

## SCHEDULE E

### Form of Completion Report for Studies

Please do not hesitate to contact your project officer to receive an electronic copy of the template of the Completion Report for Studies.

**Upon completion of the Feasibility Study, a copy of the Final Study must be submitted along with this Completion Report for Studies.**

FCM will post your report on the [Green Municipal Fund™ \(GMF\) website](#).<sup>1</sup> This is because one of FCM's mandates is to help municipal governments share their knowledge and expertise regarding municipal environmental projects, plans and studies. Before you submit a report to FCM, make sure you hold the copyright for the report (you own all the rights to the content and can decide who is allowed to reproduce and distribute the report) and that it does not contain any confidential information.

If the report contains confidential information, you need to submit two versions: one containing confidential information, to be read by FCM staff, and one that does not contain confidential information, which can be posted on the GMF website. Please contact FCM if you have any questions about copyright and confidentiality.

### How to complete the Completion Report for Studies

The purpose of the Completion Report for Studies is simple: to share the story of your community's experience in undertaking a Feasibility Study with others seeking to address similar issues in their own communities.

Please write the report in plain language that can be understood by people who are not specialists on the subject. A Completion Report for Studies is typically in the range of 5–10 pages, but may be longer or shorter, depending on the complexity of the Feasibility Study.

GMF grant recipients must enclose **final** copies of the Completion Report for Studies and the Final Study, both in electronic format, with their final Request for Contribution. The reports, including all attachments and appendices, must be submitted in PDF format with searchable text functionality. Reports that are not clearly identifiable as final reports, such as those displaying headers, footers, titles or watermarks containing terms like "draft" or "for internal use only," will not be accepted by GMF. Additionally, reports must be dated. If you have questions about completing this report, please consult GMF staff.

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<sup>1</sup> <http://www.fcm.ca/home/programs/green-municipal-fund.htm>

## Completion Report for Studies

<b>GMF number</b>	<b>15082</b>
<b>Name of lead applicant (municipality or other partner)</b>	<b>CORPORATION OF THE MUNICIPALITY OF EAST FERRIS</b>
<b>Name, title, full address, phone, fax and e-mail address of lead technical contact for this study</b>	Steven (Steve) Aiken, P.Eng. Manager, Environmental Services Knight Piésold Ltd. 1650 Main Street West North Bay, Ontario, Canada, P1B 8G5 phone: +1 705 476 2165 email: saiken@knightpiesold.com
<b>Date of the report</b>	August 18, 2017

### 1. Introduction

- a. Who was involved in doing the Feasibility Study, and what are their affiliations? Please include name, title and contact information. Those involved could include municipal staff, engineers and other consultants, a representative from a non-governmental organization, and others.

The following members have been involved at various times with the project from the start of the project to the Feasibility Study:

Steve Aiken - Knight Piésold Ltd. 1650 Main Street West, North Bay, On

Ryan Tibbles – Knight Piésold Ltd. 1650 Main Street West, North Bay, On

Shannon Alfred – Knight Piésold Ltd. 1650 Main Street West, North Bay, On

Simon Foster – Knight Piésold Ltd. 1650 Main Street West, North Bay, On

Milan Situm – Geophysics GPR International Inc., 14-6741 Columbus Rd. Mississauga, On.

Antoine Boucher – Municipality of East Ferris, 390 Hwy 94, Corbeil, On

### 2. The Feasibility Study

- a. Describe the process that you undertook to make this feasibility study a reality, from concept, to council approval, to RFP, to final deliverable.

At the time of the submission of the funding application, the Municipality was working with Knight Piésold towards establishing the full extent of the impacted soils and groundwater at the Former School and Park Land Project Area (Project Area). The Municipality submitted their funding application for the Feasibility Study at that stage, and therefore continued to work with the retained consultant on this project. The Consultant assisted in submission of the funding application being fully involved from the beginning to the end. The Feasibility Study utilized the data collected during the delineation program to provide recommendations for remediation design. The Feasibility Study was presented to the council and was passed.

- b. What were the objectives of the Feasibility Study (what was it seeking to determine)?

The objectives of the Feasibility Study included a technical review of previously completed works (Hydrocarbon Delineation Program) which consisted of the geology, characteristics of the

LNAPL liquid, and the location of potential human health and environmental receptors, to select the most effective remedial approach. Based on the results of the evaluation, a feasible remediation method was selected and was presented in the recommendation section of the Feasibility Study.

