

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 GMF 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)?

The Chatham-Kent Public Utilities Commission (CKPUC) treated Ridgetown's wastewater at a facultative lagoon facility that was constructed in the early 1970's

and upgraded in 2002 to the New Hamburg Process. Although the system had been upgraded, this step was always seen as an interim measure (with a service life of no more than 10 years) until a more permanent solution could be found.

The old Ridgetown facility exceeded the trigger level for the treatment of effluent and operated very close to its rated storage capacity. In addition, the system discharged to the Gawne Drain seasonally and intermittently. The discharge occurred during the part of the year when the receiving drain was most sensitive to ammonia concentrations.

The new Ridgetown Waste Water Treatment Plant (WWTP) was constructed at the existing site location. The abutting lands to the treatment facility are comprised of commercial, industrial and agriculturally zoned properties.

The preferred alternative from the Class Environmental Assessment (EA) was to proceed with a more compact technology. The project required a new raw sewage pump station, storage of biosolids in a lagoon and decommissioning of the remaining cells which were no longer required. As well, the conventional sewage treatment plant constructed is capable of meeting the 20-year growth projections in the Community of Ridgetown.

Non-compliance with the old Certificate of Approval (C of A) was being experienced in terms of its organic loading strength as it pertained to E. Coli considerations. The new facility improved the effluent quality by having additional treatment steps including headworks, aeration, clarification, filtration and disinfection.

As a result of the limitations in the hydraulic capacity of the Ridgetown Sewage Treatment Lagoons, a minimal amount of additional growth was permitted within the Community of Ridgetown prior to the need to implement a development freeze throughout the Community. The introduction of an improved and expanded Ridgetown Treatment Facility resolved the organic and hydraulic limitations associated with the old lagoon system. Upgrade and improvements associated with the new treatment facility supports current and future projected growth needs for a 20-year timeframe. The expansion and improvement of the Ridgetown Lagoons allows Ridgetown to continue to experience sustainable growth and prosperity by means of providing a safe and reliable means of sanitary servicing.

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

There have been several studies conducted for the Ridgetown sewage system from the mid 1990's to 2007 when the latest Class EA was completed for this project.

This project followed the focus and vision of the Chatham-Kent Community Strategic Plan approved by Municipal Council. The project followed the strategic objectives of health, economy, and environment from the Plan.

In May 2000, a Water and Wastewater Master Plan was completed for the entire Municipality of Chatham-Kent including the community of Ridgetown. This set the stage to conducting a Class EA in 2001 to carry out upgrades to the lagoon system.

In 2007 the Municipality began a 5-year plan to inspect the entire Ridgetown sanitary sewer system. The plan involved sewer flushing, fog testing and video inspections of the sanitary sewers.

- 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.

N/A

- 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 Municipality of Chatham-Kent was created on January 1, 1998 by order of the Provincial government. The Community of Ridgetown is a primary urban centre within the Municipality of Chatham-Kent with a population of approximately 3,500 (2001). Ridgetown contains a broad spectrum of land uses, businesses and residents as well as institutional and industrial properties.

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).

Rob Bernardi, P. Eng.
Facilities & Systems Manager
Chatham-Kent Public Utilities Commission
Water & Wastewater Services
Tel.: 519-436-0119 ext. 306 Fax: 519-352-3432
website: www.chatham-kent.ca

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

The project team included representatives from the Municipality operations team, and the Consulting firms of Associated Engineering and Dillon Consulting Limited.

The CKPUC Team were responsible for the engineering consultant selection, public liaison as well as internal municipal department liaison. Provided input and comments during the Class EA, pre-design and detailed design as well as during construction. Operations staff were responsible for coordination of construction tie-in and present during commissioning and finally turnover of the new facility.

The Chatham-Kent Public Utilities Commission (CK PUC) Team Consisted of:

Rob Bernardi, P. Eng.
Facilities & Systems Manager

John R. Wilson
Special Projects Manager

Darren Galbraith
Area Manager

Larry Garside
Senior Operator

The CKPUC retained the firms of Associated Engineering and Dillon Consulting Limited to carry out the Class EA, preliminary design, detailed design and contract administration for the 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.)

