AGENDA
Bentley Town Council Regular Meeting
Tuesday February 22, 2022
6:45 pm

1. **Call to Order**

2. **Indigenous Acknowledgement**

   "We acknowledge that we are meeting on Treaty 6 Territory and Home of Metis Nation Region 3, on land that is part of a historic agreement involving mutuality and respect. We recognize all the many First Nations, Metis, Inuit and non-First Nations whose footsteps have marked these lands."

3. **Amendments & Acceptance of Agenda**

4. **Adoption of Previous Minutes:**

   a) **Regular Meeting of Council February 8, 2022**

5. **Financial:**

   a) **Prepaid Cheque Listing – Cheques No. 20220071 to 20220119**

6. **New Business**

   a) **Annual Water & Wastewater Reports 2021**

7. **Correspondence**

   b) **Lacombe County January 31, 2022, Council Highlights**
   c) **Lacombe County February 10, 2022, Council Highlights**

8. **Other Business**

   a) **Meetings with Member of Parliament Blaine Calkins and Member of Legislative Assembly the Honourable Jason Nixon**

   b) **Update on Meeting with AHS and doctor or nurse practitioner recruitment**

   c) **New Beginnings Report Update and Open House**

9. **Adjournment**

Minutes of the Regular Meeting of the Council of the Town of Bentley

February 8, 2022

Date and Place Minutes of the Regular Meeting of the Council of the Town of Bentley held Tuesday, February 8, 2022, at 6:45 p.m., in the Bentley Municipal Office

In Attendance
Mayor Greg Rathjen
Deputy Mayor Brenda Valiquette
Councillor Pamela Hansen
Councillor Lenore Eastman
Councillor Dale Grimsdale
CAO, Marc Fortais

Call to Order Mayor Greg Rathjen called the meeting to order at 6:45 p.m.

Indigenous Acknowledgement "We acknowledge that we are meeting on Treaty 6 Territory and Home of Metis Nation Region 3, on land that is part of a historic agreement involving mutuality and respect. We recognize all the many First Nations, Metis, Inuit and non-First Nations whose footsteps have marked these lands"

Read by Mayor Rathjen

Agenda

Motion 32/2022 Moved by Mayor Rathjen "THAT" the agenda be amended to include the following items under

Other Business

b) Changes to the REP Program announced by the Alberta Government

Carried

Motion 33/2022 Moved by Councillor Grimsdale "THAT the amended Agenda, of the February 8, 2022, Regular Meeting of Council be accepted."

Carried

Previous Minutes

Motion 34/2022 Moved by Councillor Eastman, "THAT the minutes of the January 25, 2022, Regular Meeting of Council be confirmed."

Carried

Financial **Prepaid Cheque Listing Cheques No. 20220050 to 20220070**

Motion 35/2022 Moved by Councillor Grimsdale, "THAT the Prepaid Cheque Listing – Cheques No. 20220050 to 20220070, be received for information."

Carried

New Business

a) Delegation 6:50pm – Lacombe Regional Waste Services Presentation by Jay Hohn Manager of LRWSC

Mr. Hohn provided an overview of the LRWSC and the six members to the commission. The presentation included details about the Transfer Site in Bentley along with the other Transfer sites in the region and the operations at Prentiss Landfill and household waste hauled to West Dried Meat Lake Regional Landfill. This information was presented for information only.

b) Joint Use Planning Agreements – Presented by Parkland Community Planning Services – Craig Teal

Mr. Teal provided a presentation via zoom regarding the intent and purpose of Joint Use Planning Agreements between the Town and the Schools. The main intent being to discuss areas where shared responsibility and use may be of mutual benefit between the local schools and the town. Examples including sharing space such as gym's, arenas etc. and the terms and conditions for development of reserve lands for future school needs. The overall intent is to ensure that JUPA agreements are developed in the near future, between the Town of Bentley and the School Board to meet legislative requirements set by the Province of Alberta.

Motion 36/2022 Moved by Councillor Hansen, "THAT the information presented from Lacombe Regional Waste Services Commission and the information presented from Parkland Community Planning Services, be accepted as information by Mayor and Council."

Carried

c) Community Standards Bylaw 165/2013

Motion 37/2022 Moved by Councillor Grimsdale, "THAT the Community Standards Bylaw 165/2013 be accepted as information by Mayor and Council."

d) Consumer Price Index Increases 2022 Town Staff and Mayor and Council

Motion 38/2022 Moved by Councillor Eastman, "THAT pursuant to Policy 07/04, Council approves a cost-of-living increase of 3.20% to the salary grid and staff wages, to take effect March 1, 2022.

AND THAT, pursuant to policy 40/2021, Council approves a cost-of-living increase of 3.20% to the Council remuneration and expense rates, to take effect March 1, 2022."

Carried

Correspondence

a). Lacombe County January 13, 2022, Council Highlights.

Motion 39/2022 Moved by Councillor Valiquette, "THAT correspondence items a) be received for information."

Carried

Before moving in camera – it was discussed to amend the sequence of the agenda to move Council Reports ahead of Other Business – In-Camera item to allow for the council reports to be presented to members of the public and not keep them waiting.

Motion 40/2022 Moved by Councillor Hansen, "THAT the Council Reports be moved up on the Agenda prior to Other Business – In-Camera item being discussed, to ensure members of the public can be presented the reports and not kept waiting until after the in-camera portion of the meeting."

Carried

Councillor Eastman requested a 5-minute break prior to moving in camera

Motion 41/2022 Moved by Councillor Eastman, "THAT Council recess for 5 minutes at 8:24pm prior to moving to an in-camera discussion on a land matter."

Carried

Return from Break 8:29pm

Call To Order **Mayor Rathjen Resumed the Meeting and Called it to Order at 8:29pm**

Other Business / Council Question Period

a) **In-Camera Land Matter – Intermunicipal Development Plan, Intermunicipal Collaboration Framework Discussion. Advice from officials 24(1) Freedom of Information and the Protection of Privacy.** The head of a public body may refuse to disclose information to an applicant if the disclosure could reasonably be expected to reveal (a) advice, proposals, recommendations, analysis or policy options developed by or for a public body or a member of the executive council."

Motion 42/2022 Moved by Councillor Valiquette, "THAT the Regular Meeting of Council be closed to the public for a discussion regarding a land matter at 7:30pm."

Carried

Motion 43/2022 Moved by Councillor Eastman, "THAT the Regular Meeting of Council be resumed in public at 8:52 p.m.

Carried

b) A brief discussion took place regarding Canada Community Revitalization Grant Status and that it was not looking good regarding our application for funding. Councillor Valiquette suggested that the item be discussed at the next meeting of Council to occur on February 22, 2021

Adjournment

Motion 44/2022 Moved by Councillor Valiquette, "THAT the meeting be adjourned at 8:55 p.m.

Carried

TOWN OF BENTLEY

Cheque Listing For Council

2022-Feb-17
1:02:43PM

Cheque #	Cheque Date	Vendor Name	Invoice #	Invoice Description	Invoice Amount	Cheque Amount
20220071	2022-02-10	CHAPMAN RIEBEEK LLP		PAYMENT		393.75
			2112109	GENERAL MATTERS	393.75	
20220072	2022-02-10	PARKLAND COMMUNITY PLANNING SERVICES		PAYMENT		11,202.61
			21523	ADVICE & ASSISTANCE TOWN SUBI	1,950.00	
			21594.	LACOMBE/BENTLEY JOINT DEVELOI	9,252.61	
20220073	2022-02-10	RSM ALBERTA LLP		PAYMENT		7,875.00
			6560068	AUDIT FINANCIAL STATEMENTS YE/	7,875.00	
20220074	2022-02-10	STANTEC CONSULTING LTD.		PAYMENT		1,947.65
			1678420	NEW BEGINNINGS FEASIBILITY STU	1,947.65	
20220075	2022-02-10	STRAND MEDIA CORPORATION		PAYMENT		175.87
			65269	COMMISSIONAIRE OF OATH STAMP	175.87	
20220076	2022-02-15	CARSON, BARBARA J				
20220077	2022-02-15	JENSEN, DARREN J				
20220078	2022-02-15	MEREDITH, SANDRA L				
20220079	2022-02-15	GIBSON, COLE C				
20220080	2022-02-15	DENNEHY, NATHAN				
20220081	2022-02-15	GREAVES, LORYANNE				
20220082	2022-02-15	FORTAIS, MARC C				
20220083	2022-02-15	KIKSTRA, ROBERT B				
20220084	2022-02-11	327241 ALBERTA LTD.		PAYMENT		892.50
			985	JANUARY ANIMAL CONTROL SERVI(	892.50	
20220085	2022-02-11	BUNZL CLEANING & HYGIENE		PAYMENT		54.63
			129634	ARENA JANITORIAL SUPPLY	54.63	
20220086	2022-02-11	CAMPUS ENERGY PARTNERS LP		PAYMENT		19,019.31
			1000894-202201	ELECTRICITY BILL FOR JANUARY 2(	9,345.75	
			1000895-202201	STREET LIGHTING FOR JANUARY 2(	6,043.25	
			2688ZC-2201-1	NATURAL GAS BILL FOR JANUARY 2	3,630.31	
20220087	2022-02-11	HOLDEN, KARI		PAYMENT		255.00
			31012022	JANITORIAL FOR JANUARY 2022	255.00	
20220088	2022-02-11	INNOV8, DIGITAL SOLUTIONS INC.		PAYMENT		279.29
			IN320836	FCSS PHOTOCOPIER	11.15	
			IN321433	OFFICE PHOTOCOPIER	268.14	
20220089	2022-02-11	LACOMBE COUNTY		PAYMENT		997.50
			IVC00041576	2022 ASSESSMENT REVIEW BOARD	997.50	
20220090	2022-02-11	MUNISIGHT LTD.		PAYMENT		828.48
			INV2209494	MUNIWARE SOFTWARE FEBRUARY	828.48	
20220091	2022-02-11	PARKLAND REGIONAL LIBRARY		PAYMENT		2,495.75
			220021	QUARTERLY REQUISITION PAYMEN	2,495.75	
20220092	2022-02-11	PITNEYWORKS		PAYMENT		540.00
			03022022	POSTAGE FOR JANUARY 2022	540.00	
20220093	2022-02-11	RECEIVER GENERAL		PAYMENT		16,506.82
			31012022	REDUCED EMPLOYMENT INSURANC	16,506.82	
20220094	2022-02-11	RIMBEY EXPRESS		PAYMENT		106.52
			1911	WATER SAMPLES & RETURN FOR J/	106.52	
20220095	2022-02-11	SHAW CABLE		PAYMENT		329.70
			03092299019 Feb	FCSS INTERNET	124.95	
			03092492934 Feb	TOWN OFFICE INTERNET	131.25	
			03092533578 Feb	PW SHOP INTERNET	73.50	
20220096	2022-02-11	TAXERVICE		PAYMENT		3,782.10

Cheque #	Cheque Date	Vendor Name	Invoice #	Invoice Description	Invoice Amount	Cheque Amount
20220096	2022-02-11	TAXERVICE	1312022	TAXERVICE JANUARY BILL	3,782.10	3,782.10
20220097	2022-02-11	TELUS COMMUNICATIONS INC.		PAYMENT		863.33
			02042022	ARENA WIFI	68.25	
			04022022	TELUS BILL FOR FEBRUARY 2022	757.68	
			FEB042022	INTERAC LINE	37.40	
20220098	2022-02-11	TELUS MOBILITY INC.		PAYMENT		77.55
			JAN092022	TELUS MOBILITY BILL FOR JANUAR'	77.55	
20220099	2022-02-11	WASTE CONNECTIONS OF CANADA INC.		PAYMENT		1,964.16
			7425-0000238559	COMMERCIAL WASTE PICK UP FOR	1,008.33	
			7425-0000239423	COMMERCIAL WASTE PICK UP FOR	955.83	
20220100	2022-02-11	WASTE MANAGEMENT		PAYMENT		5,127.80
			1135144-0613-2	RECYCLING FOR JANUARY 2022	5,127.80	
20220101	2022-02-11	WILD ROSE ASSESSMENT SERVICES		PAYMENT		1,330.88
			8513	PROGRESS PAYMENT FOR FEBRUA	1,330.88	
20220102	2022-02-15	RATHJEN, ARTHUR M				
20220103	2022-02-15	VALIQUETTE, BRENDA C				
20220104	2022-02-15	HANSEN, PAMELA				
20220105	2022-02-15	GRIMSDALE, DALE A				
20220106	2022-02-15	EASTMAN, LENORE M				
20220107	2022-02-17	ADT SECURITY SERVICES CANADA INC.		PAYMENT		42.00
			26067649	PUMPHOUSE SECURITY	42.00	
20220108	2022-02-17	CANOE PROCUREMENT GROUP OF CANADA, DIV. OF		PAYMENT		2,429.69
			AB097389	OFFICE SUPPLIES	264.52	
			AB100487	ROADS & STREETS MACHINERY PAI	127.05	
			AB100889	TIRE REPLACEMENT FOR UNIT #1	2,038.12	
20220109	2022-02-17	CARSON, BARB		PAYMENT		101.14
			31012022	REIMBURSEMENT FOR VOLUNTEER	101.14	
20220110	2022-02-17	G.L.D.C. GAS CO-OP LTD.		PAYMENT		1,068.13
			31012022	FIRE DEPARTMENT NATURAL GAS E	1,068.13	
20220111	2022-02-17	GREGG DISTRIBUTORS LP		PAYMENT		621.31
			059-427724	PW. SHOP SUPPLIES & OIL PRODUC	612.57	
			059-428817	ROADS & STREETS EQUIPMENT PAI	8.74	
20220112	2022-02-17	HHID		PAYMENT		420.00
			02012022	DIRECTOR OF EMERGENCY MANAG	420.00	
20220113	2022-02-17	KIKSTRA; ROB		PAYMENT		150.00
			CA21JNA4JQI	REIMBURSEMENT OF WORK BOOTS	150.00	
20220114	2022-02-17	MY TECH ONSITE		PAYMENT		403.20
			INV 1957	OFFICE 365 SUBSCRIPTIONS	403.20	
20220115	2022-02-17	PARKLAND COMMUNITY PLANNING SERVICES		PAYMENT		108.75
			21619	DAY TO DAY PROFESSIONAL SERVI	37.50	
			21620	GIS BUILD, ENHANCEMENTS & ONG	71.25	
20220116	2022-02-17	PUROLATOR INC.		PAYMENT		159.07
			449542524	FREIGHT FOR COMMERCIAL TRUCK	159.07	
20220117	2022-02-17	SERVUS CREDIT UNION		PAYMENT		380.18
			01312022	SERVUS MASTERCARD BILL FOR JA	380.18	
20220118	2022-02-17	SYLVAN LAKE SUMMER HOCKEY CAMP LTD		PAYMENT		10,500.00
			15022022	ARENA CARETAKER PAYMENT FOR	10,500.00	
20220119	2022-02-17	ENTANDEM		PAYMENT		208.51
			189800	PERFORMANCE RIGHTS INVOICE LI	208.51	

