NORTH RED DEER RIVER WATER SERVICES COMMISSION

Annual Meeting
April 9, 2017 @ 9:00 AM
LACOMBE CITY HALL
AGENDA

1. Call to Order

2. Adoption of Agenda

3. Adoption of Minutes
   a. December 11, 2017 - Regular Meeting (*attached)*

4. Presentation
   a. BDO Canada LLP – Ryan Wachter and Dan Luymes
      i) Auditor's Report and 2017 Audited Financial Statements
      ii) 2017 Audit Financial Statements for Approval
   b. 2018 Appointment of Auditors

5. Reports
   a. Operations (*attached)*
      i) SCADA Assessment
   b. Administrator (*attached)*
      i) Monthly Report
      ii) Financial - February 2018
   c. Chair
      i) "Going North"

6. Correspondence
   a. City of Red Deer – 2017 True-up

7. Old Business

8. New Business
   a. Bylaw 3.2 A bylaw to Amend Water Rate Bylaw #3
   b. Allocation of 2017 Surplus
   c. Recognition Presentation

9. In Camera

10. Next Meeting Date: June 18, 2018 (proposed)

11. Adjournment

NORTH RED DEER RIVER WATER SERVICES COMMISSION
REGULAR MEETING MINUTES
December 11, 2017

In Attendance: Chair Ken Wigmore, Lacombe County Councillor
Mayor Grant Creasey, City of Lacombe
Mayor Rick Bonnett, Town of Ponoka
Mayor Richard Poole, Town of Blackfalds
Justin de Bresser, NRDRWSC Administrator
Jennifer Peterson, Administrator Assistant

Others Present: Albert Flootman, CAO, Town of Ponoka
Michael Minchin, Manager of Corporate Services, Lacombe County
Myron Thompson. CAO, Town of Blackfalds
Preston Weran, Director of Infrastructure, Town of Blackfalds
Chris Huston, Utilities Manager, City of Lacombe
Jordan Thompson, Acting Operation & Planning Director, City of Lacombe

Regrets: Councillor Mark Matejka, Ponoka County

1. Call to Order:

Chair Wigmore called the meeting to order at 9:03 am.

2. Adoption of the Agenda:

MOVED by Mayor Bonnett that the agenda for November 6, 2017, be adopted as presented.

CARRIED

3. Adoption of the Minutes:

MOVED by Mayor Creasey *that the minutes for November 6, 2017, be adopted as presented.*

CARRIED

4. Presentation

5. Reports

Operations Report
Mr. Huston discussed the recent operation activities.

In summary:

- The Alberta One-Call locate requests are on par with last year.
- Continuing to work with various contractors that are working in the vicinity of the waterline and or crossing the line.
- The sump pump at the 39 Avenue was not working and has been replaced.
- Will be meeting with the City of Red Deer and Stantec at the Red Deer plant to discuss the implementation strategy identified in the SCADA assessment. Stantec to have final report completed by December 15, 2017.

Administrator Report

Mr. de Bresser presented the Administrator's report.

In summary:

- Administration is in receipt of the letter from Red Deer regarding the 2018 water rates. The 2018 water rate is a 6.5% increase instead of the 5% that was initial anticipated.
- The 5-year projection will be updated to reflect the increased 2018 water rates from the City of Red Deer.
- Administration has met with the City of Red Deer regarding the sale of a portion of the waterline; it was decided to defer all discussion until January 2018.

Concerns regarding the 2018 water rates increase of 6.5% instead of the anticipated 5% from the City of Red Deer were discussed. Red Deer had indicated earlier in a report that they had capital projects planned for 2019 – 2020 but since could have moved them to 2018. Concerns were also expressed regarding the commission receiving the rate from Red Deer after the required date of November 1st as per the Water Supply Agreement.

Mr. Minchin explained that the rates are based on the American Water Works Association standards and the same system is used by Atco and Fortis. As well, advised the Commission that it is their right to ask for the calculations.

MOVED by Mayor Bonnett that the Board directs Administration to request from Red Deer the price modeling including all details of the rate calculation. This information is to be presented to the board for review at the next meeting. Once reviewed the board will determine the next steps on proceeding with the 5-year rate projections for the Commission.

CARRIED

MOVED by Mayor Creasey to accept reports as information.

CARRIED

Chairperson's Report

Nothing to report at this time.

6. Correspondence/Information

The letter from the City of Red Deer regarding the 2018 water supply rate was shared with the board.

MOVED by Councillor Matejka to accept reports as information.

CARRIED

7. Old Business:

2018 Operating Budget Update

Mr. de Bresser presented the updated 2018 Operating Budget. He advised the board that the budget was updated to reflect the 2018 water supply rate from Red Deer. The only change will be to the surplus; it will decrease from $117,213 to $69,404. The commission's rate will remain at $2.07 per cubic metre.

MOVED by Mayor Poole to adopt the 2018 Operating Budget as presented.

CARRIED

8. New Business:

Nothing to report at this time.

9. IN Camera

Nothing to report at this time.

10. Next Meeting:

Monday, April 9, 2018 at 9:00 am, City of Lacombe Council Chambers.

11. Adjournment:

MOVED by Mayor Bonnett to adjourn this Meeting at 10:07 am.

CARRIED

_____ _____

Chairperson Administrator

North Red Deer River Water Services Commission

Financial Statements

For the year ended December 31, 2017

North Red Deer River Water Services Commission
Financial Statements
For the year ended December 31, 2017

Contents

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BDO Canada LLP
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600, 4909 49 Street
Red Deer AB T4N 1V1 Canada

Independent Auditor's Report

To the Members of the Board of the
North Red Deer River Water Services Commission

Report on the Financial Statements

We have audited the accompanying financial statements of North Red Deer River Water Services Commission, which comprise the Statement of Financial Position as at December 31, 2017, and the Statements of Operations, Change in Net Debt and Cash Flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of North Red Deer River Water Services Commission as at December 31, 2017, and the results of its operations, change in net debt and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Red Deer, Alberta
April 9, 2018

CHARTERED PROFESSIONAL ACCOUNTANTS

North Red Deer River Water Services Commission
Statement of Financial Position

December 31	2017	2016
Financial assets		
Cash	**$ 6,341,364**	$ 6,097,887
Trade and Other Receivables	**1,005,534**	680,304
	7,346,898	6,778,191
Liabilities		
Accounts payable and accrued liabilities	**390,887**	299,629
Current Portion of Long-term Debt (Note 3)	**704,542**	673,815
	1,095,429	973,444
Long-term Debt, Net of Current Portion (Note 3)	**12,118,749**	12,823,291
	13,214,178	13,796,735
Net debt	**(5,867,280)**	(7,018,544)
Non-financial assets		
Tangible capital assets (Note 5)	31,265,413	31,731,023
Inventory of Supplies (Note 6)	**78,758**	72,449
	31,344,171	31,803,472
Accumulated surplus (Note 8)	**$25,476,891**	$ 24,784,928

Commitments (Note 10)

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements

North Red Deer River Water Services Commission
Statement of Operations

For the year ended December 31	Budget 2017	2017	2016
Revenue			
Water Sales to Commission Members (Note 9)	$ 5,617,068	**$ 5,651,937**	$ 5,485,677
Service Fees to Commission Members (Note 9)	140,390	**141,012**	140,350
Interest income	43,511	**71,068**	50,059
Rebates (Note 11)	30	**388**	348,371
Other Revenue	1,000	**1,750**	573
Total revenue	5,801,999	**5,866,155**	6,025,030
Expenses			
Accounting and Audit Fees	8,000	**8,321**	8,243
Board Remuneration	3,800	**4,611**	4,000
Board Travel	1,500	**409**	317
Communication	8,472	**8,333**	8,387
General Material and Supplies	900	**2,137**	737
Insurance	3,889	**3,933**	3,903
Interest Long-Term Debt	601,086	598,979	628,458
Legal	500	**100**	300
Management Fees	55,728	**55,728**	54,595
Office	150	**111**	120
Operator Costs	121,550	**112,377**	101,860
Other Expenses	25	**5**	20
Other Professional Fees	57,192	**16,662**	20,283
Purchase of Water	3,863,404	**3,878,105**	3,510,318
Repairs and Maintenance	7,500	**6,850**	861
SCADA Maintenance	8,300	**8,725**	9,014
Utilities	3,500	**2,649**	2,732
Valves	5,000	**545**	2,877
Amortization of Capital Assets	465,610	**465,610**	465,610
Total expenses	5,216,106	**5,174,190**	4,822,635
Excess of revenue over expenses	585,893	**691,965**	1,202,395
Accumulated surplus, beginning of year	24,784,928	**24,784,928**	23,582,533
Accumulated surplus, end of year	$ 25,370,821	**$25,476,893**	$ 24,784,928

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements

North Red Deer River Water Services Commission
Statement of Change in Net Debt

For the year ended December 31	Budget 2017	2017	2016
Excess of revenue over expenses	$ 585,893	**$ 691,965**	$ 1,202,395
Amortization of tangible capital assets	465,610	**465,610**	465,610
	1,051,503	**1,157,575**	1,668,005
Decrease (increase) in Inventory of Supplies	-	**(6,311)**	1,314
Net change in net debt	1,051,503	**1,151,264**	1,669,319
Net debt, beginning of year	(7,018,544)	**(7,018,544)**	(8,687,863)
Net debt, end of year	$ (5,967,041)	**$ (5,867,280)**	$ (7,018,544)

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements

North Red Deer River Water Services Commission
Statement of Cash Flows

For the year ended December 31	2017	2016
Operating transactions		
Excess of revenue over expenses	**$ 691,965**	$ 1,202,395
Items not involving cash		
Amortization	**465,610**	465,610
Changes in non-cash operating balances		
Accounts receivable	**(325,230)**	142,310
Inventories of supplies	**(6,311)**	1,311
Accounts payable and accrued liabilities	**91,258**	(44,414)
	917,292	1,767,212
Financing transactions		
Repayment of long-term debt	**(673,815)**	(644,428)
Net change in cash and bank indebtedness	**243,477**	1,122,784
Cash, beginning of year	**6,097,887**	4,975,103
Cash, end of year	**$ 6,341,364**	$ 6,097,887

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements

December 31, 2017

Management's Responsibility for the Financial Statements

The financial statements of the Commission are the responsibility of management. They have been prepared in accordance with Canadian generally accepted accounting principles established by the Public Sector Accounting Board of the Chartered Professional Accountants of Canada. The North Red Deer River Water Services Commission (the "Commission") was established for the purposes of constructing and operating a water supply system. The Commission is made up of member municipalities and requisitions funds from its members. The members of the Commission are City of Lacombe, Lacombe County, Ponoka County, Town of Blackfalds, and the Town of Ponoka.

Budget Amounts

The budget amounts presented on the statement of financial activities are taken from the commission's annual budget.

Inventories

Inventories of materials and supplies for consumption are valued at the lower of cost or net replacement cost.

Tangible Capital Assets

Tangible capital assets are recorded at cost less accumulated amortization. Cost includes all costs directly attributable to acquisition or construction of the tangible capital asset including transportation costs, installation costs, design and engineering fees, legal fees and site preparation costs. Contributed tangible capital assets are recorded at fair value at the time of the donation, with a corresponding amount recorded as revenue. Amortization is recorded on a straight-line basis over the estimated life of the tangible capital asset commencing once the asset is available for productive use as follows:

Engineered Structures - Water System	45 to 75 years

Revenue Recognition

The financial statements are prepared using the accrual basis of accounting. The accrual basis of accounting records revenue as it is earned and measurable. Funds received for specific purposes which are externally restricted by legislation, regulation or agreement and are not available for general purposes are accounted for as deferred revenue. The revenue is recognized in the statement of operations in the year in which it is used for the specified purpose.

Liability for Contaminated Sites

A contaminated site is a site at which substances occur in concentrations that exceed the maximum acceptable amounts under an environmental standard. Sites that are currently in productive use are only considered a contaminated site if an unexpected event results in contamination. A liability for remediation of contaminated sites is recognized when the organization is directly responsible or accepts responsibility; it is expected that future economic benefits will be given up; and a reasonable estimate of the amount can be made. The liability includes all costs directly attributable to the remediation activities including post remediation operations, maintenance and monitoring. The liability is recorded at net of any expected recoveries.

December 31, 2017

Use of Estimates

The preparation of financial statements in accordance with Canadian Public Sector Accounting Standards requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from management's best estimates as additional information becomes available in the future.

1. Financial Instruments

The Commission utilizes various financial instruments. It is managements opinion that the Commission is not exposed to significant interest or currency risks arising from these financial instruments.

The carrying value of these financial instruments approximates their fair value

2. Bank Overdraft

The Commission has an unusued overdraft protection agreement with a maximum overdraft of $1 million and interest charged at lender prime less 0.25%. Collateral is comprised of a general security agreement specifically pledging all grant proceeds and debenture products As at year end December 31, 2017 the prime rate was 3.20%.

