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REPORT TO FULFORD WATER SERVICE COMMITTEE
MEETING OF FRIDAY 05 FEBRUARY 2010

SUBJECT **CAPITAL PROJECT UPDATE**

PURPOSE

To present for information to the Fulford Water Service Committee a status report on the capital project.

BACKGROUND

The Fulford Harbour Waterworks District (FHWD) was established to operate a water supply and distribution system providing water from Weston Lake to the Fulford Harbour community. The original system was developed circa 1960. The FHWD requested that the Capital Regional District (CRD) conduct a feasibility study to determine the criteria for conversion of the service, and that the CRD apply for an infrastructure grant on its behalf. A study was completed in April 2004, and the CRD submitted a grant application to the province based on the scope and estimated cost of capital improvements described in the study. A grant was awarded under the Canada/British Columbia Infrastructure Program (CBCIP) for the purpose of constructing a new water treatment plant to meet current drinking water standards, metering all water service connections and modifying and upgrading distribution infrastructure as required for the new treatment plant. The service was converted by establishment of the CRD Fulford Water Service in November 2004.

A contract was awarded in May 2005 to Bullock Baur Associates Ltd. (now Genivar) for design and construction services. Stipulated price contracts were awarded in July 2005 for supply and construction of a reservoir, and for supply of prefabricated process components of a new water treatment plant. In September 2005, a stipulated price contract was awarded for watermain and pump station construction. In 2006 the CRD received only a single bid for construction of the Beddis water treatment plant, nearly identical in design to the proposed Fulford plant. The bid exceeded the budget for plant construction by roughly 60 percent, forcing the Beddis Water Service Committee to reject the bid, and revealing that tendering construction of the Fulford water treatment plant in a single general contract would not be feasible within the project budget.

An alternative project delivery model was approved by the committee on 03 October 2006, establishing the CRD as general contractor with construction contracted in smaller stipulated price contracts or on a cost plus basis using available local trades where practicable. The scope and design of plant construction were modified to reduce costs. While this approach was expected to reduce construction costs, it was also expected to defer the completion date. Despite the expected cost savings, it was anticipated at that time that in order to complete and commission the new plant and related distribution works, an increase in the overall project budget funded from available reserves would be required. It was also anticipated that available reserves would not likely be adequate to fund the installation of customer water meters as originally planned.

Current Project Status

Commissioning of the water treatment plant was completed in October 2009, and the plant has been producing water into the distribution system continuously for the past three months. A summary of the commissioning process is included in Attachment 2.

Supply and distribution works are substantially complete, with the exception of the following tasks:

1. Metered connections to new distribution mains for properties currently served by mains that will become raw water pipeline.
2. Metered connection to school, and fencing around reservoir.
3. Waste connection from water treatment plant to school wastewater plant.
4. Resolve "grandfather agreement" connections to supply pipeline near Weston Lake (outside Fulford water service area).
5. Complete metering of all remaining service connections.

As shown in Attachment 1, it is proposed to identify all project work to 31 December as Phase 1 of the project, recognizing that construction and commissioning of the water treatment plant, reservoir, pressure reducing valve (PRV) and watermains is now complete. This phase of the project is now considered closed, and any work relating to these assets after 01 January 2010 will be funded from the operating budget. Tasks 1 through 4 above, which may be completed in 2010 using currently available project funding, are identified as Phase 2. Task 5 (customer meter installation) is identified as Phase 3, to be completed after 2010 and requiring new funding outside the existing project budget. Materials for meter installation have been purchased. Fully metering the service area would enable operating cost recovery based on water usage, and would greatly improve the ability to manage water losses.

Project Financial History

A financial summary of the project is provided in Attachment 1. The original project budget was $1,544,900, of which the CBCIP grant contributed $972,146. The balance of $572,754 was provided through borrowing under the Municipal Finance Authority (MFA) over a 15-year term, with the annual debt servicing cost of $52,510 recovered through parcel taxes levied in the Fulford water service area.

