 | 10YR 7/2 | Silt | |
| B07 | 0-09 | A | 10YR 3/3 | Silt Loam | -Central Ridgeline of South Shore |
| | 09-13 | AB | 10YR 3/3 | Silt | Mottled with 10YR 5/3 Silt |
| | 13-30 | B | 10YR 7/3 | Silt | |
| | 30-42 | C | 10YR 6/2 | Sandy Clay | |
| C06 | 0-08 | A | 10YR 3/2 | Silt Loam | -Central Ridgeline of North Shore |
| | 08-39 | B | 10YR 5/2 | Silt | |
| | 39-49 | C | 10YR 6/2 | Sandy Clay | |
| D02 | 0-12 | A/O | 10YR 4/2 | Silt Loam | -Northwestern Former Shoreline |
| | 12-48 | B | 10YR 6/2 | Silt | |
| | 48-58 | C | 10YR 5/4 | Sandy Clay | Rocks appear by 50cm |
| E01 | 0-14 | A | 10YR 4/3 | Silty Loam | -Tree line Bordering Thoren Drive NW |
| | 14-40 | B | 10YR 7/3 | Silt | Frequent Roots below 14cm |
| F08 | 0-16 | A | 10YR 3/2 | Silt Loam | -Northeastern Former Shoreline |
| | 16-32 | B | 10YR 5/2 | Silt | |
| | 32-42 | C | 10YR 6/2 | Sandy Clay | |
| G03 | 0-14 | A | 10YR 3/3 | Silty Loam | -Just West of Former Pasture Road |
| | 14-39 | B/C | 10YR 6/3 | Silt | Mottled with 10YR 5/3 Silty Sand |
| H13 | 0-14 | A | 10YR 3/3 | Silt Loam | -Woodland East of Central Drive NW |
| | 14-40 | B | 10YR 5/3 | Sandy Silt | Gravel and Clay Nodules Present |
| I02 | 0-09 | A | 10YR 3/3 | Silt Loam | -Upland Between Field and Woodland |
| | 09-45 | B | 10YR 6/3 | Silt | West of Central Drive NW |