Cheque #	Cheque Date	Vendor Name	Invoice #	Invoice Description	Invoice Amount	Cheque Amount
					Total	**111,670.45**

*** End of Report ***

Agenda Date: **February 22, 2022**
Agenda Item: **2021 Water and Wastewater Annual Report**

LEGISLATIVE REQUIREMENT/AUTHORITY

Annual reports are required to be completed as a condition of the operating approvals issued by the Alberta government under the Environmental Protection and Enhancement Act Approvals for water and wastewater treatment facilities. Reports may also be required as a condition of the Code of Practice for a specific facility.

SUMMARY AND BACKGROUND

The purpose of these reports is to address the performance of each facility and ensure compliance, quality and safety of the services provided.

The reports provide:

Water Year End Report (Attachment #1)

- Volume summaries by well and by distribution
- Chlorine consumption, dosages and residuals
- Number of samples taken
- Results of water quality testing
- Any operational challenges and issues with the system and how they were addressed
- Any contraventions and what was done to address the contravention (which there were none)

Wastewater Year End Report (Attachment #2)

- Volume summaries
- Lagoon discharge dates and volume discharged
- Volume of digester treatment added to ponds
- Percentages of removal of harmful nutrients
- Results of wastewater testing

It should be noted that all results obtained indicated that the Town of Bentley has excellent water quality and that we comply for both our Water and Wastewater Treatment.

RECOMMENDATION:

THAT the Annual Water & Wastewater Reports for the year ending December 31, 2021, and the Drinking Water Safety Plan (Attachment #3), be received, approved, and accepted by Town Council as information.

ATTACHMENTS:

1) Water Year End Report
2) Wastewater Year End Report
3) Drinking Water Safety Plan

Marc Fortais, CAO

Water
Year End Report
2021

Water # 18648-00-00 (SW26-40-1-W5M)

This report was prepared by
Darren Jensen (#4051)
Town of Bentley
Box 179
Bentley, Alberta
T0C 0J0
403 748 4044

Acknowledgement of Water System Report

Water # 18648-00-00 (SW26-40-1-W5M)

Darren Jensen (#4051) Operator

Water Treatment I
Water Distribution I
Wastewater Treatment I
Wastewater Collection I

Cole Gibson (#5404) Operator

Water Treatment I
Water Distribution I
Wastewater Treatment I
Wastewater Collection I

Darren Dempsey (#3175) On Call Contracted Operator

Water Treatment I
Water Distribution I
Wastewater Treatment I
Wastewater Collection I

Mayor and Council of the Town of Bentley have reviewed and accepted this report.

Mayor: _____

Council: _____

Council: _____

Council: _____

Council: _____

Chief Administrative Officer for the Town of Bentley has reviewed and accepted this report.

CAO: _____

Raw Well Water Consumption Report
Water Treatment Distribution System
Town of Bentley
Water # 18648-00-00 (SW26-40-1-W5M)

Month End	Well # 1 Reading	Volume (m3)	Well # 2 Reading	Volume (m3)	Well # 3 Reading	Volume (m3)	Volume #1,2,3	Monthly Avg (m3)	Monthly Min (m3)	Monthly Max (m3)
Dec-20	954279		934939		21776					
Jan	956709	2430	937254	2315	23878	2102	6847	221	114	451
Feb	959135	2426	939569	2315	25980	2102	6843	244	62	471
Mar	961886	2751	942195	2626	28418	2438	7815	252	0	442
Apr	964651	2765	944829	2634	30805	2387	7786	260	102	424
May	967724	3073	947753	2924	33448	2643	8640	279	44	411
June	971213	3489	951070	3317	35955	2507	9313	310	205	494
July	974711	3498	954395	3325	38949	2994	9817	317	197	472
Aug	977625	2914	957163	2768	41434	2485	8167	263	212	438
Sept	980265	2640	959671	2508	43682	2248	7396	247	0	515
Oct	983208	2943	962462	2791	46179	2497	8231	266	95	501
Nov	985761	2553	964894	2432	48358	2179	7164	239	86	394
Dec	988483	2722	967483	2589	50688	2330	7641	246	47	450
Total		34204		32544		28912	95660			

Total Yearly Volume (m3):	95660
Monthly Average (m3):	7972
Daily Average (m3):	262
Peak Month:	July 2021 (9817)m3
Peak Day:	September 15,2021 (515)m3

Treated Water Consumption Report
Water Treatment Distribution System
Town of Bentley

Water # 18648-00-00 (SW26-40-1-W5M)

Monthly Meter Reads					
Month End	Dist Pump 1 Meter Read	#1 Volume Used (m3)	Dist Pump 2 Meter Read	#2 Volume Used (m3)	1&2 Volume Total (m3)
Dec-13	837724		822120		
Jan	841917	4193	824754	2634	6827
Feb	845924	4007	827548	2794	6801
Mar	848346	2422	832681	5133	7555
Apr	851506	3160	837192	4511	7671
May	856582	5076	840307	3115	8191
June	861763	5181	844118	3811	8992
July	866564	4801	848894	4776	9577
Aug	870809	4245	852793	3899	8144
Sept	874864	4055	855704	2911	6966
Oct	878670	3806	859585	3881	7687
Nov	881985	3315	863569	3984	7299
Dec	884415	2430	868782	5213	7643
Total		46691		46662	93353

Monthly Town Usage (m3)			
	Monthly Avg (m3)	Monthly Min (m3)	Monthly Max (m3)
Jan	220	147	287
Feb	243	80	372
Mar	244	177	299
Apr	256	194	335
May	264	163	325
June	300	216	485
July	309	162	467
Aug	263	145	432
Sept	232	118	356
Oct	248	141	376
Nov	243	158	299
Dec	247	140	317

Total Yearly Volume (m3):	93353
Monthly Average (m3):	7779
Daily Average (m3):	256
Peak Month:	July 2021 (9577) m3
Peak Day:	June 30, 2021 (485) m3

Chlorine Consumption and Chlorine residual Report
Water Treatment Distribution System
Town of Bentley
Water # 18648-00-00 (SW26-40-1-W5M)

Monthly Chlorine Used				
Month	Total (L)	Monthly Avg (L)	Monthly Min (L)	Monthly Max (L)
Jan	187	6.0	3	12
Feb	186	6.6	2	13
Mar	208	6.7	0	12
Apr	207	6.9	2	11
May	228	7.4	1	11
June	262	8.7	5	17
July	263	8.5	5	13
Aug	232	7.5	5	12.5
Sept	220.5	7.4	0	16
Oct	242	7.8	3	14
Nov	216.5	7.2	3	12
Dec	229.5	7.4	1	14
Totals	2681.5			

Monthly Dosages mg/L			
	Monthly Avg Dosage	Monthly Min. Dosage	Monthly Max. Dosage
Jan	4.0	3.4	4.5
Feb	3.9	3.3	4.8
Mar	3.7	0.0	4.4
Apr	3.8	2.8	4.6
May	3.8	3.1	4.4
June	4.1	3.1	6.0
July	3.9	3.2	4.5
Aug	4.1	3.2	4.8
Sept	4.2	0	5.7
Oct	4.3	3.9	4.9
Nov	4.4	2.9	7.9
Dec	4.3	3.1	4.9

Monthly Free CL2 Residuals (mg/L)						
Month	Free CL2 Mon. Avg Entering Dist.	Free CL2 Mon. Min Entering Dist.	Free CL2 Mon. Max Entering Dist.	Free CL2 Mon. Avg In Dist.Sys	Free CL2 Mon. Min. In Dist.Sys	Free CL2 Mon. Max In Dist.Sys
Jan	0.62	0.53	0.74	0.59	0.54	0.68
Feb	0.66	0.5	0.89	0.66	0.51	0.85
Mar	0.80	0.63	0.9	0.78	0.63	0.9
Apr	0.60	0.54	0.67	0.59	0.55	0.64
May	0.53	0.44	0.66	0.51	0.4	0.59
June	0.63	0.51	1.06	0.59	0.45	0.96
July	0.52	0.43	0.64	0.49	0.41	0.63
Aug	0.43	0.32	0.51	0.41	0.31	0.54
Sept	0.57	0.42	0.78	0.49	0.31	0.70
Oct	0.56	0.40	0.68	0.52	0.35	0.68
Nov	0.68	0.54	0.94	0.65	0.47	0.89
Dec	0.56	0.5	0.66	0.51	0.46	0.56

Monthly Total CL2 Residuals (mg/L)						
Month	Total CL2 Mon. Avg Entering Dist.	Total CL2 Mon. Min Entering Dist.	Total CL2 Mon. Max Entering Dist.	Total CL2 Mon. Avg. In Dist.Sys	Total CL2 Mon. Min. In Dist.Sys	Total CL2 Mon. Max In Dist.Sys
Jan	0.76	0.66	0.87	0.73	0.68	0.79
Feb	0.83	0.67	1.04	0.79	0.66	0.94
Mar	0.97	0.82	1.08	0.93	0.81	1.06
Apr	0.77	0.69	0.86	0.73	0.67	0.83
May	0.66	0.59	0.78	0.62	0.50	0.70
June	0.74	0.6	1.17	0.69	0.55	1.12
July	0.63	0.56	0.74	0.58	0.51	0.75
Aug	0.55	0.44	0.63	0.52	0.43	0.64
Sept	0.67	0.51	0.81	0.61	0.43	0.89
Oct	0.70	0.60	0.86	0.63	0.51	0.78
Nov	0.80	0.67	1.09	0.76	0.59	1.08
Dec	0.67	0.59	0.82	0.63	0.57	0.73

Monthly Inline Analyzer CL2			
Month	Free Mon. Avg.	Free Mon. Min.	Free Mon. Max.
Jan	0.60	0.52	0.71
Feb	0.67	0.55	0.85
Mar	0.80	0.73	0.88
Apr	0.61	0.53	0.73
May	0.51	0.46	0.58
June	0.63	0.5	0.98
July	0.54	0.46	0.64
Aug	0.43	0.37	0.50
Sept	0.54	0.41	0.70
Oct	0.58	0.49	0.68
Nov	0.68	0.56	0.92
Dec	0.56	0.5	0.66

Monthly average chlorine used (12% Sodium Hypochlorite Liquid) (Liter):	223
Daily chlorine average (Liter):	7.3
Monthly average daily dosage rate (mg/l):	4.0

Average yearly FREE CL2 residual (Entering Distribution system) (mg/l)	0.60
Average yearly FREE CL2 residual (In Distribution system) (mg/l)	0.56
Average yearly TOTAL CL2 residual (Entering Distribution System) (mg/l)	0.73
Average yearly TOTAL CL2 residual (In Distribution System) (mg/l)	0.69

CT Virus Report
Water Treatment Distribution System
Town of Bentley
Water # 18648-00-00 (SW26-40-1-W5M)

