Appendix D – Phase 1 Archaeological Reconnaissance Survey Report
PHASE I RECONNAISSANCE CULTURAL RESOURCES SURVEY FOR THE ELK CREEK SOLAR PROJECT

ROCK COUNTY, MINNESOTA

PREPARED FOR:

GERONIMO ENERGY, LLC

PREPARED BY:

AREA M CONSULTING

JUNE, 2019
REPORT AUTHORS:

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REPORT DATE:

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MANAGEMENT SUMMARY

Geronimo Energy, LLC (Client) has proposed to develop the Elk Creek Solar Project (Project) in Rock County, Minnesota. Elk Creek Solar, LLC (Elk Creek) is a wholly-owned subsidiary of the Client. As currently defined, the Project is not considered a federal undertaking as defined by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 CRF 800).

Utility-scale solar projects are typically subject to state-level permitting. In this case, the Project is seeking approval from the Minnesota Public Utilities Commission. The Client contracted with Area M Consulting (Area M) to complete a Phase I Archaeological Reconnaissance Survey (Phase I) to ensure that no unrecorded cultural resources will be disturbed during Project activities. The general purpose of a Phase I survey is to identify any archaeological sites within the Project’s Area of Potential Effect (APE) that are potentially eligible for inclusion in the National Register of Historic Places (NRHP). This archaeological study was conducted in accordance with the Minnesota Field Archaeology Act of 1963.

The Project will produce up to 80 MW of solar energy. Ground between rows of photovoltaic generators will be planted with seed and vegetation maintenance will occur for the life of the Project. The lifespan of solar equipment can be up to 40 years, with an energy contract between 20 and 25 years. All areas within the APE that may experience ground-disturbing activities, including interconnection, masts, road improvements, lay down areas, and water retention are included in this survey report.

The Phase I included literature search, predictive modeling, LiDAR analysis, and field survey of the APE. The archaeological field survey consisted of systematic pedestrian reconnaissance and sub-surface testing in those portions of the Project APE considered to have the highest potential for holding unrecorded cultural resources. Zero sites were identified during Phase I Reconnaissance survey conducted April 17-19 and May 22-23, 2019. Garrett Knudsen served as Principal Investigator.

No previously-recorded archaeological resources or historical facilities were identified within the Project APE. No previously-recorded archaeological resources were identified within a half-mile buffer surrounding the APE. Area M believes that the current APE for the Project has low potential to hold unrecorded cultural resources. Therefore, Area M recommends that the project may proceed as planned with no negative impact to cultural resources. If the Project APE is altered, a new survey must be conducted and a new report must be rendered.
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1. INTRODUCTION

Geronimo Energy, LLC (Client) has proposed to develop the Elk Creek Solar Project (Project) in Rock County, Minnesota. Elk Creek Solar, LLC (Elk Creek) is a wholly-owned subsidiary of the Client. As currently defined, the Project is not considered a federal undertaking as defined by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 CFR 800).

Utility-scale solar projects are typically subject to state-level permitting. In this case, the Project is seeking approval from the Minnesota Public Utilities Commission. The Client contracted with Area M Consulting (Area M) to complete a Phase I Archaeological Reconnaissance Survey (Phase I) to ensure that no unrecorded cultural resources will be disturbed during Project activities.

The general purpose of a Phase I survey is to identify any archaeological sites within the Project’s Area of Potential Effect (APE) that are potentially eligible for inclusion in the National Register of Historic Places (NRHP). This archaeological study was conducted in accordance with the Minnesota Field Archaeology Act of 1963.

The Project is located in Sections 27 and 34-35, Township 103N, Range 44W in Rock County, Minnesota (Figure 1). The APE for archaeology includes the maximum potential construction limits and all areas of potential ground disturbance, such as staging areas, associated with the construction of the solar project. The study area is comprised of 330 acres within the Southwest Riverine (1) archaeological sub-region, as defined in the SHPO Manual for Archaeological Projects in Minnesota (Anfinson, 2005).

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>COUNTY</th>
<th>LEGAL LOCATION</th>
<th>ESTIMATED AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elk Creek 1</td>
<td>Rock</td>
<td>T103N - R44W - Sections 27, 34, &amp; 35</td>
<td>330 Acres</td>
</tr>
</tbody>
</table>
2. METHODS

2.1. OBJECTIVES

The principal objectives of the Phase I Archaeological Reconnaissance survey (Phase I) are:

1) To identify all previously recorded archaeological resources within the archaeology Project Footprint that are listed in or are eligible for listing in the NRHP; and

2) To identify, to the extent possible by means of systematic in-field inspection and testing, other potentially NRHP-eligible resources within each Project Footprint.

Area M’s investigation was guided by the Secretary of the Interior’s Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716) and by the SHPO Manual for Archaeological Projects in Minnesota (Anfinson 2006). Fieldwork, laboratory analysis, and preparation of the final report with recommendations were accomplished by Garrett Knudsen, a professional archaeologist meeting the standards set forth in 36 CFR 61.

