Waste Water Treatment Plant Upgrades

The Corporation of the Town of Kapuskasing

October 4, 2011

FINAL Completion Report

SCHEDULE H

Project Completion Report

⚠ **IMPORTANT**: Submit this report to FCM as soon as possible after the completion of the Project.

FCM will post your report on its Green Municipal Fund website at http://gmf.fcm.ca because one of FCM's mandates is to help municipal governments share their knowledge and expertise regarding municipal environmental projects, plans and studies. Therefore, before you submit a report to FCM, make sure that you hold the copyright in the report (i.e. you own all the rights in the report 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 reports: one report containing confidential information to be read by FCM staff and one report that does not contain confidential information, which can be posted on the Green Municipal Fund website. Please contact FCM if you have questions about copyright and confidentiality.

Introduction

Project completion reports are intended to provide a plain-language summary of the projects funded by FCM's Green Municipal Fund (GMF). While project completion reports fulfill a reporting requirement for FCM, the information they contain can be useful to other municipalities. As such, FCM may share these reports with those in other municipalities interested in addressing similar issues. For this reason, when writing the report, please assume a low to moderate level of technical knowledge and a preference for clear, direct and focused writing. Use simple language, and explain any highly technical terms or acronyms that are used.

Reports are expected to be between 8 and 15 pages in length, single- spaced, but may be longer or shorter depending upon the complexity of the Project. While there are no maximum word counts for each section, the two most pertinent sections of the report should be given more weight, namely:

- Section 5 – Environmental benefits of the Project, and
- Section 7 – Lessons learned.

For simplicity, the lead municipality or municipal partner is referred to throughout as the "Municipality." Similarly, the term "project" is used to describe all types of projects, including new infrastructure, programs, and others.

Note: The Municipality may contact the Green Municipal Fund Project Officer for an electronic fillable form version of this report.

1. Project and Community Context

a. What was the objective(s) of the Project (i.e., what factors led to the Project being undertaken, and what problem(s) did the Project hope to solve)?

Problems:

The aging Kapuskasing WWTP complied with its effluent criteria however required numerous upgrades to address operational and equipment problems that included the following:
-Raw sewage bypassed the WWTP and is discharged to the Kapuskasing River during every major wet weather event and during every power outage.
-There was insufficient biosolids handling and storage capacity to meet MOE storage requirements and to unable the operation of the WWTP at its design capacity.
-Treatment process and equipment control was entirely manual, and monitoring devices were minimal, offering very few opportunities for process optimization and for achieving energy and other efficiencies.
-Equipment utilization was wasteful of energy.
-Current health & safety standards were not met, with associated risk to the operators.
-Mechanical equipment was corroded and non or malfunctioning.

Objectives:

The Town's objectives in undertaking this WWTP Upgrade Project were to:
-Improve its ability to meet effluent compliance criteria and all other applicable provincial regulatory requirements at all times
-Minimize the frequency and volume of raw sewage bypasses to the Kapuskasing River
-Increase biosolids storage capacity to meet MOE requirements and to improve treatment
-Improve treatment process control and increase the level of automation
-Replace equipment as required for a fully functional operation
-Reduce energy costs
-Provide adequate stand-by power to enable operation of all essential equipment during a power outage
-Implement upgrades to meet current health and safety requirements

The completion of this project will result in the following environmental benefits:
-Reduce waste biosolids hauling and fuel needs
-Reduce toxicity of the effluent, as it no longer contains chlorine

b. How is the Project related to existing sustainability plans, practices, policies or programs within the municipality (or as adopted by the Municipality)?

The Town of Kapuskasing has adopted a Pollution Control Plan that has been submitted to the Ministry of Environment. This project incorporated the elements necessary to meet our objectives outlined in the Pollution Control Plan.

c. If the borrower/recipient is not a municipality, briefly describe or profile the borrower/recipient. Describe the factors that led to the borrower's/recipient's involvement in the Project.

The borrower is a Municipality – The Corporation of the Town of Kapuskasing

d. Provide a brief (three- to four-sentence) description of the community in which the Project took place. Include such factors as population, major economic drivers, and other significant aspects that help to understand the community context (e.g. a tourism-based economy). (Note: This information can be readily obtained from the Community Profiles section of the Statistics Canada website at <www.statcan.ca>.)

