



CITY OF CORNER BROOK WATER TREATMENT PROJECT

**Prepared for the Provincial
Clean and Safe Drinking Water Workshop
Gander, NL - March 2013**



Spring 2013





Agenda

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Project History - The 1st Attempt

- ◆ The City experienced a *Girardia* outbreak in 1992
- ◆ Several studies done on the distribution system and treatment requirements
- ◆ Original project was estimated to cost \$36M, including transmission work
- ◆ Funding secured with Federal / Provincial / Municipal at 1/3 share each
- ◆ Redesign of distribution system – moved from two water supplies to one
- ◆ Original design of the WTP based on accepted industry norms
- ◆ Treatment facility tendered via “Design-Bid-Build” in July 2010
- ◆ Bids closed well above estimates, Council voted to reject all bids





Project History - The Road to Design-Build

- ◆ Fall 2010 City re-evaluated alternative delivery options including P3
- ◆ Owner's Engineer selected in February 2011
- ◆ City chose to go with "Design-Build" (D-B) delivery method Spring 2011
- ◆ Request For Qualifications (RFQ) released July 18, 2011
- ◆ Significant interest in the project from all across Canada & US
- ◆ The inclusion of an honorarium was an important factor
- ◆ Request For Proposals (RFP) released December 16, 2011
- ◆ At this point the control shifts to the D-B teams to be innovative in their design and construction planning



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Design-Build - Request For Proposals Stage

- ◆ Four (4) D-B Teams were pre-qualified to submit proposals
 - ◆ Pre-qualification required to attract “experienced candidates”
- ◆ Drawings had to be 30% complete to be considered
 - ◆ Significant effort was expended by all 4 teams (honorarium)!
- ◆ The range of innovation in the designs was impressive
- ◆ 3 of the 4 proposed DAF (or DAF based) plants
- ◆ Different approaches to manage the risk of raw water variations
- ◆ Proposals to be scored on cost and technical evaluation
- ◆ RFP included two Performance Guarantees





Design-Build - Evaluation of Proposals

- ◆ Evaluation Committee of 9 people consisting of:
 - ◆ 4 from the City of Corner Brook
 - ◆ 4 from CBCL
 - ◆ 1 from Department of Municipal Affairs
- ◆ Used an evaluation matrix outlined in the RFP to assess proposals
- ◆ Each person reviewed and scored the proposals independently for the Technical evaluation worth 50% of points
- ◆ Capital cost worth 45% of points, 5% to Annual Operating Cost
- ◆ Several conference calls were held by the committee to review questions
- ◆ Process took several weeks, with final results clear according to points





Design-Build - Negotiation & Award

- ◆ Pomerleau was notified they were the Preferred Proponent
- ◆ A technical discussion ensued to review several aspects of proposal, which identified potential modifications to design
- ◆ How to evaluate and decide on the potential modifications???
- ◆ City agreed to pay for a 30 day pilot evaluation to be performed by the process equipment provider, which was Xylem in this case
- ◆ Pilot process confirmed the proposed design to be appropriate for the raw water and also led to expected operational cost savings (details covered in a later slide)
- ◆ Based on these findings, the contract was awarded in October 2012





Design-Build - Final Design Phase

- ◆ Contract awarded based on design at 30% complete
- ◆ Upon signing of the contract, design work re-commenced, with the negotiated changes being incorporated into the plant
- ◆ Design review meetings were held at the 50% complete mark
- ◆ Final design details are determined by the Builder and his Designer.
- ◆ The City and the Owner's Engineer are involved to ensure the design satisfies the Statement of Requirements as included in the Request for Proposals, and to clarify issues with conflicts, omissions, etc.
- ◆ Construction commences well before the final design is complete (I.e. Site and foundation work begins while electrical design is ongoing)





Design-Build - Construction Phase

- ◆ As with traditional construction, the Builder is in control of the site
- ◆ Unlike traditional construction, the Builder is responsible to resolve conflicts and/or omissions in the design
- ◆ Significant efficiencies are typically realized by the close working relationship between the Builder and the Designer
- ◆ Although paid by the Builder, the Designer is held to a high standard due to their Professional obligations
- ◆ Owners Engineer ensures the construction and equipment meet the intent of the Statement of Requirements
- ◆ Owners Engineer is the Payment Certifier and declares Substantial Completion





