

SCHEDULE G

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.

**Town of St-Andrews Final Completion Report
Town of St-Andrews Wastewater Treatment Plant Upgrading
April 12, 2012**

© 2012, **Town of Saint Andrews**. All Rights Reserved.

This project was carried out with assistance from the Green Municipal Fund, a Fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

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

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.

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)? The original facility was constructed in 1980 and was approaching its design capacity. Much of the original equipment (floating aerators, pumps and controls) was still in use, but in poor condition and subject to failure. On top of that, new Federal and Provincial regulations pertaining to the proper treatment and disposal of waste water have become much more stringent than what the 1980 design was constructed for. The Town was put in the necessary position of needing to make major renovations to our aging facility.

By completing the work, we will be in compliance with the new standards. It also gives us excess capacity which allows us to continue historic growth patterns and remain compliant with current regulations for many years to come.

- 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 Saint Andrews, both citizens and the municipal government, take pride in achieving to be a greener community. As stated in section 2.1.1 of our Municipal Plan, “The residents of Saint Andrews place significant value on the health of the natural environment and consider it a major asset of the community.”

This is demonstrated in multiple ways by the Municipality:

- Through the development of many green spaces to maintain a balance between developed and natural areas.
- In the past few years, we have used monies from the Gas Tax Fund to make substantial improvements to our in-ground infrastructure which included;
 - Separating storm water from the sanitary sewer, which reduces the load on our sewage lagoon thereby reducing power consumption used to treat the clean storm water. This step also greatly reduced flooding in homes due to surcharges in the system from heavy rain events.
 - Replacing aged water and sewer mains that were prone to breaks and small, undetectable leaks. This allowed for a cleaner environment around our system and conserved water that was being lost in the distribution system.
- We have a Tree Committee who reviews all trees on municipally owned land, maintains a tree replacement program and uses the service of an arborists to assess the health of larger trees to determine if there health can be improved or if they present a danger and must be removed.
- We have a Fall & Spring leaf pick-up program in which the municipality composts the materials to be used for our own purposes. Otherwise, the leaves would end up in the regional landfill.

- As part of our parks and gardens programs, we have adopted a no pesticide/herbicide policy for at least the last ten years.
 - We have participated in Communities in Bloom over the past few years, which encouraged the development and sustainability of the green spaces and gardens.
 - We have made improvements to our arena to reduce power consumption which includes;
 - Replacing metal halide lights with T8 lights, which are much more energy efficient, in our main arena and curling rink area.
 - Overhauled the ammonia system within our ice plant to increase efficiencies, reduce power consumption and to make more environmentally safe.
 - Put in programmable thermostats to better control the heating of the facility.
 - Development of an in-town walking & biking trail system to encourage an active lifestyle that also encourages use of our green spaces.
- 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.
- 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 Saint Andrews is located in Southwest New Brunswick, nestled on the shores of Passamaquoddy Bay, adjacent to the State of Maine. Our fulltime population is 1,798, but has a summer resort destination, our summer time population would be closer to 3,000. Our main economic driver is the tourist industry, but we also house two science based institutions, the Saint Andrews Biological Station and Huntsman Oceansciences. We have an active volunteer base as demonstrated by the prevalence of organizations within the town such as Kiwanis, Scouts Canada, minor hockey, speed skating, seniors' groups and others.*

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). *Tim Henderson, Chief Administrative Officer, thenderson@townofstandrews.ca, (506)529-5120, 212 Water St, Saint Andrews, NB E5B 1B4*
- b. Briefly describe the implementation team: who was on the team, and what was their involvement?

<i>Clayton Rogers, P Eng</i>	<i>Engineer, Dillon Consultants</i>	<i>Oversaw design and implementation of project</i>
<i>Dan Bartlett</i>	<i>Water & Sewer</i>	<i>Maintained daily contact</i>

	Technician, Town of Saint Andrews	with contractor in order to be fully aware of operations once the project was completed.
Sonny Phillips	President, Philson Ltd	General Contractor of the Project
Tim Henderson	CAO, Town of Saint Andrews	Acted as liaison between Council and project team.

