# Town of Renfrew

# Water Pollution Control Plant Upgrade

## Lessons Learned from a first Value Engineering Study

Mike Asselin, P.Eng. Director of Development and Works
Steve Taylor, P.Eng., CVS

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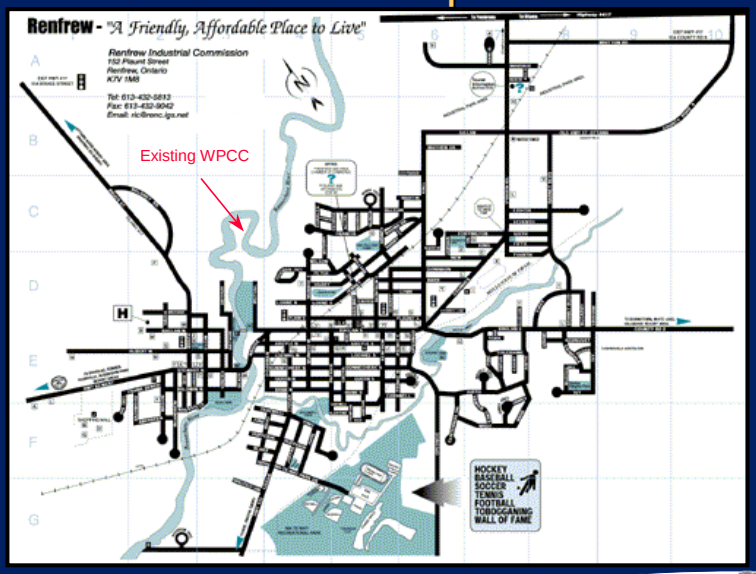
## This Presentation…

- **Project location**
- **Project Issues**
- **Why did Town choose VE**
- **The Study**
- **Feedback from Town and Design Team**
- **Lessons Learned**

# Project Location


# Town of Renfrew – Population 7600



## Project Requirements

- **Current plant**
  - Primary treatment plant includes primary clarifier and disinfection by chlorine gas
  - Plant constructed in 1966
  - MOE and Town concerned with increasing non compliance events
  - MOE issued provincial order for plant upgrade to minimum secondary treatment – facing potential development freeze
- **Planning**
  - EA defined constraints and proposed plant upgrade
  - Capital budget established –early in process

## Existing Plant

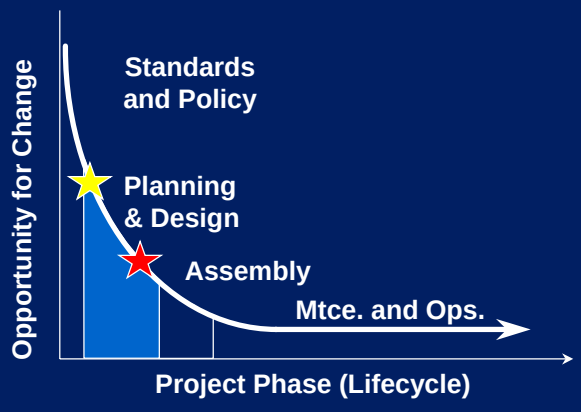

## Funding Issues

- **COMRIF funding**
  - $28 million received from COMRIF (Intake 2 after unsuccessful Intake #1)
  - 10% contingency included in funding applications
  - Project cost is capped (The grant is the grant)
- **Municipal Commitments**
  - Commitment to ratepayers “project will not go $1 over budget ” as not to repeat experience with Water Treatment Plant Experience of 2005
  - Town developed a review committee to track project

## Why did the Town Choose Value Engineering?

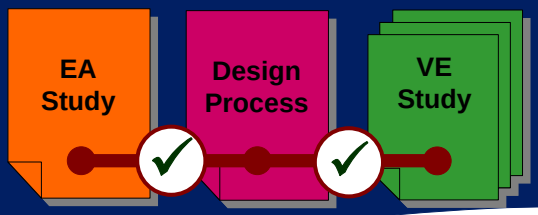
- **Primary Concerns**
  - Council feels accountable for project cost control
  - Poor experience on WTP project required greater cost control be planned into project
  - Town has $18 million debt capacity
  - Inflation pressures for prices makes original budget unlikely which places us over budget out of the gate
  - Project overruns are funded 100% by Town and overruns will cut into other project commitments
  - Independent review and accountability