Commissioning Phase

- ◆ Substantial completion (S-C) re-defined in this D-B contract
(In Newfoundland the Mechanics Lien Act defines Substantial Completion, but you can contract out of it)
- ◆ Unlike construction of a new building, a WTP is deemed to be serving its purpose when it is producing water as required in the RFP
- ◆ Performance Guarantee (P-G) – Valued at \$500,000
 - ◆ Trial #1 – Successful completion achieves S-C
(this triggers the release of the 10% hold back)
 - ◆ Trial #2 – Successful completion earns the Builder 75% of the P-G
 - ◆ Trial #3 – Successful completion earns the Builder 25% of the P-G
- ◆ Operational Guarantee (O-G) – Valued at \$500,000
 - ◆ Builder submitted their estimated Annual Operating Cost (AOC)
based on energy and chemical consumption, in their proposal
 - ◆ Sliding scale for payment based on actual cost evaluation



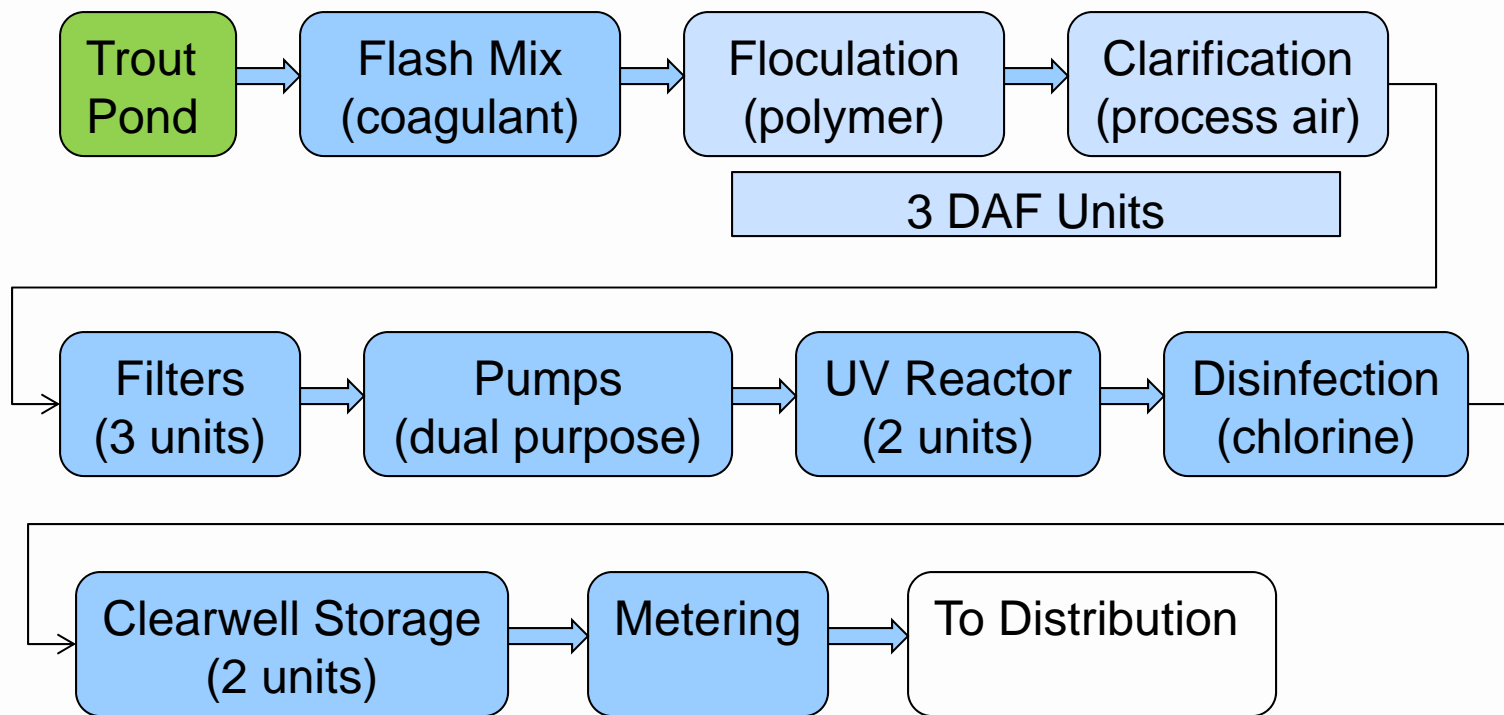


Overall Plant Description

- ◆ The selected proponent had the smallest and simplest design
- ◆ A standard Pre-Eng steel building with simple roof design
- ◆ Primary process: Dissolved Air Flootation (DAF) system with 3 DAF trains
- ◆ Footprint is reduced further by utilizing a “High Rate” DAF process
- ◆ Gravity flow through plant with several fail-safes to prevent flooding
- ◆ Pump to 2 above grade Clearwell tanks
- ◆ Residuals piped to City sanitary sewer system



WTP - Process Block Flow Diagram





The Money!