N/A

- 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.

Public Meetings

A notice of study commencement was filed in March of 2007 and advertised in the local newspapers and mailed to review agencies and key stake holders. Having satisfied Phase 1 and 2 of the Class EA with the Water and Wastewater Master Plan that was completed, one more public meeting was held. The notice of a public information centre (PIC) was again advertised and mailed out in early April 2007 and the public information centre was held in late April.

The environmental assessment process, the treatment process selection and alternative locations for a mechanical treatment plant were presented at the PIC. At the PIC, there were several questions with respect to clarifying information; however, no written comments or concerns were submitted.

Discussion with Stakeholders

In line with the Municipal Class EA Planning and Design Process, public and stakeholder consultation took place. Appropriate agencies, First Nations Communities and interested and affected parties were contacted during the Class EA process.

One of the main stakeholders in this potential project was the Lower Thames Valley Conservation Authority (LTVCA). Upon review of the proposed work, they were asked to be kept informed of the progress. The LTVCA as well informed the project team that the drain where the outlet for the plant would be is a Class C (warm water baitfish) system thereby requiring approval by the LTVCA (on behalf of the Department of Fisheries and Oceans).

Further discussions, meetings and correspondence occurred between the project team and the LTVCA to discuss the work that was being proposed near the drain. The introduction of a new outfall met all the mandatory requirements. The LTVCA in conjunction with the Department of Fisheries and Oceans, asked for additional measures to be implemented when performing work in the drain.

The notice of study completion was filed in early June 2007. With no issues raised by the public or other stakeholders.

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)?

Schedule

The timelines for the project is summarized in the following table.

Task	Timing
Consultant Selection	February 22, 2007
ESR Approved	May 24, 2007
Notice of Completion	June 6, 2007
End of 30-day public review period	July 6, 2007
Pre-Design	October 2007
Detailed Design	October 2007 – May 2008
Tender period	June 2008
Award of construction contract	July 2008
Plant Commissioning	May 2010

- 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.

Tertiary Treatment

The technological innovations in the new WWTP are the tertiary treatment component, the re-use of existing lagoon cells as well as the automated septage receiving system.

The tertiary component involves sand filtration and UV disinfection. Together these two systems will considerably reduce E.coli concentrations being discharged to the environment.

UV Disinfection

As well, the introduction of UV disinfection eliminates the need to add chemicals for disinfection and eliminates completely any chlorine residual being discharged to the environment.

Automated Septage Receiving System

The automated septage receiving system allows any time of day unloading of hauled septage by licenced hauling contractors allowing easier management and operations of septic systems by private owners.

Re-Use of Existing Lagoons

A unique aspect of the project involved the re-use of two of the existing lagoon cells for sludge storage and plant high flow diversions, greatly reducing possibilities of plant by-passes. The operator can limit the flow to the aeration tanks by sending the excess flow (or all the flow) to the lagoon. Decommissioning of the other lagoon cells allowed prime land to be possibly developed instead of prime agricultural land. Also of note, future plant expansions will not require any new land acquisitions. All new facilities could be constructed on the retained properties.

- 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.).

The Project was implanted as outlined in the GMF funding proposal. There were no substantial changes to the implementation plan.

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 capital project cost for the Ridgetown WWTP is \$16,104,112.13.

Canada-Ontario Municipal Rural Infrastructure Fund (COMRIF) Intake Three program funding of \$5,333,332 was awarded to the project.

Green Municipal Fund (GMF) loan and grant of \$2,400,000 was awarded to the project.

The information below summarizes the capital cost for the project.

