SCHEDULE G

Form of Project Completion Report

Instructions

Requirement

You must submit a Project Completion Report as a condition of the Final Loan Disbursement.

Purpose

Your Project Completion Report has three purposes:

1. **Project tracking:** This report enables FCM to confirm that your project was completed as described in the Agreement.

2. **Reporting on the impacts and lessons learned during the construction of the project:** This report describes any environmental, social and economic results as well as lessons learned during the **planning, design and construction of the project**. Ensure that you include in the report any processes or techniques used at these stages to address triple bottom line impacts (e.g. dust minimization measures or the onsite use of electric vehicles instead of gas-powered vehicles). All environmental, social and economic results **from the operation** of the project will be reported under a separate Environmental Results Report in the form set out in one of the schedules to the Agreement.

3. **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. FCM will post your reports on its website at the approved projects database.[1] This is the most frequently visited part of the GMF website. Your report will assist FCM in producing other materials related to your project, including a GMF case study. In addition, other municipalities may view your Project Completion Report to improve the success of their projects.

Copyright

You must hold the copyright to the reports that you submit to us and provide FCM with rights to reproduce and distribute it as set out in the Agreement.

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] http://www.fcm.ca/home/programs/green-municipal-fund/funded-initiatives.htm

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1. **A complete report including confidential information:** Please clearly label this report with the word "**Confidential."** FCM will treat it as confidential.

2. **An abridged report excluding confidential information:** This report may be posted on the FCM website and otherwise made available to interested third parties.

Content

Your Project Completion Report should be approximately **9 to 15 pages**. Some reports may be longer or shorter, depending on the complexity of the project. While there are no prescribed 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.

Report format

Please request an electronic Form of Project Completion Report from the GMF Project Officer and submit your report in either MS Word (.doc or .docx) or PDF (searchable) format. A scanned copy of the Project Completion Report will not be accepted. FCM endeavors to collect the most relevant project information and as such may amend the Form of Project Completion Report from time to time. If so, FCM will provide you with the latest Form of Project Completion Report.

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Project Completion Report

Project information

GMF number: 15043
Name of funding recipient: Corporation of the Town of Perth
Project title: Perth Submerged Attached Growth Reactor (SAGR)
Date of Project Completion Report: ____01/10/2019_____
Project construction start date (MM/DD/YYYY): ___08/25/2017_____
Project substantial completion date (MM/DD/YYYY): ___12/28/2018__
Total project cost (actual): _____$10,121,557.24_____

Project implementation

1. Was the project implemented as outlined in the contract (or as amended)? Please identify any substantial changes, explaining why they happened (e.g. getting a new system to operate correctly, delays due to bad weather, labour availability, etc.) and their impact on the project (e.g. higher overall costs, more staff training required, etc.).

- The project did encounter delays due to wet weather and high winds. Soil saturation required additional aggregate and ground textiles had to be used. Wind storm blew down support walls (photo) submitted. Total lost time 3-4 weeks.
- Grounding grid for high voltage system required redesign after being deemed inadequate. 6-week delay and additional cost
- Heavy over burden (solid rock) during pump station excavation created 2-week delay and additional costs.
- Electrical component incompatibility during testing of back-up generator power supply created 4-week delay during commissioning.
- Additional SAGR cell built to provide equal flow capacity from exisiting lagoon system.

Lessons learned

Lessons learned capture knowledge gained from the project that can be applied to other situations. For this report, GMF is interested in the lessons learned from the **design, planning and construction phases** of the project.

Answers in this section may refer to **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 should be avoided in future projects).

2. Describe what worked well and what did not work well, and why, for the project elements below. Include a description of any solutions implemented to address challenges.

a. Design, procurement and contracting

- Design, for the greater majority of the project this component was steady
- Procurement of aggregate used in the beds was somewhat of a challenge. The quarry required 6 months' time to stock pile enough material to satisfy quantities and ensure delivery to site in a timely manner.
- Contracting, the GC coordinated all subcontractor's efficiently and effectively

b Consultation and community engagement (prior to and during construction)

- To the best of my knowledge little if any community involvement was associated with this project

3. Describe your experience (e.g. trade-offs, surprises) when choosing a particular approach, technology or solution for this project. What would you do differently?
   - This was my first capital project; I don't have other bench marks to measure against. I feel the project was for the most part predictable.
4. Has the business case associated with the project changed since the planning stage (e.g. changes in the level of service delivered by the project, expected revenues, capital or operating costs, payback, etc.)? Could anything have been done to better understand the business case at the application stage? No

