J D MOLLARD AND ASSOCIATES (2010) LIMITED

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October 05, 2022

Michael Chung morehats@shaw.ca

RE: Aggregate Assessment Study – Phase 1 Air Photo Mapping Study NW & NE 35-25-18-W2

Dear Michael:

This report outlines the results of J.D. Mollard and Associates (2010) Limited's (JDMA) office-based air photo mapping study covering two (2) quarter-sections (NW & NE 35-25-18-W2), located approximately 6.5 km east of Serath, SK. Based on this office study, we have identified a prospective aggregate area where further exploration might be considered to help evaluate the aggregate resources within this area.

Sincerely,

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Lynden Penner, M.Sc., P.Eng., P.Geo.



Association of Professional Engineers & of Saskatchewan	Geoscientists
CERTIFICATE OF AUTHORIZ	ATION
J.D. Mollard and Associates (20) Number C0123	10) Limited
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Introduction

This report covers a Phase 1 - office air photo study to assess the potential aggregate resources on 2 quarter-sections of land located east of Serath, SK. The study area is shown in Figure 1 and includes the following quarter sections:

• NW & NE 35 25-18-W2

This Phase 1 study consists of an office-based review of existing data and the interpretation of stereoscopic air photos to identify, map and describe potential granular deposits in the study area. The purpose of the study is to assess whether field work is warranted and if so, to help plan and guide the next phase of testing.

Data used in this study include several provincial datasets including surficial geology mapping and soil texture mapping. A search for water well logs in the study area yielded no useful information.

In conjunction with the above listed data, JDMA acquired stereoscopic air photos (1970 - 1:80,000 scale and 1947 - 1:15,000 scale) from ISC in Regina. JDMA interpreted the air photos and the local geologic conditions and processes. The assessment of landforms and their potential for containing granular material is provided below.



Figure 1. Two-quarter-section study area east of Serath, SK

Study Results

Examination of the study area in stereoscopic air photos indicates that the two quarters in question are located immediately east of a large meltwater channel and outwash terrace that hosts gravel pits west and north of NW35-25-18-W2, as shown in Figure 2a. This meltwater channel continues north of NE35-25-28-W2 where it is flanked by ice-contact ridges which also contain sand and gravel deposits and host additional gravel pits. There is also a third meltwater channel east of NE35 which also hosts a gravel pit.

A small part of the outwash terrace to the west cuts across the northwesternmost corner of NW35-25-18-W2. There may be granular material in this area but it covers a very small area in NW35 that is not likely large enough to develop into a commercial pit.

The landform in NE35-25-18-W2 may be a collapsed meltwater channel as it is lower in elevation than NW35. The gravel pits in the northeast corner of NE35 indicate that this landform contains granular material, at least in the area where the pits are located. The presence of granular material in the rest of NE35 is uncertain. However, given the presence of extensive granular material in the general area, and the appearance of NE35 in the air photos, there is a possibility that some granular material could be present on this quarter. If present, it may be pockety and of variable extent, depth and quality across the quarter-section. Even so, a geophysical survey could be considered as a next step to further evaluate this area, even though there is a chance the results could prove negative as the soil texture across NW35 & NE35 is loam (see Figure 2b), which is not generally indicative of gravel. There are no water well records within the area of interest.

Recommendations for Further Testing

While the study findings raise uncertainty with respect to the potential for finding aggregate in these two quarters, conducting an electromagnetic (EM) geophysical survey across NE35 might still be considered to confirm whether or not granular material is present and, if so, to obtain an indication of its potential depth, lateral extent and continuity. This area is shown in Figure 3.

The cost for a geophysical survey covering NE35 would be \$3,500 + GST.

When considering a geophysical survey, keep in mind that a geophysical survey cannot differentiate sand from gravel. Therefore, test pitting would be required to fully assess the aggregate potential if the geophysical survey returns positive results.





Closing

This concludes our Phase 1 report covering the office air photo assessment component of this aggregate assessment study. Please contact Lynden Penner (306-535-8775 or penner@jdmollard.com) if you have questions about this report, or if you would like to discuss moving forward with a geophysical survey.