Ridgetown Wastewater Treatment Plant Project Cost Summary				
Project Costs	Project Costs			\$14,644,625.29
	Engineering Fees (Associated / Dillon)			\$ 1,459,486.84
	Total Current Project Costs			\$16,104,112.13
Project Funding	COMRIF	Federal Government	1/3	\$ 2,666,666
		Provincial Government	1/3	\$ 2,666,666
	GMF	Grant		\$ 400,000
		Loan		\$2,000,000
	Total Funding Sources			\$ 7,733,332
	PUC Cost			\$8,370,780.13

The operation and maintenance costs estimated by the project team engineers included electricity, chemical and staffing costs. Cost estimated for electricity is \$70,000 / to run the process equipment. The cost for alum is based on 41 kg/d use and equates to \$7,500/yr as opposed to the current \$15,000/yr. The staffing requirement for the new plant would total \$45,000/year.

Potential revenue will be gathered by the PUC because they will meter all customers on the basis of use. The other potential revenue lies with the revenue generated by the septage receiving station.

- 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.

N/A

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 proposed Ridgetown WWTP upgrade expanded the treatment capacity from 1,537 m³/d to an average design flow of 2,347 m³/d, providing an immediate increase to the treatment capacity by 50%.

Additionally, the proposed design included provisions for future expansion to handle flows from potential future development in and around the community of Ridgetown as well as outlying Rondeau Bay Area. The selected site location also freed up industrial land and provided extended separation distance for the new facility.

The requirement of monitoring the raw sewage for CBOD₅, TSS, Total Phosphorus and total Kjeldahl Nitrogen remained the same and additional MOE required monitoring of Total Ammonia Nitrogen (weekly) and Alkalinity (weekly) were introduced to better control and monitor discharges to the environment.

The total phosphorus concentration limit was lowered in proportion to the increase in the average flow to maintain the existing permitted phosphorus loading limit on the Gawne Drain. The operating objective for disinfection was to lower from 150 organisms per 100 mL to 100 organisms per 100 mL of E.Coli bacteria.

As well, increased reliability of E.coli parameter being discharged to environment because of new UV disinfection system is now monitoring 24 hrs/day along with a stand-by system for back-up.

Direct environmental benefits include:

- Reduced incidences of non-compliance with effluent E. coli limits, through additional treatment capacity, enclosed buildings and UV disinfection.
- Non-toxic effluent (ammonia) through more sophisticated treatment technologies and year round discharge
- Reduced phosphorus loading through more sophisticated treatment technologies and year round discharge.

The previous operational impacts that were eliminated with the new WWTP included:

- Lagoon effluent storage capacity is fully utilized during wet cold winters (no excess capacity).
- Design limits use of full storage capacity of Cell 1.
- Hydraulic restrictions impact ability to drain Cell 1.
- Filter bed freeboard is insufficient, limiting operation of the effluent pump station thus affecting the treatment of ammonia.

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.

The new facility helped protect the Gawne Drain and the irrigation ditches that empty into it. The new wastewater treatment plant provides a safe and cleaner discharge which result in protecting the health of those in the stream, and ultimately result in a safer and cleaner Chatham-Kent environment.

The treatment plant improved the ecology of Gawne Drain through the reliable, ongoing discharge of a dependable supply of non-toxic effluent to the intermittent flow regime which was exhibited. As well, there is a marked improvement in terms of minimizing periodic odour emissions related to storage of effluent in on-site lagoons.

The decommissioning of Cell 1 and aeration 1 in the previous system will reduce water fowl damage to neighbouring farmlands.

Guelph University, Ridgetown Campus which specializes in academic programs such as agriculture, horticulture and environmental management benefits of having the new facility in their community. The new facility allows the students direct access to a treatment facility which helps with their site studies, as opposed to travelling a fair distance to witness the same processes.

Reserve capacity of treatment plant, allows for industries to move in, thus providing for growth in the municipality and create employment.

Growth promotes new revenue streams that in turn support urban renewal opportunities, such as improvements to recreational facilities and other community based initiatives.

Improvements to facilities and community based initiatives can incorporate Leadership in Energy and Environmental Design (LEED) principles and other eco friendly concepts that provide further environmental benefits.

- 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.)