Month	Free CL2 Resid. Avg.	Free CL2 Resid. Min.	Free CL2 Resid. Max.	Temp °C	CT Required
Jan	0.62	0.53	0.74	6	8
Feb	0.66	0.50	0.89	6	8
Mar	0.80	0.63	0.90	6	8
Apr	0.60	0.54	0.67	6.5	8
May	0.53	0.44	0.66	6	8
June	0.63	0.51	1.06	6	8
July	0.52	0.43	0.64	6	8
Aug	0.43	0.32	0.51	7	8
Sept	0.57	0.42	0.78	6	8
Oct	0.56	0.40	0.68	8	8
Nov	0.68	0.54	0.94	8	8
Dec	0.56	0.50	0.66	7	8

Monthly CT Achieved Avg / Min / Max			
Month	CT Achieved Avg.	CT Achieved Min.	CT Achieved Max.
Jan	839	720	1005
Feb	900	679	1209
Mar	1087	856	1223
Apr	816	734	910
May	715	598	897
June	858	693	1440
July	710	584	869
Aug	583	435	693
Sept	770	571	1060
Oct	754	543	924
Nov	922	734	1277
Dec	758	679	897

Free CL2 Residual yearly average (mg/l):	0.60
Temperature yearly average (Celsius):	7
CT Achieved yearly average:	809
CT Required yearly average:	8
CT Performance yearly average:	101

Monthly CT Proformance Ratio Avg / Min / Max			
Month	CT Proform. Ratio Avg.	CT Proform. Ratio Min.	CT Proform. Ratio Max.
Jan	105	90	126
Feb	113	85	151
Mar	136	107	153
Apr	102	92	114
May	89	75	112
June	107	87	180
July	89	73	109
Aug	73	54	87
Sept	96	71	132
Oct	94	68	115
Nov	115	92	160
Dec	95	85	112

Bacterial Analysis Report
Water Treatment Distribution System
Town of Bentley
Water # 18648-00-00 (SW26-40-1-W5M)

Samples taken throughout the distribution system	
Number of samples required	52
Number of samples submitted	58
Number of samples testing positive	1
Number of late samples	1

Monthly Bacterial Analysis

Month	Number of Samples	Results of Samples	Dates of Samples
Jan	4	Negative	January 6, 2021/January 13, 2021/January 20, 2021/January 27, 2021
Feb	4	Negative	February 3, 2021(Not Delivered Currier Error)/February 10, 2021/February 17, 2021/ February 24, 2021
Mar	6	1-Pos/5-Neg	March 3, 2021(2 samples)/March 10, 2021/ March 17, 2021/March 24, 2021/March 31, 2021(Positive, 3 re-samples)
Apr	7	Negative	April 2, 2021(3 re-samples taken)/April 7, 2021/April 14, 2021/April 21, 2021/April 28, 2021
May	5	Negative	May 5, 2021/May 12, 2021/May 19, 2021(2 samples)/May 26, 2021
June	4	Negative	June 2, 2021/June 9, 2021/June 16, 2021/June 23, 2021
July	4	Negative	July 7, 2021/July 14, 2021/July 21, 2021/July 28, 2021
Aug	4	Negative	August 4, 2021/ August 11, 2021/ August 18, 2021/ August 25, 2021
Sept	6	Negative	September 1, 2021/ September 8, 2021/September 15, 2021/ September 22, 2021/ September 29, 2021(2 samples)
Oct	4	Negative	October 6, 2021/ October 13, 2021/ October 20, 2021/ October 27, 2021
Nov	5	Negative	November 3, 2021/ November 9, 2021(2 samples)/ November 17, 2021/ November 24, 2021
Dec	5	Negative	December 1, 2021/December 8, 2021/December 15, 2021/December 22, 2021/December 29, 2021

Description of Operational Problems and Corrective Actions
Town of Bentley
Water # 18648-00-00 (SW26-40-1-W5M)
Wastewater # 415-02-00 (SW22-NW26-40-1-W5M)

June 4th, Well #3 offline. Fortis replaced the transformer to the Arena where the control panel to well #3 is located. The wrong transformer was installed resulting in inadiquate power to operate the building. Fortis was notified of the problem and a new transformer was ordered.

June 8th, The new transformer was installed, power was restored to #3 well control panel. The well was back online.

Dinking Water Safety Plan
Town of Bentley
Water # 18648-00-00 (SW26-40-1-W5M)

The Drinking Water Safety Plan has been reviewed and updated as required by Alberta Environment & Parks.

Wastewater
Year End Report
2021

Wastewater # 415-02-00 (SW22-NW26-40-1-W5M)

This report was prepared by
Darren Jensen (#4051)
Town of Bentley
Box 179
Bentley, Alberta
T0C 0J0
403 748 4044

Acknowledgement of Wastewater System Report
Wastewater # 415-02-00 (SW22-NW26-40-1-W5M)

Darren Jensen (#4051) Operator

Water Treatment I
Water Distribution I
Wastewater Treatment I
Wastewater Collection I

Cole Gibson (#5404) Operator

Water Treatment I
Water Distribution I
Wastewater Treatment I
Wastewater Collection I

Darren Dempsey (#3175) On Call Contracted Operator

Water Treatment I
Water Distribution I
Wastewater Treatment I
Wastewater Collection I

Mayor and Council of the Town of Bentley have reviewed and accepted this report.

Mayor: _____

Council: _____

Council: _____

Council: _____

Council: _____

Chief Administrative Officer for the Town of Bentley has reviewed and accepted this report.

CAO: _____

Wastewater Lagoon Report

Town of Bentley

Wastewater # 415-02-00 (SW22-NW26-40-1-W5M)

Date	Monthly Volume	Daily Average
Jan		
Feb	3692 m3	205 m3
Mar	9006 m3	291 m3
April	10125 m3	338 m3
May	8932 m3	288 m3
June	7688 m3	256 m3
July	6869 m3	222 m3
Aug	7065 m3	257 m3
Sept	7279 m3	304 m3
Oct	8032 m3	266 m3
Nov	8603 m3	287 m3
Dec	4279 m3	186 m3
Total	81570 m3	2900 m3

(Did not record, Extended wait period for new meter due to Covid-19)

Monthly Average:	7415 m3
Daily Average:	250 m3

Lagoon discharge dates:	Open	Nov 8/2021
	Closed	Nov 29/2021
Approximate discharge:		120000 m3 (outfall not metered)

Treatment:

January - December (2021)

4 Pails @ 20 Kgs (44 lbs) January - April, DD Bio Liquid (Kadd) added to Anaerobic Pond One.

4 Pails @ 20 Kgs (44 lbs) May - August, DD Bio Dry (Kadd) added to Anaerobic Pond One.

4 totes @ 25 kgs (55 lbs) September - December Acti-Zyme added to Anaerobic Pond One.

The active use of digester will liquefy bio-solids, increase a systems capacity, stabilizes pH, decreases odour, removes pathogens, and cleans pipes, traps & valve boxes.

Acti-Zyme, Kadd & Chem International products are used as a non-toxic, all natural bio-augmentation for digestion of organic wastewater.

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869

KaizenLAB

ANALYTICAL REPORT

Client: Town of Bentley
Box 179
Bentley, AB, T0C 0J0

Attention: Darren Jensen

KaizenLAB JOB #:	**318745**
DATE RECEIVED:	27-Oct-2021
DATE REPORTED:	08-Nov-2021
PROJECT ID:	
LOCATION:	

KaizenLAB Sample #: 318745_001 **Sample ID:** Pre-Lagoon
Date Sampled: 25-Oct-2021 9:30 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit	
Total and Thermotolerant (Fecal) Coliforms in water				
Thermotolerant (Fecal) Coliforms	MPN/100mL	4	1	
Total Coliforms	MPN/100mL	80	1	
CBOD pH TSS with un-ionized ammonia				
pH @ 15°C		8.1		
Ammonia-N in Water				
Ammonia-N	mg/L	<0.05	0.05	
Ammonia-N (un-ionized)	mg/L	<0.01	0.01	
Carbonaceous Biochemical Oxygen Demand	mg/L	<3.0	3.0	*
Total Suspended Solids	mg/L	<2	2	
Chloride	mg/L	9.55	1.00	*
Dissolved Sodium	mg/L	47.0	0.1	
Total Kjeldahl Nitrogen	mg/L	<2.00	2.00	
Total Phosphorus	mg/L	0.071	0.040	

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Phone (403) 297-0868
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e-Mail: kaizenlan@kaizenlab.ca

Comments:

Additional replacement sample received for Total and Fecal Coliforms.

* The detection limit has been adjusted due to sample matrix type and/or insufficient sample volume.

The theoretical holding time requirement for pH in Water of 15 minutes was not met.

Test Methodologies

Ammonia in Water: Modified from SM 4500-NH3 F
Anions in Water: Modified from SM 4110B
Carbonaceous Biochemical Oxygen Demand in Water: Modified from SM 5210B
Cations in Water: Modified from SM 3030B and SM 3120B
pH of Water: Modified from SM 4500-H+ B
Thermotolerant (Fecal) Coliforms in Water: Modified from SM 9223B
Total Coliforms in Water: Modified from SM 9223B
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total Metals in Water: Modified from EPA 200.2 and SM 3120B
Total Suspended Solids in Water: Modified from SM 2540D

Final Review by:

Shirley Lowe
Client Service Representative / Project Coordinator

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869

KaizenLAB

ANALYTICAL REPORT

Client: Town of Bentley
Box 179
Bentley, AB, T0C 0J0

Attention: Darren Jensen

KaizenLAB JOB #:	**318760**
DATE RECEIVED:	27-Oct-2021
DATE REPORTED:	08-Nov-2021
PROJECT ID:	
LOCATION:	

KaizenLAB Sample #: 318760_001 **Sample ID:** Lagoon
Date Sampled: 25-Oct-2021 9:00 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit	
Total and Thermotolerant (Fecal) Coliforms in water				
Thermotolerant (Fecal) Coliforms	MPN/100mL	6	1	
Total Coliforms	MPN/100mL	>2420	1	
CBOD pH TSS with un-ionized ammonia				
pH @ 15°C		8.1		
Ammonia-N in Water				
Ammonia-N	mg/L	0.52	0.05	
Ammonia-N (un-ionized)	mg/L	0.02	0.01	
Carbonaceous Biochemical Oxygen Demand	mg/L	10.4	3.0	*
Total Suspended Solids	mg/L	5	2	
Chloride	mg/L	75.77	1.00	*
Dissolved Sodium	mg/L	251.3	0.1	
Total Kjeldahl Nitrogen	mg/L	4.39	2.00	
Total Phosphorus	mg/L	2.504	0.040	

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Fax: (403) 297-0869
e-Mail: kaizenlan@kaizenlab.ca

Comments:

Additional replacement sample received for Total and Fecal Coliforms.

* The detection limit has been adjusted due to sample matrix type and/or insufficient sample volume.

The theoretical holding time requirement for pH in Water of 15 minutes was not met.

Test Methodologies

Ammonia in Water: Modified from SM 4500-NH3 F
Anions in Water: Modified from SM 4110B
Carbonaceous Biochemical Oxygen Demand in Water: Modified from SM 5210B
Cations in Water: Modified from SM 3030B and SM 3120B
pH of Water: Modified from SM 4500-H+ B
Thermotolerant (Fecal) Coliforms in Water: Modified from SM 9223B
Total Coliforms in Water: Modified from SM 9223B
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total Metals in Water: Modified from EPA 200.2 and SM 3120B
Total Suspended Solids in Water: Modified from SM 2540D

Final Review by:

Shirley Lowe
Client Service Representative / Project Coordinator

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KaizenLAB

ANALYTICAL REPORT

Client: Town of Bentley
Box 179
Bentley, AB, T0C 0J0

Attention: Darren Jensen

KaizenLAB JOB #:	**318757**
DATE RECEIVED:	27-Oct-2021
DATE REPORTED:	08-Nov-2021
PROJECT ID:	
LOCATION:	

KaizenLAB Sample #: 318757_001 **Sample ID:** Post Lagoon
Date Sampled: 25-Oct-2021 10:00 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit	
Total and Thermotolerant (Fecal) Coliforms in water				
Thermotolerant (Fecal) Coliforms	MPN/100mL	1	1	
Total Coliforms	MPN/100mL	78	1	
CBOD pH TSS with un-ionized ammonia				
pH @ 15°C		7.9		
Ammonia-N in Water				
Ammonia-N	mg/L	<0.05	0.05	
Ammonia-N (un-ionized)	mg/L	<0.01	0.01	
Carbonaceous Biochemical Oxygen Demand	mg/L	<3.0	3.0	*
Total Suspended Solids	mg/L	5	2	
Chloride	mg/L	10.90	1.00	*
Dissolved Sodium	mg/L	48.0	0.1	
Total Kjeldahl Nitrogen	mg/L	<2.00	2.00	
Total Phosphorus	mg/L	0.063	0.040	

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e-Mail: kaizenlan@kaizenlab.ca

Comments:

Additional replacement sample received for Total and Fecal Coliforms.

* The detection limit has been adjusted due to sample matrix type and/or insufficient sample volume.

The theoretical holding time requirement for pH in Water of 15 minutes was not met.