Staff reports presented to the committee on 03 April and 07 October 2008, and 22 April 2009, projected that costs to complete the project would exceed the original budget by $200,000, $260,000 and $366,000, respectively. On 03 April 2008 the committee approved an increase in the project budget of $106,000 from reserves. On 07 October 2008, the committee approved a further increase of $146,439 consisting of the remaining reserve funds and the projected 2008 year-end surplus in the operating budget. The actual surplus was less than projected, resulting in an actual increase of $142,130. A further increase of $10,000 from the 2009 operating budget was authorized 22 April 2009, bringing the current approved budget to $1,803,030.

At the request of Regional Director Garth Hendren, in November 2009 the CRD Board authorized a grant of $75,000 under the Community Works Fund (Gas Tax Agreement) to aid in completion of the Fulford capital upgrade project. Of this funding, $30,000 was provided in 2009, and the balance of $45,000 is provided in 2010. As a result, the available project funding at 31 December 2009 was $1,833,030, and a further $45,000 is available this year. Committee approval is required to assign the Gas Tax funds to the project budget.

The total expense to complete Phase 1 of the project was $1,827,982, leaving the balance of $55,048 of project funding available to complete Phase 2 in 2010. The estimated cost to complete Phase 2 is $55,000. No funding from the project budget is expected to be available for Phase 3 (customer meter installation).

ALTERNATIVES

1. That the Fulford Water Service Committee approve increasing the upgrade project budget to $1,878,030, funded from Community Works Fund (Gas Tax Agreement) grants of $30,000 in 2009 and $45,000 in 2010.

2. That the Fulford Water Service Committee refer the matter back to staff for more information.

FINANCIAL IMPLICATIONS

The requested project budget is expected to be sufficient to complete all remaining project work in 2010 except the installation of customer water meters, without any impact on parcel taxes or user charges. Additional funding of approximately $60,000 would be required in order to complete metering. If this work is funded at $10,000 per year beginning 2011 from the operating budget, metering would likely be completed in 2016, and would require a roughly $100 increase in the annual user charge per customer for six years.

SUMMARY/CONCLUSIONS

The new Fulford water treatment plant entered service in October 2009 and is currently producing treated water into the distribution system. With a $75,000 grant provided by Regional Director Garth Hendren from the Community Works Fund, remaining work on the distribution system will be completed in 2010 within the available remaining capital budget. The budget is not sufficient to complete customer metering, which would require an estimated $60,000 in additional funding in order to proceed.

RECOMMENDATION

That the Fulford Water Service Committee approve increasing the upgrade project budget to $1,878,030, funded from Community Works Fund (Gas Tax Agreement) grants of $30,000 in 2009 and $45,000 in 2010.

Colwyn Sunderland, AScT
Local Services Engineering Coordinator

CS:ls
Attachments: 2

ATTACHMENT 1

FULFORD DAF PLANT
COMMISSIONING SUMMARY

PURPOSE

To brief the Fulford Water Service committee on the process of commissioning the Fulford Dissolved Air Floatation (DAF) water treatment plant and ancillary equipment, including commissioning, training, unforeseen issues, modifications and final outcome.

BACKGROUND

The CRD Fulford project manager requested that Operations staff commence the commissioning and start-up of the Fulford DAF Plant in February of 2009. This process was completed in November of 2009 and included the following:

- Commissioning
- Operator training
- Resolution of minor mechanical, electrical and process control (SCADA) issues
- Superchlorination of reservoir and distribution system
- Final underground connections for distribution of treated water

COMMISSIONING PART I – SPRING 2009

1. Commissioning of the facility started the week of February 16, 2009 with the assistance of a project technician from Corix (process equipment supplier). All equipment was checked for functionality and proper rotation prior to the arrival of the Corix field technician. SCADA programming was approximately 70% complete at that time.
2. The following sequence describes the initial startup process:
    - All alarm points checked for all operating systems
    - Plant started with raw feed
    - Turbidity meter calibrated
    - Polymer feed system adjusted as per jar test results
    - Start flow control adjusted as per manufacturer's specification
    - Discharge flow control adjusted via PID controller for electrically actuated values
    - Chlorination system started and set points put in place
    - All storage and recycle water tanks operating level set
    - Operator training progressed as the plant was put in operation
3. The following unforeseen problems were encountered during commissioning:
    - Static/dynamic head pressure from the reservoir exceeded the plenum pressure set by manufacturer if the required flow rate were applied (field).
    - Blocked nozzles at filter plenums
    - Malfunction of control board at UV disinfection
    - Contractual flows could not be achieved.

