

SCHEDULE G

Form of Project Completion Report

REQUIREMENT: You must submit a Project Completion Report as a condition of the Final Loan Disbursement by e-mail to the GMF Project Officer.

PURPOSE: Your Project Completion Report has two main purposes:

- 1. Project tracking:** This report enables FCM to confirm that your project was completed as anticipated upon approval of your application.
- 2. Knowledge sharing:** FCM shares the lessons and expertise gained through GMF-funded initiatives with other communities across Canada. The findings and lessons learned documented in your Project Completion Report could be valuable for other municipal governments that are seeking to address sustainability issues in their own communities. One way FCM shares the findings and lessons learned is by posting your reports on our website. Your report will also assist FCM in producing other materials related to your project, including a GMF case study.

Note: You are required to submit a separate report on the environmental results of your Project. See Schedule H, Environmental Results Report, for more information.

COPYRIGHT: Because we may post your report on our website, you must hold the copyright to the reports that you submit to us. This means that you own all the rights in the report and can decide who is allowed to reproduce and distribute it.

CONFIDENTIALITY: If your report contains any confidential information that you would prefer not be made available to the public (e.g. through a case study or other materials produced by FCM that relate to your project), please submit two versions of the report:

- 1. Complete report including confidential information:** Please clearly label this report with the word "**Confidential**" or similar wording and FCM will treat it as confidential.
- 2. Abridged report excluding confidential information:** This report may be posted on the FCM website and otherwise made available to interested third parties, to help FCM meet its knowledge sharing objectives.

CONTENT OUTLINE: Your Project Completion Report should be approximately **8 to 15 pages long**; some reports may be longer or shorter depending on the complexity of the Project. While there are no maximum word counts for each section, the most pertinent section of the report — Lessons Learned — should be given more weight.

Because your report may be read by non-technical municipal staff and similar readers, 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.

Your Project Completion Report should include the information below. **Note: You may request a Microsoft Word version of this report from the GMF Project Officer.**

Project information

GMF number: 12078

Name of funding recipient: Town of Drayton Valley

Project title: New Energy Efficient Water Treatment Plant for Drayton Valley

Date of Project Completion Report: September 24, 2015

Project implementation

1. How long did it take to complete the Project, from the time it began (initial planning) to the time it was completed?

ANSWER

The planning for this project starting in 2007. The design was completed, and construction started in 2013. After two years of construction the new facility achieved Substantial Performance in September of 2015. This is roughly eight years of time. The new water treatment plant is currently in its third full year of operation.

2. Were members of the community involved in the Project (e.g. through a public participation exercise)? If so, how, and what was the impact of their involvement?

ANSWER

Public participation was not required for this project. Members of the community were not involved in the design or construction processes. Updates were provided to the public in general during construction however but it was only for information purposes.

3. Was the Project implemented as outlined in the contract? If there were substantial changes to the implementation plan, please 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.).

ANSWER

For the most part, construction occurred as planned and stipulated in the contract. There were no substantial changes to the implementation plan.

There were some delays due to weather that slowed the construction progress during the first winter in 2013/2014. During that winter season there was a lot of snow that was falling and accumulating on the ground around the project site. This was happening at a point in construction when the contractor was working on the large underground reinforced concrete tanks for the reservoir and thus there was a very large and deep excavation that was open. Managing the accumulated snow was a challenge for the contractor. This impact, while it slowed construction to a minor degree, did not result in additional cost to the contract.

In addition to the weather related challenges during the first winter season of construction, there were some changes that were made during the course of construction as the project unfolded. These minor changes were done to improve upon the design elements of the project. These changes did have cost implications for the project and were of a minor nature.

