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Regional Supervisor - Dangerous Goods
Manitoba Environment
Box 7, Building 2
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961292-01-00

June 14, 1996

Dear Mr. Ediger:

**Re: Remedial Action Plan - Carte International Inc.
1995 Logan Avenue, Winnipeg, MB**

Wardrop was retained by Carte International to carry out subsurface soil and ground water investigations at the above-referenced site. Copies of Wardrop's reports regarding these investigations are enclosed for reference purposes.

Based on chemical data generated during these investigations, it has been determined that the soil quality has been impaired by mineral Oil and Grease (O & G) and diesel fuel in the southwest portion of Carte facility. Concentrations of O & G and Total Extractable Hydrocarbons (TEH) in soil, exceed Manitoba Environment's Level III Soil Remediation Criteria. Consequently, on behalf of Carte, Wardrop has developed the following Remedial Action Plan (RAP) to address present environmental concerns at the site.

Based on available provincial soil remediation criteria, it is Wardrop's intention that the site cleanup be carried out pursuant to Manitoba Environment's Level III Soil Remediation Criteria for O & G, and Total Extractable Hydrocarbons (TEH).

It is Wardrop's opinion, based on our understanding of the site, that the most appropriate remedial measures will involve excavation and disposal of the O & G and TEH impacted soil (above the Level III Criteria) located west of the Carte building, in the vicinity of the tank farm area, and continued free-phase hydrocarbon product recovery from beneath the building.

Site Remediation

Remediation of the site will involve the excavation of soils containing in excess of 5000 mg/kg O & G and 2000 mg/kg TEH, outside of the building and beneath the aboveground storage tanks (AST), as delineated in our report dated May 23, 1996. Soil samples will be tested (O & G and TEH) following excavation to confirm removal of the impacted soil. We propose that the existing ASTs be temporarily removed, to allow access to the affected area. Shoring of the excavation will be required adjacent to the building, to prevent sloughing and undermining of

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40 Years of Progress

Mr. Dave Ediger, P.Eng.
Manitoba Environment

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Site Remediation (cont'd)

the building floor slab. During excavation, ground water and free-product will likely flow into the excavation from beneath the building. A sump will be constructed in one corner of the excavation, and the ground water and free product will be collected and pumped to an oil-water separator.

Depending on the amount of free-product flowing into the excavation, the excavation may be left open for a few days, to allow for collection of some of the free-product from beneath the building. The excavation will be lined with a geomembrane liner and backfilled with clean fill. The fill will be placed in 300 mm lifts and compacted. The area will be returned to the original grade and the ASTs replaced or new self-contained ASTs will be installed.

A large diameter (300 mm) collection well will be placed at the corner of the excavation, with the geomembrane liner placed along the down gradient end of the well. This large diameter well will collect any free-product that migrates from beneath the building. A 150 mm layer of bentonite will be placed around the area of the well, to prevent surficial water from recharging the ground water and potentially reversing the ground water flow. A conceptual design of this recovery system, showing the area to be remediated, is presented as Figure 1, attached.

In addition to free product recovery via the outdoor collection well, free product will be bailed manually from the indoor monitoring wells. This will prevent further spread of the free product and further aid the remediation process.

Soil and Free-Product Disposal

Remediation of the site will involve the excavation and disposal of all soil outside of the building that has an O & G concentration in excess of 5000 mg/kg and TEH concentrations in excess of 2000 mg/kg, as defined in our report dated May 23, 1996. We estimate that approximately 600 m³ of affected soil will be excavated adjacent to the building. This soil will be disposed at the Mid Canada Soil Treatment Ltd. facility in Sanford, Manitoba.

Samples of ground water collected from the oil-water separator will be analyzed for O & G and TEH, to determine if the water can be disposed in the sanitary sewer or if treatment is required prior to disposal.

Any free-product pooling in the excavation will be collected and properly disposed by A-1 Sewer Service.

We note that this remediation plan will not address the impacted soils beneath the building structure. It is anticipated that Manitoba Environment will not require the remediation of this soil, which may necessitate demolition of part of the structure. The volume of affected soil to remain in situ is estimated to be 370 m³, with concentrations of O & G varying from 1000 to 13 300 mg/kg and TEH concentrations of up to 7500 mg/kg.

Mr. Dave Ediger, P.Eng.
Manitoba Environment

June 14, 1996

Soil and Free-Product Disposal (cont'd)

It should also be noted that based on Wardrop's soil/ground water investigations to date at the site, O & G and TEH soil quality impairment is restricted to the site with no indications of off-site impact.

Remediation Schedule

We propose that the remediation activities be conducted during the plant shutdown, from July 22 to August 6, 1996.

Monitoring Program

A monitoring program will be developed following remediation of the site, and will involve regular monitoring for free-product thickness, ground water elevations, and hydrocarbon vapour concentrations from each of the monitoring wells. Letter reports will be prepared and submitted to Manitoba Environment, following each monitoring event.

The collection well will be inspected regularly to ensure that it is operating properly and to determine the amount of free-product collected.

On behalf of Carte, we request Manitoba Environment review the enclosed soil/ground water investigation reports (for background purposes) and comment on the proposed RAP.

Wardrop will address Manitoba Environment's written comments regarding the proposed RAP; the document will be revised, finalized and implemented pending Manitoba Environment's written authorization to proceed.

If you have any questions or require clarification regarding any aspect of the enclosed information, please contact me at 956-0980.

Sincerely,

WARDROP ENGINEERING INC.



Edward A. Wolowich, M.Sc., P.Eng.
Principal and Manager
Environmental Earth Sciences

EAW/pp
Enclosure

Copy Mr. Rod Kakowchyk, Carte International
 Mr. Harry Ethans, ENSIS
 Mr. Mike Cugino, ERM-Ontario, Inc.