Test Methodologies

Ammonia in Water: Modified from SM 4500-NH3 F
Anions in Water: Modified from SM 4110B
Carbonaceous Biochemical Oxygen Demand in Water: Modified from SM 5210B
Cations in Water: Modified from SM 3030B and SM 3120B
pH of Water: Modified from SM 4500-H+ B
Thermotolerant (Fecal) Coliforms in Water: Modified from SM 9223B
Total Coliforms in Water: Modified from SM 9223B
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total Metals in Water: Modified from EPA 200.2 and SM 3120B
Total Suspended Solids in Water: Modified from SM 2540D

Final Review by:

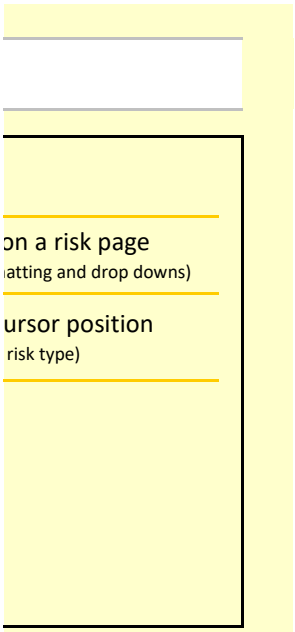
Shirley Lowe
Client Service Representative / Project Coordinator

DRINKING WATER SAFETY PLAN

Water Supply System	Town of Bentley
Location	Section 26-40-1-W5M (4602 46 Street)
Approval Holder	Town of Bentley Mayor
Approval Number	18648-01-00
AbWARN	CAO of Bentley
DWSP Author	Public Works Foreman

KEY / Instruction Page

Buttons and their actions	
Jump to Register Page	Reformats all rows c (replaces eqns, cond. Form
Jump to Menu Page	Inserts row above c (then formats it and offers
Toggles screen Split on and off	
Go to previous group page	
Go to next group page	


on a risk page
atting and drop downs)
ursor position
risk type)

DRINKING WATER SAFETY PLAN

SHEET REGISTER

CLICK SHEET NAMES TO NAVIGATE

(This page refreshes each time it is activated)

Sheet Name	(1)
Title	
KEY	
DWSP Intro	
Glossary	
Sheet Guide	
Menu	
Risk Scoring	
Core Detail	
Source Detail	
Source Schematic	
Source Risks	
Treatment Detail	
Treatment Schematic	
Treatment Risks	
Network Detail	
Network Schematic	
Network Risks	
Customer Detail	
Customer Risks	
Key Risks	
Action Summary	
SOPs	

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

About Drinking Water Safety Plans

A Drinking Water Safety Plan is a systematic method of risk management that may be applied to any water supply system. It is based on the analysis of detailed knowledge of the whole water supply system from source to tap and its fundamental purpose is to ensure the safety of the supply at all times.

It considers four main areas of supply: source, treatment, distribution network and customer. The risks attached to each section are analysed using a combination of likelihood and consequence and the most significant risks must then be assigned an appropriate mitigation. The plan records all of this information in various forms and is updated on a regular basis. It is a 'living document' that provides the operator with an efficient means of managing risk and is a useful single source of information about the supply.

About this template

This template has been designed to enable you to systematically record the main details of your water supply system and to assess the potential risks to public health. It is divided into four main sections, source, treatment, network and customer and you will be expected to supply the main details, a schematic and then to assess the risks for each section.

The amount of detail required will depend on the nature and complexity of your system. You have been provided with a list of common water supply risks to help you, but it is very important that you also think about any specific risks that might be present in your own system. A guide on how the risks are assessed is given in the risk scoring sheet. **Once the major risks are identified they must be carried forward to the Major Risks sheet**, where you need to consider the most appropriate way of diminishing each risk.

You will obviously be constrained by resources and you may need to think about short-term ways of mitigating the risk before you can put in place a permanent solution.

Once you have completed this section you then need to record all of the actions that you have identified into the Action Summary sheet.

A brief guide to the function of each of the sheets is given in the Sheet Guide

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Glossary of commonly used terms and Abreviations

Term	Definition
AbWARN	The mission of the Alberta Water/Wastewater Agency Response Network (AbWARN) is to support and promote a province-wide emergency preparedness, disaster response, and mutual assistance program for public and private water and wastewater utilities.
Anatoxins	A group of algal neurotoxins produced by the *Anabaena* species of blue-green algae.
Breakthrough	The situation where barrier filtration is no longer effective and material starts to pass through the filter.
Cause	The action, situation or state that has led to a particular effect or event.
CIP	Cleansing in place. Applies to cleaning of membranes, usually with citric acid
Consequence	The assessed outcome of any hazardous event
Control Measure	Any action or activity that is used to prevent or eliminate a water safety hazard or reduce the risk of it occurring to an acceptable level.
Contingency Plan	A plan of action that will be operated should a hazard or group of hazards enter the distribution system creating a situation where there is an acute risk to Public Health.
Cryptosporidium	A protozoan parasite common in water that causes a severe diarrhoeal disease, cryptosporidiosis. As part of its lifecycle it forms a cyst (oocyst) that is very resistant to normal means of disinfection. It is, however, deactivated by exposure to UV light and will be removed by barrier filtration.
Cyanotoxins	A large group of organic compounds released by the breakdown of blue green algal cells. Amongst other effects they may cause neurological damage, liver damage, or cause diarrhoea.
DWSP	Drinking Water Safety Plan
Event	An incident or situation resulting in an increased public health risk in the water supply.
Geosmin	An organic compound produced by blue-green algae that causes and earthy/musty taste and odour problem in water.
Giardia	A protozoan parasite common in water that causes a severe diarrhoeal disease, giardiasis. As part of its lifecycle it forms a cyst that is very resistant to normal means of disinfection. It is, however, deactivated by exposure to UV light and will be removed by barrier filtration.
Hazard	A chemical, biological, physical or radiological presence with a potential adverse human health effect.
HACCP	Hazard Analysis and Critical Control Point
Likelihood	Probability that an event will happen.
MAC	Maximum Acceptable Concentration.
MIB	2'Methylisoborneol. An organic compound produced by blue-green algae that causes an earthy/musty taste and odour problem in water.
Microbiological Contamination	Results from the presence of pathogenic bacteria or protozoans. The presence of pathogenic bacteria (e.g *E.Coli*) often results from a fault with disinfection, but in the case of protozoans, for example *Cryptosporidium* or *Giardia* from the failure or lack of barrier filtration.

Microcystins	A group of toxins produced by blue green algae, specifically *Microcystis* , that cause liver damage.
Pathogenic	Capable of causing disease, in DWSPs specifically to humans.
Protozoan	Any of a large group of single celled organisms, usually too small to be seen with the naked eye, and characterised by their ability to move. They often include a resistant cyst form as part of their lifecycle, and some species such as *Cryptosporidium* and *Giardia* are responsible for a lot of waterborne disease.
PRV	Pressure reducing valve
OSEC	On-site electrolytic chlorination
Risk	The probability of something happening that will impact on water safety. It is measured in terms of likelihood and consequence.
Risk Score	A numerical expression of risk derived from the product of likelihood and consequence.
Schematic	A schematic (diagram) represents the elements of a system using abstract, graphic symbols rather than realistic pictures and is not drawn to scale.
Validation	Confirmation that a process fulfils its intended function
Verification	Confirmation that the stated data or processes are correct.
WHO	World Health Organisation.
WTW	Water Treatment Works

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Explanation of sheets included in template & their function

Sheet Name	Purpose	Details
Title	Identifies Site	Water supply name, owner, site manager, WSP author, date of completion, next planned review date
DWSP Intro	Information	Provides summary of DWSP process and how the DWSP is put together
Glossary	Information	Provides a definition for commonly used terms and abbreviations
Sheet Guide	Information	Guide to the purpose & detail of each component sheet
Menu	Quick links to other areas of plan	Simple structure showing main areas with hyperlinks to start of each section
Risk Scoring	Information	Example of matrix and how risk scores are derived
Core Detail	Site Information	Main details of the system, people involved in the making of the plan and main stakeholders
Source Detail	Information	Main details of the watershed, reliable yield, watershed type, watershed activities, etc., and any raw water mains
Source Schematic	Information	Schematic showing the source to the point of treatment, using standard symbols.
Source Risks	Risk assessment	Pre-populated with standard risks with consequence pre-scored. Additional site specific risks to be added as required. Each line must be reviewed to see if it applies at this site and all of the other detail added.
Treatment Detail	Information	Full account of the treatment process including constituent parts, chemicals used etc
Treatment Schematic	Information	Schematic showing full treatment process including any on-line monitoring, using standard symbols
Treatment Risks	Risk assessment	Pre-populated with standard risks with consequence pre-scored. Additional site specific risks to be added as required. Each line must be reviewed to see if it applies at this site and all of the other detail added.
Network Detail	Information	Main details of the distribution network including any pump stations, service reservoirs, and length and type of mains
Network Schematic	Information	Schematic showing the distribution network, using standard symbols.
Network Risks	Risk assessment	Pre-populated with standard risks with consequence pre-scored. Additional site specific risks to be added as required. Each line must be reviewed to see if it applies at this site and all of the other detail added.
Customer Detail	Information	Details of numbers of properties domestic/commercial, key customers/at risk customers, etc.

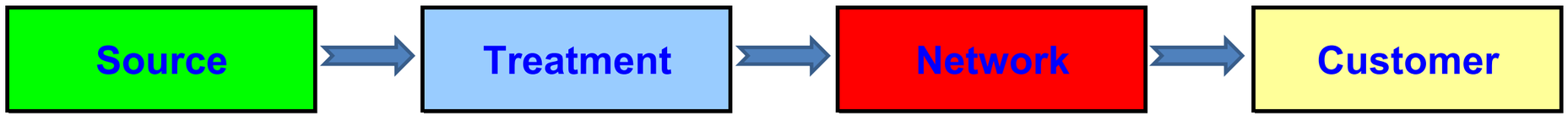
Customer Risks	Risk assessment	Pre-populated with standard risks with consequence pre-scored. Additional site specific risks to be added as required. Each line must be reviewed to see if it applies at this site and all of the other detail added.
Key Risks	Risk assessment	Summary of risks that exceed an agreed acceptable level and what actions are required to mitigate the risks.
Action Summary	Risk Mitigation	Details of how the unacceptable risks are to be mitigated, by whom, when and funding
SOPs	Information	Summary of standard operating procedures, relating to this water supply system.

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Menu Page

This page contains shortcuts around the spreadsheet and will take you either to the start of a section or to another commonly used sheet.
Simply click on the box description that you want and it will transfer you to that sheet

Main areas



Other useful links

DWSP Intro

Core Detail

Key Risks

Action Summary

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Risk Scoring Guide

This page explains the rationale behind risk scoring. It provides an explanation of the numbers used for likelihood and consequence and a matrix indicates the level of derived risk (risk score), and the level of threat that each represents.
It should be noted that although the risk score gives an indication of the level of risk posed it is a semi-quantitative guide value only and not an absolute number.

Likelihood

The likelihood is a measure of the frequency with which any event is likely to occur. Six levels of likelihood are used and their definitions are shown below.
to describe the assessed frequency and a nominal value is attached to each.

Likelihood Table

Likelihood	Definition	Value
Not applicable	Does not apply in this water supply system	0
Most Unlikely	Conceivable but extremely small chance of happening in next 4-5 years	1
Unlikely	Is possible and cannot be ruled out in next 4-5 years.	2
Medium	As likely as not to happen in next 4-5 years.	4
Probable	Would be expected to happen in next 4-5 years but there is a small chance it may not.	8
Almost Certain	Would be confident this will happen at least once in next 4-5 years	16

Consequence

The consequence is a measure of the severity of the event which is likely to occur. Six levels of consequence are used and their definitions shown below.

Consequence Table

Consequence	Definition	Value
Not applicable	Does not apply in this water supply system	0
Insignificant	Wholesome water or interruption < 8 hrs	1
Minor	Short term or localised non-compliance, non health related e.g. aesthetic or interruption 8-12 hrs	2
Moderate	Widespread aesthetic issues or long term non compliance, not health related or interruption 12-24 hrs	4
Severe	Potential Illness or interruption >24 - 48 hrs	8
Catastrophic	Actual illness or potential long term health effects or interruption >48 hrs	16

Risk Matrix

			Consequence Descriptor				
	Score	Not Applicable	Insignificant	Minor	Moderate	Severe	Catastrophic
	Not Applicable	0	**1**	**2**	**4**	**8**	**16**
Likelihood Descriptor	Most Unlikely	**1**	1	2	4	8	16
	Unlikely	**2**	2	4	8	16	32
	Medium	**4**	4	8	16	32	64
	Probable	**8**	8	16	32	64	128
	Almost Certain	**16**	16	32	64	128	256

Note: The score of "0" should only be applied if the risk is not applicable in this water supply system.