The Town of Kapuskasing is located in the District of Cochrane, approximately 160 km North West of Timmins. The Town has a population of 8,454. Its main industry and employer is Tembec, a pulp and paper producer.

2. Project Team

a. Identify the principal contact for the Project and provide his or her contact information (title, email, phone number, and full address).

The project is being overseen by our General Manager of Public Works:

Yves Labelle
C/O Town of Kapuskasing
20 Brunetville Road
Kapuskasing, ON
P5N 2E7
Tel: 705-337-4269
yves.labelle@kapuskasing.ca

The Municipality also employed the services of C.C. Tatham & Associates, a recognized engineering firm

b. Briefly describe the implementation team: who was on the team, and what was their involvement?

The implementation team included our General Manager of Public Works, Municipal Council, Ontario Clean Water Agency, C.C. Tatham & Associates. All worked diligently together to achieve this complex project.

c. If there was a Project champion, please identify that person and briefly describe how his or her input helped the Project. (Note: A Project champion is someone such as a senior manager or elected official whose support is critical to the success of the Project.)

Yes – Yves Labelle, General Manager of Public Works. Yves input in a project of this magnitude is critical to the success of the endeavor.

d. If members of the community were involved in the Project (e.g., through a public participation exercise), explain how and the impact of this involvement on the Project.

N/A

3. Project Implementation

a. Approximately how long did it take to complete the whole Project, from the time it began (initial planning) to the time it was completed (Project completion or commissioning)?

The project started in the spring of 2008 with the preliminary study, then in the spring of 2009 with a study that included a detailed condition assessment and energy audit of the WWPT and established the required upgrades, recommended energy efficient measures, and defined costs.
The final design and Approvals were completed in February 2010.
The contractor prequalifications and tendering were completed by April 2010.
Construction started in May 2010 and was completed in June 2011.

b. Describe any new technology or new approach (e.g. full-cost accounting) used in the Project. Were there any benefits or drawbacks in using this new technology or approach? If so, please describe briefly.

There were many new approaches to technology for the upgrading of the WWTP.
-Variable Frequency Drives on the 2 screw pumps will save energy
-UV desinfection system has improved safety to the workers and there is no more chlorine in the effluent water discharged to the river.
-New Scada system has improved operational optimization and there is still a learning curve for the operators to implement further improvements to the system.

c. Was the Project implemented as outlined in the GMF funding proposal? If there were substantial changes to the implementation plan, identify them and explain why they happened (e.g. bad weather delays, labour strife, challenges getting the new system to operate correctly, etc.). Describe the effects of any changes on the Project (e.g. higher overall costs, less time allotted for a particular stage of the Project, more staff training required, etc.).

An influent raw sewage flow metering chamber was not constructed upstream as was initially planned. After the final design was completed, it was more practical and more cost efficient to install flow meters on the treated waste water and on the bypass line to monitor the bypass flows.

4. Project Budget and Financial Savings

a. Indicate the cost of the Project, and briefly explain in general terms how it is being financed (through municipal tax increases, via user fees, in the municipal capital budget, through a partnership arrangement, etc.).

Total cost of the WWTP project as of September 22, 2011 is $ 7,627,782. A contribution from BCF of $5,009,332 is applied against this project with the balance financed by way of debenture or loans. Loan payments will be made from the Sewer system which draws its revenue from users.

b. Are there any financial savings to the community (or Municipality) in having undertaken the Project (e.g., reduction in energy use or water use that results in lower operating costs)? If known, please describe.

The exact energy savings and operating costs are not known at this time as the project has just been completed.

5. The Environmental Benefits of the Project

a. Describe, in plain language, the environmental benefits associated with the completed Project. Note: If the benefits cannot be identified when the Project is completed and this report is submitted, the Municipality must report on the environmental benefits after the Project has been in operation, in accordance with the contractual agreement. (For more information, see the Environmental Results Report requirements as per Schedule I.)

-The upgraded WWTP now includes equipment controls, variable frequency drives and high-efficiency motors on all new building mechanical and process equipment in order to reduce electricity usage.

-The reduction in the frequency and volume of raw sewage bypasses, the increase in biosolids storage capacity, and the replacement of the chlorination equipment with UV disinfection equipment has a direct benefit on the quality of water released in the Kapuskasing River

-In addition to assisting in a more consistent treated effluent quality, the improved biosolids treatment and storage facilities have resulted in a reduced volume of biosolids being hauled off-site. This has resulted in a reduction of all associated costs.