3. Long-term Debt

Long-term debt reported on the statement of financial position is comprised of the following:

	2017	2016
4.46% debenture, repayable $66,762, semi-annually, due September 15, 2031	**$ 1,379,344**	$ 1,449,010
4.515% debenture, repayable $570,688 semi-annually, due June 15, 2031	**11,443,947**	12,048,096
	12,823,291	13,497,106

Principal and interest repayments are as follows:

	Principal	Interest	Total
2018	$ 704,542	$ 570,359	$ 1,274,901
2019	736,670	538,231	1,274,901
2020	770,264	504,637	1,274,901
2021	805,389	469,512	1,274,901
2022	842,116	432,785	1,274,901
Thereafter	8,964,310	1,939,094	10,903,404
	$ 12,823,291	$ 4,454,618	$ 17,277,909

Debenture debt is issued on the credit of the Commission at large. The Commission has agreed to levy upon the member municipalities, a cubic meter water service fee based on actual use sufficient to provide for annual funds to pay principal and interest due eachyear on debentures and annual operating costs.

4. Debt Limits

Section 3 Alberta Regulation No. 76/2000 requires that debt and debt limits for the Commission to be disclosed. The Commission has received approval to borrow up to $27 million under ministerial order L:043/05 ($22,000,000) and L:148/05 ($5,000,000) to complete the project and as such, has not exceeded its debt limit at December 31, 2017. The debt limit and debt service limit otherwise determined are as follows:

	2017	2016
Total debt limit	**$11,732,310**	$ 12,050,064
Total debt	**(12,823,291)**	(13,497,106)
Total debt limit exceeded	**(1,090,981)**	(1,447,042)
Debt servicing limit	**2,053,154**	2,108,761
Debt servicing	**(1,274,901)**	(1,274,901)
Total debt servicing limit	**778,253**	833,860

The debt limit is calculated at two times the revenue of the Commission (as defined in Alberta Regulation No. 76/2000) and the debt service limit is calculated at 0.35 times such revenue. Incurring debt beyond these limitations requires approval by the Minister of Municipal Affairs. These thresholds are guidelines used by Alberta Municipal Affairs to identify Commissions that could be at financial risk if further debt is acquired. The calculation alone does not represent the financial stability of the Commission. Rather, the financial statements must be interpreted as a whole.

5. Tangible Capital Assets

			2017
	Engineered Structures	Land	Total
Cost, beginning of year	$ 34,776,820	$ 1,821,692	$ 36,598,512
Additions		-	-
Cost, end of year	$ 34,776,820	$ 1,821,692	$ 36,598,512
Accumulated amortization, beginning of year	$ 4,867,489	$ -	$ 4,867,489
Amortization	465,610	-	465,610
Accumulated amortization, end of year	$ 5,333,099	$ -	$ 5,333,099
Net carrying amount, end of year	$ 29,443,721	$ 1,821,692	$ 31,265,413

			2016
	Engineered Structures	Land	Total
Cost, beginning of year	$ 34,776,820	$ 1,821,692	$ 36,598,512
Additions	-	-	-
Cost, end of year	$ 34,776,820	$ 1,821,692	$ 36,598,512
Accumulated amortization, beginning of year	$ 4,401,879	$ -	$ 4,401,879
Amortization	465,610	-	465,610
Accumulated amortization, end of year	$ 4,867,489	$ -	$ 4,867,489
Net carrying amount, end of year	$ 29,909,331	$ 1,821,692	$ 31,731,023

6. Inventories of Supplies

	2017	2016
Valves	**$ 45,204**	$ 45,750
Materials and supplies	**8,523**	8,852
Pipe	**8,512**	8,512
Couplings	**4,266**	4,266
Miscellaneous	**12,253**	5,069
	$ 78,758	$ 72,449

7. Equity in Tangible Capital Assets

	2017	2016
Tangible capital assets	$ 31,265,413	$ 31,731,023
Total Long-Term Debt	(12,823,291)	(13,497,106)
	$ 18,442,122	$ 18,233,917

8. Accumulated Surplus

The Commission segregates its accumulated surplus in the following categories:

	2017	2016
Unrestricted Operating Surplus	**$ 1,375,621**	$ 1,915,441
Unrestricted Capital Surplus	**233,104**	233,104
Operating Reserve	**1,250,363**	1,212,773
Capital Reserve	**2,894,870**	2,429,260
Equity in tangible capital assets	**18,442,122**	18,233,917
Rate Stabilization Reserve	**1,280,811**	760,433
	$25,476,891	$ 24,784,928

The Capital Reserve is used to provide funds for specific capital equipment purchases to enhance or improve service delivery. Operating Reserves are funds for emergency situations. Both are funded out of year-end surplus and allocated based on Board Policy.

9. Related Party Transactions

City of Lacombe, Town of Blackfalds, Town of Ponoka, Lacombe County and Ponoka County are members of the Commission and, as such, have been identified as related parties.

Water sales charged to Commission members are as follows:

	2017	2016
City of Lacombe	**$ 2,602,751**	$ 2,555,540
Town of Ponoka	**1,397,499**	1,413,211
Town of Blackfalds	**1,625,047**	1,497,192
Ponoka County	**20,312**	19,734
	$ 5,645,609	$ 5,485,677

Service fees are based on the actual net operating costs of the Commission and are allocated among various Commission members based on earlier agreement. Service fees charged to Commission members are as follows:

	2017	2016
Lacombe County	**70,506**	70,175
Ponoka County	**70,506**	70,175
	$ 141,012	$ 140,350

The Commission is provided accounting, management and operations services by the City of Lacombe for a total cost of $178,184 (2016 - $166,638).

Included in accounts receivable are $995,344 (2016- $669,947) due from various members municipalities.

Included in accounts payable is $7,830 (2016 - $14,648) due to various member Municipalities.

10. Significant Agreements

a) **City of Red Deer**

The Commission has entered into a 25 year agreement with the City of Red Deer, expiring August 31, 2030 to purchase water. The agreement may be terminated by either party by giving five year's written notice. Under the agreement, the Commission is obligated to purchase an annual quantity of water to be determined by negotiation between the parties at a rate calculated on a cost of service basis utilizing the principles set out in the American Water Works Association manual or practice dealing with water rates and charges.

b) Related Parties

The Commission has entered into agreements with the City of Lacombe, Town of Ponoka, Town of Blackfalds, and Ponoka County to supply water. Under the agreement, the Commission is obligated to provide a maximum allocation of water to each municipality for a price determined annually by October 31st of the prior year.

11. Rebates

Based on the terms of the water supply agreement with the City of Red Deer effective September 1, 2005, annual water rates are based on forecasted consumption volume and costs which are subject to annual reconciliation. A "true-up" transactions, where one party compensates the other for variance in consumption and/or costs results in an actual cost per cubic metre variance greater than 10%. The rebate received in 2017 is a result of the reconciliation of actual annual costs and volumes to annual budgeted costs and volumes completed by the City of Red Deer for the 2016 calendar year and resulted in a rebate of $nil (2016 -$348,357). The reconciled amount and resulting rebate or payable is not calculated until subsequent to year end and as a result is recognized in the financial statements when known or received.

12. Approval of Financial Statements

The Board and Management approved these financial statements.

North Red Deer Regional Water Services Commission

5432 56th Avenue
Lacombe, Alberta T4L 1E9

Memorandum

TO: Commission Board Members

FROM: Justin de Bresser, Administrator

DATE: April 5, 2017

RE: Appointment of External Auditors for 2018 REF: 13/931 (2018)

PURPOSE:

To recommend appointment of auditors for the Commission for 2018 fiscal year.

BACKGROUND:

The Commission's Auditors recently completed the 4rd year of a 5 year contract for the delivery of auditing services for the Commission. In accordance with the Commission's Bylaws a resolution is required to appoint the auditors for 2018.

ISSUE ANALYSIS:

BDO LLP was awarded a 5 year auditing contract covering the 2014-2018 fiscal years.

FINANCIAL IMPLICATIONS:

The annual cost of the audit is $8,000 per year.

LEGISLATIVE AUTHORITY:

- Section 5.4 of the Commission's Bylaw 1 requires the annual appointment of the auditors.

ALTERNATIVES:

1. The Board can appoint BDO Canada LLP as auditors
2. Give notice to BDO Canada LLP and issue a new RFP for the upcoming years.

ATTACHMENTS:

- n/a

ACTION/RECOMMENDATION:

That the Board appoint BDO LLP of Red Deer, Alberta as the Commission's external financial auditors for the 2018 fiscal year.

North Red Deer River
Water Services
Commission

5432 56th Avenue
Lacombe, Alberta T4L 1E9

Phone: (403) 782-6666
Direct Line: (403) 782-1256
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chuston@lacombe.ca

M E M O R A N D U M

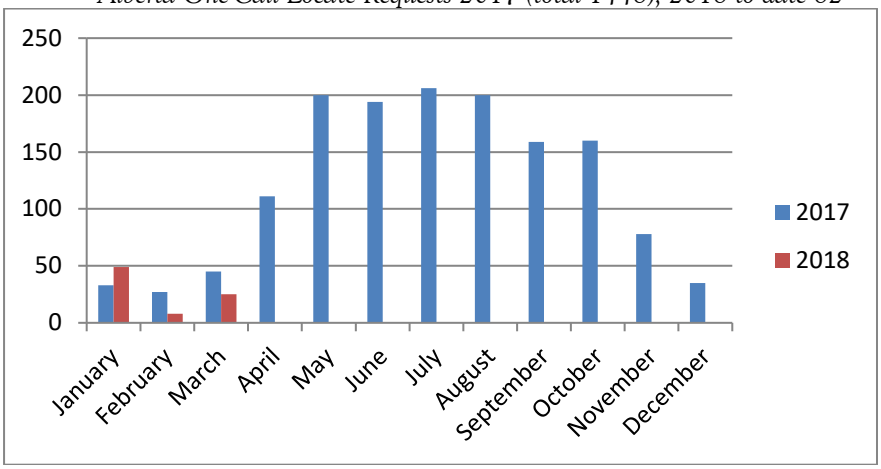
April 9th, 2018
Attn: NRDRWSC
Re: Operational Report since December 11th, 2017.

Since the last update provided to members of the Commission, the City of Lacombe has:

GENERAL INFORMATION

- Alberta One-Call Locate Requests:
  - December – 35 locates
  - January – 49 locates
  - February – 8 locates
  - March – 25 locates

Alberta One-Call Locate Requests 2017 (total 1448); 2018 to date 82



Repair response charges:

- January 8 – Operator replaced a leaking 90° (4") elbow at Railway in Blackfalds
- March 2 – Operator called by Central Alberta Greenhouses regarding a leaking air release valve in the field adjacent to their property. Operator used COL staff to aid in hydro-excavating the water from the leaking chamber and repair the leaking air release valve.
  - Same day, Stantec replaced the modem at the RDWTP

Call-Out:

- January 27 – Operator called by RDWTP to reset modem at PH'A' to restore communication
- January 28 - Operator called by RDWTP to reset modems at 39th Ave, Lucas, Wolf Creek, PH'B' and Broadway to restore communication

General Information:

- Operator continues to work with the various contractors that are digging in vicinity or are crossing the regional water line.
- SCADA Assessment – Drafting the RFP (using Stantec's SCADA Assessment review and recommendation) to upgrade the software and hardware - $270,000 project.

If you have any questions or comments regarding the operations described above please don't hesitate to call or email me.

Regards,

Chris Huston
Operations Supervisor

North Red Deer River Water Services Commission:

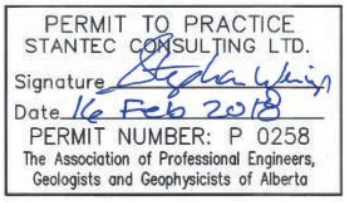
SCADA Assessment

This document outlines the strategies and recommendations for controls upgrade to the North Red Deer River Water Services Commission

Prepared for:
NRDRWSC

Prepared by:
Stantec Consulting Ltd.

Engineer's Stamp
& Signature



Permit to Practice Stamp
& Signature

February 16, 2018

Revision	Description	Author		Quality Check		Independent Review	
0	For 90% Review	MS	20171115	SS	20171115	SW	20171115
1	For 100% Review	MS	20171221	MM	20171227	DH	20180104

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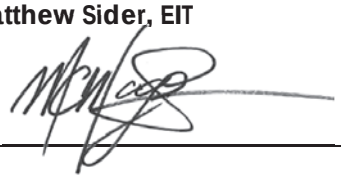
Prepared by 

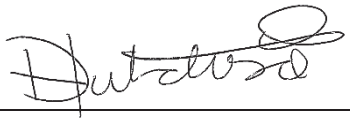
(signature)

Matthew Sider, EIT

Reviewed by 

(signature)

Michael Magas, ME, CET

Approved by 

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David Hutchison, P.Eng

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1 Abbreviations

GIS	Geographic Information System
NAS	Network Attached Storage
NRDRWSC	North Red Deer River Water Services Commission
SCADA	Supervisory Control and Data Acquisition
SCADARR	Supervisory Control and Data Acquisition Records & Reporting
VM	Virtual Machine

2 Background

In 2005, shortly after the North Red Deer River Water Services Commission (NRDRWSC) was formed, the regional water line from the City of Red Deer to the Town of Ponoka was constructed. At this time, the NRDRWSC is responsible for the supplying potable water to the following water delivery points and approximately 30,000 people without interruption:

- CRDWTP (52.273347, -113.818555)
- Main Meter Vault (2006) (52.318351, -113.813342)
- Central Park Meter (52.332425, -113.807923)
- Town of Blackfalds - Railway Reservoir (2006) (52.376859, -113.800144)
- Town of Blackfalds - Broadway Reservoir (2009) (52.390367, -113.795162)
- City of Lacombe - Pumphouse A (2006) (52.475366, -113.729010)
- City of Lacombe - Pumphouse B (2006) (52.461250, -113.739790)
- City of Lacombe - Pumphouse C (2006) (52.489804, -113.722092)
- Wolf Creek Reservoir (2008) (52.580397, -113.637294)
- Town of Ponoka – 39th Avenue Reservoir (2006) (52.667891, -113.609798)
- Town of Ponoka – Lucas Heights Reservoir (2006) (52.682545, -113.596603)
- Town of Ponoka – Riverside Reservoir (2006) (52.672918, -113.558695)

As illustrated in an **NRDRWSC Map** found in **Appendix A**, the regional water line starts in the City of Red Deer, where the water is treated at the Red Deer Water Treatment Plant. The regional water transmission main starts at the north side of the City of Red Deer, specifically at the intersection of Highway 2A and Highway 11A, where it passes through the Main Meter Vault. The Commission is responsible for the safe and secure operation of this critical infrastructure, and SCADA is a key tool used by the commission operators to fulfil this responsibility.