4. The following actions resolved the above problems:
    - Manually cleaned individual nozzles at plenum
    - Provided new control board UV disinfection unit (warranty replacement)
    - Installed pressure regulating valves and backwash water feed pump

Commissioning work on site was suspended through late spring and summer 2009 as CRD, Corix and Vancouver Island Health Authority engineering staff developed, approved and procured suitable equipment and processes to resolve problems encountered during spring 2009 commissioning.

COMMISSIONING PART II – FALL 2009

The following work was completed:

1. Completion of SCADA monitoring and alarming system
2. Installation of telephone lines
3. SCADA dial up connection
4. Installation of buck to booster transformer
5. On June 1, 2009 visit from Corix field technician to prove filter backwash cycles and complete SCADA programming
6. Training of contract operator while the plant was operating to fill the reservoir
7. Superchlorination of reservoir and distribution system
8. Connection of treated water to distribution system

OPERATIONAL CHALLENGES

The following challenges will need to be addressed in the first year of operation:

1. Chlorination requirements of raw water: $80/week materials, and 3 hours/week labour
2. Twenty-four hour operation of DAF plant versus batch treatment
3. Processing recycled water through the DAF plant
4. Operational requirements versus budget allocations – 15 hours per week budgeted

SUMMARY

1. Plant performance to date
2. Future work requirements
    - Customers yet to be hooked up to new distribution system ASAP
    - Freeze protection – as time permits, or weather requires
    - Safety requirement and signage – will evolve with operating experience
    - In plant metering – ongoing discussion with Public Health Engineer

Fulford Water - Upgrade Project Financial Summary

ATTACHMENT 2

PHASE 1 (2005-2009): TREATMENT PLANT, WATERMAINS, RESERVOIR AND PRV STATION

	Original Plan 2005	Revised 3 Apr 2008	Revised 7 Oct 2008	Revised 22 April 2009	Proposed Final Budget
Budget and Funding Sources					
CBCIP Grant	$ 972,146	$ 972,146	$ 972,146	$ 972,146	$ 972,146
Fulford - grantable	$ 486,073	$ 486,073	$ 486,073	$ 486,073	$ 486,073
Subtotal - eligible costs	$ 1,458,219	$ 1,458,219	$ 1,458,219	$ 1,458,219	$ 1,458,219
Fulford - non-grantable	$ 86,681	$ 192,681	$ 334,811	$ 344,811	$ 344,811
CWF (Gas Tax) Grant 2009					$ 30,000
Total Budget - Phase 1	$ 1,544,900	$ 1,650,900	$ 1,793,030	$ 1,803,030	$ 1,833,030
Total Expense (Actual)					**-$ 1,827,982**
Balance forward to Phase 2					$ 5,048

PHASE 2 (2010): REMAINING CONNECTIONS TO TREATED DISTRIBUTION SYSTEM, FULFORD SCHOOL

Budget and Funding Sources	
Balance forward from Phase 1	$ 5,048
Sale of process control programming to Beddis*	$ 5,000
CWF (Gas Tax) Grant 2010	$ 45,000
Budget - Phase 2	**$ 55,048**
Estimated Expense	
Connect remaining customers in service area to WTP	-$ 30,000
Connect water to school and fence reservoir site	-$ 20,000
Connect WTP waste to school wastewater plant	-$ 5,000
Resolve "grandfather agreement" connections	$ -
Total Estimated Expense - Phase 2	**-$ 55,000**
Balance forward to Phase 3	$ 48

PHASE 3 (FUTURE): CUSTOMER METER INSTALLATION

Budget and Funding Sources	
Balance forward from Phase 2	$ 48
Transfer from operating revenue, or new borrowing	$ 59,952
Budget - Phase 3	**$ 60,000**
Estimated Expense	
Complete metering of remaining connections	-$ 60,000

* Programming work required for the Fulford system will also be required for other planned CRD DAF systems. Since the work has been completed at a cost to Fulford, other services will purchase equal $5,000 shares in the estimated $25,000 labour cost of developing code that applies to all the systems. Sale already completed for Highland/Fernwood, Lyall Harbour / Boot Cove and Magic Lake Estates.