* cmbs = centimeters below surface

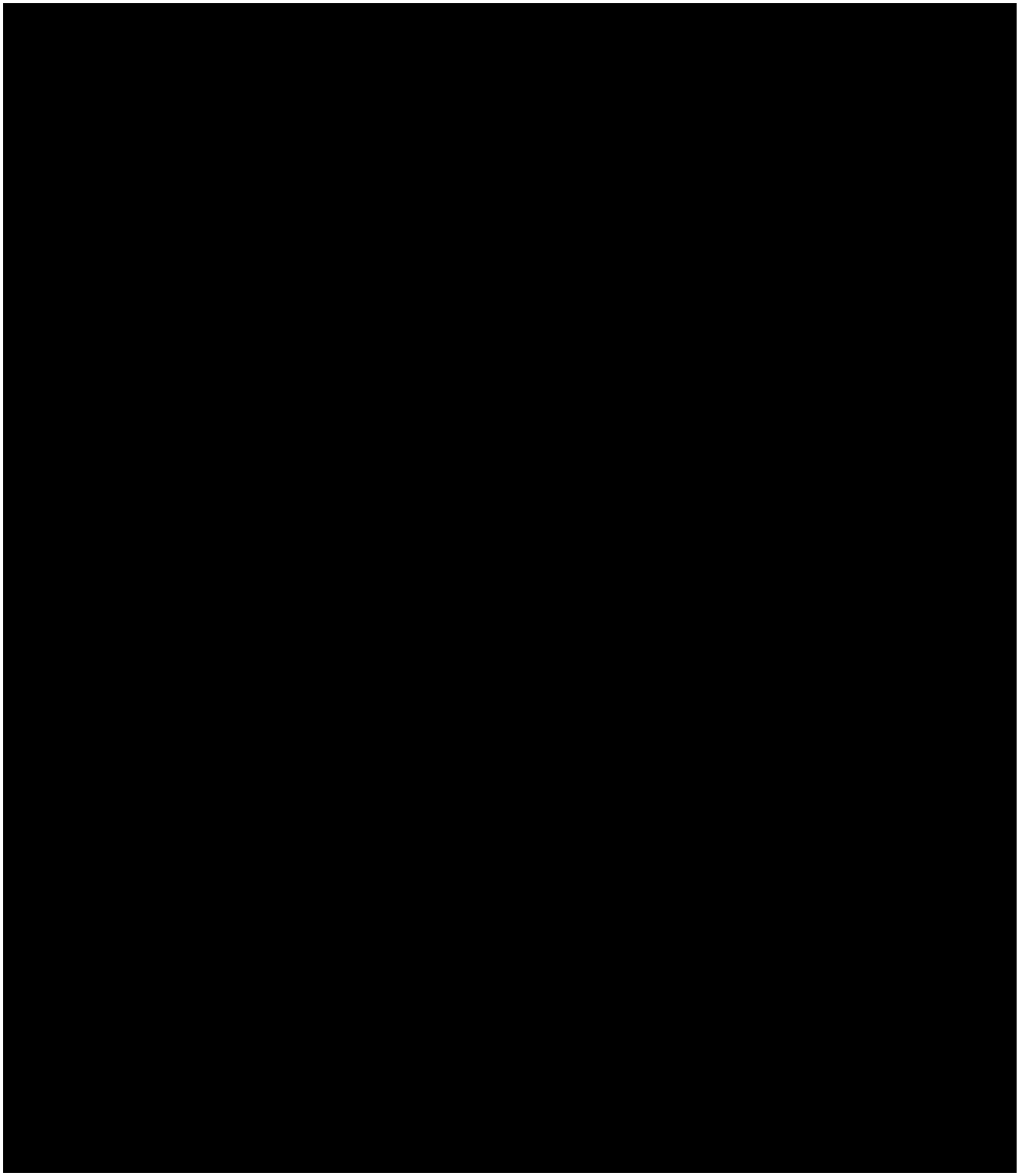
The agricultural fields located to the east and west of Central Drive NW consisted of harvested hay fields at the time of the survey. Surface visibility was between 25% and 40% percent which allowed for close-interval pedestrian survey with team members spaced five meters apart, following the survey methodology described in the SHPO Manual (Anfinson 2005:30-31; Photos 6-7).

Modern can dumps were found in two locations between STPs H06 and H20 within the northeastern woodland area dated to the late 1980s and early 1990s. Both modern dump sites were likely created when the modern roadway, Central Drive NW, brought more vehicle traffic near this woodland as it grew and began to obscure observation from the roadside. A can dump along the southeastern edge of this woodland in the east/central portion of the Project had a range of cans and glassware dated between 1972-1974 (Photo 5). This can and glass dump appears to be closely associated with a fieldstone pile. The stone pile and 1970s materials relate to the agricultural field located immediately south of this location. These combined features along with several exposed fragments of barbed wire along the forest floor to the west of STP H18 may represent maintenance activities for the former pasture lands and crop fields located near this location.

A pair of circular depressions, 80ft and 20ft in diameter, were visible in the LiDAR imagery in the north-central area along Thoren Drive NW (Photo 10). Both depressions were investigated and found to have been related to cattle-formed wallowing depressions where they preferred to congregate when this was pasture. Multiple narrow pathways associated with cattle moving to and from these shallow depressions remain visible along the ground between the two depressions. The location of these two depressions is close to a former pasture access gate between Thoren Drive NW and the north-central part of the Project area.

An isolated automobile hubcap documented in the north/central pasture of the Project area (Photo 11). Research into the style and maker of these hubcaps revealed it belonged to a single make and model vehicle, a 1957 Ford Fairlane. Based on the multiple bullet holes and badly dented condition of the hubcap it seems likely it was removed from its car and disposed of many years after it was made.