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Basic Details

Municipal Authority	Marc Fortais CAO
Approval Number	18648-01-00
Water Supply System	Town of Bentley
Main Contact/Operator	Darren Jensen

Source

Source Type	High Quality Groundwater Wells
Watershed Area	Paskapoo Formation
Reliable Yield	287 m3/day (2012 Average)
Diversion Licence	200,043 m3/year
Main hazards	Oil feild contamination...benzene in aquifer

Treatment

Main Process	12% Sodium Hypochlorite
Design Capacity	548 m3/day max diversion
Average Throughput	287 m3/day (2012 average)
Storage	1778 m3

Network

Network Length	9650m
Network Materials	AC, PVC
Network Storage	n/a
Domestic Properties (No.)	372
Business Properties (No.)	50

Customer

Bylaws in Operation	Bylaw 91/05
Hospitals	n/a
Home Dialysis Patients	not aware of any
Prisons etc.	n/a
Other Vulnerable Customers	Care centre, Westveiw Apartments (seniors)
Significant Manufacturers	n/a

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Source Information

Water Supply System	Town of Bentley

Source Type	3 Wells
Source Description	3 High Quality ground water wells located within Bentley corporate limits. Furthest well located 1000m west of pumhouse.
Watershed Area	Paskapoo Formation
Diversion Licence	200,043 m3/year
Yield	287 m3/day (2012 Average)
Inlet or pump arrangements	3 well pumps running simultaneously- start/stop activation.
Raw Water Mains (length, diameter, condition)	1150m (3")
Activities within watershed	n/a
Agricultural Discharges/Run-off (manure, etc.)	n/a
Municipal Discharges/Run-off (raw or treated wastewater, stormwater, etc.)	n/a
Discharges from septic fields/tanks or other non-municipal unsewered human activity	n/a
Industrial Discharges/Run-off	n/a
Recerational Discharges/Run-off	n/a
Comments	

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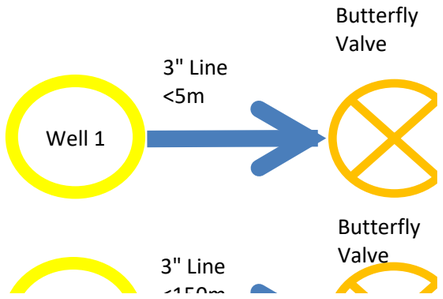
(Insert Schematic)

Source



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Note: Shallow wells from river gravels should be regarded as surface water as much of the recharge may be coming from the adjacent watercourse

	Risk Description	Risk I.D.	Hazard	Cause of Potential Failure	Comments	Current Monitoring	How Risk is Currently Controlled	Assess if Control is Adequate	Do any Standard Procedures cover this	Likelihood	Consequence	L'Hood Score	Cons. Score	Risk Score	Key Risk?	Required Interventions to Prevent Failure	Responsible Party
General Risks	Microbiological contamination of raw water as a result no restriction in access to source	DWSP-S-001	Microbiological contamination	Due to livestock having access to source due to inadequate fencing.	wells located within town.	CT Calculations, 24 hr online analyzing of CL2.	CL2 treatment & monitoring	yes	SOP 6.0 to 6.8	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Microbiological contamination of raw water resulting from wildlife activity in watershed.	DWSP-S-002	Microbiological contamination	Due to wildlife dying or defecating in watershed.	Some animals such as beaver can carry Giardia and other pathogenic organisms	CT Calculations, 24 hr online analyzing of CL2.	CL2 treatment & monitoring	yes	SOP 6.0 to 6.8	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Deterioration of water quality due to birds roosting on reservoirs at night	DWSP-S-003	Microbiological contamination	Due to bird roost due to large faecal loading	Bird excrement contains very large numbers of bacteria.	CT Calculations, 24 hr online analyzing of CL2.	CL2 treatment & monitoring	yes	SOP 6.0 to 6.8	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination of raw water with sewage	DWSP-S-004	Microbiological contamination	Resulting from sewage input to the source from private septic tanks or sewer outfalls.	No sanitary sewer line within 50'+ of a well.	CT Calculations, 24 hr online analyzing of CL2.	CL2 treatment & monitoring	yes	SOP 6.0 to 6.8	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Chemical contamination of raw water as a result of proximity to transport corridor.	DWSP-S-005	Chemical contamination Hydrocarbons	Due to chemical contamination in the source due to spillage from transport corridor (e.g. road or rail tanker) adjacent to source and no containment.	May result from accidental spillage or a crash.	Visual	All 3 wells are surrounded by concrete reinforced steel bollards and a steel top weighing 500+ pounds.	yes	ERP 3.0	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Chemical contamination of raw water as a result proximity to airport or disused airport	DWSP-S-006	Chemical contamination Hydrocarbons	Due to chemical contamination in the source due to spillage from airport adjacent to source and no containment.	May result from accidental spillage or a crash. May also be due to use of chemicals within airport as result of uncontrolled run-off e.g. de-icing fluid.	n/a	n/a	No airport in Bentley.	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Chemical contamination of raw water as a result of mining activity	DWSP-S-007	Heavy metals Hydrocarbons	Due to uncontained spillage or disturbed ground within watershed.	n/a	n/a	n/a	No Mines in Bentley.	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Chemical contamination of raw water as a result of mining activity drainage	DWSP-S-008	Heavy metals Hydrocarbons	Due to mine drainage discharge being contaminated or deoxygenated	n/a	n/a	n/a	No Mines in Bentley.	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Chemical contamination of raw water as a result of recreational activity within watershed	DWSP-S-009	Microbiological contamination Hydrocarbons	Due to uncontrolled defecation or use of land or water vehicles within watershed	Well system.	n/a	n/a	Well system.	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination of water with nutrients, due to agricultural activity.	DWSP-S-010	Algal bloom Reduced oxygen level in water.	Due to contamination in run-off from areas of agricultural activity.	There are a number of different sources: silage pits, sludge lagoons, concentrations of stock.	Wells are all within Town limits.	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination of water with pathogens due to agricultural activity.	DWSP-S-011	Microbiological contamination	Due to contamination in run-off from areas of agricultural activity.	Wells are all within Town limits.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination of raw water with pesticides	DWSP-S-012	Pesticides	Resulting from pesticides spraying in the watershed due to poor practice.	Toxicity testing for Town water every 5 years.	Toxicity testing for Town water every 5 years.	No herbicides used around wells.		ERP 3.0	Unlikely	Insignificant	2	1	2	No		Town
General Risks	Deterioration of raw water as a result of flooding or heavy rain	DWSP-S-013	Turbidity	Due to inability to close intake when raw water has deteriorated.	Lack of storage may also influence ability to close intake; high sediment loading resulting from high level of rainfall or spring melt.	Town is on well system with no raw storage.	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Deterioration of raw water from forestry activities	DWSP-S-014	Turbidity Colour Iron & manganese	Resulting from poor quality surface run-off from forestry activities due to forestry within watershed.	When brush and vegetation are removed the rate of erosion will often increase transporting solids to the watercourse.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination of raw water from forestry activities	DWSP-S-015	Fertilizers Hydrocarbons Microbiological contamination	As a result of forestry-related human activity within watershed.	Many forestry activities will result in chemicals being brought into watershed. Human waste may also produce pathogenic organisms.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination of raw water as a result forestry fires	DWSP-S-016	Chemical contamination	Due to change in soil chemistry as a result of heat or run-off rate as a result of reduced vegetation	Surrounded by farm land, with no raw water storage ponds.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination as a result of waste disposal site within watershed.	DWSP-S-017	Hydrocarbons Heavy metals Organics	As a result of leachate from waste disposal site getting into watercourse	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination as a result of disposal of animal remains within watershed	DWSP-S-018	Microbiological contamination	As a result of leachate from the disposal site getting into watercourse	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Changing raw water quality caused by environmental change	DWSP-S-019	Manganese	Due to increase in manganese level resulting from changing weather patterns.	Increased temperature or inversion in lakes may cause manganese release.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Deterioration of raw water quality caused by shallow water body and wind effects	DWSP-S-020	Turbidity Colour Manganese	Resulting from shallow water body and wind induced turbulence.	Storm conditions may stir up sediment and make treatment more difficult.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination of raw water resulting from algal blooms	DWSP-S-021	Algae	Due to algal blooms due to increased nutrient levels or changing weather patterns.	Algal cells may clog filters causing poor quality or lower throughput. Blue green algae produce toxins.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Insufficient raw water quantity	DWSP-S-022	Loss of supply	Resulting from restriction in diversion licence due to changing legislation or growth in demand.	Changes in environmental legislation may lead to tighter diversion limits.		Hydrogeological study 2012.		ERP 21.0	Most Unlikely	Insignificant	1	1	1	No		Town

														0	No		Town
General Risks	Insufficient water available for abstraction	DWSP-S-023	Low pressure Loss of supply	As a result of drought.	The Town`s recent draw down recovery for the wells shows that in 20+ years the wells have shown no	Contracted maintenance on the wells every 5 years.	Hydrogeological study 2012.	Will be adding static level records in 2013 because of a new observation well.	ERP 21.0	Most Unlikely	Insignificant	1	1	1	No		Town
Well Risks	Contamination of well during construction	DWSP-S-024	Microbiological contamination Metals Drilling fluids	Cross-contamination by drilling equipment or residual substances used in drilling e.g. Barium released from drilling mud.	Drillers should operate according to the Water (Ministerial) Regulations	Well three was overseen in all aspects by contracted engineer.	Well casings will be camera(d) every 5 years starting in 2013.		no	Most Unlikely	Insignificant	1	1	1	No		Town
Well Risks	Contaminated water entering well from upper levels	DWSP-S-025	Microbiological contamination Nutrients	Well casing does not extend above surface or is damaged or deteriorated.	Water at upper levels of well more prone to surface effects. Downhole camera inspection	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Well Risks	Contaminated water entering well from surface	DWSP-S-026	Microbiological contamination Nutrients	Well head badly constructed, damaged, or badly maintained.	Well head should be inspected and assessed for risk.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Well Risks	Contaminated water entering well from surface	DWSP-S-027	Microbiological contamination Nutrients	Site prone to flooding due to poor siting and well head not sealed.	Well head should be inspected and assessed for risk.	Visual, Wells camera(d) every 5 years by contractor.	All wells have been mounded and well heads brought up 3` past ground level. According to AENV best practices.	yes	ERP 3.0	Most Unlikely	Insignificant	1	1	1	No		Town
Well Risks	Contaminated water entering well from surface	DWSP-S-028	Microbiological contamination Nutrients	Inadequate security around well head giving animals access.	Well head should be inspected and assessed for risk.	Visual, Wells camera(d) every 5 years by contractor.	All wells have been mounded and well heads brought up 3` past ground level. According to AENV best practices.	yes	ERP 3.0	Most Unlikely	Insignificant	1	1	1	No		Town
Well Risks	Deterioration of water quality	DWSP-S-029	Iron manganese	Due to over-production from aquifer, mixing with other zones or biofouling	Well should not be pumped higher than recommended rate, downhole camera inspection, shock chlorination, rehabilitation	Wells pumped within engineered limits, camera inspection and well maintenance every 5 years.	Wells pumped within engineered limits, camera inspection and well maintenance every 5 years.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Well Risks	Deterioration of water quality	DWSP-S-030	Fluoride Arsenic Uranium Other heavy metals	Due to naturally occurring minerals	Yearly water analysis done by contracted lab.	Yearly water analysis done by contracted lab.	Yearly water analysis done by contracted lab.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Well Risks	Contamination of aquifer	DWSP-S-031	Hydrocarbons Pesticides Nutrients	Activities within recharge zone or vulnerable aquifer	More likely with shallow wells, unconfined aquifers or where rock is badly faulted or fractured.	Yearly water analysis done by contracted lab.	Yearly water analysis done by contracted lab.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Springs Risks	Contamination of spring at collection chamber	DWSP-S-032	Microbiological contamination Suspended solids	As a result collection chamber design or poor maintenance.	Structure should be well maintained.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Springs Risks	Contamination of spring at collection chamber	DWSP-S-033	Microbiological contamination Suspended solids	As a result of inadequate security round collection chamber and animal or human activity.	The rock around springs is often fractured so an adequately fenced protection zone is desirable.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Springs Risks	Contamination of aquifer	DWSP-S-034	Chemical contamination Microbiological contamination	As a result of human/animal activities in the recharge zone	If the recharge zone is small it may be possible to prevent some activities if shown to be adverse.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Pumps & Mains Risks	Reduced resource availability due to break/leak on raw water mains	DWSP-S-035	Loss of supply	Resulting from raw water main breaks/leaks as a result of poor mains condition.	Lack of maintenance may lead to more frequent interruptions to supply.	Daily hours and volumes recorded.	Daily hours and volumes recorded. Each well is on a separate line into pumphouse, if one of the 3 fails there still is 2 other wells until the one can be repaired.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Pumps & Mains Risks	Contamination due to insecure break-pressure tank.	DWSP-S-036	Microbiological contamination	As a result of contamination entering break-pressure tank.	Break-pressure tanks are often poorly maintained	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Pumps & Mains Risks	Failure of pumps at Pump Station	DWSP-S-037	Loss of supply	Resulting from pumps failure due to insufficient/no standby generation if electricity supply fails.	Wells/pumps serviced every 5 years.	Daily hours and volumes recorded.	Daily hours and volumes recorded. Each well is on a separate line into pumphouse, if one of the 3 fails there still is 2 other wells until the one can be repaired.	yes	ERP 10.0	Most Unlikely	Insignificant	1	1	1	No		Town
Pumps & Mains Risks	Loss of power to pumps as a result of electrical fault.	DWSP-S-038	Loss of capacity	Loss of power to pumps due to control panel fault resulting from insufficient maintenance.	Essential components need to be maintained regularly.	Daily hours and volumes recorded.	Daily hours and volumes recorded. Each well is on a separate line into pumphouse, if one of the 3 fails there still is 2 other wells until the one can be repaired. Town electrician maintains and stores parts for system.	yes	ERP 19.0	Most Unlikely	Insignificant	1	1	1	No		Town
Facility Specific Risks		DWSP-S-100												0	No		
Facility Specific Risks		DWSP-S-101												0	No		
Facility Specific Risks		DWSP-S-102												0	No		
Facility Specific Risks		DWSP-S-103												0	No		
Facility Specific Risks		DWSP-S-104												0	No		
Facility Specific Risks		DWSP-S-105												0	No		