2.2. LITERATURE SEARCH

Area M has reviewed information at the Minnesota State Historic Preservation Office (SHPO), located in St. Paul, Minnesota, as well as various private databases and online sources to perform an assessment of cultural resources within the Project area and within one-half mile. In addition, the new online database of archaeological data managed by the Office of the State Archaeologist (OSA) was reviewed in March, 2019 and May, 2019. The purpose of research at SHPO and OSA was to identify previously-recorded cultural resources and cultural resource surveys conducted near Project area. In addition, Area M has analyzed Century Public Land Survey (PLS) maps, Andreas maps, General Land Office (GLO) maps, Trygg maps, and historic aerial photographs in order to identify potential historic-period cultural features within the Project area. Finally, Area M conducted extensive analysis of LiDAR imagery at various sales and shadings for the Project area with a specific focus on the identification of unrecorded burial mound complexes.

2.3. PREDICTIVE MODELLING

Probability maps for unrecorded resources were completed for the Project. Assessments of the project area’s potential to contain pre-contact archaeological resources was based on analyses of terrain, water sources, and other natural resources adjacent to the project area. Permanently wet areas (e.g., wetlands and streams), poorly drained areas, and areas with slopes greater than 20 percent are generally considered inhospitable to human occupation and are unlikely to contain cultural resources. In general, areas with higher pre-contact archaeological potential are in proximity to a relatively substantial water source, typically within 500 feet, though the exact distance often varies according to environmental conditions such as the size of the body of water, the nature of the water source (perennial versus intermittent), and the extent of the floodplain. Topographic prominence and/or proximity to previously recorded pre-contact sites are also typically indicative of high pre-contact archaeological potential.
2.4. Field Methods

Phase I field investigations consist of systematic pedestrian survey, systematic shovel testing, and soil auger testing. The use of these methods is based on ground surface visibility, slope, distance to water, degree of previous disturbance, terrain, and vegetation as found within the survey areas.

Areas demonstrably disturbed through previous construction or other modern landuse practices are excluded from survey unless the potential exists for intact cultural deposits beneath the disturbance. In addition, permanently wet areas (wetlands, lakes, ponds, streams) and slopes greater than 20 percent are excluded from survey because they are generally inhospitable to human occupation and are unlikely to contain cultural resources.

Visual reconnaissance of the Project Footprint is conducted during Phase I field survey to identify above-ground archaeological features or other indicators of the presence of past peoples, such as burial mounds. Areas of moderate to high archaeological potential exhibiting 25 percent or more surface visibility are examined through systematic pedestrian survey. A systematic pedestrian survey is a visual examination of the ground surface, during which field personnel walk across the project area at regular intervals to observe ground surfaces for the presence of cultural resources. During this project, pedestrian reconnaissance was conducted along transects spaced 3 meters apart.

Areas of medium- and high-potential for unrecorded cultural resources exhibiting less than 25 percent surface visibility are examined through systematic shovel testing. Systematic shovel testing involves the manual excavation of small holes 30 to 40 centimeters in diameter at regular intervals to identify subsurface archaeological materials. Shovel tests are placed at intervals of 15 meters.

In areas where archaeological sites are identified, shovel testing is used to define the boundaries of those sites within the Project Footprint. Shovel tests are excavated 5 or 10 meters from all positive shovel tests in the cardinal directions until two consecutive negative shovel tests spaced 5 meters apart are encountered, until severe disturbances were encountered, or until the edge of the Project Footprint was reached.

Shovel tests are excavated through all soil horizons with the potential for containing cultural remains and into the underlying sterile subsoil (C horizon), or to a maximum depth of one meter (three feet), depending on which condition was first encountered. Excavated soils are passed through ¼-inch hardware mesh to ensure consistency in the recovery of cultural materials. Shovel test data are recorded on standardized forms. Recorded information includes: 1) the designated field area within which each test was located; 2) the location of each shovel test in relation to natural or cultural features, or to other shovel tests, as appropriate; 3) a description of soil horizons, including depth, texture, and Munsell® color designation; and 4) the nature and depth of natural or cultural inclusions. The locations of all shovel tests are recorded using a Trimble.
When archaeological sites are encountered during fieldwork, they are documented and given a unique field number. Site locations, characteristics, and conditions are recorded manually and digitally. GPS coordinates are recorded for each site, also recorded on 7.5-minute USGS quadrangle maps of the project area.
3. LITERATURE SEARCH RESULTS

3.1. Previous Investigations
Area M was able to locate one previous archaeological survey that has previously occurred within the Project APE:

1026-2342 RK-16-01

3.2. Recorded Archaeological Resources
Literature and archival research indicates that zero pre-contact archaeological sites have been previously recorded (field verified) or reported (not field verified) within the APE. This was confirmed through review of the online database managed by OSA.

One previously-recorded historical facilities was identified within a half-mile buffer of the Project area:

21-RK-0011 (possible encampment)

3.3. Recorded Historical Facilities
The records search at SHPO produced no previously-recorded historic facility resources within the APE.

No previously-recorded historical facilities were identified within a half-mile buffer of the APE (sites associated with the Warren-McDougall homestead are beyond one half-mile).