[redacted]



## 6.0 SUMMARY AND RECOMMENDATIONS

On October 14-17, 2024, Merjent conducted a Phase I archaeological survey for the Project area. No new archaeological sites were identified during the survey. [redacted]

[redacted] no further cultural resources work is recommended.

## 7.0 REFERENCES CITED

Anfinson, Scott

1990 "Archaeological Regions in Minnesota and the Woodland Period". In *the Woodland Tradition in the Western Great Lakes: Papers Presented to Elden Johnson*, edited by Guy Gibbon, pp. 135-166. University of Minnesota Publications in Anthropology No. 4, Minneapolis.

2005 SHPO Manual for Archaeological Projects in Minnesota. Minnesota State Historic Preservation Office. St. Paul, Minnesota. https://mn.gov/admin/assets/archsurvey_tcm36-327672.pdf. Accessed 13 January 2025.

Koski, Laura and John Seidl

2024. *Phase 1a Cultural Resources Literature Review and Assessment Solway Solar Project: Prepared for Otter Tail Power Company*. HDR Engineering, Inc. St. Louis Park, Minnesota.

Marschner, Francis

1895 "Native Vegetation at the Time of the Public Land Survey 1847-1907." Accessed 10 May 2024. https://gisdata.mn.gov/dataset/biota-marschner-presettle-veg.

TopoView

2024 National Geologic Database Project (NGDP). USGS National Geospatial Program. https://ngmdb.usgs.gov/topoview/viewer/#3/39.64/-102.92. Accessed 11 November 2024.

Photo 1: Shovel testing on north ridge in the logged northwestern corner of the Project area.

Photo 2: Tree stumps 100+ years old seen in the north-central portions of the Project area.

Photo 3: Example of logged area with ruts and brush in northwestern corner of the Project Area.

Photo 4: Fieldstone pile with early 1970s cans on southern edge of former pasture in the northeastern corner of the Project area.

Photo 5: Detail of early 1970s can dump circa 1972-1974 on southern edge of former pasture in the northeastern corner of the Project area.

Photo 6: Pedestrian survey in fields with five meter intervals

Photo 7: Central fields around 30% ground visibility

Photo 8: Shovel Test A02 profile from northwestern Project Area

Photo 9: Shovel Test H13 profile from northeastern Project Area

Photo 10: Depression, about 80 feet in diameter, made by cattle with cow-paths along its edge.

Photo 11: Hubcap for a 1957 Ford Fairlane found in the central pasture of the Project area.

**APPENDIX A:**

Map Figures

PUBLIC DOCUMENT - NONPUBLIC DATA HAS BEEN EXCISED

Exhibit OTPC-___, Riewer Direct, Schedule E

[redacted]


Solway
1974 Quad

Wilton
1974 Quad

T147N, R36W

T147N, R35W

Clearwater County

Beltrami County

PIPELINE

Grant

L A M M E R S

BURLINGTON

0 1,000 2,000 Feet
1:24,000

N
W E
S

For Environmental Review Purposes Only

**Figure 1: Project Location**
**HDR Engineering Inc.**
**Solway Solar Project**
**Beltrami County, Minnesota**

Project Area
One-Mile Buffer
Quad Map
Township Boundary
County Boundary

merjent

Source: Z:\Clients\E_H\HDR\Solway_Solar_MN\ArcGIS\Cultural\007_ArcPro\HDR_SolwaySolar_MN_Cultural.aprx

Date: (11/7/2024)

Figures 2.1 through 2.8 redacted for PUBLIC version

January 31, 2025

Kelly Gragg-Johnson
Environmental Review Program Specialist
State Historic Preservation Office
Administration Building Suite 203
50 Sherburne Ave
St. Paul, MN 55155

RE: Submission of Updated Phase I Survey Report for the Solway Solar PV Project for SHPO Review