- 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.)
- 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. Initially, the cost of the project was announced during the annual budget process in November. In order to substantiate the large investment for our small town, we held an information session where the plans were made available to the public and the consultants were on hand to answer any questions. This allowed residents to see the details prior to construction starting and make inquiries on the construction process itself. In our opinion, by making the process as transparent as we could, we minimized complaints during construction and created enthusiasm within the town for this project.

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 initial planning stages began in late 2008 when the engineers and town staff met to discuss the aging waste water treatment plant, costs to upgrade and funding opportunities. The project was fully completed by August 31, 2011, nearly three years later.
- 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. The upgrade will include stand-by power for the main pumping station and treatment plant, thus avoiding untreated discharge during a power interruption. We have also designed for the use of UV radiation for disinfection which avoids the risk normally associates with chlorine gas and eliminates a chlorine residual from the discharge to the marine environment.
- 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.). As with any large project that takes several months to complete, there are challenges in keeping within budget and on time.

Our first challenge was that when the tender results came in from the contractor, the quotes were approximately \$400,000 more than initially projected, which represents a

15% variance on a total approximate budget of \$3 million. This was a significant increase, and a substantial amount for our small town to absorb. With the assistance of the successful contractor, Philson Ltd, as well as our engineering firm, Dillon Consulting, we looked at ways to re-design the technology or reduce some costs on the project. With the cooperation of the contractor, we were able to make minor changes to the design without sacrificing the integrity of the project, understanding how important it was to meet the environmental regulations before us. At the same time, we were also exploring additional opportunities to increase financing to the project as additional overruns were likely.

Our next significant challenge was the weather. The spring & early summer of 2010 was unusually wet in our area, making for muddy working conditions for the large equipment. This created time delays as the contractor had to put the safety of his workers first and minimize potential damage to the construction site as a result of the heavy equipment. By mid-July the weather had gotten better, the site dried out and the contractors were able to move ahead uninterrupted.

Another issue that came up was sludge removal. This was tendered separately with the hope that since it was a significant contract in itself, we may realize savings and increase competition on the tender. The quotes came in and once again, were higher than anticipated. Part of the extra cost was related to the wording of the tender. We asked for specific dates for the work to start and finish (a very narrow range). However, we went back to the proponents and asked for them to suggest dates and re-bid the job. Once they were able to pick dates that better worked for them, all bids came down. This created an inconvenience for the general contractor, who now had to work around their schedule, but they were quite accommodating.

Once the sludge removal was started, it became apparent there was going to be substantially more material removed which increased the project by another \$80,000.

The project was substantially complete by the end of 2010, and the new plant was operational. However, they had to wait until the spring of 2011 to finish the landscaping, paving and some finishing touches on the facility. That work was done through another wet spring and summer, but explains why the project is 9 months past its intended finish date.

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.).

With the projected cost overruns, the project total cost (HST Rebate remove) is expected to be approximately \$3.4 million. The project is being financed 2/3 by the Building Canada Fund in the amount of \$1.9 million, the balance to be financed by the Town of Saint Andrews. We will do that through adding additional debt as well as using funds from our Utility Capital Reserve Fund. The long-term debt will be repaid by an immediate surcharge to our utility customers of \$40/year per account. There is also a gradual increase in the consumption rates moving forward to offset the costs as well.

- 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 installation of new equipment will replace old equipment hats reached its useful life, which shall result in operational efficiencies with savings in repair and energy costs. There will also be efficiencies as the new plant will be less prone to breakdown, thus less downtime and less staff costs in maintenance.

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 H.)

There are several environmental benefits to be realized. Through better technology and intuitive engineering, we will realize the following benefits;

- We will now be able to eliminate most bacteria in our discharge through the use of Ultra-Violet technology. Thus the water being released into the bay is purer than before.
- The settling ponds are now aerated which allows for better settling of the solids contained within the sewer water
- Under the new design, the two ponds are both used for settling. This allows for twice as long settling and aeration period.
- We have included in the new design auxiliary power in the event of a prolonged power outage. This allows for the system to keep pumping and treating the effluent. This further reduces the possibility of back-up which could contaminate homes and the environment.
- We have replaced mechanical aerators with a compressed air submerged system. The mechanical system experienced issues occasionally and created an extremely loud howling sound. This was a huge issue for the individuals in the immediate area, including a campground. This reduction in noise pollution is greatly appreciated by the residents surrounding the waste water treatment plant.

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.