3.4. Predictive Model
The Project area was studied to estimate the potential for the Project area to hold unrecorded cultural resources. The majority of the Project APE has low-potential to hold unrecorded cultural resources, based on local chronologies and settlement patterns. The APE contains no permanent water sources and is characterized by undulating topography with frequent slopes.

3.5. Historic Contexts
Historic contexts are discussed in terms of a pre-contact period (before ca. 375 years ago), a contact period (A.D. 1630-1820), and a historical period (A.D. 1820-present) in North America in general and apply to Morrison County, Minnesota in particular. These contexts are further divided into a number of periods and sub-periods, and constitute research themes under which archaeological resources identified are evaluated for NRHP significance. Since no pre-contact, contact, or historical properties were encountered during the survey, full contexts related to the pre-contact, contact, and historical periods are extraneous to this report and are not provided here.
4. FIELDWORK RESULTS

Area M conducted systematic survey, constituting a full Phase I Archaeological Reconnaissance of the Project APE April 17-19 and May 22-23, 2019. Garrett Knudsen (Knudsen) served as Principal Investigator for the investigation. Predictive modeling, LiDAR analysis, literature review results, pedestrian reconnaissance, and models depicting natural features as they appeared historically were used to ascertain which portions of the Project APE had greater potential to contain intact unrecorded archaeological resources; 100 percent of the APE was surveyed at the request of the Client. The Project APE was divided into seven Survey Zones (A-H; see Page 14); these are discussed individually below.

4.1. Survey Zone A
Zone A is a north-sloping area transected by two ephemeral, north-south drainages. The zone was disced for planting at the time of survey; surface visibility was 75%. No unrecorded cultural resources were identified.

4.2. Survey Zone B
Zone B is a low plateau, with an ephemeral drainage in its southwest corner. The zone was disced for planting at the time of survey; surface visibility was 75%. No unrecorded cultural resources were identified.

4.3. Survey Zone C
The majority Zone C is a south-facing slope with an ephemeral drainage along its eastern edge. Zone C also includes a narrow corridor following 190th Avenue. The entire zone was disced for planting at the time of survey; surface visibility was 75%. No unrecorded cultural resources were identified.

4.4. Survey Zone D
Zone D is a level landform, with no discernible drainages; this zone was disced for planting at the time of survey; surface visibility was 75%. No unrecorded cultural resources were identified.

4.5. Survey Zone E
Zone E is a low shelf and south-facing slope with an ephemeral drainage along its western edge. A quonset hut and other outbuildings are surrounded by a wind break of trees to the North and West, adjacent to County Road 3. Occasional fragments of white ceramic and window glass were observed on the ground surface. At the time of survey, surface visibility was 50%; some areas of this zone were bare ground (no weeds or crops established). No unrecorded cultural resources were identified.
4.6. **Survey Zone F**
Zone F is a shelf and south-facing slope with an ephemeral drainage along its east edge. This area is adjacent to a substation, immediately to the North. Surface visibility was greater than 50%. At the time of survey, surface visibility ranged from 40-75%, with lower-visibility areas here partially obscured due to soy bean debris from last season’s harvest. No unrecorded cultural resources were identified.

4.7. **Survey Zone G**
Zone G consists of a gentle south-facing slope. At the time of survey, surface visibility ranged from 40-75%, the lower-visibility areas due to soy bean debris from last season’s harvest. No unrecorded cultural resources were identified.

4.8. **Survey Zone H**
Zone H consists of a gentle south-facing slope. Occasional fragments of white ceramic and window glass were observed on the ground surface. At the time of survey, surface visibility ranged from 50-75%, the lower-visibility areas due to soy bean debris from last season’s harvest. No unrecorded cultural resources were identified.

**Recommendations**
Based on the absence of recorded and unrecorded cultural materials in this location, in any zone, no further archaeological work is recommended for the Project.
5. SUMMARY OF RECOMMENDATIONS

No previously-recorded archaeological resources or historical facilities were identified within the Project area. Zero previously-recorded archaeological resources were identified within a half-mile buffer surrounding the Project APE. Area M completed systematic survey of the entire APE for the Regal Solar Project, and believes this project has low potential to hold unrecorded cultural resources. Therefore, Area M recommends that the project may proceed as planned with no negative impact to cultural resources. If the Project APE is altered, a new survey must be conducted and a new report must be rendered.
REFERENCES CITED

Anfinson, Scott F.


General Land Office

APPENDIX A: LIST OF PROJECT PERSONNEL

Project Manager and Principal Investigator  Garrett L. Knudsen

Field Archaeologists  Garrett L. Knudsen
Wyatt Rowe
Jonathan R. Knudsen

GIS/Graphics Specialist  Jonathan R. Knudsen
APPENDIX B: PROJECT PHOTOS
Photo 1: View South from northeast corner of survey Zone A.

Photo 2: View West showing from East edge of survey Zone B.
Photo 3: View North from south edge of survey Zone C.

Photo 4: View southwest from northwest corner of survey Zone D.
Photo 5: View East from center of survey Zone E.

Photo 6: View northwest from southeast corner of survey Zone F.
Photo 7: View East from center of survey Zone G.

Photo 8: East from East edge of survey Zone H.