Facility Specific Risks		DWSP-S-106												0	No		
Facility Specific Risks		DWSP-S-107												0	No		
Facility Specific Risks		DWSP-S-108												0	No		
Facility Specific Risks		DWSP-S-109												0	No		

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Treatment Information

Water Supply System	Town of Bentley

Treatment Type	12% Sodium Hypochlorite
Treatment Description	Injection at lowest point in header, where wells 1,2 and 3 meet.
Primary Treatment	12% Sodium Hypochlorite
Secondary Treatment	n/a
CT	Average CT performance 98 (8.8 required).
Design Capacity	1778 m3 (treated potable water storage)
Chemicals Used in Process	12% Sodium Hypochlorite
On-line monitors	2012 Swan AMI online analyzer
Treated Water Storage	1778 m3 (treated potable water storage)
Stand-by Generator	Emergency/standby natural gas driven engine.
Sludge Treatment Process	n/a
Comments	Bentley doesn`t currently store raw water.

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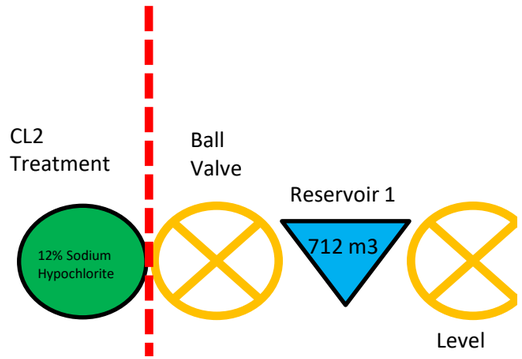
(Insert Schematic)



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	Risk Description	Risk I.D.	Hazard	Cause of Potential Failure	Comment	Current Monitoring	How Risk is Currently Controlled	Assess if Control is Adequate	Do any Standard Procedures cover this	Likelihood	Consequence	L'Hood Score	Cons. Score	Risk Score	Key Risk	Required Interventions to Prevent Failure	Responsible Party
Pre-treatment Risks	Inability to meet demand as a result of failure of cartridge filters	DWSP-T-001	Loss of Supply	Due to blocking due to deterioration of raw water quality.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Pre-treatment Risks	Inability to meet demand as a result of failure of microstrainers	DWSP-T-002	Loss of Supply	As a result microstrainers blocking due to failure of microstrainer wash pump to wash screens adequately.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Pre-treatment Risks	Inadequate treatment due to poor contact chamber design	DWSP-T-003	Turbidity Microbiological contamination	Inefficient filtration due to incorrect contact time for coagulant.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Pre-treatment Risks	Loss of supply caused by failure of heating at works inlet	DWSP-T-004	Loss of Supply	As a result of mechanical failure due to poor maintenance	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Pre-treatment Risks	Loss of supply caused by failure of inlet control valve	DWSP-T-005	Loss of Supply	As a result of frozen inlet due to low temperatures and no heating	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Breakthrough of algal breakdown products as a result of failure of carbon dosing	DWSP-T-006	Taste & odour Algal toxins	Due to failure to remove algal by-products in the water due to lack of carbon dosing	Geosmin and MIB impart a strong earthy musty taste to water. Algal toxins are pathogenic.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Breakthrough of contaminants as a result of poor floc formation caused by incorrect or no dosing	DWSP-T-007	Turbidity Aluminium Iron Microbiological contamination	due to poor floc formation due to incorrect coagulant dose due to flow meter out of calibration or signal failure due to inadequate maintenance	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Contamination caused by unauthorised human access	DWSP-T-008	Unknown contamination	Unauthorised human access may lead to contamination.	WTWs should be kept secure at all times when not attended.	Lighting, 8' chainlink with barbed wire, ADT alarm system. Locked hatches	Lighting, 8' chainlink with barbed wire, ADT alarm system. Locked hatches behind the chainlink	Yes	ERP 2.0	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Contamination of treated water as a result of dosing with incorrect or inferior quality chemicals	DWSP-T-009	Chemical contamination	Contamination due to use of incorrect or inferior quality or contaminated chemicals due to lack of control check on deliveries.	Might be due to change in supplier or inadequate specification for chemicals used.	NSF approved, visual/signed bill of ladeing, purchase from leading manufacturer - Cleartech.	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Deterioration of treated water quality as a result of failure of coagulant dosing	DWSP-T-010	Trace organics Turbidity Iron Manganese	As a result of failure to dose coagulant due to dosing line blocked.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Deterioration of treated water quality as a result of incorrect or no permanganate dosing	DWSP-T-011	Taste and odour Colour	Due to not setting the dose at the right level or failure of dosing system	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Inability to meet demand as result of damage to single line interprocess pipework	DWSP-T-012	Loss of Supply	Structural failure due to failure of single line interprocess pipe work; i.e. Interruption to process.	General issue common to most WTWs	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Inability to meet demand caused by power failure	DWSP-T-013	Loss of Supply	Resulting from power failure and to failure of stand by generator change over or no standby generator.	Many small WTW will have no standby power generation		Auto dialer will call out power failures, stand by/emergency pump starts with low pressure switch.	no, a genset is needed for the Town.	ERP 19.0	Medium	Moderate	4	4	16	No		Town
General Risks	Inadequate treatment as a result of raw water bypassing all or part of the treatment process	DWSP-T-014	Chemical contamination Microbiological contamination	As a result of no treatment to the raw water	Ideally treatment bypasses should not exist. Where they do they should be secured and signed.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Inadequate pH adjustment as a result of break in dosing pipework	DWSP-T-015	pH	Due to flooding of dosing pump due to break of make up water piping in dosing room and inadequate drainage.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Inadequate treatment as a result of failure to reach optimum coagulation pH.	DWSP-T-016	Aluminium Iron	Failure of optimum coagulation due to over-or under dosing of pH adjustment due to mechanical failure	Duty/stand-by system of operation would normally control this.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Inadequate treatment caused by incorrect dosing of chemicals	DWSP-T-017	Chemical contamination	Due to incorrect dosing due to faulty equipment.	Manual dosing by hand can also be done.	365 day a year chlorine sampling. Colourmeter grab samples on working	365 day a year chlorine sampling. Colourmeter grab samples on working days, and 24 Swan AMI	yes	ERP 7.0, 8.0	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Loss of supply as a result of flooding	DWSP-T-020	Loss of Supply	Due to plant shut down as a result of flooded areas of plant.	Flooding is not a great concern as in other Towns as we are on the side of the Blindman Valley, and our	Alberta Environment weather warnings.	Alberta Environment weather warnings.	yes	ERP 14.0	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Contamination due to incorrectly plumbed drains	DWSP-T-021	Chemical contamination Microbiological contamination	Due to inappropriate cross-connection of drainage into treated water areas.		Every three years divers inspect the reservoirs including the ceilings of all three reservoirs.	Every three years divers inspect the reservoirs including the ceilings of all three reservoirs.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Contamination or loss of supply due to lack of knowledge of infrastructure location	DWSP-T-022	Chemical contamination Microbiological contamination	Due to lack of adequate 'as-built' drawings	Bentley spent 3 years and contracted Stantec to map/GPS water system.	All new developments are mapped/GPSed then added to our autocad drawings by Stantec.	Proactive mapping before issues.	yes	Bentley`s development agreement.	Most Unlikely	Insignificant	1	1	1	No		Town

Process Control Risks	Loss of supply resulting from failure of telemetry.	DWSP-T-018	Loss of supply	Due to plant shut down not being notified due to failure of telemetry	The only system on a SCADA set-up is well number 3.	Daily run hours and volumes.	Daily run hours and volumes. If well 3 stops responding wells 1 and two will pick-up slack until it is caught from the hours difference.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Process Control Risks	Loss of supply resulting from failure of the control system	DWSP-T-019	Loss of supply	Due to inability to run the plant as a result of PLC software failure or to voltage variation and lack of power surge protection.	If control system fails the plant may not be able to run on manual.	n/a plant is not a PLC set-up.	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Sedimentation Risks	Inadequate treatment as a result of unstable sludge blanket	DWSP-T-023	Turbidity Aluminium Iron Microbiological contamination	As a result of increased loading on secondary filters due to carry-over of floc from sedimentation stage.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Sedimentation Risks	Inadequate treatment as a result of insufficient de-sludging	DWSP-T-024	Turbidity Aluminium Iron Microbiological contamination	As a result of increased loading on secondary filters due to carry over of floc from sedimentation stage.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Sedimentation Risks	Inadequate treatment as a results of temperature variation in incoming water upsetting settlement	DWSP-T-025	Turbidity Aluminium Iron Microbiological contamination	Due to warmer water upsetting settlement due to changes in raw water temperature.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
DAF Risks	Inadequate treatment as a result of insufficient air saturation	DWSP-T-026	Turbidity Aluminium Iron Microbiological contamination	Due to insufficient flotation as a result of insufficient air saturation.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
DAF Risks	Inadequate treatment as a result of insufficient de-sludging	DWSP-T-027	Turbidity Aluminium Iron Microbiological contamination	As a result of increased load due to sludge carry over to filters	Important to set the desludge at the right interval.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
DAF Risks	Inadequate treatment as a result of unstable float	DWSP-T-028	Turbidity Aluminium Iron Microbiological contamination	As a result of increased load due to sludge carry over to filters	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
DAF Risks	Inadequate treatment as a result of failure of air blowers	DWSP-T-029	Turbidity Aluminium Iron Microbiological contamination	As a result of failure of flotation.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
DAF Risks	Inadequate treatment as a result of failure of floating sludge removal mechanism	DWSP-T-030	Turbidity Aluminium Iron Microbiological contamination	As a result of no sludge removal	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Washwater Risks	Contamination of raw water or water in treatment with wash water / sludge supernatant	DWSP-T-031	Turbidity Chemical contamination Microbiological contamination	As a result of carry-over in recycled washwater.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Washwater Risks	Contamination of recovered wastewater in inlet works caused by chemical spill entering wastewater system	DWSP-T-032	Chemical contamination	Due to uncontrolled spillage due to washwater recycling	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Washwater Risks	Contamination of water due anaerobic conditions in washwater treatment process.	DWSP-T-033	Chemical contamination Taste and odour	Due to formation of phenolic compounds due to breakdown of sludge due to anaerobic activity	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Washwater Risks	Restriction of supply due to problems with washwater storage capacity	DWSP-T-034	Loss of Supply	As a result of restriction in filter wash frequency due to mechanical breakdown or high loading on filters.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Washwater Risks	Restriction of supply due to problems with sludge de-watering/disposal capacity	DWSP-T-035	Loss of Supply	As a result of inadequate capacity to de-water sludge as a result of difficult conditions or significant increase in sludge produced.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Washwater Risks	Restriction of supply due to problems with sludge disposal capacity	DWSP-T-036	Loss of Supply	As a result of inadequate capacity to dispose of sludge to sewer interruption.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Slow Sand Filtration Risks	Deterioration of water quality due to cracking of media in filters	DWSP-T-037	Microbiological contamination Turbidity Iron	Due to media disruption due to uneven flow or problems with under drainage.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Slow Sand Filtration Risks	Deterioration of water quality due to cracking or failed underdrains	DWSP-T-038	Microbiological contamination Turbidity Iron	Due to failed underdrains.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Slow Sand Filtration Risks	Deterioration of water quality due to failure to mature filter before putting into use following cleaning	DWSP-T-039	Microbiological Contamination Chemical contamination Turbidity	Due to lack of development of the schmutzdecke (biological layer) following cleaning.	Without the schmutzdecke the filter acts only as a sieve and is less efficient. Filter should be run to waste until turbidity is satisfactory.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town