The scope of this project is to assess the existing SCADA system for vulnerabilities and to identify opportunities for improvement. In order provide meaningful recommendations that balance the level of service, and social and fiscal responsibilities we must consider how system failures may take place. Subsequently we must also ensure that the SCADA system responds appropriately to these failures.

Some of the acute failure events we have considered to measure our assessment are:

- Line break
- Major fire event
- Water Treatment Plant Failure
- Drought
- Temporary Water Service Provisions

We have considered what response the Commission would take in an emergency, and how the SCADA system will cope with events. Initial conclusions are based on a cascading automated control system failure from Remote SCADA control/view failure to PLC island mode failure. Each level of failure would increase the level of direct operator input required until such time as a local operator would be required to operate the local regional waterline inlet flow control valves in hand.

Our conclusions and recommendations assume that operating one reservoir fill point in hand for up to three days is an acceptable emergency operational paradigm. This includes the commission not being able to see the reservoir levels, but knowing the local reservoir operators all have independent local control systems that allow for remote reservoir level monitoring.

Beyond basic functional, safety and security requirements, we are also considering using the SCADA system and database as an information source to improve the Commission's ability to access information, fulfil archiving, protect against malicious cyber attacks, failure recovery support, and make use of best reporting practices.

2.1 Report Objectives

Based on the Request for Proposal, discussions with commission leadership, system operators, and other key stakeholders, we have prepared the following list of report objectives:

- Make recommendations for upgraded hardware from the existing Flexlogix PLCs or keep existing and manage with appropriate spares;
- Managed communications;
- Automated callouts provided directly from the SCADA system, rather than relying on the CRD Water Treatment Plant Operations Staff to call;
- Reliable remote access (user friendly and cyber secure);
- Redundancy in the SCADA Hardware/Software;
- Reporting capabilities;
- Exploring options to merge the SCADA system into the City of Red Deer's Current iFix SCADA system.

3 SCADA Functional Requirements

The recommendations outlined in this report will be based on the Commission's desire to achieve the following SCADA functional requirements.

3.1 Monitored communications

The regional water system covers a large geographic area and has specific data transfer quantity, quality, and reliability requirements. There are many communication choices available today with the advancement of technology and infrastructure. Historically, licensed private radio, copper wire based telephony solutions and internet based land line have been the professional solutions. With the increasing prevalence and evolution of cellular networks, cellular systems have become reliable, secure and provide cost effective alternative. Considering all these options, there is a solution that will meet the objective. The recommended solutions will meet the criteria of a modern managed communications network.

3.2 Callouts from SCADA system

In 2017, access to information is important for the efficient and effective operation of any complex system. Having the system operators notified directly by the automated control system removes one layer of communication. This reduces the opportunity for errors and miscommunication and speeds up the transfer of information. Traditionally the SCADA alarms would notify the CRD Operator of a problem through a general notification as an audible alarm and the specific alarm reported on the SCADA screen. The CRD operator would then call the NRD Operator to notify them of the issue. Modern SCADA software now have the capability, either directly or through a third-party software like WIN911, to call and notify any amount of operators in any sequence required. In this scenario, the CRD would see the alarm but would know that the NRD operator was receiving the alarm as well directly.

3.3 Reliable remote access

Currently the SCADA system at the CRDWTP polls all the system PLCs to display the information on the central screens. The system is being accessed by the operator at the CRD water treatment plant but can also be remotely controlled through a program called VNC over a VPN connection. This however takes over the local screen and results in a conflict for control. This document will show how to further leverage the effectiveness of a modern SCADA system that can be configured to allow simultaneous connections to access information and make changes to operational parameters from laptops, tablets or smart phone devices. The effectiveness of this system is dependent upon reliable data connections, which will be a key consideration of this report.

3.4 Redundancy in the SCADA Hardware/Software

The central SCADA system consists of the GE iFix SCADA software that is run on a commercial grade computer at the CRD. Historically, SCADA software is installed and run on a personal computer located at a water treatment plant, reservoir office, or municipal administration building. To provide redundancy in the event the SCADA personal computer fails, a second personal computer is often provided. This warm standby computer has the SCADA software and program installed and will automatically become available should the primary computer fail. In 2017, the use of cloud-based solutions are becoming more prevalent. This report will consider the applicability of a cloud-based SCADA solution where the SCADA software is installed and runs on a cloud-based computer service. The cloud-based solution can fulfill the redundancy requirement, along with a redundant communications service.

3.5 Reporting capabilities

One of the major advantages of a SCADA system is that it can be configured to collect data from all the remote PLC controllers, store it for historical purposes and produce reports based on this data automatically. The solutions we present in this report will have the ability to perform this function. It is important for the commission to have accurate sales contract reporting as well as regulatory reports that can be autogenerated. A Drinking Water Safety Plan (DWSP) is critical to compare with operational practices and controls algorithms to determine the systems response as desired.

3.6 CRD SCADA Integration

It is important for the City of Red Deer to see the near real-time data collected and displayed by the regional water system SCADA software as it directly effects the operations of the distribution throughout the City. Currently the two SCADA systems do not communicate directly. In the event of an alarm in the NRD system, there is a common PLC that as a relay between both systems. During discussions with the NRD commission the idea of merging the two SCADA systems into one surfaced. However after extensive discussions with both the CRD and NRD senior operators the following list of requirements was alternatively developed:

- Integrate more NRD alarms into the CRD system
- Allow a cross connection between systems to allow the CRD ERIS reporting system to collect data directly from the NRD SCADA system. This connection would be read only and the networks would only be connected at that one specific port.
- Presentation of information to show more data on the flows, depicting seasonal highs, fire fighting flows, chlorine analyzer data if available.

- Provide a console in kind with existing CRD equipment
    - 24” Dell monitor
    - Wired Keyboard and Mouse
    - Establish a 5 year replacement plan

In our evaluation of the proposed NRD SCADA software, we will ensure that the City of Red Deer reporting software will be able to read the commission’s SCADA database, so that it may be displayed at the water treatment plant or for Environment regulators upon request.

3.7 Asset Management System with SCADARR

In 2017, most organizations are expected to “do more with less”, and often technology is available that will help to achieve this objective. Historically, paper drawings, maps, thick binders full of as-builts and vendor pamphlets were the only source of information about infrastructure. While it is comforting to have paper copies of important system record documents, it can be very time consuming to find information and this is exacerbated in emergency situations. The SCADA control database and Geographic Information System (GIS) software can be brought together and integrated into an Asset Management System to be a repository for digital versions of drawings, maps and the vendor information specific to the regional waterline. The key to the effectiveness of the GIS is that all information is georeferenced or attached to the asset which it details. This simplifies the task of finding information about any given valve, meter, pipe, or any other recorded system asset. In our evaluation of solutions, we will consider the integration of the proposed SCADA upgrades with a GIS solution.

4 Condition Assessment

As a primary consideration for the development of the site assessments, the first step completed was determining which assets need to be assessed and what conditions qualify the lifespan of those remaining assets using an incremental scale from very poor to very good condition.

4.1 Equipment Condition Rating

When determining how to evaluate an asset, several different factors were considered including reliability, availability of replacements, and capacity. In addition, technology advancement is a vital factor for condition assessment of the controls systems. Suppliers regularly replace products with functional equivalents that have enhanced performance and security features. As manufacturers improve product lines, older products become obsolete and are no longer supported or available for purchase.

A rating system based on recommendations from the International Infrastructure Management Manual (2015 edition) was developed. The rating system classifies assets as follows:

Table 1 – Equipment Rating

Rating	Description	Estimated Remaining Life
5	Very Good Condition	60%-100%
4	Good Condition	50%-60%
3	Fair or moderate Condition	40%-50%
2	Poor Condition	30%-40%
1	Very Poor Condition	0%-30%

For the purpose of this project, the type and installation date, and/or date of last known maintenance should be collected for each asset evaluated. The methodology for completing a review of the various components of the controls system was completed from both visual on-site inspections and a desktop review exercise.

4.2 Risk Assessment

To develop a justifiable plan for upgrading, replacing, or continuing to maintain the existing equipment, we will examine:

- Level of Service requirement
- Equipment Service life
- Impact of unscheduled failure
- Probability of unscheduled failure
- Schedule to repair or replace equipment

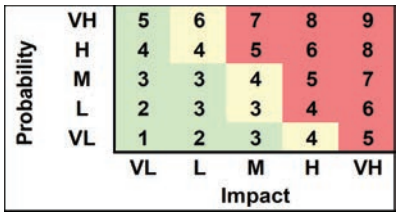
- Cost to repair or replace equipment

The Risk Management Recommendations outlined in the Risk Matrix are intended to reduce the severity of a medium severity realized risk to a low severity event. We have documented this examination in a **Risk Assessment** which can be found in **Appendix B.**

4.3 Risk Assessment Matrix

We have assembled an inventory of risks specifically related to the NRDRWSC SCADA functional requirements and equipment. We have provided our subjective opinion of the probability and impact of each risk which is extended to a severity rating. Our recommended solutions will be designed to mitigate the effect of medium and high severity risks so that they are low severity.

The severity rating is based on the following matrix.



This risk evaluation, highlighted several risks that warrant management. The recommendations identified in the following sections are designed to address the stated requirements of the commission.

4.4 Water Delivery Points Condition Summary

There are nine (9) water delivery points that that are similar in configuration and include a PLC control panel, inlet flow meter, reservoir level instrument and other instrumentation. We have inventoried these water delivery points in an **Equipment Inventory**, found in **Appendix C**. In general, the equipment was installed between 2006 and 2009, and some components have undergone maintenance since that time.

One of the key items that is driving our recommendations is where the existing control equipment resides within the OEM manufacturers product lifecycle. The NRWRWSC PLCs processors are a discontinued product, while the IO modules are not. Based on discussions with manufacturers, anecdotal evidence from operators and maintenance personnel and our own experience evaluating various installations, we have identified the anticipated service life for various system components and found that most of the control hardware and instrumentation is within its service life.

We have reviewed the need to migrate the existing PLCs from discrete I/O logic to object-oriented logic software support to accommodate the new SCADA functionality. This change is expected to save time with programming the new SCADA, however, the savings will not be sufficient to overcome the cost of re-programming all of the site PLCs. It is our opinion that it is not advantageous to undertake a program to replace PLC control panel components, inlet flow meter, reservoir level instrument or other ancillary instrumentation at this time. However, we do make recommendations to mitigate the impact of failure by procuring spare parts for key equipment. We have outlined the specific Risk Management Recommendations in the **Risk Assessment, Appendix B.**

In addition to the management actions provided in the Risk Matrix, we recommend that the commission update the Risk Matrix once every 10 years.

4.5 Meter Vaults Condition Summary

The meter vaults on the system have additional equipment such as flood detection and entrance hatch switches that the commission is responsible for. We recommend that these

building instruments are tested regularly, and replaced upon detection of failure. We do recommend that the UPS units are replaced, and that the new units have ability to connect to the PLC so that a fault can be annunciated via the SCADA.

4.6 General Site Recommendations

It is recommended that the following actions are taken by April 2018 to improve the reliability of both the water delivery points and the meter vaults.

Replace Immediately:

- Cellular modems, antenna and ethernet switches at all sites
- UPS at all sites with output cards [Eaton Powerware 9130 series c/w relay output card PN 1014018]
- PLC controller battery [Allen Bradley 1756-BA1]

Perform Maintenance:

- Preform monthly test on site alarms [float, intrusion, power, temp]
- Rebuild the PRVs when they show signs of failing
- Calibrate PITs
- Field calibrate Flow Meters [This has been conducted in October 2017 all flow meters were verified by Endress + Hauser]

Procure Spare Parts:

- 2 x Flexlogix 5434 Controllers Processors [1788-ENBT/A]
- 1 x Spare DI Card [1794-IB16/A]
- 1 x Spare DO Card [1794-OB8/A]
- 1 x Spare AI Card [1794-IE8/B]
- 1 x Spare AO Card [1794-OE4/B]

4.6.1 NRDRWSC SCADA

Several SCADA options have been evaluated for the NRDRWSC and based on the project objectives and discussions with Commission stakeholders, t is our opinion that Ignition from Inductive Automation best meets the Commission's needs now and in the future. We feel that the summary below identifies that Ignition, while not being the least expensive software option, provides the Commission with the required features built-in without the need for 3rd party utilities. This means that Inductive Automation directly supports all features and nothing will need to be custom-built by Stantec. As a certified Ignition integrator, Stantec receives ongoing support from Inductive Automation, which can be used to support resolving any issues that may arise. Stantec's experience with the Ignition platform has been excellent. The Ignition system appears to be very well designed and is built with modern technology and best practices in mind. This ensures it is easy to develop and maintain.