A	B	C
Sustainable design and construction element	As described in your GMF application	Describe the implementation of the measure (one paragraph)
Site characteristics		
Uses a remediated brownfield or underutilized site (i.e. not a greenfield)		
Uses existing buildings/ infrastructure/equipment	First of all, the project site is at the existing wastewater treatment lagoon site so there will be no change to land use or zoning. The SAGR system will be installed in a part of the pre-existing empty lagoon cell that has been used in the past for dewatering; therefore, extensive lot clearing will not be required. Further, we are keeping the existing lagoon as part of the treatment system; thereby optimizing and reusing an existing asset, minimizing construction waste and using local materials	
Avoids, protects or enhances sensitive environmental areas	The proposed project will have minimal disturbance to the existing wildlife habitat in and around the lagoon site. During	

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	construction and set-up, there is no disruption to the existing lagoons as the SAGR beds are being constructed outside of the lagoon footprint. During commissioning, lagoon effluent that is currently being discharge directly to the river will be redirected to the SAGR. It takes approximately 2 to 3 weeks for biomass to grow. During that time the water quality would as good as or better than the lagoon effluent. Through this project, we seek to protect and enhance the Tay River, by improving the water quality discharging to the river. Work will not take place in the watercourse itself, thereby avoiding a sensitive environmental area and diverse habitats. Furthermore, the lagoon system is in a natural area with hiking trails and bird-watching opportunities that can only be enhanced by this project.	
Restores land for wildlife habitat		
Utilizes natural systems to provide environmental benefits within the project (e.g. wetlands)	Natural processes are used in the treatment system, as is the nature of a lagoon system. First, settling occurs in the lagoon cells, followed by treatment from sunlight and the bacterial breakdown of pathogens. Finally, evaporation puts part of the water back into natural circulation. The partially treated wastewater then flows through the SAGR beds and discharges back into the Tay River through the Tay Marsh where bulrushes and other aquatic plants help filter out any remaining contaminants.	
Does not contribute to urban sprawl		
Part of the urban transport network and encourages the use of sustainable transportation		
Project Activities During Construction:		
Green Procurement		
Use of energy efficient practices (e.g. reducing fuel		

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consumption from transportation)		
Consideration of renewable energy		
Minimal site disturbance, use of in-situ options if available		
Re-use of available construction material on-site	Local materials will be used during construction as much as possible, including fill and locally sourced stones and granular for the SAGR beds. The project is based upon the wise reuse of existing assets.	
Uses construction materials with recycled content		
Construction site waste management, including diverting construction waste from the landfill through recycling and reuse (off-site)		
Minimizes expected impacts of construction activities (e.g. dust creation or soil erosion)		
Other (please specify)	The SAGR project will strive to be sustainable throughout the design, procurement and construction phases. With proper operation and maintenance, the remaining service life of the lagoon is expected to be many decades. The lagoon has been in operation since 1962 (over 50 years), and was recently cleaned out for sludge. The SAGR system is expected to has a long expected life with proper operation and maintenance, including periodic media replacement and repairs, as needed. Further, the O&M costs for the SAGR system are about 10% of those for a conventional WWTP of the same capacity, demonstrating that the SAGR is indeed sustainable over the long term.	

5. Did you use any approach(es) that are not business as usual over the course of the project (e.g. decision-making approach, consultation methodology, non-typical procurement, full-cost accounting)? Did this approach have any benefits or drawbacks?
   - No

Sustainable design and construction

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6. In your GMF application, you noted that the project would include sustainable design and construction measures, as set out in column B of the table below.

   Please complete the table below by inserting into column C the following information:

   - Did the project implement the measures as described? Yes
   - Describe the effectiveness of the measures.
   - Sourcing local aggregate and materials provided time savings and supported local business.
   - Please provide reasons for any changes to the measures. None to my knowledge
   - Please include any measures taken beyond what you committed to in the application from. . None to my knowledge

Environmental, social and economic outcomes

7. Please describe any additional environmental, social and economic outcomes your project has achieved during the design, procurement and construction phases.
   - None to note

Project champion

8. Do you have a project champion who has been instrumental to the project to date (during design, procurement or construction)? If so, please include his or her name, title and contact information, and describe his or her role in the project.
   - This project was an orchestrated team effort

Next steps

9. Please describe any steps you have taken or plan to take to ensure that the people, internal groups or other key stakeholders that are important to the operation of the project adopt the necessary behavior's and other practices to ensure successful project performance.
   - Operations staff have been involved with the project every step of the way. Gaining ground level knowledge of the component's that make up this intricate system. Hands on training has been provided by industry experts for every sub-system with technical support available any time.

10. Have systems and technologies been established for measuring and monitoring the performance of the project during operation?
    - Yes, flow monitoring, electric motor performance monitoring, extensive SCADA development inclusive of performance alarms to notify operations of any failures or deviations in process

Publicity

11. Briefly describe any recognition, media coverage, awards or public support the project has received to date.
    - At the time of completing this report, none of any note

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Photos and materials

FCM includes project photos and links to project materials in GMF case studies, website content and other communication 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.
   - Photos have been forwarded

   For example, a water conservation 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.

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 (between 1 MB / 1,000 KB and 10 MB / 10,000 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 the copyright holder 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.**

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