Further, the original plan for the overall water system was to design and construct a new dedicated raw water pump station before the new water treatment plant. Due to various constraints (not specific to this project), the new water treatment plant was designed and constructed first. This meant that for the new facility to receive raw water, the existing WTP and

high lift pumping and piping infrastructure had to be modified to achieve a dual purpose (i.e., remain the main source of potable water for the Town, while also serving as an interim raw water pump station supplying untreated raw water to the new facility) with no risk of cross contamination. This required internal piping and control system modifications to effectively create an interim raw water supply system separate from the water treatment process, while coming from the same source of water. The interim raw water supply system will remain in place until a new, fully separate raw water pump system is introduced.

The design team made the transition as smooth as possible to ensure that the new treatment process was commissioned without impacting the community's water supply. To reduce errors and minimize disruption to the existing WTP and distribution system while integrating the new plant and watermain connections, the design team, contractor and owner devised a step by-step commissioning and communication plan with visual diagrams. This plan was an essential element in the successful transition. There were additional project costs associated with the modifications required to the old water treatment plant. The modifications did not add any significant time to the completion timeframe for this project.

The original contractual completion date for this project was to be in June of 2013. Due to the issues mentioned above, the project was actually completed in September of 2013.

Economic and social benefits

Note: Environmental benefits are reported in a separate Environmental Results Report.

1. If known, describe the economic benefits your Project has achieved to date. If the economic benefits are not yet known, briefly describe any economic benefits that you anticipate will emerge from the Project. Examples include:
 - Increased return on investment
 - Decrease in facility operating or maintenance costs
 - Extended lifespan for facility (e.g. landfill, wastewater treatment plant, recreation centre)
 - Increased property tax revenues
 - Stimulus for local economy
 - Lower healthcare costs
 - Increased employment options or job retention
 - Increase in transit ridership

ANSWER

The main economic benefit for the Town of Drayton Valley is that the community's potable water supply system has been renewed and thus they have extended the service life of this very valuable asset. Having a secure source of potable water for the community that accommodates future growth is key to the overall economic viability of the town.

2. If known, describe the social benefits your Project has achieved to date. If the social benefits are not yet known, briefly describe any social benefits that you anticipate will emerge from the Project. Examples include:
 - Improvements to public health
 - Improvements to public safety
 - Improvements to community quality of life
 - Increased employment options or job retention

- Increased opportunities for community engagement
- Increased public education or awareness
- Community revitalization
- New housing and infrastructure
- New or enhanced public space or public facilities
- Reduced urban sprawl
- Increased civic pride and participation
- Reduced opportunities for crime

ANSWER

The main social benefit for the Town of Drayton Valley is that the community's potable water supply system has been renewed and thus they have improved public safety with respect to general health in the community.

Part of the design intent of the facility is that it also brings water treatment to the forefront with educational components designed to make the WTP a true centre of excellence. The new WTP was built in the uplands, closer to the community, the wastewater treatment facility and one of the major stormwater management outfalls that services the Town. This formed a hub or campus of water resource services and presented Drayton Valley with a unique opportunity to showcase how water is managed within the Town in terms of being used for drinking water, being treated effectively as wastewater and being managed properly as stormwater. This water campus evolved into the Centre for Water Intelligence – a place for the community to visit and learn about what the Town does to manage water and a place for further research into water and wastewater treatment technologies and advancements (i.e., a place to learn new ways of doing things within the industry).

A first step towards increasing public awareness regarding water treatment occurred when the new WTP was built in the uplands, closer to the community where residents will more regularly see the facility. To encourage residents to actually visit the new WTP, to welcome them to the site and to accomplish the longer term goals of public education, park space was developed adjacent to the plant and around the stormwater management pond. This park space is connected to the walkable pathway system that the Town has developed. The longer term goal for this park space is to continue to enhance the landscaping and create and install interpretive signage to highlight how the water is managed.

With community and public education in mind, a large space was created on the main floor of the plant to host tours. The space is complete with seating and a large floor-to-ceiling glass window that invites visitors to take a look inside and see the equipment that is used to turn North Saskatchewan River water into the clean and safe drinking water that comes out of the Town's taps.