Although Stantec recommends Ignition as the preferred choice for this project, we can implement any of the alternative options at the Commission's request. Note the pricing was developed around Ignition and would be subject to change should the software choice be altered.

The cost estimate provided is based on the project requirements, supplied by the vendor to allow the Commission to take advantage of official product support. Many integrators (including Stantec) have developed customized tools for additional features (e.g. reporting) to minimize software costs to the end user. However, these tools are very specifically developed on a per-project basis and do not qualify for support. To provide the Commission with the most flexibility, Stantec is proposing to use 100% vendor supplied and supported software and features.

Examples of Stantec's work on any of the SCADA platforms, with the owner's permission, would be available upon request.

Table 2 – SCADA Software Comparison

Feature	Inductive Automation Ignition	Rockwell FactoryTalk	GE Proficy iFix	Schneider Wonderware
Redundancy	Yes	Yes	Yes	Yes
Alarm Dialer Software	Built-In	3rd Party – Win911	3rd Party – Win911	3rd Party – Win911
Alarm Dialer Hardware	External Device, connected to network or Cloud based	Voice Modem connected to PC	Voice Modem connected to PC	Voice Modem connected to PC
Concurrent Users	Unlimited user licenses included	License required for each user	License required for each user	License required for each user
Remote Access	Yes	Yes	Yes	Yes
Access Control	Yes	Yes	Yes	Yes
Reporting	Built-In	3rd Party OSISoft PI	3rd Party Crystal Reports	Built-In Dream Reports
Audit Logs	Yes, advanced filtering and reporting	Yes, difficult to filter. No reports	Yes, text file. No filter or reports	Yes

Backups	Built-in	Manual	Manual	Manual
Software cost	$29,500	$65,000	$29,000	$44,000
Relative Integrator Effort *	1.00	1.20	1.40	1.15

* For every hour Stantec would spend developing and maintaining features in Ignition, how many hours would need to be spent in the other software packages to do the same job; lower is better.

4.6.2 SCADA HARDWARE

SCADA hardware is the hardware on which the SCADA software is installed and run. Often when SCADA machines are installed at facilities or town offices, they are not included in the client's IT computer maintenance and replacement plan. This results in rapidly outdated software with potential security threats and risk of hardware failure. If the hardware is in the facilities there is always a risk of damage caused by water, dust etc. With current strides in technology, the servers no longer must be physical machines located at the facilities, but can be located in secure data centers and can be fully managed by those data centers. For clarity, we have provided a proposed **Cloud Based SCADA System Architecture** customized for the NRDRWSC specific requirements. This proposal can be found in **Appendix D.**

A redundant server setup is recommended no matter what the hardware configuration. At least three machines are recommended: two of server quality, and one of desktop quality. Servers will not be logged into directly by the operators; operators will access the data on the server through the SCADA view client installed on the workstation computer. The operator terminals are, consequently, less vital, as terminal failures will not impact auxiliary functions of the SCADA, such as reporting, alarming, and historical data collection.

Option 1: Virtual Cloud Based SCADA Servers

The servers would be hosted in a data center within Canada. Our servers would be arranged to be isolated from all other traffic in the data center, and linked into the sites using a VPN connection. The data center itself works on the maintenance of the physical servers, and updates are regularly made to enhance security from outside cyber-attacks. The data center would provide approximately 99.9% uptime on the physical servers and if there was a problem, the virtual servers that housed the SCADA operations would shift to another machine within the server cluster. The software would run the same as the physical servers with the gateways automatically failing over to the redundant gateway and the SCADA machine and all data would stay intact and functional.

Pros: The physical hardware and operating system is completely maintained by the data center and would then not be a maintenance task for the commission to conduct with their own personnel.

Cons: Due to the servers being in the control of a third party, there is a chance of non-access due to non-payment or violation of data center policies. There would have to be an agreement in place to ensure essential services stay operational. Monthly maintenance and usage costs can be substantial however this is an item that can be managed.

Server Type	Capital Cost	Monthly Operational Cost	10 Yr Life Cycle Cost	Reliability / Up Time	Repair Time: Equipment
Physical Server	$62,400	$2,592	$311,000	95%	14+ days
Secure Cloud based Server	$950	$1,100	$132,000	99.95%	0.125-1 days

Note: A full server replacement is included in the 10-year life cycle cost of the physical server as typical recommended replacement is 10 years for this equipment.

Option 2: Physical SCADA Servers

Two servers would be purchased, one installed in a server rack at Blackfalds Broadway Avenue Reservoir, and a second server installed in a server rack at the City of Lacombe. Two servers have been recommended to be deployed this way for redundancy and disaster recovery. Further to the two physical servers, the operating systems will be installed on a virtual machine and be backed up regularly. In the event of physical hardware failing the virtual machine will automatically start up on the secondary machine. If the software fails, the redundant gateway will start up and the SCADA system will continue to run and be accessible.

Pros: Data, servers and software are local, low maintenance costs (though it is strongly recommended that there be a maintenance plan).

Cons: Significant capital costs, hardware is more vulnerable to damage from environment, vandalism, theft, failure due to lack of maintenance, lead time to replace. System updates must be downloaded regularly to combat cyber threats.

PLC Controller Migration Strategy

As discussed in the Risk Matrix, we have recommended that the PLCs should not be replaced at this time. They are currently approximately 11 years old, and it is reasonable to expect them to last several more years . We recommend that the Commission have a replacement plan in place that can be executed on short notice if more than one PLC fails in a 6-month period without an external cause such as lightning. We recommend that the commission replace the PLCs once the oldest unit is 20 years old.

We are basing these recommendations on the following:

- Replacement PLCs that are compatible as drop-in replacements are no longer available from the manufacturer.
- The OEM no longer provides technical support or warranty for the existing PLC controllers.
- Replacing the existing PLC controllers would require engineering and electrician contractor effort and costs to re-arrange components inside the PLC cabinet.

At the year 20 mark, we recommend that the PLCs and I/O modules at all sites are replaced. This has many advantages. One of the key advantages is that all the sites will have the same equipment that can be installed by one reliable engineering and contracting team. It is our opinion that this is preferred over a staged modernization plan.

We are basing these recommendations on the following:

- The I/O modules currently being used on site are currently available to purchase from the manufacturer.
- We are recommending that the Commission procure an inventory of PLC processors and I/O modules so they can be used as replacement parts on short notice.
- In our experience, I/O modules often fail before the PLC controllers fail. This justifies having these spare parts on hand.

Communications Strategy

As discussed in the Risk Matrix, we are recommending that the cellular communication equipment at each of the remote sites is replaced. Through conversations with the Commission operator, and our own knowledge of the service life of cellular equipment, it is reasonable that the Commission is experiencing cellular equipment failure. In conversations with cellular equipment providers, we have concluded that it is necessary to replace the cellular model, antenna and ethernet switch.

Stantec has spent considerable time and energy assessing communication systems for regional water systems. During this investigation, we considered cost, reliability, emergency recovery, and future expansion among other considerations. We have concluded that using a widely-known service provider who will be directly involved in emergency planning and directly involved with emergency response is preferred over service retailers.

By subscribing to the services of a large service provider, the Commission can get managed communications service directly from their service provider in addition to monitored communications that improves reliability for the Commission's SCADA system.

Stantec has worked with Telus to develop a package of services for municipal services commissions that meets their day to day data transfer needs, repair needs, hardware retail needs, and emergency recovery communication needs.

It is our recommendation that the commission works with Telus for their communication upgrade requirements.

Monitored VS Managed Systems

Monitored communications are real time monitored with alert notification to the client of any issues. This can be provided directly from the service provider or from a third-party software. Though monitored communications are good for letting a client know if they have a problem, they do not solve the issue, unless the problem is within the communication company. For example, Telus will let you know when there is a service outage and fix the problem if it has to do with their infrastructure such as a cell tower or network issue, however they will not be expected to manage the internal network of the client's system.

Managed solutions usually include monitoring but do not take care of the maintenance and service of the system. This type of service is usually provided by a company with a master service agreement.

In what Stantec is recommending, the communications would be a monitored solution and the web server would be a partially managed system, in that Telus will provide upkeep and maintenance on the servers themselves and are dedicated to providing the client with a 99.9% uptime. However they are not responsible for the software on the servers. Telus will monitor the cellular APN connections but once the signal leaves the cell tower, it is no longer their

responsibility. They do have a business center who are knowledgeable in these types of applications who can assist on restoration of the service.

Stantec suggests a service agreement on top of these two services to monitor, maintain and assist in the event of an outage. We have provided a line item for such a service in the cost estimate.

PLC Programming Upgrades

- Line break logic: Confirm or install logic in the SCADA that will monitor the flow from all the remote sites and notify the operator if there is a significant difference between the sum of flow to all sites and the Mainline meter.
- Add provisions to the SCADA that allows both the City of Red Deer operators and the Regional operators to make changes to control setpoints.
- Make provisions in the SCADA to eliminate the opportunity for operators logged in on different stations from changing the same setpoints at the same time.
- Configure the SCADA so that only NRD owned devices will be permitted/programmed to make changes to SCADA.
- Configure the SCADA so that internet facing devices can only view SCADA securely.

5 Site Evaluations

Stantec has completed field assessments of the following sites with the goal of providing a clear route of improving/modernizing the controls equipment at each site:

- Red Deer Water Treatment Plant (AHWTP)
- Main Meter Vault
- Blackfalds – Railway Reservoir
- Blackfalds – Broadway Reservoir
- Lacombe PH A Reservoir
- Lacombe PH B Reservoir
- Lacombe PH C Reservoir
- Wolf Creek Reservoir
- Ponoka – 39th Ave Reservoir
- Ponoka – Riverside Reservoir
- Ponoka – Lucas Heights Reservoir

Each site has been evaluated based on the onsite controls, communication, and instrumentation equipment. Recommendations on improvements to the equipment are given to ensure the equipment can be easily supported and that replacement parts will be available. It should be noted that many of the site equipment is reaching its end-of-life.

5.1 City of Red Deer Water Treatment Plant

Figure 2: CRDWTP

The City of Red Deer Water Treatment Plant intakes, treats and distributes all the water for the City of Red Deer and the North Red Deer River Water Service Commission. The facility contains the NRDRWSC SCADA PC for the Commission. The SCADA system was installed in 2005 when the regional line was built. The SCADA system communicates to the site though a VPN router that connects to a APN or private cellular network and can then connect to each of the remote sites.

The SCADA system computer power supply failed in February of 2017, causing the Water Plant and the NRDRWSC to lose communication and control of the remote sites for 24 hours. The computer was adapted with a temporary power supply to continue to run while immediate plans were made to purchase a new computer and move the SCADA project over to it. However, it was during this time that several issues were discovered, the operating system was Windows XP (since discontinued), the SCADA software was an older version of iFix SCADA software from General Electric, and could only work on Windows XP. Finally, the hardware key that kept the software running was a 25-pin serial hardware key. The software and the hardware key could only be upgraded with an update of the software, which would be considered a full rebuild and would have the same costs of a new build.

Stantec was able to virtualize the old SCADA system and run it on a Windows 10 using a software called VMWare. A 25-pin parallel port card was then installed onto the computer and brought into the virtual machine with good success. The system has been functional in this state for the last 6 months.

5.2 Main Meter Vault

Figure 3: Main Meter Vault

The Main Meter Vault is located on the north end of Red Deer and is the first NRDRWSC location from the City of Red Deer water distribution. The location is an underground vault and contains a Rotork Valve, flow meter, PLC Cabinet, sump pump and unit heater. This station can be viewed and controlled remotely via the SCADA system.

5.3 Central Park Meter

Figure 4: Central Park Meter

The Central Park Meter station provides a water connection from the water transmission main to the Central Park Industrial area. This station contains only a flowmeter and can not be remotely viewed by the SCADA system. The meter readings are taken manually by the operator.