## Influencing Change…



## Issues organizing the VE Study

- **Best to completed preliminary design**
- **Short time allowance for VE and resulting changes to meet COMRIF deadlines**
- **Reduced Schedule may cut into construction season and increase costs**
- **COMRIF funding –How can you fund VE in a competitive environment?**
- **Effective and timely selection of participants**



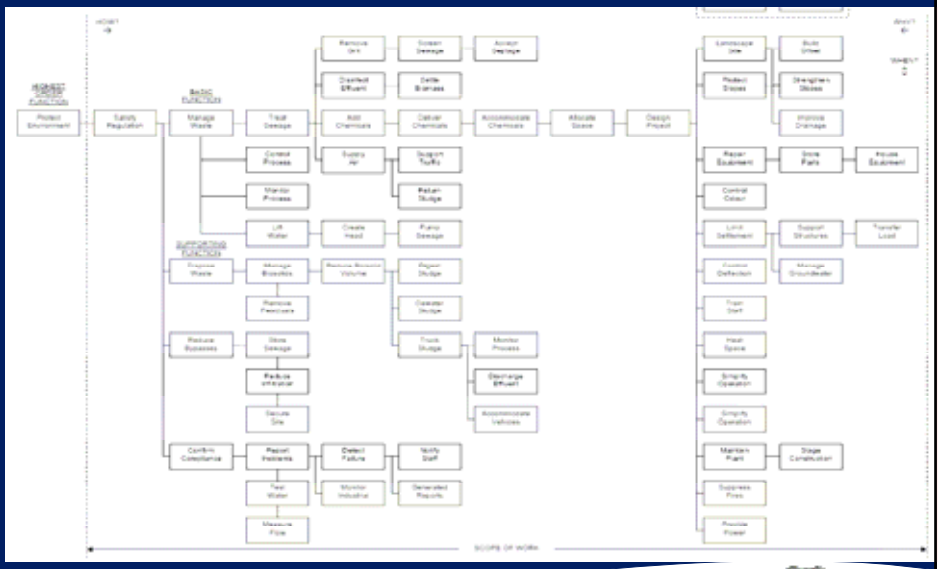

## The Study

- **SAVE International Job Plan**
- **3 day Workshop June 2006**
- **Site Visit during workshop (during wet day)**
- **VE Team**
  - Design Team Participants
  - Municipal
  - Independent Designers
  - MOE
  - Contractor
  - OCWA
  - External Municipal Operator

## Facilitator's Role

- **Clear Understanding of Problem**
- **Generation of Quantity of Ideas**
- **Focus on Value (Performance/Cost)**
- **Decision Making**


## FAST Diagram



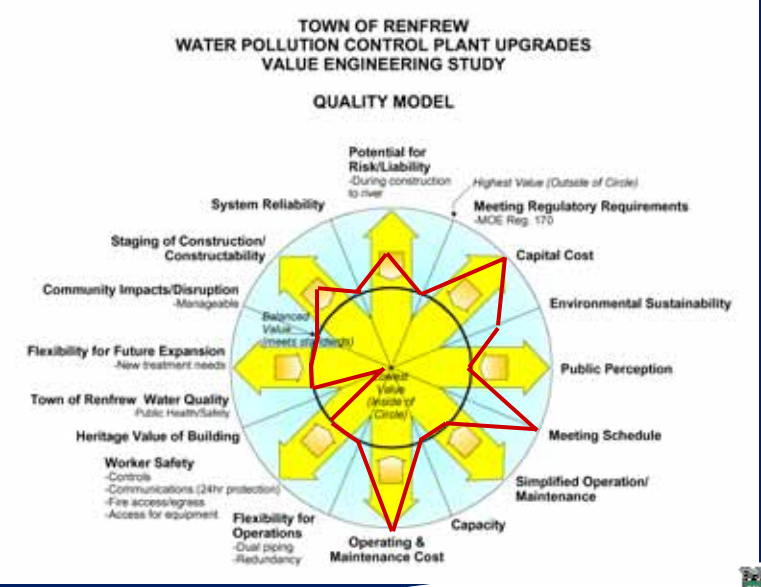
## Workshop Tools

- **Function Analysis**
- **Function Cost Model**
- **Quality Modeling**
- **Independent Cost Estimate Review**

## Function Cost Model and Cost /Worth Analysis

- **Capital Cost $28 million all in (with Engineering)**
- **Budget 24 million**
- **Worth (Target Cost $23 million)**
- **Future Operating LCC $13 million**
- **Town of Renfrew Cost**
  - $9.3 Million - Capital
  - $13 Million - Operating