Slow Sand Filtration Risks	Deterioration of water quality due anaerobic conditions prevailing in filter.	DWSP-T-040	Manganese Low oxygen levels	Due to anaerobic conditions releasing manganese	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Slow Sand Filtration Risks	Deterioration of water quality due to birds roosting on filters at night	DWSP-T-041	Microbiological contamination	Due to bird roost due to large faecal loading	Bird excrement contains very large numbers of bacteria.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Slow Sand Filtration Risks	Deterioration of water quality due to incorrect media being installed.	DWSP-T-042	Microbiological contamination Turbidity	Due to use of wrong sand	Slow sand filtration requires angular sand rather than round sand.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Slow Sand Filtration Risks	Inability to meet demand due to algal bloom	DWSP-T-043	Loss of Supply	Due to block of filters due to large numbers of algal cells.	May also lead to unacceptable tastes and odours.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants due to mud-balling in media.	DWSP-T-044	Suspended solids Trace organics Residual coagulant Microbiological contamination	As a result of inadequate filtration due to state of filter due to inadequate washing.	May result from inadequate bed expansion or upflow rate failing to clean media.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as a result of filter wash plant failure	DWSP-T-045	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to inadequate filtration due to overload of filter due to lack of washing.	If no standby available adequate spares should be carried.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as a result of inadequate frequency for backwash.	DWSP-T-046	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to inadequate filtration due to overload of filter due to frequency of washing.	If allowed to operate in this way, the media may also become less efficient due to build up of dirt.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as a result of no slow start or run-to-waste following backwashing	DWSP-T-047	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to inadequate filtration due to starting filter too quickly.	If filter is started at too high a rate before the bed has settled down filtration will be less efficient.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as a result of reduced capacity when one filter is out for backwash	DWSP-T-048	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to inadequate filtration due to increased filter loading as a result of a filter being out of service for washing.	More likely if plant is running close to or exceeding its design capacity or is stressed due to poor raw water conditions.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as a result of uneven backwash	DWSP-T-049	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to inadequate filtration due to uneven filter loading as a result of blocked filter nozzles.	The efficiency of some areas of the filter bed will be reduced, placing a greater load on areas that are OK.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as result of loss of media	DWSP-T-050	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to inadequate filtration due to inadequate media depth.	Media loss may be greater in dual media filters. Anthracite/ carbon has a lower density and is washed over more easily	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as result of failure to set correct coagulant or polyelectrolyte dose.	DWSP-T-051	Suspended solids Trace organics Residual coagulant Microbiological contamination	As a result of floc that is too soft or too small penetrating the bed more rapidly.	A rise in treated water turbidity may indicate a problem. Flocculation tests should then be done to check floc formation.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Rapid Gravity Risks	Breakthrough of contaminants as a result of wrong media in filter	DWSP-T-052	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to inadequate filtration due to wrong grade of media.	If media is replaced ensure the right specification and check samples for effective size and uniformity coefficient to ensure that it is.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Breakthrough of contaminants caused by dirty or damaged membrane	DWSP-T-053	Suspended solids Trace organics Residual coagulant Microbiological contamination	As a result of inefficient cleaning of membranes due to failure of cleaning system	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Breakthrough of contaminants caused by dirty or damaged membrane	DWSP-T-054	Suspended solids Trace organics Residual coagulant Microbiological contamination	As a result inadequate frequency of cleaning of membranes due to failure to follow operating procedures.	Important that all operators are adequately trained,	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Breakthrough of contaminants caused by dirty or damaged membrane	DWSP-T-055	Suspended solids Trace organics Residual coagulant Microbiological contamination	Resulting from damage to membranes due to inadequate frequency of inspections or membrane integrity tests	Membrane integrity tests should be an integral part of the operation of membrane plants.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Loss of supply due to CIP failure	DWSP-T-056	Loss of Supply	Due to automatic plant shut-down	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Loss of supply due to 'deep clean' failure	DWSP-T-057	Loss of Supply	Due to automatic plant shut-down	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Loss of supply due to integrity test failure	DWSP-T-058	Loss of Supply	Due to manual plant shut-down	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Loss of supply due to particle count failure	DWSP-T-059	Loss of Supply	Due to automatic plant shut-down	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Breakthrough of contaminants as a result of loss of membrane integrity.	DWSP-T-060	Suspended solids Trace organics Residual coagulant Microbiological contamination	Due to membrane damage due to failure of pre-treatment.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town

Membrane Risks	Deterioration of final water quality as a result of inability to dose coagulant	DWSP-T-061	Chemical contamination	Due to decrease in membrane efficiency as a result of failure of coagulant dosing system.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Inability to meet demand as a result of failure of backwash system	DWSP-T-062	Loss of supply	Inability to operate membranes due to fouling due to inability to backwash membranes	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Membrane Risks	Inability to meet demand as a result of membrane feed pump failure	DWSP-T-063	Loss of supply	Inability to operate membranes as a result of membrane feed pump failure.	If no standby available adequate spares should be carried.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Contamination of treated water as a result of accumulation of deposits in contact tank	DWSP-T-064	Turbidity	As a result of carry over of sediment from contact tank.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Contamination of treated water as a result high bromate content of sodium hypochlorite	DWSP-T-065	Chemical contamination	As a result of sodium hypochlorite not meeting supply specification	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Contamination of treated water as a result of excessive formation of disinfection by-products	DWSP-T-066	Chemical contamination	As a result of excessive disinfectant dose and high levels of trace organics	Due to formation of disinfection by-products	TOC sampled yearly, if it is about 2.0 mg/L then for THM tests are done in one year.	TOC sampled yearly, if it is about 2.0 mg/L then for THM tests are done in one year.	yes	ERP 3.0	Most Unlikely	Insignificant	1	1	1	No		Town
Disinfection Risks	Inadequate treatment as a result of disinfection at wrong pH	DWSP-T-067	Microbiological contamination	As a result of reduced disinfection efficiency due to pH out with optimum range	Disinfection efficiency is significantly affected by pH.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Failure of disinfection as a result of failure of chlorine gas flow	DWSP-T-068	Microbiological contamination	Due to failure of disinfection due to failure of delivery system.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Failure of disinfection as a result of failure of UV	DWSP-T-069	Microbiological contamination	Due to failure of disinfection due to failure of UV lamp.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Failure of disinfection as a result of failure of sodium hypochlorite delivery system.	DWSP-T-070	Microbiological contamination	Due to failure of disinfection due to failure of delivery system.	Back-up chlorinator in stock.	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer	Back-up chlorinator in stock. Auto-dialer to call out an alarm if CL2 is below 2.5 mg/L. Maintenance shedule.	yes	ERP 6.0, 7.0	Most Unlikely	Insignificant	1	1	1	No		Town
Disinfection Risks	Failure of disinfection as a result of failure or lack of automatic shutdown following disinfection process failure	DWSP-T-071	Microbiological contamination	Due to WTW failing to shut down when disinfection fails.	System is not a PLC set-up. Start and stop is wired into power of wells.	n\a	n\a	n\a	n\a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Inadequate treatment as a result of reduced UV efficiency	DWSP-T-072	Microbiological contamination	Due to reduction transmittance of light due to fouling of lamp sheath or to increase in colour or turbidity	If light transmission is reduced UV becomes less effective.	n/a	n\a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Inadequate treatment as a result of inability to meet disinfection requirements due to high chlorine demand	DWSP-T-073	Microbiological contamination	Due to inability to add sufficient chlorine due to high flow or high chlorine demand	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer with dial-out alarm.	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer with dial-out alarm.	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer with dial-out alarm.	yes	ERP 6.0, 7.0	Most Unlikely	Insignificant	1	1	1	No		Town
Disinfection Risks	Inadequate treatment as a result of insufficient contact time	DWSP-T-074	Microbiological contamination	Due to insufficient contact time to kill bacteria as a result of poor contact tank design or operating beyond design flow	In 2002 the Town added a new pumphouse & reservoir to the existing. At that time the two older reservoirs were retro-fitted with diffusion piping on both the inlets and the outlets of reservoir 1 & 2.	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer with dial-out alarm. CT equation is done daily.	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer with dial-out alarm. CT equation is done daily.	yes	ERP 6.0, 7.0	Most Unlikely	Insignificant	1	1	1	No		Town
Disinfection Risks	Inadequate treatment as a result of incorrect chlorine dose	DWSP-T-075	Microbiological contamination	Due to lack of residual controller and rapid change in chlorine demand, due to insufficient manual intervention.	The system is not a PLC setup, dosage doesn't control the CL2 injector. The injector is controlled by the start/stop process of the wells, dosage is manually adjusted.	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer with dial-out alarm. CT equation is done daily.	Colourmeter grab sample taken 5 days per week, Swan AMI 24 hr online analyzer with dial-out alarm. CT equation is done daily.	yes	ERP 6.0, 7.0	Most Unlikely	Insignificant	1	1	1	No		Town
Disinfection Risks	Inadequate treatment as a result of failure of ammonia dosing system	DWSP-T-076	Microbiological contamination Taste or odour	As a result of incorrect chlorine:ammonia ratio due to failure of ammonia dosing system	If using chloramination failure to reach the correct ratio of ammonia to chlorine affects disinfection.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Disinfection Risks	Inadequate treatment due inadequate ventilation of hydrogen from OSEC unit	DWSP-T-077	Explosion Loss of supply	As a result of build up of hydrogen as a result of inadequate ventilation.	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Ozone Risks	Inadequate Treatment due to low levels of ozone	DWSP-T-078	Microbiological contamination	Due to failure to adequately reduce humidity of incoming air supply	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Ozone Risks	Inadequate Treatment due to high pH in water	DWSP-T-079	Microbiological contamination	Due to rapid decay of ozone due to elevated pH in water	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Ozone Risks	Contamination of water due to excessive formation of ozonation by-products	DWSP-T-080	Chemical contamination	As a result of high levels of pre-cursor organics in the incoming water	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Treated Storage Risks	Contamination of treated water as a result of vandalism	DWSP-T-081	Microbiological contamination Chemical contamination	As a results of actions by intruders	As a minimum lids and air vents must be secure. Security fence may be needed if conditions warrant it.	ADT security system in both pumphouses. 8' fence with barbed wire at the top around both pumphouses. Lids within compound are paddle locked.	ADT security system in both pumphouses. 8' fence with barbed wire at the top around both pumphouses. Lids within compound are paddle locked.	yes	ERP 2.0	Most Unlikely	Insignificant	1	1	1	No		Town
Treated Storage Risks	Contamination of treated water caused by rainwater ingress	DWSP-T-082	Microbiological contamination Chemical contamination	As a result of lack of structural integrity of reservoir due to lack of inspection or maintenance	Reservoirs should be cleaned and inspected on a regular basis.	Every three years divers inspect the reservoirs including the ceilings of all three reservoirs.	Every three years divers inspect the reservoirs including the ceilings of all three reservoirs.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town

Treated Storage Risks	Deterioration in water quality due to disturbance of sediment in reservoir	DWSP-T-083	Microbiological contamination Turbidity Aluminium Iron	Due to disturbance of sediment on floor of reservoir due to low level and lack of maintenance.	Reservoirs should be cleaned and inspected on a regular basis.	Every three years divers inspect/clean the reservoirs including the ceilings of all three reservoirs.	Every three years divers inspect/clean the reservoirs including the ceilings of all three reservoirs.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Treated Storage Risks	Loss of supply due to inadequate storage	DWSP-T-084	Loss of supply	Due to insufficient storage to cope with fluctuations in demand.	Reservoirs may be undersized due to financial considerations.	New pumphouse/reservoir added in 2002.	New pumphouse/reservoir added in 2002.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Facility Specific Risks	VFD pressure switch waterline freezing	DWSP-T-200		Emergency back-up pump running, ceiling exhaust fan removing excess heat and fumes from building	Only an issue during extended running of the back-up pump when the temperature outside the building	On duty operator monitors the temperature of the building if the back	An extra heater has been installed on the wall beside the pressure control switches.	yes	no	unlikely	Insignificant	2	1	2	No		Town
Facility Specific Risks		DWSP-T-201												0	No		
Facility Specific Risks		DWSP-T-202												0	No		
Facility Specific Risks		DWSP-T-203												0	No		
Facility Specific Risks		DWSP-T-204												0	No		
Facility Specific Risks		DWSP-T-205												0	No		
Facility Specific Risks		DWSP-T-206												0	No		
Facility Specific Risks		DWSP-T-207												0	No		
Facility Specific Risks		DWSP-T-208												0	No		
Facility Specific Risks		DWSP-T-209												0	No		

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Network Information

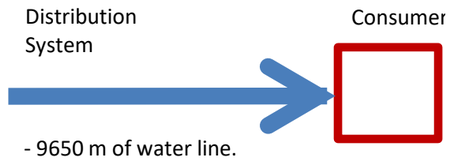
Water Supply System	Town of Bentley

Length of Network	9650m
Mains Materials	AC, PVC
Trunk Mains	8" and 6" mains throughout Town.
Pumping Stations	n/a
Service Reservoirs and average residence times	
Telemetry	
Comments	9650m of water mains, 68 main shut-offs, 40 hydrants, 40 hydrant isolation valves.

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

(Insert Schematic)

Network



- 9650 m of water line.