5.4 Town of Blackfalds

5.4.1 AVENUE RESERVOIR

Figure 5: Town of Blackfalds - Railway Reservoir

The Town of Blackfalds Railway Avenue Water Treatment Plant was converted into a receiving station for regional water in 2006 when the regional water line was first installed. It now acts as a water reservoir and pumphouse to distribute the water that is delivered to the facility via the regional waterline supply header. The reservoir level, inlet valve, inlet flow and chlorine levels are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.4.2 BROADWAY AVENUE RESERVOIR

Figure 6: Town of Blackfalds - Broadway Reservoir

The Town of Blackfalds reservoir and pumphouse was constructed in 2008, with the regional water inlet run inside the pumphouse. The reservoir level, inlet valve, inlet flow and chlorine levels are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.5 City of Lacombe

5.5.1 PUMPHOUSE A

Figure 7: City of Lacombe - Pumphouse A

The City of Lacombe Pumphouse A has the regional water inlet run inside the pumphouse. The reservoir level, inlet valve, and inlet flow are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.5.2 PUMPHOUSE B

Figure 8: City of Lacombe - Pumphouse B

The City of Lacombe Pumphouse B has the regional water inlet run inside the pumphouse. The reservoir level, inlet valve, and inlet flow are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.5.3 PUMPHOUSE C

Figure 9: City of Lacombe - Pumphouse C

The City of Lacombe Pumphouse C has the regional water inlet meter run inside the pumphouse which was installed in 2006 when the regional waterline was first constructed. The reservoir level, inlet valve, and inlet flow are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.6 Wolf Creek Subdivision

Figure 10: Wolf Creek Reservoir

The Wolf Creek Rural Subdivision reservoir and pumphouse was constructed in 2008 and has the regional water inlet run inside the pumphouse. The reservoir level, inlet valve, and inlet flow are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.7 Ponoka

5.7.1 39TH AVENUE RESERVOIR

Figure11: 39th Avenue Reservoir

The Town of Ponoka 39th Avenue Reservoir has the regional water inlet meter run inside the pumphouse which was installed in 2006 when the regional line was first constructed. The reservoir level, inlet valve, and inlet flow are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.7.2 RIVERSIDE RESERVOIR

Figure 12: Riverside Reservoir

The Town of Ponoka Riverside Reservoir has the regional water inlet meter run inside the pumphouse which was installed in 2006 when the regional waterline was first constructed. The reservoir level, inlet valve, and inlet flow are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

5.7.3 LUCAS HEIGHTS RESERVOIR

Figure 13: Lucas Heights Reservoir

The Town of Ponoka Lucas Heights Reservoir has the regional water inlet meter run inside the pumphouse which was installed in 2006 when the regional waterline was first constructed. The reservoir level, inlet valve, and inlet flow are monitored by the NRDRWSC PLC, and allows the NRDRWSC operators to control filling remotely via the SCADA system.

6 Conclusions

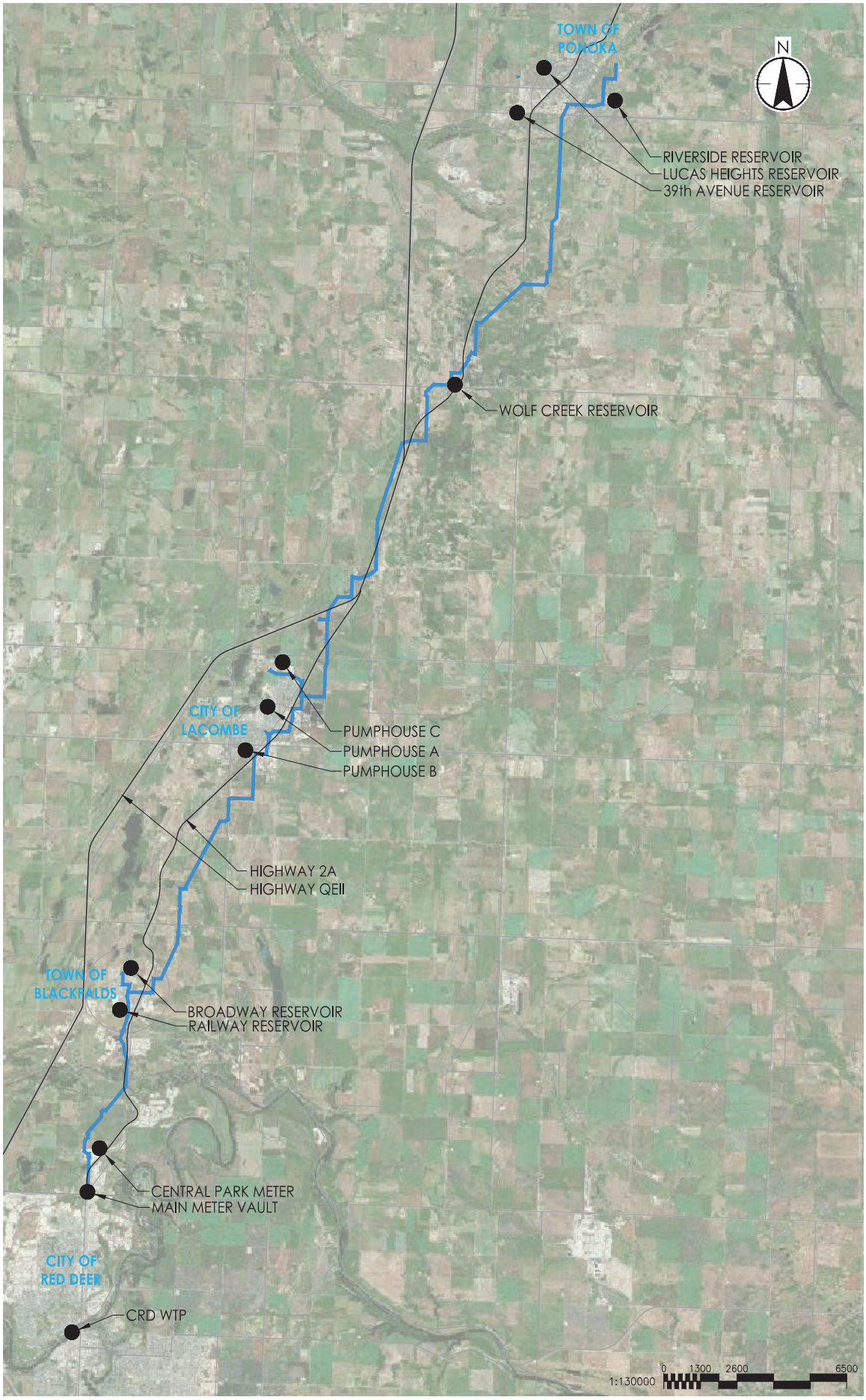
The NRWRWSC system appears to be well looked after, and it is reasonable to expect the system to function well moving into the future. Based on the Stantec team's experience assisting commissions with equipment lifecycle planning, emergency response planning, administrative requirements, utility rate planning, risk planning, and equipment migration planning, we have mapped out a plan to enhance the activities the commission is already taking.

We have provided a summary table of improvements and budgetary costs for anticipated monthly, Immediate upgrades, future upgrades, and optional upgrades. See **Appendix E – Opinion of Probable Cost.**

7 Recommendations

- Undertake a program to document equipment and instrument failures and replacements to monitor for trends and the need for proactive action
- Secure the services of an engineering company to implement all the Immediate Upgrades
- Undertake activities to Initiate Future Upgrades

APPENDIX A – Regional Line Map



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Stantec

SYSTEM OVERVIEW MAP
FIGURE 1
SCADA ASSESSMENT PROJECT
NRDRWSC

APPENDIX B – Risk Assessment

North Red Deer River Water Services Commission
SCADA, Instrumentation, Control, Communications Condition Assessment
Appendix B - Risk Assessment

	Risk	Impact	Probability	Severity	Impact Remarks	Probability Remarks	Risk Management Recommendations
SCADA computer host (City of Red Deer)							
	Failure of primary SCADA computer	M	H	H	1. If the SCADA computer fails, the CRD operator will not be able to remotely control when the 9 water delivery points get water. 2. Schedule: 1 - 4 weeks for repair 3. Cost: Costs for local operators to increase their monitoring and control of the reservoir fill system. Plus the cost to complete repairs at a minimal premium cost for emergency repairs.	If the SCADA software is hosted on a consumer grade computer, the probability of an unplanned failure is high.	Mitigate the impact of this risk by being prepared to fill the compromised facility by manually operating the local reservoir inlet flow control valve.
	PLC – SCADA - PLC communications failure	M	M	M	1. The CRD operator will loose the ability to over-ride the automatic fill commands from the local PLC controllers and see what the PLCs are doing. Local operators will lose the ability to see if their reservoir is being filled. 2. Schedule: Depends on what has gone wrong, but most repairs should take less than 4 weeks. 3. Cost: Costs for local operators to increase their monitoring of the reservoir fill system. Plus repair costs.	The communications between the SCADA computer and the PLCs depends on radio hardware, phone service providers and computer hardware. The probability of any given piece of this system failing is high.	Mitigate the impact by having personnel available to visit each site to confirm operation periodically.
	Unauthorized access to SCADA	H	VL	M	1. SCADA offers the ability to change reservoir filling parameters, which could be changed to prevent a reservoir from filling, or to be over filled. The local operators have the ability to manually control reservoir filling directly on site if necessary. A saboteur could also break into a facility and steal a physical SCADA computer. 2. Schedule: 3. Cost:	The probability of someone stealing the SCADA computer that is hosted in the CRD WTP or a municipal building is considered to be very low.	1. Establish a security protocol for passwords 2. Have a standby SCADA computer stored in a location separate from primary computer 3. Have critical operations - setpoint changes separately password protected.
	Unauthorized access to PLC	H	VL	M	1. If a PLC controller were sabotaged, the operators could lose automatic control of their facilities, particularly the ability to automatically fill the reservoirs. The reservoirs would then have to be filled and monitored by local operators manually. 2. Schedule: 3. Cost:	The probability of someone sabotaging a PLC is considered to be very low.	1. Establish a security protocol for passwords 2. Keep a copy of the PLC program at an off site repository and update it anytime there is a change made 3. Keep adequate quantity of spare parts available on the shelf.
Regional PLC controller							
	PLC System Processing Unit	M	L	M	1. If the PLC processor fails, the operator will loose the ability to remotely control the filling of the reservoir and will also lose the ability to remotely view the telemetry that is connected to the regional water PLC control panel. Depending on the reason for failure, the PLC processor may have to be replaced, reprogrammed, tested and returned to service. The Allen Bradley FlexLogix5434 processor is no longer available or supported by the manufacturer, so replacement in kind is likely to be difficult. 2. Schedule: 2 weeks 3. Cost premium for emergency work.	The system PLC processors are robust industrial computers that can last for decades. The probability of a unit failure before it is 20 years old is low.	1. Replace the FlexLogix5434 PLC processor in kind with a replacement unit from spare parts inventory. 2. If no equivalent spare parts are available, replace the processor with a current controller and reconfigure the PLC chassis and related hardware to accommodate the new controller. (serial connection to remote I/O with a remote processor) 3. Procure 1 spare for every 4 units in service.

	Risk	Impact	Probability	Severity	Impact Remarks	Probability Remarks	Risk Management Recommendations
	PLC System Digital Input Unit	M	L	M	Similar impact as PLC processor failure.	Similar probability as PLC processor failure.	1. We recommend that the Commission have 1 spare part for every 5 units in service. The spare parts should be procured before the manufacturer stops producing the equipment 2. 8 years until the I/O looses support according to OEM documentation
	PLC System Analog Input Unit	M	L	M	Similar impact as PLC processor failure.	Similar probability as PLC processor failure.	1. We recommend that the Commission have 1 spare part for every 5 units in service. The spare parts should be procured before the manufacturer stops producing the equipment 2. 8 years until the I/O looses support according to OEM documentation
	PLC System Analog Output Unit	M	L	M	Similar impact as PLC processor failure.	Similar probability as PLC processor failure.	1. We recommend that the Commission have 1 spare part for every 5 units in service. The spare parts should be procured before the manufacturer stops producing the equipment 2. 8 years until the I/O looses support according to OEM documentation
	PLC Power Supply	M	L	M	Similar impact as PLC processor failure.	Similar probability as PLC processor failure.	1. We recommend that the Commission have 1 spare part for every 5 units in service. The spare parts should be procured before the manufacturer stops producing the equipment 2. 8 years until the I/O loses support according to OEM documentation
	UPS	VL	M	L	1. If the UPS fails when there is no power outage, there is no operational impact. The unit is simply repaired or replaced at the earliest opportunity. UPS units are readily available. If a UPS fails during a power outage, the operators will loose the ability to remotely control the inlet flow control valve and will also lose the ability to remotely view the telemetry that is connected to the regional water PLC control panel. 2. Schedule: 2 days 3. Cost: Minimal premium required	The batteries in a UPS have a limited service life, and unless they are changed according to manufactures recommendations, and tested regularly, there is a high probability of an unanticipated UPS failure after approximately 5 years.	1. Replace the UPS units with equipment that has the ability to send status to the PLC and has automatic bypass on fail. 2. Continue to service the units or batteries approximately every 5 years or according to manufacturers recommendations.
	Ethernet Switch	L	L	L	1. If the ethernet switch fails, the operators will loose remote control and the ability to read the telemetry from the PLC. Replacement parts are readily available and require minimal configuration to be integrated into the existing system. 2. Schedule: 2 days 3. Cost: Minimal premium required	The service life of an industrial ethernet switch is approximately 15 years, however they can last much longer.	1. Keep adequate spare parts.
	PLC Cabinet 24v power source	L	L	L	1. If the PLC cabinet power source fails, the operators will loose remote control and the ability to read the telemetry from the PLC. Replacement parts are readily available and require an electrician to complete the installation. 2. Schedule: 2 days 3. Cost: Minimal premium required	The service life of an industrial PLC cabinet 24v power source is approximately 15 years, however they can last much longer.	1. Replace with an equivalent
Communications							