With the overall improvement of the discharge, there will be benefits realized to the natural environment effecting aquatic and human health. The existing plant is near a seasonal camp ground as well as local residents. New, quieter running aerators will decrease the noise level generated at the plant, thus increasing the quality of life for the neighbors.

The current pumping station does not meet current health and safety regulations, by upgrading we will be in compliance with current regulations and create safer working conditions for municipal staff.

The ability for the town to approve new development has been compromised by the fact that the old plant had reached its design capacity. The newly attained increase in capacity will allow the Town to attract new growth and support the objective of sustainable development,

- 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.)

Other economic benefits for the community include spinoffs for local stores and contractors as the general contractor made use of local merchants to do part of the project; local restaurants and motels had increased revenue as the crew stayed in town for during the work week; and the decrease in operating costs will increase the availability of funds for other projects to complete within the Town.

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.

It was important to involve the provincial Department of the Environment early. Not only was their expertise appreciated, they were also involved in the Building Canada Fund program selection committee. By being part of the process, they understood our needs and had a better understanding of the proposal.

A second lesson was the importance of communicating to the municipal residents. Early in the process, prior to construction, there was a public meeting to explain the new project and the benefits it would bring. By feeling they were a part of the process early, the public bought into it and we faced no criticism when requesting borrowed funds to finance our share or when we increased rates to repay the debt.

Flexibility was the most important characteristic we acquired during the process. As explained earlier, we had weather delays, contractor delays and cost overruns. When in the initial planning stages for a large project, you should examine the worst case scenario and then plan for it. If the project needs to run on a tight schedule or your budget offers little leeway, you need to revisit your capability to actually do the project. We allowed ourselves some leeway early on, but needed to adjust our plans as time went on. Despite

the setbacks we experienced, we faced no critical roadblocks due to having contingencies in place.

Another important point is to be involved early with the consultants and do research on your own. For small municipalities without a full time engineer, a lot of reliance is put on the outside consultant. However, it is vital that you do your own research independent of them. Whether it's through the world wide web, contacting other similar organizations or doing reading on your own, you can find new technologies, find out issues that similar projects experienced and estimated total costs.

The final piece of wisdom we picked-up is the importance of regular and continuous communication between the contractor, the consultant and the municipality. Most problems are foreseen, and it's easier to mitigate them ahead of time. By all involved parties staying in touch (through regular site meetings and informal visits), all parties are aware of progress, challenges overcome and potential issues on the horizon.

- 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.

One aspect we would do differently is on financing. We would take the maximum expected cost and add 25% for potential cost overruns. That way, when additional costs are incurred, you have the room and immediate availability of funds. By having the extra financial room, we would reduce the stress of coming up with financing if the situation arises.

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

The first barrier we encountered was a too small projected cost. We had an initial estimated budget of \$3 million, but when the project went to tender, it was going to be closer to \$4 million. This also created an extra burden as this project was 2/3 funded through the Building Canada Fund, but only pre-approved with a budget of the original \$3million. That meant we were 100% responsible for the extra costs. In reality, it doubled our financial contribution. Our first action was to go back to the consultants and contractors to see what changes we could make that wouldn't compromise the intent of the project (to ensure our new waste water treatment plant meets current regulations). Through some changes to the original design, we were able to save close to \$300 thousand. Our next step was to look at our internal savings (ie Reserve Funds) and see if we could cover part of the costs, which we were able to. Finally, we went to the New Brunswick Municipal Capital Borrowing Board to request additional authorization to borrow.

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

A project of this magnitude requires close attention and continuous follow-up. Part of our success can be attributed to constant communication between the contractor, consultant and Town staff. We were kept up to date on construction progress, cost savings and areas of potential overruns and any issues that should be brought to the table.

This process reduced the chance of unanticipated events as well as allowed us to address small issues before they became large ones. At these meetings we were also able to address and issues or perceived issues the citizenry brought forward.

- 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. *None at this time.*

8. Publicity and Photos

- a. Briefly describe any recognition, media coverage, awards, or public support the Project has received. *The facility has had exposure both in the St. Croix Courier (a county wide paper) as well as the Telegraph Journal (Province wide daily). We had coverage for both the Grand Opening, but also for an announcement of the funding partnership with the Green Municipal Fund of the Federation of Canadian Municipalities.*
- 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).