Lessons learned

Lessons learned refer to knowledge gained from the Project that can be applied to other situations. This 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.**

One way of thinking about lessons learned is to group them into barriers and solutions.

Barrier: A barrier is anything that hinders a result that is being sought, and can take many forms. For example, barriers can be behavioural (e.g. "Not in My Backyard" or political disinterest); legislative (e.g. provincial planning act or municipal bylaw); financial (e.g. unaffordable costs or lack of financing); technological (e.g. unable to find local suppliers); situational (e.g. a pre-existing low-density development). The identification of a barrier is a type of lesson learned.

Solution: A solution is any strategy that can be taken to surmount a barrier. Solutions are as varied as the obstacles they surmount. A solution can be behavioural (e.g. providing education to encourage change in views and behaviours); legislative (e.g. passing a bylaw permitting secondary suites); financial (e.g. offering low-interest loans), technological (e.g. validating test results on a municipality's own water source) and so on. The identification of a solution is a type of lesson learned.

1. What did you find worked well during the project?

ANSWER

Every effort was made on this project to establish and maintain good levels of communication between the Consultant, the Contractor, and the Town. Communication was done through regular electronic updates via email, phone calls and bi-weekly progress meetings. Typically, all parties were "on the same page" throughout the project with respect to progress, budgets, and schedules. Any challenges or issues that were arising were openly discussed such that there were no surprises.

2. What barriers did you encounter and what solutions did you implement to address them?

ANSWER

Financing a project of this magnitude and finding the capital resources needed was a barrier. It is difficult for a community of the size of Drayton Valley to establish the capital reserves to self-fund a project such as this. As such, the solution was to partner with Government and the adjacent municipality of Brazeau County to join together to contribute. In addition, applying to organizations such as FCM for funding was also part of the solution. In the end, through strong relationships, multiple sources of funding were arranged and brought together for this project so it could proceed.

Another barrier that was encountered was the lack of a sufficient electrical supply for the new facility. The solution to this issue was for the Town to work closely with the electric utility provider (Fortis) to upgrade the main electrical lines that service the area of the Town where the new WTP was located and increase the electrical supply available. This improved the service supply for this area of Town and also allows for increased growth and opportunity due to the provision of upgraded electrical supply services.

3. What knowledge did you gain from conducting this project? (e.g. "geothermal energy is not cost-effective in buildings under X square metres" or "biomass can't compete with natural gas unless gas prices rise above X" or "community consultation is more effective if the city circulates proposals in advance, rather than offering citizens a blank slate." Where possible and applicable, include technical lessons from which other municipalities may benefit.

ANSWER

The Town was clear in its desire for a WTP with a sustainable focus that would encapsulate the true basics of sustainable design, including improving efficiencies and performance, lowering operating costs, streamlining environmental and material impacts, measuring short and long-term payoffs and redefining the status quo. All of these initiatives would ensure that the new treatment plant exceeded all expectations, while quietly doing the job it was designed for.

Committed to inspiring sustainable thinking, the Consultant took this mission to heart, designing and constructing a state-of-the-art sustainable water treatment facility that included a number of high-performance and efficient sustainable features and considered the environment every step of the way. This includes not only what is built (i.e. design features) but “how” it is built (i.e. construction practices).

The knowledge gained on this project was that it is possible to provide opportunities for paradigm shifts in thinking about the “how’s” of a project. It starts with a basic specification that expresses a desire to minimize construction waste and recycle as much of the leftover materials as possible. These specifications can influence behaviours and cause paradigm shifts in thinking that can continue on far beyond this project for added benefit to others.

4. Did you use any new technology or new approach (e.g. full-cost accounting) in the course of the Project? Were there any benefits or drawbacks in using this new technology or approach?