	Risk	Impact	Probability	Severity	Impact Remarks	Probability Remarks	Risk Management Recommendations
	Cellular Radio, antenna and switch	M	L	M	1. If the ethernet radio fails, the operators will loose remote control and the ability to read the telemetry from the PLC. Replacement parts are readily available and will require and electrician to complete the installation. 2. Schedule: 4 days 3. Cost: Minimal premium required	The service life of an industrial cellular ethernet system is approximately 5 - 10 years.	1. Replace with an equivalent
Instrumentation							
	Inlet Pressure Transmitter	VL	VL	L	1. If the PLC and operators lose the ability to read the signal from the pressure transmitter, they will get a false water supply line break alarm. This will not effect the ability to transfer water. Replacement equipment is readily available and will require an electrician and integrator to complete the replacement and configuration testing. 2. Schedule: 2 days 3. Cost: Minimal premium required	Modern industrial pressure transmitters have a service life of approximately 15 years, however can last much longer.	Replace with an equivalent in the event of failure
	Effluent Pressure Transmitter	VL	VL	L	Same as Inlet Pressure Transmitter	Same as Inlet Pressure Transmitter	Same as Inlet Pressure Transmitter
	Inlet Flow Meter	VL	VL	L	1. If the Inlet Flow Meter fails, the PLC and operators will loose their ability to see what flow is entering the reservoir, and the total flow entering the reservoir. This may impact the ability to generate accurate water bills. 2. Schedule: 2 - 6 weeks 3. Cost: Minimal premium required	Modern industrial flow meters have a service life of approximately 15 years, however can last much longer.	Replace with an equivalent in the event of failure and take an average of historical flow for water billing.
	Inlet Isolation Valve	VL	VL	L	1. If the Inlet Isolation Valve actuator fails, the PLC will loose the ability to automatically operate the valve and fill the reservoir, and the operators will loose the ability to remotely operate the valve. To fill the reservoir, the operator will have to operate the valve from site. 2. Schedule: 1 - 4 weeks 3. Cost: Minimal premium required	Actuators have electronic parts, electrical parts and moving mechanical moving parts. They have a service life of approximately 5 to 10 years.	We recommend that the manufacturers service recommendations are followed, and that 1 spare actuator is in stock for every 5 actuators in service.
	Flow Control Valve	VL	VL	L	1. If the inlet flow control valve performance begins to deteriorate, the wear parts should be replaced by a qualified technician. The impact of wearing parts will have minimal impact on the operation of the system. If there is a catastrophic failure of a mechanical part, it will have a cascading damaging effect on the Inlet Isolation Valve if left unchecked for any period of time but should not effect the ability to fill the reservoir. Most spare parts for the Singer valves are readily available at this time. 2. Schedule: 1 week 3. Cost: Minimal premium required	The probability of a catastrophic failure of the valve is very low, and if maintained according to manufacturers recommendations, the valve should last for decades.	Service valve according to the manufacturers recommendations.
	Combination Air Valve (CAV)	VL	VL	L	If the CAV stops working, the most probable impact is that water from the regional line will free flow past the valve, or air will build up in the line and effect the ability to fill the reservoir. The condition can be corrected temporarily by operator intervention and action taken to repair the valve with minimal impact.	CAV valves have moving parts that should be services regularly, but otherwise, a CAV should last for decades	Service valve according to the manufacturers recommendations.

North Red Deer River Water Services Commission
SCADA, Instrumentation, Control, Communications Condition Assessment
Appendix B - Risk Assessment

	Risk	Impact	Probability	Severity	Impact Remarks	Probability Remarks	Risk Management Recommendations
Vulnerabilities and Risks with Recommended solutions							
	Failure of commission operators SCADA remote access	L	M	L	Loss of the ability to remotely view system status and commission operators will have to communicate with the CRD operators to get information.	-	Commission operator to call CRD operator.
	Failure of CRD remote SCADA access	L	M	L	The operator will loose the ability to over-ride the automatic fill commands from the local PLC controllers	-	CRD operators to call commission operator.
	CRD operator and commission operators making changes concurrently	M	L	M	-	-	Commission operators and CRD operators to communicate.
	Failure of redundant SCADA computer while primary SCADA is being repaired	VL	H	L	Same as if the primary SCADA computer fails	-	Accept this risk and have a plan in place to replace the hosting service with a SCADA computer if necessary.
	Failure of automatic remote alarm annunciation	M	L	M	-	-	Schedule times when the operators monitor the operation of the system.

APPENDIX C – Equipment Inventory

Function	Tag	Manufacture	Model	Year Installed	Service Life (years)	Years remaining
Red Deer Water Treatment Plant						
SCADA Computer (Consumer Grade)						
iFix Software						
Regional Modem (192.168.100.1)		D-Link				
Regional Switch (192.168.100.25)		Cisco	RV042			
Main Meter Vault						
Regional PLC controller						
PLC System Processing Unit	PLC-1700	Allen Bradley FlexLogix	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley Flex I/O	1794-IB8/A	2006	25	14
PLC System Digital Output Unit		Allen Bradley Flex I/O	1794-OB8/A	2006	25	14
PLC System Analog Input Unit		Allen Bradley Flex I/O	1794-IE8/B	2006	25	14
PLC System Analog Output Unit		Allen Bradley Flex I/O	1974-0E4/B	2006	25	14
PLC Power Supply		Allen Bradley Flex I/O	1974-PS3	2006	25	14
UPS		Powerware	PW5115 1000 USB	2006	15	4
UPS Batteries		Powerware	PW5115	2012	5	0
PLC 24VDC Power Source		Flex I/O Power Supply	1794-PS3	2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Cellular Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-1701	Rosemount	2088G2S22A1M5B4C6	2006	25	14
Effluent Pressure Transmitter	PIT-1704	Endress + Hauser	PMC41 CC11PBJ21N1	2006	25	14
Inlet Flow Meter	FIT-1702	Elster	P/56200/1/1	2006	25	14
Inlet Isolation Valve	FCV-1703	Bray Valve c/w Rotork Electric Actuator	IQ18B4/IW5 70:1 Actuator	2015	25	23
Flow Control Valve	FCV-1401	Singer ANSIClass 150	106-RF-R	2006	25	14
Combination Air Valve	CAV-1402	APCO	140C.1	2006	25	14
Central Park Meter						
Inline Flow Meter		ABB AquaMaster3		2006	25	14
Blackfalds – Railway Reservoir						
Regional PLC controller						
PLC System Processing Unit	PLC-1700	Allen Bradley FlexLogix	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley Flex I/O	1794-IB8/A	2006	25	14
PLC System Digital Output Unit		Allen Bradley Flex I/O	1794-OB8/A	2006	25	14
PLC System Analog Input Unit		Allen Bradley Flex I/O	1794-IE8/B	2006	25	14
PLC System Analog Output Unit		Allen Bradley Flex I/O	1974-0E4/B	2006	25	14
PLC Power Supply		Allen Bradley Flex I/O	1974-PS3	2006	25	14
UPS		Powerware	PW5115 1000 USB	2006	15	4
UPS Batteries		Powerware	PW5115	2012	5	0
PLC 24VDC Power Source		Flex I/O Power Supply	1794-PS3	2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Celullar Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-2701	Endress + Hauser	PMC41-CC11PBJ21N1	2006	25	14
Effluent Pressure Transmitter	PIT-2706	Endress + Hauser	PMC41-CC11PBJ21N1	2006	25	14
Inlet Isolation Valve	LCV-2705	FlowTEK Valve c/w Rotork Electric Actuator	V-port Characterized Ball Valve	2015	25	23
Reservoir Level Transmitter	LIT-2704	Slemens-Milltronlcs	LIT: MiniRanger Plus LE: XPS-15	2006	25	14
Inlet Flow Meter	FE/FIT-2703	Endress + Hauser Promag W	53W1H ULOB1RAOBAAA	2006	25	14
Pressure Control Valve	PCV-2401	Singer ANSI Class 150	206-PR-R	2006	25	14
Combination Air Valve	CAV-2402	APCO	140C.1	2006	25	14
Inlet Chlorine	AIT-001	Endress + Hauser	C1001517G00	2006	25	14

Blackfalds – Broadway Reservoir						
Regional PLC controller						
PLC Processor c/w Memory	PLC-2750	Allen Bradley	1756-L61 & 1784-CF64	2009	25	17
Ethernet Module		Allen Bradley	1756-ENBT	2009	25	17
Slot Filler		Allen Bradley	1754-N2	2009	25	17
Discrete Input Module		Allen Bradley	1756-IB32 & 1756-TBCH	2009	25	17
Discrete Input Module		Allen Bradley	1756-IB16 & 1756-TBNH	2009	25	17
Configurable Flowmeter Module		Allen Bradley	1756-CFM & 1756-TBNH	2009	25	17
Isolated Relay Output Module		Allen Bradley	1756-OW16I & 1756-TBCH	2009	25	17
Analog Output Module		Allen Bradley	1756-OF8 & 1756-TBNH	2009	25	17
Analog Input Module		Allen Bradley	1756-IF16 & 1756-TBCH	2009	25	17
Analog Input Module		Allen Bradley	1756-IF16 & 1756-TBCH	2009	25	17
PLC Power Supply		Allen Bradley	1756-PA75/B	2009	25	17
UPS		Powerware 5 115		2009	5	-3
Ethernet Switch		EtherTRAK		2009	15	7
PLC Cabinet 24v power source		connectPower	992534 0024	2009	25	17
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2009	10	2
Cellular Antenna		Unknown	Unknown	2009	10	2
Ethernet Switch		SIXNET	ET-GT-5ES	2009	10	2
Instrumentation						
Inlet Pressure Transmitter	PIT-2707	Endress + Hauser		2009	25	17
Effluent Pressure Transmitter	PIT-2708	Endress + Hauser		2009	25	17
Inlet Flow Meter	FIT-2702	Endress + Hauser	53W1F-UL0B5RA0BBAA	2009	25	17
Inlet Isolation Valve	LCV-2705	FlowTEK Valve c/w Rotork Electric Actuator	V-port Characterized Ball Valve	2015	25	23
Reservoir Level Transmitter	LIT-206/LIT-227	Slemens-Milltronlcs	LIT: MiniRanger Plus LE: XPS-15	2009	25	17
Inlet Flow Meter	FE/FIT-2703	Endress + Hauser ANSI Class 150	53W1H ULOB1RAOBAAA	2009	25	17
Pressure Control Valve	PCV-2401	Singer ANSI Class 150	206-PR-R	2009	25	17
Combination Air Valve	CAV-2402	APCO	140C.1	2009	25	17
Chlorine Analyzer Incoming Water	AIT-211	Endress + Hauser		2009	25	17
Lacombe PH A Reservoir						
Regional PLC controller						
PLC System Processing Unit	PLC-1700	Allen Bradley FlexLogix	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley Flex I/O	1794-IB8/A	2006	25	14
PLC System Digital Output Unit		Allen Bradley Flex I/O	1794-OB8/A	2006	25	14
PLC System Analog Input Unit		Allen Bradley Flex I/O	1794-IE8/B	2006	25	14
PLC System Analog Output Unit		Allen Bradley Flex I/O	1974-0E4/B	2006	25	14
PLC Power Supply		Allen Bradley Flex I/O	1974-PS3	2006	25	14
UPS		Powerware	PW5115 1000 USB	2006	15	4
UPS Batteries		Powerware	PW5115	2012	5	0
PLC 24VDC Power Source		Flex I/O Power Supply	1794-PS3	2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Celullar Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-3704	Endress + Hauser	PMC41-CC11PBJ21N1	2006	25	14
Inlet Flow Transmitter	FIT-3701	Endress + Hauser	53W1H-ULOB1RAOBAAA	2006	25	14
Inlet Control Valve	LCV-3702	FlowTEK Valve clw Rotork Electric Aclualor	V-port Characlerized Ball Valve	2015	25	23
Pressure Control Valve	PCV-3402	Singer ANSI Class 150	206-PR-R	2006	25	14
Reservoir Level Transmitter	LIT-3101 (Existing)			2006	25	14