- ◆ Original project cost: \$36M
- ◆ Escalated total project cost during early design: \$43.5M
- ◆ Pre-Tender estimate for plant alone rose to \$36.4M
- ◆ Bids for the WTP ranged from \$41M to \$51M (3 bids received)
- ◆ Total project cost at that time was estimated at up to \$65M
- ◆ Design-Build process took 25 months to arrive at new proposals
- ◆ Proposal costs ranged from \$25.7M to \$46.4M
- ◆ Final negotiated cost for plant: \$28.2M
- ◆ Estimated savings on overall project: \$15M





Negotiated Items Summary

- ◆ Pre-Award Items
 - ◆ Pilot testing
 - ◆ Additional (3rd) Chlorinator
 - ◆ Clearwell capacity increase from 4.7ML to 6.0ML
 - ◆ Additional (3rd) DAF Train

- ◆ Post-Award Items
 - ◆ Chemical substitutions and associated equipment changes
 - ◆ CO₂ and Caustic Soda replaced with Soda Ash
 - ◆ Alum replaced with PACL

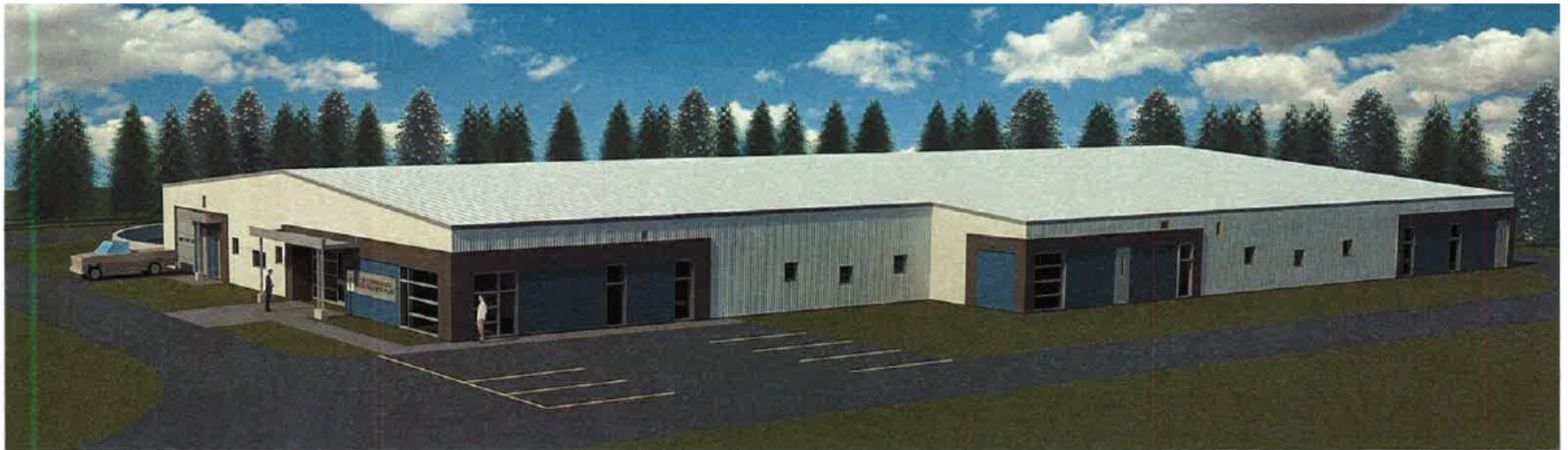




Closing Comments

- ◆ For large projects, engage an experienced Owners Engineer AND and an experienced Lawyer
- ◆ A detailed RFP is a must! It should include the proposed D-B contract
- ◆ In the D-B method, the Builder is in charge and hires the Designer
- ◆ Owner can negotiate with Preferred Proponent prior to awarding contract
- ◆ For large projects consider pre-qualifying the D-B teams
- ◆ Consider an honorarium
- ◆ Accept the fact that you're not in COMPLETE control!





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Currently Using 2 Water Sources