- c. What approach (or methodology) was used in the Feasibility Study to meet these objectives?  
A flowchart approach was created to illustrate the decision process to select a preferred remediation method. The flowchart answers site specific questions related to the physical setting of the environment, and the hydrocarbon contaminant to select an appropriate remediation technology for the Project. This flowchart is presented as Figure 2 in the Feasibility Report (page 10). This flowchart has been adapted from the American Petroleum Institute's (API) Interactive LNAPL Guide (API, 2004).
- d. Please describe any public consultations conducted as part of the Feasibility Study and their impact on the Study.  
During the delineation phase, an open-house meeting was conducted to notify the immediate property owners, and effected parties of the current soil and groundwater hydrocarbon impacts. Currently the open-house meeting included a presentation of the Results of the Delineation Study, and a brief discussion on the possible remediation activities. A discussion of the potential conflicts of the remediation work and the current land-use was also completed.

### **3. Feasibility Study Findings and Recommendations**

- a. What were the environmental findings related to the options explored in the Feasibility Study? Please provide quantitative results and summary tables of these results (or the page numbers from the Feasibility Study report).  
The Feasibility Study included an options assessment (presented as Table 1; page 8 of the Feasibility Study), and a flowchart selection tool (Figure 2; page 10) which utilized the environmental findings of the Hydrocarbon Delineation Program to select an appropriate remediation approach. The summary of remedial technologies table provided the preferred subsurface conditions and the relative cost and maintenance required for each of the potential options.
- b. What were the financial findings related to the options explored in the Feasibility Study (for example, results of a cost-benefit analysis, financial savings identified, and so on)? Please provide quantitative results and summary tables of these results (or the page numbers from the Feasibility Study report).  
The Feasibility Study provided several potential options for remediation. The financial costs of the options are presented in relative terms on Table 1. Ultimately, financial considerations are also related to the performance of the remediation technology, since if mass reduction of the hydrocarbons is not being completed, the costs for re-design can be high. Alternatively, a full excavation of the site would be extremely expensive and would still not completely remove the hydrocarbon mass. An excavation of that size will also have an effect on the current land use of the project site (cenotaph memorial).

- c. Based on the environmental and financial findings above, what does the Feasibility Study recommend?

Given the physical setting of the site, the preferred approach to removing the LNAPL mass is a trench system that includes a containment barrier and a sump and skimmer collection system. Additional skimmer systems may also be deployed within the existing LNAPL monitoring wells to increase the recovery of the LNAPL.

KP recommends that the following items be considered in the trench design:

- The trench be positioned near the project boundary such that the containment barrier can restrict the off-site migration of LNAPL
- The length of the trench encompass the width of the LNAPL plume
- The trench be positioned perpendicular to the estimated groundwater and LNAPL flow direction
- A skimmer system be employed to remove the LNAPL from a collection sump
- The trench be constructed to a depth below the lowest LNAPL water interface depth
- A second trench be excavated within the center of the LNAPL plume to enhance LNAPL recovery

#### **4. Lead Applicant's Next Steps**

- a. Taking the Feasibility Study's recommendations into account, what next steps do you as the municipality plan to take? What potential benefits or internal municipal improvements would result from these next steps?

The next steps that the municipality plans consist of the Pilot Phase I Remediation Project. The Pilot Phase I Project includes the removal of the LNAPL at the Park and School properties. The steps included within the completion of the Pilot Phase I Remediation Project include the completion of a design report, tendering of the proposed work, and implementation of the system. The overall objectives of the Phase I system will be to insure that LNAPL mobility is reduced, that mass reduction of the LNAPL is achieved, and that physical containment of the LNAPL is contained to the current footprint.

#### **5. Lessons Learned**

In answering the questions in this section, please consider all aspects of undertaking the Study — from the initial planning through each essential task until the Final Study was prepared.

- a. What would you recommend to other municipalities interested in doing a similar Feasibility Study? What would you do differently if you were to do this again?

Delineation of the impacted footprint is key to any similar project, and therefore should be prioritized before proceeding with other work. Now being fully aware of the extents of the impacts, the Municipality with assistance of the Consultant is in a better position to complete an accurate Feasibility Study, and to proceed with remediation.

- b. What barriers or challenges (if any) did you encounter in doing this Feasibility Study? How did you overcome them?

There were no significant barriers or challenges specific to the completion of the Feasibility Study.

## 6. Knowledge Sharing

- a. Is there a website where more information about the Feasibility Study can be found? If so, please provide the relevant URL.

At this relatively early stage, documents have not been published to any website. Upon completion of the Pilot project, the Municipality with the consent of Knight Piésold and in consultation with GMF will consider posting documents to a website.

- b. In addition to the Feasibility Study results, has your Feasibility Study led to other activities that could be of interest to another municipality (for example, a new policy for sustainable community development, a series of model by-laws, the design of a new operating practice, a manual on public consultation or a measurement tool to assess progress in moving toward greater sustainability)? If so, please list these outcomes, and include copies of the relevant documents (or website links).

The Municipality anticipates that there may be more outcomes in the future; however there are none at this time.

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