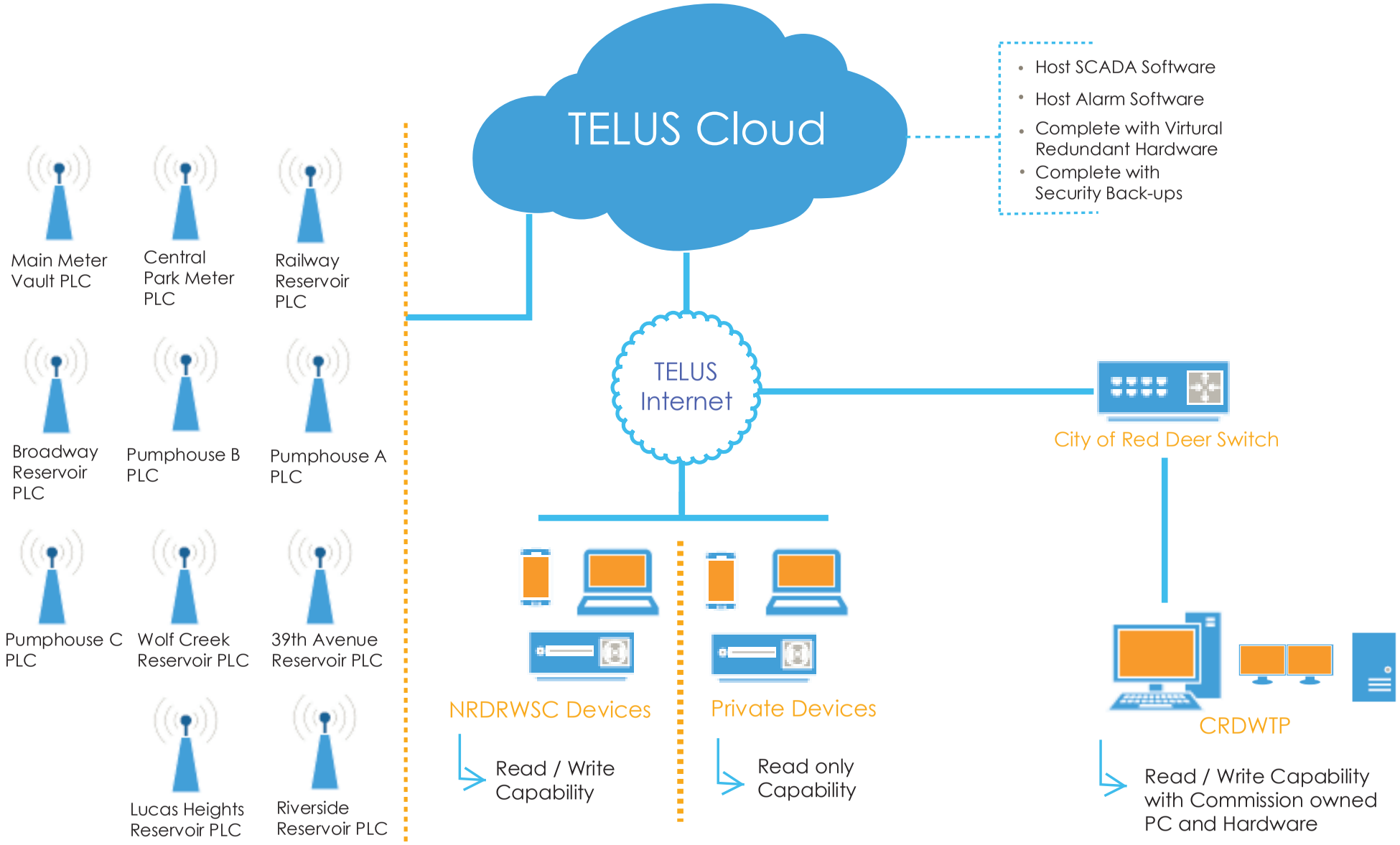
Lacombe PH B Reservoir						
Regional PLC controller	PLC-3701					
PLC System Processing Unit		Allen Bradley	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley	1794-IB8	2006	25	14
PLC System Analog Input Unit		Allen Bradley	1794-IE8	2006	25	14
PLC System Analog Output Unit		Allen Bradley	1974-0E4	2006	25	14
PLC Power Supply		Allen Bradley	1974-PS3	2006	25	14
UPS		Powerware 5 115		2006	5	-6
Ethernet Switch		EtherTRAK		2006	15	4
PLC Cabinet 24v power source		connectPower	992534 0024	2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Celullar Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-3708	Endress + Hauser	PMC41-CC11PBJ21 N1	2006	25	14
Effluent Pressure Transmitter	PIT-3706	Endress + Hauser	PMC41-CC11PBJ21 N1	2006	25	14
Inlet Flow Transmitter	FIT-3707	Endress + Hauser	53W1H-ULOB1RAOBAAA	2006	25	14
Inlet Control Valve	LCV-3705	FlowTEK Valve	V-port Characterized Ball Valve	2015	25	23
Reservoir LevelTransmitter	LIT-3201			2006	25	14
Pressure Control Valve	PCV-3403	Singer ANSI Class 150	206-PR-R	2006	25	14
Reservoir Level Transmitter	LE/LIT-3201 (Existing)			2006	25	14
Lacombe PH C Reservoir						
Regional PLC controller	PLC-3702					
PLC System Processing Unit		Allen Bradley	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley	1794-IB8	2006	25	14
PLC System Analog Input Unit		Allen Bradley	1794-IE8	2006	25	14
PLC System Analog Output Unit		Allen Bradley	1974-0E4	2006	25	14
PLC Power Supply		Allen Bradley	1974-PS3	2006	25	14
UPS		Powerware 5 115		2013	5	1
Ethernet Switch		EtherTRAK		2006	15	4
PLC Cabinet 24v power source		connectPower	992534 0024	2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Celullar Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-3725	Endress • Hauser	PMC41-CC11PBJ21N1	2006	25	14
Effluent Pressure Transmitter	PIT-3724	Endress • Hauser	PMC41-CC11PBJ21N1	2006	25	14
Inlet Flow Transmitter	FIT-3721	Endress • Hauser	53W1H-ULOB1RAOBAAA	2006	25	14
Inlet Control Valve	LCV-3723	FlowTEK Valve	V-port Characterized Ball Valve	2015	25	23
Reservoir Level Transmitter	LIT-3722	Siemens- Milllronlcs	Mini Ranger Plus	2006	25	14
Pressure Control Valve	PCV-3404	Singer ANSI Class 150	106-PR-R	2006	25	14
Combination Air Valve	CAV-3403	APCO	140C.1	2006	25	14

Wolf Creek Reservoir						
Regional PLC controller	PLC-3703					
PLC System Processing Unit		Allen Bradley	1794-L34	2008	25	16
PLC System Digital Input Unit		Allen Bradley	1794-IB8	2008	25	16
PLC System Analog Input Unit		Allen Bradley	1794-IE8	2008	25	16
PLC System Analog Output Unit		Allen Bradley	1974-0E4	2008	25	16
PLC Power Supply		Allen Bradley	1974-PS3	2008	25	16
UPS		Powerware 5 115		2016	5	4
Ethernet Switch		EtherTRAK		2008	15	6
PLC Cabinet 24v power source		connectPower	992534 0024	2008	25	16
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2008	10	1
Celullar Antenna		Unknown	Unknown	2008	10	1
Ethernet Switch		SIXNET	ET-GT-5ES	2008	10	1
Instrumentation						
Inlet Pressure Transmitter	PIT-	Endress • Hauser		2008	25	16
Inlet Flow Transmitter	FIT-	Endress • Hauser		2008	25	16
Inlet Control Valve	LCV-	FlowTEK Valve c/w Rotork Electric Actuator	V-port Characterized Ball Valve	2008	25	16
Reservoir Level Transmitter	LIT-			2008	25	16
Pressure Control Valve	PCV -	Singer ANSI Class 150		2008	25	16
Combination Air Valve	CAV -	APCO		2008	25	16
Ponoka – 39th Ave Reservoir						
Regional PLC controller	PLC-4700					
PLC System Processing Unit		Allen Bradley	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley	1794-IB8	2006	25	14
PLC System Analog Input Unit		Allen Bradley	1794-IE8	2006	25	14
PLC System Analog Output Unit		Allen Bradley	1974-0E4	2006	25	14
PLC Power Supply		Allen Bradley	1974-PS3	2006	25	14
UPS		Powerware 5 115		2006	5	-6
Ethernet Switch		EtherTRAK		2006	15	4
PLC Cabinet 24v power source		connectPower	992534 0024	2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Celullar Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-4706	**Endress + Hauser**	PMC41- CC11PBJ21N1	2006	25	14
Inlet Flow Transmitter	FIT-4701	ABB MagMaster	MF/F201341101 004EH1321111	2006	25	14
Inlet Control Valve	LCV-4702	FlowTEK Valve c/w; Rotork Electric Actuator	V-port Characterized Ball Valve	2015	25	23
Reservoir Level Transmitter	LIT-4707	ABB	611EDD21670 G81P1	2006	25	14
Pressure Control Valve	PCV-4405	Singer ANSIClass 150	106-PR-R	2006	25	14
Pressure Control Valve	PCV-4406	Singer ANSI Class 150	206-PR-R	2006	25	14
Combination Air Valve	CAV-4401	APCO	140C.1	2006	25	14
Sump Level Switch	LSH-4703			2006	25	14
Building Temperature Switch	TSL-4704			2006	25	14
System Armed + Hatch Door Open	HS-4705 ZS0-4705			2006	25	14

Ponoka – Riverside Reservoir						
Regional PLC controller	PLC-4701					
PLC System Processing Unit		Allen Bradley	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley	1794-IB8	2006	25	14
PLC System Analog Input Unit		Allen Bradley	1794-IE8	2006	25	14
PLC System Analog Output Unit		Allen Bradley	1974-0E4	2006	25	14
PLC Power Supply		Allen Bradley	1974-PS3	2006	25	14
UPS		Powerware 5 115		2013	5	1
Ethernet Switch		EtherTRAK		2006	15	4
PLC Cabinet 24v power source		connectPower	992534 0024	2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Celullar Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-4713	Endress + Hauser	PMC41-CC11PBJ21N1	2006	25	14
Effluent Pressure Transmitter	PIT-4714	Endress + Hauser	PMC41-CC11PBJ21N1	2006	25	14
Inlet Flow Transmitter	FIT-4715	Endress + Hauser	53W1H-ULOB1RAOBAAA	2006	25	14
Inlet Control Valve	LCV-4716	Flowtek Valve c/w Rotork Electric Actuator	V-port characterized ball valve	2015	25	23
Reservoir Level Transmitter	LIT-4717	Siemens-Milllronies	LEll. T: SINTRANS; Probe LU	2006	25	14
Pressure Control Valve	PCV 4409	Singer ANSI Class 150	206-PR-R	2006	25	14
Combination Air Valve	CAV-4405	APCO	140C.1	2006	25	14
Ponoka – Lucas Heights Reservoir						
Regional PLC controller	PLC-4702					
PLC System Processing Unit		Allen Bradley	1794-L34	2006	25	14
PLC System Digital Input Unit		Allen Bradley	1794-IB8	2006	25	14
PLC System Analog Input Unit		Allen Bradley	1794-IE8	2006	25	14
PLC System Analog Output Unit		Allen Bradley	1974-0E4	2006	25	14
PLC Power Supply		Allen Bradley	1974-PS3	2006	25	14
UPS		Powerware 5 115		2006	5	-6
Ethernet Switch		EtherTRAK		2006	15	4
PLC Cabinet 24v power source		APC		2006	25	14
Communications						
Cellular Modem		DIGI	CONNECT WAN 3G IA	2006	10	-1
Celullar Antenna		Unknown	Unknown	2006	10	-1
Ethernet Switch		SIXNET	ET-GT-5ES	2006	10	-1
Instrumentation						
Inlet Pressure Transmitter	PIT-4708	Endress + Hauser	PMC41- CC11PBJ21N1	2006	25	14
Effluent Pressure Transmitter	PIT-4709	Endress + Hauser	PMC41- CC11PBJ21N1	2006	25	14
Inlet Flow Transmitter	FIT-4710	Endress + Hauser	53W1H- ULOB1RAOBAAA	2006	25	14
Inlet Control Valve	LCV-4711	FlowTEK Valve c/w; Rotork Electric Actuator	V-port Characterized Ball Valve	2015	25	23
Reservoir Level Transmitter	LIT-4712	Siemens-Milllronics	LIT :MiniRanger Plus; LE:XPS-15	2006	25	14
Pressure Control Valve	PCV-4408	Singer	106-PR-R	2006	25	14
Pressure Control Valve	PCV-4407	Singer ANSIClass 150	206-PR-R	2006	25	14
Combination Air Valve	CAV-4402	APCO	140C.1	2006	25	14

APPENDIX D – Cloud Based SCADA Figure

SCADA System Architecture



APPENDIX E – Opinion of Probable Cost

Stantec

North Red Deer River Water Services Commission
SCADA, Instrumentation, Control, Communications Condition Assessment
Appendix E - Opinion of Probable Cost

Date: 1/8/2018

	Monthly Costs	Immediate Upgrades	Future Upgrades	Optional Enhancements
SCADA				
Cloud Based SCADA	$600	$5,000		
SCADA Software: **Includes:** - Ignition Primary Server (U/L Screens, U/L Access, Reporting, Alarming, Historian) - Ignition Backup Server (U/L Screens, U/L Access, Reporting, Alarming, Historian) - Basic Care - Email Support & Free Upgrades [1 yr]		$36,000		
SCADA Development		$60,000		
CRD Plant SCADA - Commission SCADA integration (ERIS Integration Third Party Contract)			$35,000	
Cellular Equipment Upgrade **Includes:** - Cell Modems - Cell Antennas - Installation	$650	$21,000		
Managed Communications Managed SCADA System	$1,000			
Callouts and SMS from SCADA (Using Twilio)	$100			
Pipeline break detect logoc			$20,000	
Remote Web Access (Basic SCADARR)	$600		$120,000	
PLC's				
PLC Migration				
Replace PLC & Remote I/O			$100,000	
PLC & I/O Spares2 full sets plc/ps/io		$20,000		
UPS replace c/w I/O status card		$22,000		
UPS I/O card wiring		$20,000		
PLC Panel Upgrades				
Control Panel TVSS		$20,000		
Control Panel Common Breaker		$2,500		
Instruments				
Instrumentation Spares		$15,000		
Instrumentation Replacement			$50,000	
Instrument Calibration				
Meter Field Verification				$3,500
Pressure Transmitter Calibration				$50,000
Security provisions (web cameras)				TBD
Security Upgrade				TBD
Equipment				
PSRV Overhaul		$40,000		
Administrative				
Asset Inventory				$50,000
Support Reporting for: Sales Contracts, Regulatory, Drinking Water Safety Plans				TDB
Asset Management System				$200,000
Total	**$2,950**	**$261,500**	**$325,000**	**$303,500**

North Red Deer Regional Water Services Commission

5432 56th Avenue
Lacombe, Alberta
T4L 1E9

Memorandum

TO: Commission Board Members

FROM: Justin de Bresser, Administrator

DATE: April 9, 2018

RE: Administrator's Report – 1st Qtr 2018

REF: 47/117 (2018)

The following is a summary of items Administration has been working on since the Board's last meeting:

1. Commission staff have been in conversations with both the City of Red Deer and the Province concerning the potential sale of the water line to the City. The commission has received a preliminary approval for the sale. Administration has requested a formal letter indicating the sale can go ahead. Staff will bring this item back in June to the Commission.