-The addition of a stand-by generator now provides enough power to sustain complete operation during power failures.

6. The Social and Economic Benefits of the Project

a. If known, describe the social benefits that have resulted from the Project thus far. If the social benefits are not yet known, briefly describe any social benefits that are anticipated to emerge from the Project. Examples of social benefits include improved health, community revitalization, heritage conservation, quality of life improvements, enhanced public safety, and so forth.

Social Benefits

Reduction in the frequency and volume of raw sewage discharges to the Kapuskasing river; this will improve the receiving river water quality, which is of concern for the local fisheries. The river is extensively used for recreational fishing.

Improve biosolids treatment and management; Increased biosolids treatment and storage will improve the treatment performance of the WWTP, which will result in a more consistent treated effluent quality discharged to the Kapuskasing river.

Improve health & Safety for the operators; with the proposed HVAC equipment upgrades, the new UV system and provision of explosion proof motors, new clarifier covers, the project will minimize health & safety risk to the operators

b. If known, describe the economic benefits that have resulted from the Project thus far. If the economic benefits are not yet known, briefly describe any economic benefits that are anticipated to emerge from the Project. Examples of economic benefits include financial savings expected as a result of the Project (such as reduced energy or water use leading to lower operating costs), or benefits to the community such as job retention or creation, employment income, increases or decreases in property taxes due to the Project, and so forth. (Note: If financial savings are already known and explained in Section 4b, they do not need to be repeated in this section, but any other economic benefits that are known should be described here.)

Improve biosolids treatment and management; The increase in solids concentration of the biosolids will reduce the volume of biosolids hauled off-site, with the resulting reduction in fuel usage and associated costs.

Improve energy efficiency; Provision of controls, variable frequency drives and high efficiency motors on new building and process equipment will reduce the WWTP electricity usage.

7. Lessons Learned

Lessons learned refer to knowledge gained from the Project that can be applied to other situations. Knowledge can be acquired through positive experiences (i.e. what worked or went well, and could serve as a model for future projects) or negative experiences (i.e. what didn't work, or went poorly, and so could try to be avoided in future projects). Lessons learned can help those in other municipalities interested in addressing similar issues in their own communities.

a. Describe what the Municipality would do again in the same way (and why), if it were to launch a similar project in the future. Please consider and reflect on all aspects of the Project thus far in answering this question.

   We requested a contractor prequalification process for this project as the project was complex due to the fact that all the work was being performed while operating. This process allowed the municipality to select only the contractors that had extensive experience in this type of work. Approximately 16 contractors requested the application documents, which only 8 were selected to tender the project.

b. Describe what the Municipality would do differently (and why), if it were to launch a similar project in the future. Please consider and reflect on all aspects of the Project thus far in answering this question.

   No comment.

c. Describe any barriers the Municipality encountered during the Project thus far, and how they were overcome.

   There were many phases of the project that required extensive planning and coordination. Originally, regular construction meetings were held on a biweekly basis. As we were getting closer to tying new equipment with existing, the meetings were held weekly and on major shutdowns these meetings were held daily. At these meetings, all concerned contractors, the consultant, the operators and the Town of Kapuskasing were present to discuss any scheduling issues or any concerns.

d. Describe any other advice the Municipality might give to other communities interested in undertaking this or a similar type of Project.

   A lot of planning is involved in these retrofit projects. It is most important to have all the concerned personnel such as project managers, Operators, engineers, etc.. sit at the table to give their concerns so that there is no surprises of the outcome of the project.

e. Did the Project result in any products or materials that could be shared with other communities? (For example, a water metering Project might have resulted in a new municipal water use by-law and/or a series of householder information brochures on ways to reduce water use.) If so, identify them in this report and include a copy when submitting the Project Completion Report.

8. Publicity and Photos

a. Briefly describe any recognition, media coverage, awards, or public support the Project has received.

Project signs were erected on site, there was a public consultation meeting during the design and the approval phases and the local media has provided coverage of the project.

b. Provide at least five photographs that depict different aspects of the completed Project. Additional photos are welcome. The photos must be in jpeg or tiff format, at least 300 dpi, and a minimum of two inches square (larger photographs are acceptable).

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