

## Geophysics Research at Nutana Pioneer Cemetery

### ISSUE

A request has been received from the University of Saskatchewan to complete a research project at the Nutana Pioneer Cemetery to prove and calibrate the use of the electrical resistivity surveys to map known grave locations.

### RECOMMENDATION

That the Standing Policy Committee on Planning, Development and Community Services recommend to City Council that the request to complete geophysics analysis at the Nutana Pioneer Cemetery, be approved.

### BACKGROUND

Through a previously established Research Connection, the City of Saskatoon (City) has been approached by Professor Samuel Butler, Department Head of Geological Sciences at the University of Saskatchewan (USask) to utilize the Nutana Pioneer Cemetery for a research project to determine if the application of electrical resistivity surveys is successful in locating graves.

### DISCUSSION/ANALYSIS

Forensic geophysics is increasing in application and has recently been in the Canadian and Saskatchewan news regarding finding unmarked graves on the sites of residential schools.

Ground penetrating radar is the most commonly used geophysical technique for finding unmarked graves, but it doesn't work well in conductive ground where electrical resistivity tomography may be effective.

USask is requesting to complete a research project using electrical resistivity surveys to detect known grave locations at the Nutana Pioneer Cemetery, located close to the intersection of Ruth Street and St. Henry Avenue in the Exhibition neighbourhood. The proposed research expects to prove and calibrate the use of the geophysics technique to map known grave locations. This will enable the technique to be used for locating unmarked graves in the future at other sites.

Nutana Pioneer Cemetery was designated as Municipal Heritage Property in January 1982 and is also specifically listed in Cemeteries Bylaw No. 6453. City Solicitors reviewed the proposed project, in conjunction with the *Heritage Property Act* and Cemeteries Bylaw No. 6453 and determined that due to specific provisions that protect Nutana Pioneer Cemetery from any type of alteration or disturbance, that City Council approval will be required.

The Nutana Pioneer Cemetery is a location of focus for USask due to proximity of the University; the cemetery being inactive and previous work completed on site by members of the USask anthropology department, involved in the search for unmarked graves at residential schools.

The team of approximately four (Professor Butler, one technician and two graduate students) would be at the site for a maximum of three hours. The electrical resistivity method is more invasive than ground penetrating radar and would involve pounding 30 metal stakes into the ground to a depth of roughly 10 centimeters in lines of approximately 30 meters in length. The stakes will be connected by cables to a central control box and electrical currents injected into the ground. The proposed investigation will use three lines crossing expected grave locations based on the location of tombstones, as shown in Appendix 1.

An image of the electrical resistivity of the ground can then be created when the data is analyzed. Graves may be located as resistive anomalies if the caskets are intact or may be conductive if the caskets are no longer intact or were not present at time of burial. Areas where the soil was disturbed to dig the grave may have a different resistivity from the background and therefore will show as a resistive anomaly.

### **FINANCIAL IMPLICATIONS**

The research is funded by USask with no input required from the City of Saskatoon; therefore, there are no financial implications.

### **OTHER IMPLICATIONS**

A brief summary of this request and notification of this report to Committee has been provided to the local Indigenous community, the Nutana Community Association, the Municipal Heritage Advisory Committee, and the Saskatoon Heritage Society.

Approval of this project will help in building the City's partnership with USask in addition to supporting research that supports Truth and Reconciliation Call to Action #75:

“to develop and implement strategies and procedures for the ongoing identification, documentation, maintenance, commemoration, and protection of residential school cemeteries or other sites at which residential school children were buried.”

This request is linked to issues that could be and are sensitive and emotionally triggering. Any work relating to locating marked and unmarked graves will be conducted with respect to the people buried and their families.

If successful, the techniques proposed in this application could be used in the future for locating unmarked graves at residential schools, which will continue to be sensitive and upsetting for communities, as well as for residential survivors, their families, and the families of children whose location remains unknown. However, this new technology could also help serve to provide closure and validation.

**NEXT STEPS**

If the recommendation is supported, USask will complete the fieldwork during summer 2022. The completed research will be shared with the City.

**APPENDIX**

1. Proposed Survey Lines

**REPORT APPROVAL**

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