ANSWER

Building on the answer provided for the previous question, the new approach used on this project was to actually specify a goal on this project of minimizing construction waste and recycling as much of the leftover construction materials as possible. In the end, the Contractor produced seven pages of environmental initiatives that they adopted on-site during construction. These initiatives ranged from sourcing compostable cups for use in the lunch trailer to crushing waste concrete and using it as aggregate in the construction of the access road. By challenging the Contractor, they gained experience in the benefits of a more sustainable approach to construction with they have since adopted for use on other projects. There are no apparent drawbacks to this approach.

In terms of new technology, this project used a building envelope system that was an “insulated metal panel” (IMP) system. This is a more efficient envelope in terms of thermal performance and it is something that has not been done a lot in water treatment facilities. Typically a lot of these facilities are designed using concrete block walls. The benefits in going with this IMP system was that it was easier to construct and thus took less time and that it performs better than concrete block.

5. Have the lessons you learned from this project influenced any of your policies, plans or other activities?

ANSWER

As stated in the previous answer, the lessons learned by all on this project can be applied to the next one in terms of thinking about “how” that project will be built.

6. Do you have a Project champion who was instrumental to the Project? If so, please include his or her name, title and contact information, and describe his or her role in the Project.

Manny Deol – Chief Operating Officer, Clean Energy Technology Centre

Mr. Deol was the Chief Administrative Officer for the Town of Drayton Valley at the time of project inception and commissioning of the Project.

7. If you were planning this type of Project again, what would you do differently, knowing what you know now?

ANSWER

The planning that went into the Operator training and facility commissioning really helped make this project a success. In the future, for a project such as this (they don't happen that often), it would be of benefit to be very mindful of the fact that advanced planning and thinking about how projects are going to unfold is very valuable.

8. What advice would you give to someone in another community undertaking a similar project?

ANSWER

Thinking about "how" a project is built is just as important as to what is built. As well, one can never plan enough for the operator training and facility commissioning components of a project of this nature. Well worth the investment in time up front prior to execution.

Next steps

1. Describe how you intend to build on the results of the Project. If possible, include the month and year of anticipated activities.

ANSWER

A new raw water pump station is planned as the next phase of the project. The Town has selected a Consultant and the design process will begin in the second half of 2018. The lessons learned from the new WTP project will be applied to the new raw water pump station project. Currently, it is anticipated that the new pump station will be delivered through a more collaborative project delivery model rather than a conventional design-bid-build process. The greater emphasis on the collaborative approach is the catalyst to continue to build on the lessons learned and positive experience of the water treatment plant project.

Publicity

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

ANSWER

In general, there were a few articles written about the project in the Western Reporter newspaper that is local to the Drayton Valley region.

In terms of awards, the project did receive an Award of Excellence in Water Resources and Energy Production at the 2018 Consulting Engineers of Alberta Showcase Awards.

Photos and materials

FCM includes project photos and links to project materials in GMF case studies, website content, and other vehicles.

1. Identify and attach any materials resulting from the Project that would be useful to share with other communities, such as checklists, toolkits, guidelines, bylaws, videos or information brochures. If the material is available on your website, simply include the link to it.

For example, a water metering Project might result in a new municipal water use bylaw, or a series of householder information brochures or online video clips on ways to reduce water use.

ANSWER

Have included the award submission report from the Canadian Consulting Engineer award submission.

2. Attach five high-quality photographs of the Project. Where possible, include photos that feature people in action, illustrate the progress of the project, or feature “before” and “after” perspectives. The photos must be in jpeg or tiff format and at least 300 dpi (up to 10 MB/10,000 KB but no smaller than 1 MB/1,000 KB in file size).

For each photo, please include:

- a) A caption describing what is featured in the photo.
- b) A photo credit that indicates who owns the copyright to the photo and the photographer (e.g. © 2010, City of Ottawa/Madison Brown).
- c) A written release signed by the individuals depicted in the photo granting FCM permission to use the images. **Please request an FCM Photo Consent Form from the GMF Project Officer.**

© 2018, Town of Drayton Valley. 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.