UNDERWOOD AND MCLELLAN LTD.

GEOLOGY OF THE
SASKATOON SEWAGE SLUDGE DISPOSAL SITE

Report 0089-002       September 6, 1983
November 5, 1982

Underwood and McLellan Ltd.
P.O. Box 539
3301 8th Street East
Saskatoon, Saskatchewan
S7H 5K5

Attention: Mr. R.W. Gush

Dear Mr. Gush:

Enclosed are seven copies of the UMA Saskatoon testhole logs 01-09 along with an index map. You will notice the project area is divided into three parts by a subsurface valley that crosses it. To the south of the valley, aquifers occur in the upper 70 feet (UMA Saskatoon 01,05,06). Within the valley, water bearing sands were encountered at depths of 42 feet (09) and 108 feet (04). North of the valley, only till was encountered to a depth of 164 feet where sand is interbedded with till (07). Testhole 01 suggests the entire project is underlain by the Tyner valley aquifer.

From a geological point of view, this information suggests the area north of the subsurface valley is the most favorable for the disposal of sewage sludge.

Sincerely yours,

E.A. Christiansen
September 6, 1983

Underwood and McLellan Ltd.
P.O. Box 539
3301 8th Street East
Saskatoon, Saskatchewan
S7H 5K5

Attention: Mr. R.W. Gush

Dear Mr. Gush:

Sewage Sludge Disposal Site

Enclosed are seven copies of two cross sections with adjoining base maps (Drawings 0089-002-01,02,03) and UMA Testholes 01-12 from a potential sewage sludge disposal site northwest of Saskatoon. Testholes 10-12 were drilled adjacent to NW₄ Section 7 and SW₄ Section 18, Township 38, Range 4, West of the Third Meridian (Drawing 0089-001-01).

In descending order, the glacial deposits are: Battleford and Floral Formations and Sutherland and Empress Groups (Drawings 0089-002-02,03). In the broad, shallow valley at Testhole 11 and 12, the Battleford Formation has been removed by fluvial erosion which left a lag concentrate of 1 to 2 m of bouldery gravel.
The Floral Formation is composed of Upper, Middle and Lower Tills. Sand lies between the Middle and Lower Tills, and the Subglacial Valley was eroded through the Lower till of the Floral Formation in the Upper Till of the Sutherland Group. Although the Upper Till of the Floral Formation contains thin sand beds, such beds were not encountered in Testholes 11 and 12.

The Sutherland Group is composed of Upper and Middle Tills in this area. The Upper Till is clayey and contains only local lenses of sand. The Middle Till, however, is sandy and contains interbedded sand and till in its upper part. This interbedded unit which is extensive in the area, was used as the base of exploration for Testholes 10-12.

The entire area under investigation is underlain by the Tyner Valley Aquifer of the Empress Group which, in turn, is underlain by bedrock silt and clay of the Lea Park Formation and Upper Colorado Group.

From a geological point of view, the subsurface information suggests both the NW¼ of Section 7 and the SW¼ of Section 18, Township 38, Range 4, West of the Third Meridian appears to be suitable for the disposal of sewage sludge. Because of the sand beds in the Upper Till of the Floral Formation in Testhole 10, the NW¼ of Section 7 is considered to be a more favorable disposal site.

Sincerely yours,

E.A. Christiansen
UMA 73B/7 1983
SASKATOON NO 10
NW05-18-38-04-W3
13:392600E/5791700N
TESTHOLE

CONTRACTOR
HAYTER DRILLING LTD.

ROLF JABS

SURFACE ELEV. 1640 FT
TOP. MAP 25 FT. C.I.
SP COND MUD 675 MICROSIEMENS/CM AT 25°C
SP COND WATER 460 MICROSIEMENS/CM AT 25°C
SP 10 MV R 10 OHMS

CUTTING SAMPLE DESCRIPTION
TILL, SANDY, LT. RD. GR. Soft, Unstained
TILL, SANDY, CAG., LT. RD. GR. Vel. RA. Stains
TILL, CAG., DR. GR. RA.
TILL, SANDY, CAG., ST. GR. RA. Stains
TILL, SANDY, CAG., ST. GR.
SAND, FINE, GR.
TILL, DL. CAG., GR.
TILL, CAG., GR.
GRAVEL, Boulders
TILL, CLAYET, CAG., GR.
CLAY, TILTY, CAG., DR. GR. Rich Sand Beds
GRAVEL, Boulders + Sand
TILL, CLAYET, DL. CAG., GR.