Economic benefits of the new waste water treatment plant include:

- Located the new facility in an existing lagoon, there was savings by not having to purchase a new property;
- Re-used as much equipment as possible in the new facility;
- No impediment to growth, because treatment capacity for new connections are available;
- New businesses find serviced properties more advantageous to purchase around the facility.

The treatment process is Continuous Flow Activated Sludge. This process was selected based on its proven track record, its ability to expand to meet future needs, and its positive impact on both the natural and socio-economic environments.

Innovative environmental technologies included the facility's tertiary treatment which utilized sand filters for superb effluent quality and UV disinfection which eliminated chlorine levels being discharged into the environment.

The use of full-cost accounting and full-cost pricing has been satisfied by CKPUC by implementing the water and wastewater rates study with periodic updates.

Demand-side management policies and programs include the municipality's policy for water use restrictions and the sewer use policy.

The requirement of staff to operate the new WWTP satisfies the job retention, job creation and generation of employment. As well, employment during construction seen as many as 25 – 30 construction workers on site during peak days.

The new waste water treatment plant was designed to treat raw sewage outside the urban limits of Ridgetown if needed. There has recently been inquiries on the potential of servicing the wastewater from an existing nearby trailer park that accommodates over 1,000 people during half the year.

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.

Chatham-Kent would select the engineering consultants for a new project in a similar manner as it did for the Ridgetown WWTP project. Chatham-Kent followed its consultant selection policy and found it to be competitive and clear.

Chatham-Kent would also follow the same Class EA process by keeping all stakeholders involved and updated as well as conducting the public information centre. Proper notices were distributed to the public information centre. Proper notices were distributed to keep all interested parties well informed. The public submitted no appeals for the Ridgetown WWTP ESR and Notice of Completion.

The PUC operations staff were involved heavily from the consultant selection to completion of construction. This allowed valuable input during the entire process which enabled the start-up of the new facility to go well.

- 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.

If Chatham-Kent were to build a similar project, key operations staff would be chosen to tour other facilities of the same design that have already been constructed elsewhere. This would allow any operations feedback from the other facilities to be incorporated into the new design.

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

A barrier from the local conservation authority delayed approval to discharge the effluent to the local drain. With great diligence, liaison and relationship building between the consulting engineers, a solution was developed to satisfy both parties on the outcome.

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

Keep operations staff well informed on all aspects of the project. Potential stakeholders and relevant agencies should also be kept abreast of the project from the initial stages.

- 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.

The Environmental Study Report (ESR) completed by Associated Engineering and Dillon Consulting satisfied requirements under Phase 4 of the Class EA. The ESR highlighted the preferred design to be a continuous flow activated sludge process. This process has a proven track record and can be easily expanded for future capacity increases at the plant.

8. Publicity and Photos

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

A ribbon cutting ceremony was held at the new Ridgetown WWTP on May 14, 2010 to celebrate the completion of the facility. Percy Hatfield, member of the Federation of Canadian Municipalities (FCM) National Board of Directors and councillor, City of Windsor; Dave Van Kesteren, Member of Parliament for Chatham-Kent-Essex; Pat Hoy, Member of Provincial Parliament for Chatham-Kent-Essex; Randy Hope, Mayor of the Municipality of Chatham-Kent; and PUC staff were present for the ribbon cutting and tour of the facility. FCM through the Green Municipal Fund is providing \$400,000 grant.

- 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).



Photograph of MP Dave Van Kesteren, CKPUC GM Tom Kissner, Windsor Councillor Percy Hatfield and Chatham-Kent Councillors Bryon Fluker, Steve Pinsonneault, Jim Brown



Photograph of Area Manager Darren Galbraith giving a tour to Percy Hatfield, Dave Van Kesteren, Steve Pinsonneault, Jim Brown and members of the media.



Photograph of federal, provincial, municipal and PUC Staff in front of the new Ridgetown WWTP.



Photograph of Settling Tanks and Lagoon Cell at the Ridgetown WWTP.



Photograph of Area Manager Darren Galbraith explaining the innovative UV Disinfection system used at the Ridgetown WWTP.