# Quality Model



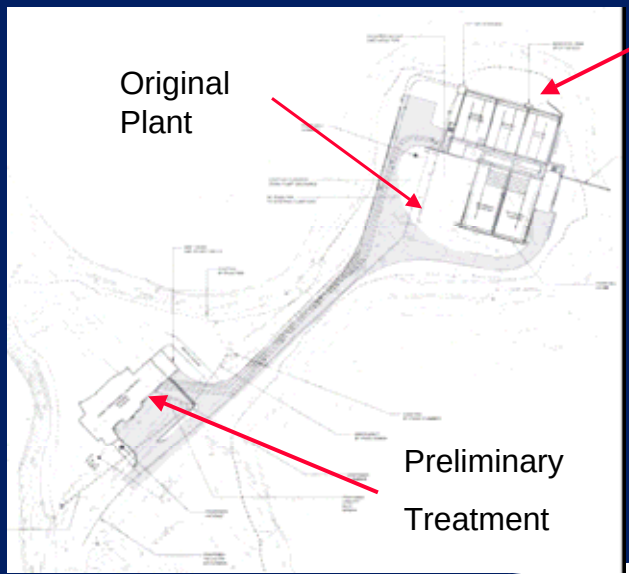

# Summary of Ideas

- **Constructability**
- **Electrical**
- **Tendering**
- **Geotechnical**
- **Architectural**
- **Process/Mechanical**
- **Instrumentation and Control**
- **Structural**
- **202 ideas (long list) to 25 final proposals**

## Key Idea – Relocation of Site

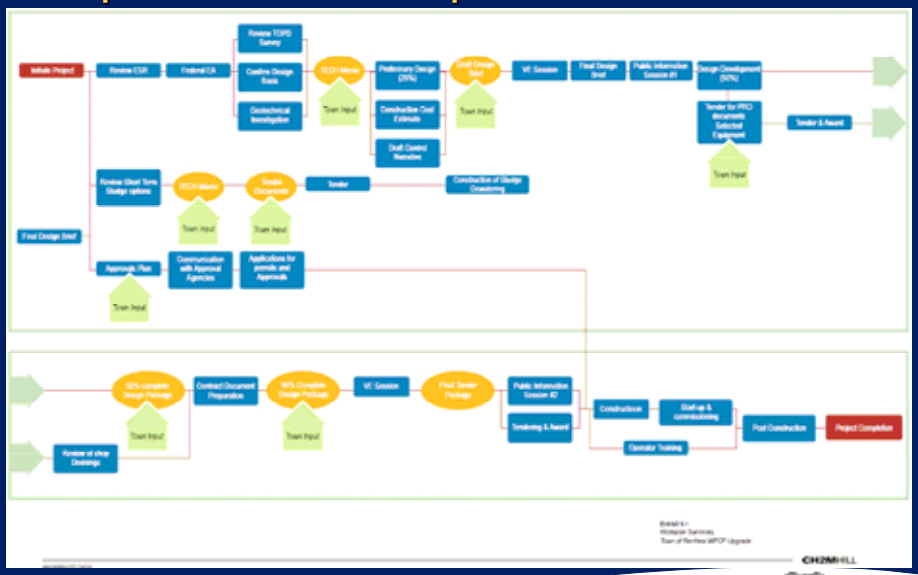
- **Initial Site selection on island Small footprint**
- **Constrained by topography and founding conditions**
- **Constraints increase capital cost of project**


## Initial Plant Layout



## Post VE layout


## VE planned into Proposal



## Feedback from the Town

- Will use this process on all major projects
- Process does cause some pain to incorporate (shift gears) after the VE
- Be prepared for scope and budget changes in Engineering fees (negotiation)
- Involvement of political representatives build confidence in design team, staff and project
- Great for public accountability
- Great benefits from technical expert review to confirm direction of project

## Feedback from the Design Build Team

- This is the 3 rd study the design team has had taken to a VE review
- Adding Design team to workshop improved consensus building
- Reduced the increasing expectations of owner
- Relationships were build that persist through the design period
- Set tone of being open and respectful to new ideas through remainder of project

## Lessons Learned

- **Do Early**
  - Consider VE at planning stage
  - Determine participants at proposal stage -get quotes for time and expenses
  - Budget for VE (time and money)
  - Good to include in funding applications to get best value for money
  - Results make good substantiation for advancing components of the project in a certain direction
- **Manage Risks**
  - VE is a tool to manage risky project in today's environment

NCE