SHPO Project Review Number: 2024-1959

Dear Ms. Gragg-Johnson,

Otter Tail Power Company (Otter Tail) is proposing construction of a new 50 MW AC solar facility within Lammers Township in Beltrami County, Minnesota (Project). The Project is anticipated to be constructed on land controlled by Otter Tail near the existing Solway Peaking Plant near Solway, MN. The existing 115kV substation adjacent to the existing Solway Peaking Plant will be modified for interconnection to the Project. There is no federal involvement for the Project at this time. Otter Tail intends to apply for a site permit from the Minnesota Public Utilities Commission (MN PUC); therefore, the Project must comply with the Minnesota Field Archaeology Act (MS 138.31-138.42) and the Minnesota Historic Sites Act (MS 138.661-138.669). The Project does not anticipate a federal nexus at this time.

SHPO was first made aware of the Project via a letter submitted July 2, 2024. On August 2, 2024, HDR Engineering, Inc. (HDR), on behalf of Otter Tail, submitted the Phase Ia Cultural Resources Literature Review and Assessment for SHPO review. SHPO responded in an October 1, 2024 letter stating they would review the Phase I survey report when available. HDR, on behalf of Otter Tail, submitted the Phase I survey report titled *Solway Solar Project, Beltrami County, Minnesota* for SHPO's review on November 26, 2024.

SHPO reviewed the Phase I survey report and responded in a January 8, 2025 letter with four requests for additional information. HDR and the primary report author, Merjent, Inc., coordinated to update the report and ensure these requests were met. These requests are listed below, along with where the added information can be found in the report:

- "The November report as prepared by Merjent documented large portions of these areas as 'Disturbed' in the project maps and provided no explanation of what these disturbances represent or whether or not intact archaeological sites may be present in these areas…Please provide more information about the extent of the

disturbances and the potential for the presence of intact archaeological sites in these areas and why subsurface testing was not conducted."

- Text explaining the disturbance in more detail, along with the presence of obstructions related to logging, is now included in the first paragraph of the Survey Results section (page 4). The Project also does not anticipate developing in the northern and northwestern areas of the parcel. We have added this elaboration in the second paragraph of the Survey Results section on page 4.

- "In addition to providing more information on previous disturbances, please provide more information about the pedestrian survey. The field methodology section of the report did not describe the interval for pedestrian survey nor did the results describe the ground surface visibility."
  - We have added a paragraph on page 5 explaining the percentage of ground visibility and the interval used. Photo 7 was also added to the photo pages to help demonstrate the ground surface visibility (page 13).
- "Additionally, we note that the maps show several shovel tests were not excavated. Please provide more information about why these shovel tests were not excavated."
  - We added additional elaboration in the second paragraph of the Survey Results section on page 4 explaining these could not be excavated due to obstructions from the clear cutting, and shovel tests were instead offset where possible. An example photo of a brush pile obstruction was also included in the photo pages (Photo 3, page 11).
- "We recommend including representative profiles in either table or photographic format for excavated shovel tests, although this is not mandatory."
  - We have added a table describing characteristic soil profiles across the Project area (Table 1 on page 5), and two example shovel test profile photos (Photos 8-9 on page 14).

Otter Tail has appointed HDR to submit the updated Phase I survey report for SHPO review on their behalf. This updated report is attached with this letter. We are requesting SHPO review this updated report and let us know whether the updates satisfy the comments iterated in SHPO's January 8, 2025 letter. If you have any questions or would like to meet to discuss this Project or updated report, please feel free to contact Otter Tail's Preston Riewer at 218.739.8582 or priewer@otpco.com

Sincerely,

HDR Engineering, Inc.

Laura Koski
*Senior Cultural Resources Project Manager*

Attachments: Phase I survey report: *Solway Solar Project, Beltrami County, Minnestoa*

CC'd: Lucy Harrington, SHPO
Preston Riewer, Otter Tail
Paul Vukonich, Otter Tail
Ryan Swanson, HDR
Dan Schmidt, HDR