2. The year end was completed by mid March this year in order to facilitate the Commission meeting.

North Red Deer Regional Water Services Commission

5432 56th Avenue
Lacombe, Alberta T4L 1E9

Memorandum

TO: Commission Board Members

FROM: Justin de Bresser, Acting Administrator

DATE: April 9, 2018

RE: February 2018 Variance Report

REF: 47/860 2018

Attached is the 2018 variance report as of February 28 for the regional water commission.

Water sales are right on budget so far this year, however, the busy summer months are yet to come.

Expenses remain in line with expectations. No extraordinary expenses have been incurred. As expected the largest purchase to date is the purchase of water from the City of Red Deer.

Year : 2018
Period : 2
Budget :
Group by:

Account No.	Description	CC1	CC2	CC3	Open Bal	Current	Year to Date	Budget	Variance
REGIONAL WATER REPORTING									
47 Regional Water Revenues									
06-1-47-35110	Water Sales - City of Lacombe				-223178	-191386	-414565	-2660343	-2245779
06-1-47-35120	Water Sales - Town of Ponoka				-122407	-101894	-224301	-1469568	-1245267
06-1-47-35130	Water Sales - Town of Blackfalds				-133119	-112982	-246101	-1600139	-1354038
06-1-47-35140	Water Sales - Ponoka County				-1139	-842	-1981	-24923	-22942
06-1-47-35150	Water Sales - City of Red Deer				-161	-133	-293	-7550	-7256
06-1-47-42200	Line Crossing Agreement Fee				0	0	0	-1500	-1500
06-1-47-55100	Interest Revenue				-8362	0	-8362	-50000	-41638
06-1-47-55500	Rebates & Dividends				0	0	0	-30	-30
06-1-47-85140	Lacombe County Contribution				0	0	0	-70195	-70195
06-1-47-85150	Ponoka County Contribution				0	0	0	-70195	-70195
06-1-47-92100	Transfer from Reserves				0	0	0	-215000	-215000
	47 Regional Water Revenues				**-488366**	**-407237**	**-895603**	**-6169442**	**-5273839**
47 Regional Water Operating Expenditures									
06-2-47-11110	Board Wages-City of Lacombe				0	0	0	1400	1400
06-2-47-11120	Board Wages-Town of Ponoka				0	0	0	600	600
06-2-47-11130	Board Wages-Town of Blackfalds				0	0	0	600	600
06-2-47-11140	Board Wages-Lacombe County				0	0	0	600	600
06-2-47-11150	Board Wages-Ponoka County				0	0	0	600	600
06-2-47-21110	Board Travel-City of Lacombe				0	0	0	250	250
06-2-47-21120	Board Travel -Town of Ponoka				0	0	0	250	250
06-2-47-21130	Board Travel-Town of Blackfalds				0	0	0	250	250
06-2-47-21140	Board Travel-Lacombe County				0	0	0	250	250
06-2-47-21150	Board Travel-Ponoka County				0	0	0	250	250
06-2-47-21170	Travel-Administration				0	0	0	100	100
06-2-47-21400	Membership Fees				0	0	0	300	300
06-2-47-21500	Postage & Freight				0	0	0	50	50
06-2-47-21600	Staff & Volunteer Appreciation				0	0	0	300	300
06-2-47-21700	Telephone - Office				694	-642	52	1080	1028
06-2-47-21701	Telephone - Operations				0	1336	1336	8072	6737
06-2-47-23000	Management Fees				4737	5620	10357	56844	46487
06-2-47-23100	Accounting and Auditor Fees				3922	0	3922	8000	4078
06-2-47-23200	Legal Fees				0	0	0	500	500
06-2-47-23900	Other Professional Services				264	60	324	16800	16476
06-2-47-25300	Equipment Repair & Maintenance				629	0	629	9500	8872
06-2-47-25301	SCADA Maintenance				0	722	722	9025	8303
06-2-47-27400	Insurance & Bond Premiums				0	0	0	3889	3889
06-2-47-34200	Administration				883	0	883	10596	9713
06-2-47-35100	Purchase of Water				283362	290026	573389	4096061	3522672
06-2-47-35200	Operations				9247	6402	15649	123637	107988
06-2-47-51000	Miscellaneous Expenses				0	0	0	250	250
06-2-47-51100	Meeting Supplies				0	0	0	50	50
06-2-47-51400	Office Supplies				0	0	0	150	150
06-2-47-52400	General Materials & Supplies				0	184	184	750	566
06-2-47-54400	Utilities-Electricity				215	89	305	3500	3195
06-2-47-56400	Valves				0	0	0	5000	5000
06-2-47-81400	Bank Charges & Interest				0	0	0	25	25
06-2-47-83100	Debenture Interest				0	0	0	570359	570359
06-2-47-83200	Debenture Principal				0	0	0	704542	704542
06-2-47-99000	Amortization				0	0	0	465610	465610
	47 Regional Water Operating Ex				**303953**	**303798**	**607751**	**6100040**	**5492289**

CITY OF LACOMBE

GL Department Report

GL5330

Date : Apr 0

Year : 2018

Period : 2

Budget : PRO

Account No.	Description	CC1	CC2	CC3	Open Bal	Current	Year To Date	Budget	Variance
REGIONAL WATER REPORTING									
REGIONAL WATER REPORTING Total					-184413	-103439	-287853	-69402	218450

THE CITY OF
Red Deer
ENVIRONMENTAL SERVICES

March 23, 2018

Justin de Bresser, Commission Administrator
North Red Deer River Water Services Commission
c/o City of Lacombe
5432 – 56 AVE
Lacombe AB T4L 1E9

Dear Mr. de Bresser,

Re: 2017 True-up Per the Water Supply Agreement

Each year, The City reviews actual costs and actual usage for the regions and assess whether or not there should be a reconciliation of costs (i.e. a "true-up"). Based on Schedule E of the Water Supply Agreement, if actual usage and costs results in a variance compared to the amounts charged of more than 10%, a "true-up" amount will be charged or paid to reconcile the difference.

The 2017 budgeted revenue requirement for the water utility was $26.67 million, and the actual revenue requirement was $25.75 million; a net reduction of $0.92 million. The primary reasons for the reduction are related to: operating expense variances of $0.74 million; and depreciation and cost of capital reduction of $0.17 Million as some anticipated capital expenses were deferred from 2017 to 2018.

For NRDRWSC, the actual cost allocated in 2017 was $3,861,988 and the actual consumption was 2,834,178 m^3; or $1.36/$m^3$ .This compares to actual revenue collected of $3,878,104.84; resulting in a variance of $16,117 The variance does not exceed 10% of budget; therefore no amount is owing to the region.

Please give me a call if you have any questions or would like to discuss this matter further.

Yours truly,

Tim Ainscough, P. Eng.
Environmental Services Manager
JF/lms
c. Director of Development Services
Environmental Services Administrative & Accounting Supervisor
Water Superintendent

North Red Deer Regional Water Services Commission

5432 56th Avenue
Lacombe, Alberta T4L 1E9

Memorandum

TO: Commission Board Members

FROM: Justin de Bresser, Administrator

DATE: March 23, 2018

RE: Commission Bylaw #3.2 – Water Rate REF: 47/200 (18)

Purpose

To present for the Board's consideration Bylaw #3.2, a bylaw to amend the Commission's Water Rate Bylaw #3.

Background

In December of last year, the Commission received a letter from the City of Red Deer regarding the 2018 Water Supply Rates. The 2018 rate will be $1.47 per cubic metre which is an increase of 6.5% above the 2017 rate of $1.38 per cubic metre. The Commission has not had to change their rate of $2.03 since 2013.

Issue Analysis

Section of 602.07(1)(b) of the Act states that a Commission shall pass a bylaw governing the fees to be charged by the commission for services provided to its customers or any class of customers.

The Commission's Bylaw #1 establishes the administration of the Commission, including how the annual rate is to be established. Bylaw #1 does not actually establish the rate itself. Bylaw 3 established the rate for members beginning in 2016.

Bylaw 3.2 would amend the original Bylaw 3 to the rate to be charged by the Commission to the members would be $2.07 per cubic meter which is a 1.97% increase.

Unlike a municipal council, the Board may pass a bylaw in one meeting by simple majority vote.

Financial Implications

Based on the 6.5% increase from the City of Red Deer and the commission's rates increased to $2.07 per cube metre, there will be a reduction in the operating surplus from $117,213 to $69,404 as a result.

Attachment

1. Bylaw 3.2 – A Bylaw to Amend Commission Bylaw 3

Recommendation

Administration is recommending that the Commission give all three readings to Bylaw 3.2 at its April 9, 2018 meeting.

8NORTH RED DEER RIVER WATER SERVICES COMMISSION

BYLAW 3.2

BEING A BY-LAW OF THE BOARD OF DIRECTORS OF THE NORTH RED DEER RIVER WATER SERVICES COMMISSION TO AMEND COMMISSION BYLAW 3, THE 2016 WATER RATE BYLAW

WHEREAS the North Red Deer Water Services Commission has been established by the Lieutenant Governor in Council under Alberta Regulation 105/2004 made pursuant to Part 15.1 of the Municipal Government Act, RSA 2000, c. M-26; and

WHEREAS the Board of Directors of the North Red Deer Water Services Commission has been duly appointed pursuant to section 602.04(3)(b) of the said Act and the Board of Directors now wishes to make a Bylaw pursuant to section 602.07(1)(b) of the said Act establishing the per unit rate to be charged for the sale of water to its member municipalities and customers;

WHEREAS the Board of Directors of the North Red Deer Water Services Commission approved Commission Bylaw 3 in 2016 to establish an annual utility rate and the Board wishes to amend this Bylaw to incorporate a separate annual utility rate for non-member customers:

NOW THEREFORE the Board enacts the following:

1. Commission Bylaw 3 is hereby amended in the following manner:

    a. Section 3 is deleted in its entirety and replaced with the following:

    *"**3. The rate to be charged for the sale of potable water as of April 1st, 2018 to members by the Commission is hereby set at $2.07 per cubic meter of measured water."***

    b. Section 3.1 is deleted in its entirety and replaced with the following

    "**3.1.** ***The rate to be charged for the sale of potable water as of April 1st, 2018 to customers by the Commission is hereby set at $1.960 ($1.469 for potable water and $0.491 for delivery) per cubic meter of measured water."***

2. This bylaw comes into force upon final adoption.

Read a first time **9** day **April** of **2018**

Read a second time this **9** day **April** of **2018**

Read a third time and adopted this **9** day **April** of **2018**

_____
CHAIR

_____
MANAGER

North Red Deer Regional Water Services Commission

5432 56th Avenue
Lacombe, Alberta T4L 1E9

Memorandum

TO: Commission Board Members

FROM: Justin de Bresser, Administrator

DATE: April 9, 2018

RE: Allocation of 2017 Surplus

REF: 47/860/2017

PURPOSE:

To propose allocations of the 2017 operating surplus to reserves in accordance with Commission policy.

BACKGROUND:

In accordance with the Commission's capital and operating reserve policy (see attached), annual surpluses are to fund contributions to the capital and operating reserves in the following amounts:

Capital – equal to the annual amortization expense (for 2017 that is 465,610).

Operating – equals 100% operating surplus until the reserve reaches the equivalent of 90 days of the cash operating expenses. The 2017 operating surplus (after amortization and less debt payments) was $18,149. ($691,964 less $673,815 principle debt payment).

The 2017 operating reserve target is $1,345,599 (2016 target was $1,250,363).

ISSUE ANALYSIS:

Based on policy, Administration is proposing the following allocations:

Operating Reserve

Operating Reserve Opening Balance	$1,250,363
Portion of 2017 Surplus	**$ 18,149**
2018 Opening Balance	$1,268,512
2017 operating reserve target is	$1,345,599 (As noted above)

Stabilization Reserve	
Opening Balance	$1,280,811
2017 True Up	**$ 0**
2017 Opening Balance	$1,280,811
Capital Reserves	
Capital Reserve Opening Balance	$2,894,870
2017 Amortization	**$ 465,610**
2018 Opening Balance	$3,360,480

Administration is recommending that the balance of the 2017 surplus be allocated to the operating reserve.

As identified during the presentation of the financial statements, the surplus was achieved without accessing the stabilization reserve. This amount will remain in the rate stabilization reserve for future use.

Administration is also recommending that an amount equivalent to the 2017 amortization be transferred to the capital reserve as per policy.

FINANCIAL IMPLICATIONS:

The transfer to reserves has no immediate impact on the 2018 operating budget. Funding from the rate stabilization reserve in the amount of $215,000 is being transferred to the 2018 operating budget to ensure water rates remain unchanged.

LEGISLATIVE AUTHORITY:

- Commission Policy #7

ALTERNATIVES:

1. Apply transfers to reserves as proposed.
2. Vary transfers as per Board direction.
3. Return surplus through rebates to Member municipalities.
4. Do nothing and retain surplus in unrestricted operating surplus.

ATTACHMENTS:

- Commission Policy #7 - CAPITAL & OPERATING RESERVES

ACTION/RECOMMENDATION:

THAT the Board approve the following transfer to reserve:

1. That an amount equal to the annual amortization for 2017 be allocated to the Capital Reserves; and
2. That an amount equal to $18,149 be transferred to the Operating Reserve.