Approval Holder Town of Bentley Mayor
Water Supply System Town of Bentley
Approval Number 18648-01-00
Location Section 26-40-1-W5M (4602 46 Street)

	Risk Description	Risk I.D.	Hazard	Cause of Potential Failure	Comment	Current Monitoring	How Risk is Currently Controlled	Assess if Control is Adequate	Do any Standard Procedures cover this	Likelihood	Consequence	L'Hood Score	Cons. Score	Risk Score	Key Risk	Required Interventions to Prevent Failure	Responsible Party
General Risks	Loss of supply from regional supply line	DWSP-N-001	Loss of supply	Failure of flow from regional supply	n/a	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Build up of deposits in network as a result of inadequate flushing frequency and/or velocity	DWSP-N-002	Discoloration Taste & Odour	Resulting from inadequate flushing of problem areas.	Areas where sediment is known to build up benefit from a regular flushing programme.	Residential complaints, CL2 usage.	Hydrants are flushed/pressure tested yearly.	yes	SOP 9.0	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Broken main as a result of PRV failure	DWSP-N-003	Loss of supply Chemical contamination Microbiological contamination	As a result of a broken main due to high pressure due to failure of PRV.	PRVs should be serviced as required.	The only PRV valve is on the standby emergency pump. A smaller PRV is on the main header incase of water hammer from power outage and start-ups.	Both PRV are inspected and serviced every 5 years.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Loss of supply and/or deterioration of water quality as a result of broken main	DWSP-N-004	Loss of supply Chemical contamination Microbiological contamination	As a result of a broken main due to failure of pipe integrity.	May be as a result of many different circumstances	visual, if the break causes a drop in pressure starting the fire pump we would be called from the atuo-dialer.	visual, if the break causes a drop in pressure starting the fire pump we would be called from the atuo-dialer.	maybe...don`t know of any other detection methods that run with a nonPLC setup.	SOP 9.3	Medium	Minor	4	2	8	No		Town
General Risks	Contamination of water as a result of cross-connection	DWSP-N-005	Chemical contamination Microbiological contamination	As a result of connection with private supply due to customer having dual connection, no air gap	If customer has dual supply the pipework must be safely set up.	none	none	no	ERP 5.0	Medium	Minor	4	2	8	No		Town
General Risks	Contamination of water due to leaking air valves	DWSP-N-006	Chemical contamination Microbiological contamination	Resulting from ingress of water due to faulty air valve surrounded by water.	Air valves should be checked periodically.	Colourmeter grab samples 365 days a year, Swan AMI 24 hr online analyzer.	Daily CL2 treatment.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Contamination of water in supply as a result of the use of non-approved or inappropriate materials in the network	DWSP-N-007	Chemical contamination	As a result of contact with inappropriate materials.	Any materials used in the network should comply with the appropriate standard.	Bentley has a development plan for new subdivisions. The water system was installed in 1974 so all of the infrastructure is relatively up to date.	Bentley has a development plan for new subdivisions.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Contamination of water due to failure to follow proper hygiene practice when carrying out repairs.	DWSP-N-008	Chemical contamination Microbiological contamination	Due to ingress of material from excavation and/or poor disinfection procedures.	Operators should be fully trained in proper hygiene practice	Water system repairs are done by contractors. The Town only uses contractors with tickets and AC cutting tickets.	Water system repairs are done by contractors who practice CL2 treatment of repaired lines. The Town only uses contractors with tickets and AC cutting tickets.	yes	SOP 9.3	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Contamination of water in supply as a result of connection to mothballed or abandoned assets.	DWSP-N-009	Chemical contamination microbiological contamination	As a result of connection to a main containing stagnant water.	All abandoned assets should be cut and capped rather than just valved off.	Appropriate CL2 levels throughout system tested using grab samples and Swan AMI online analyzer.	Most dead-ends in sytem have been looped and areas that are dead-ends have hydrants flushed 2 times per year.	yes	ERP 6.0	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Deterioration of water quality as a result of incorrect sequence of valve operations	DWSP-N-010	Chemical contamination Microbiological contamination	As a result of flow reversal due to the need for rezoning due to the incorrect sequence of valve operations	Valves should be maintained and good records kept of their location and mode of operation, i.e. RH or LH thread.	Valves are exercised every year and records kept.	Valves are exercised every year and records kept.	yes	SOP 9.1	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Deterioration of water quality in supply as a result of unauthorised connection to the network.	DWSP-N-011	Chemical contamination	As a result of unauthorised connection to the network due to incorrect use of hydrants and standpipes.	Use of standpipes should be controlled to ensure that they have anti backflow devices and are used correctly.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Deterioration of water quality due to change in normal flow pattern.	DWSP-N-012	Chemical contamination	Due to mains sediment being disturbed by increased flow.	Iron, manganese, aluminium sediment	none	Bentley doesn`t currently have iron bacteria active in its system.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Failure to meet demand as a result of failure to mend break in a reasonable time	DWSP-N-013	Loss of supply	As a result of poor access.	or as a result of contractor timing.	none	The Town uses various local and nonlocal contractors to minimze response time.	yes	no	Medium	Moderate	4	4	16	No		Town
General Risks	Failure to meet demand due to inability to operate valves as required.	DWSP-N-014	Loss of supply	Inability to operate valves when needed due to the lack of maintenance	If valves are not operated and checked they may become difficult to operate.	All valves exercised yearly with documentation, problem valves are replaced immediately.	All valves exercised yearly with documentation, problem valves are replaced immediately.	yes	SOP 9.1	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Failure to meet demand as a result of insufficient valves to isolate area affected by break	DWSP-N-015	Loss of supply	Due to high loss of water due lack of isolation of mains	All valves exercised yearly with documentation, problem valves are replaced immediately.	All valves exercised yearly with documentation, problem valves are replaced immediately.	All valves exercised yearly with documentation, problem valves are replaced immediately.	yes	SOP 9.1	Unlikely	Minor	2	2	4	No		Town
General Risks	Failure to meet demand as a results of operating system above design pressure	DWSP-N-016	Loss of supply	Due to broken mains as a result of operating mains above design pressure.	Pressure is maintained at 43 psi by VFD motors controlled by the main VFD computer.	Pressure gauges - visual inspection daily.	Variable drive distribution pumps controlled by a pressure switch located on the main header.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Failure to meet demand as a result of failure of pipe bridge	DWSP-N-017	Loss of supply	As a result of mains break due to pipe bridge collapse.	Pipe bridge structures should be checked regularly.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town

General Risks	Failure to meet demand as a result of breaks caused by age-related deterioration.	DWSP-N-018	Loss of supply	Resulting from break due to deterioration of pipe condition due to age.	Planned maintenance/renewal should prevent this problem occurring.	none	reactive currently.	no	SOP 9.3	Medium	Insignificant	4	1	4	No		Town
General Risks	Iron discoloration in water as a result of metal pick-up from the mains material.	DWSP-N-019	Chemical contamination	Resulting from mains corrosion due to mains material and prevailing water quality.	Older pipe materials in use may not comply with current standards. May also be affected by flow rate.	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
General Risks	Loss of pressure as a result of leakage	DWSP-N-020	Loss of supply Loss of pressure	Due to leakage due to inadequate leakage control/poor maintenance.	If system leakage rates are high, a leakage control programme is recommended.	none	none	no	no	Medium	Minor	4	2	8	No		Town
General Risks	Loss of supply or pressure or contamination of water in supply as a result of fire service tackling a fire	DWSP-N-021	Loss of supply Loss of pressure Microbiological contamination Chemical contamination	Due to high flow rate or changes in flow patterns, or loss of disinfectant contact time or disturbance of sediment		New stand-by/emergency pump, motor and drive. Hydrants colour coded to prevent over pumping of hydrant. Callout alarms for low pressure and water level.	New stand-by/emergency pump, motor and drive. Hydrants colour coded to prevent over pumping of hydrant. Callout alarms for low pressure and water level.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Loss of supply or contamination of water in supply as a result of excessive demand in a short period of time	DWSP-N-022	Loss of supply Chemical contamination	Lack of communication from external stakeholders, e.g. builders, fire service	Fire service should be aware that if they are testing hydrants they should notify water operators.	Public Works pressure tests hydrants.	Public Works pressure tests hydrants.	yes	SOP 9.0	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Loss of supply as a result of failure of critical main due to lack of alternative supply	DWSP-N-023	Loss of supply	Due to break on a critical main such that no alternative means of supply is available		Visual and pressure gauges in pumphouse. Low pressure alarm for large breaks.	Visual and pressure gauges in pumphouse. Low pressure alarm for large breaks.	yes	SOP 9.3	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Microbiological growth in distribution system as a result of oversized mains	DWSP-N-024	Microbiological contamination	Build up of biofilms in the network due to excessive dwell time as a result of incorrectly sized mains.	Biofilms are more likely to develop in areas of low flow where disinfectant residual may be very low.	CL2 colourmeters and Swan AMI 24 hr chlorine monitoring. Water lines are 8" and 6" mains.	CL2 colourmeters and Swan AMI 24 hr chlorine monitoring. Water lines are 8" and 6" mains.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Microbiological growth in distribution system as a result of low disinfectant residual	DWSP-N-025	Microbiological contamination	Build up of biofilms in the network due to inadequate residual disinfectant.		CL2 colourmeters and Swan AMI 24 hr chlorine monitoring. The town isn't currentley affected by iron bacteria. Free and Total CL2 are usually within 0.9 mg/L of each other.	CL2 colourmeters and Swan AMI 24 hr chlorine monitoring. The town isn't currentley affected by iron bacteria. Free and Total CL2 are usually within 0.9 mg/L of each other.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
General Risks	Migration of hydrocarbons and other contaminants through pipework as a result of inappropriate materials used in areas of contaminated land	DWSP-N-026	Chemical contamination	Resulting from use of inappropriate materials in areas of contaminated land	All polyethylene pipes are susceptible to migration of hydrocarbons through the pipe wall.					Most Unlikely	Insignificant			0	No		Town
General Risks	Health risk to vulnerable customer due to inability to operate dialysis machine or similar	DWSP-N-027	Loss of supply	Due to loss of supply						Not applicable	Not applicable	0	0	0	No		Town
General Risks	Pressure problems caused by PRV failure	DWSP-N-028	Loss of pressure High pressure	Pressure fluctuation due to the failure of PRV.	PRVs should be serviced as required.	PRV valve on the fire engine is serviced every 5 years by a Singer rep.	PRV valve on the fire engine is serviced every 5 years by a Singer rep.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Pumping Station Risks	Failure of pump control panel resulting in power loss	DWSP-N-029	Loss of supply	As a results of inability to operate pumps due to lack of power		Stand by emergency pump, motor, and drive was replaced in 2009.	Stand by emergency pump, motor, and drive was replaced in 2009.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Pumping Station Risks	Failure of pumps due to breakdown and no standby	DWSP-N-030	Loss of supply	As a result of mechanical breakdown and lack of standby pump.		Stand by emergency pump, motor, and drive was replaced in 2009.	Stand by emergency pump, motor, and drive was replaced in 2009.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Pumping Station Risks	Oil contaminating water due to use of unacceptable pump lubricants.	DWSP-N-031	Hydrocarbon contamination	Due to non food grade leaking into wet well.	All pumps should use food grade lubricants.	The only grease used is food grade.	The only grease used is food grade. Maintenance sheets.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Pumping Station Risks	Failure of pumps due to power surge at pump station.	DWSP-N-032	Loss of supply	Due to pump failure due to electrical fault caused by power surge.	If electrical supply is subject to power fluctuations surge protection should be used.	none	no surge protector in pumphouse	no	no	Medium	Minor	4	2	8	No		Town
Pumping Station Risks	Failure of pumps due to flooding	DWSP-N-033	Loss of supply	Due to inadequate drainage or poor siting of pump house		Visual 365 days a year.	Bentley is on the side of a hill and the pumphouse is at the top of the hill.	yes	ERP 14.0	Most Unlikely	Insignificant	1	1	1	No		Town
Pumping Station Risks	Failure to meet demand as a result of loss of power supply	DWSP-N-034	Loss of supply	Due to power failure and no standby generator.		n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Town
Pumping Station Risks	Failure to meet demand due to insufficient pumping capacity	DWSP-N-035	Loss of supply Low pressure	Due to pumps operating below rating or inadequately sized.	Pump capacity should be matched to expected demand.	Callout alarm for excessive alternation due to demand.	Callout alarm for excessive alternation due to demand.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Contamination of water as a result of sediment deposition in reservoir	DWSP-N-036	Chemical contamination Microbiological contamination.	Due to build up of sediment in bottom of reservoir as a result of inadequate maintenance.	Reservoirs should be emptied, inspected and cleaned on a regular basis.	Reservoirs cleaned and inspected every five years.	Reservoirs cleaned and inspected every five years.	yes, very little sediment is present when the divers inspect/clean the reservoirs	SOP 8.0	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Contamination of water due to ingress of water as a result of inadequate structure or maintenance.	DWSP-N-037	Chemical contamination Microbiological contamination.	Due to lack of structural integrity of reservoir as a result of poor design or maintenance	Common weaknesses are lids, ducting holes for cables, poorly sealed roof joints, air vents.	Divers monitor deficiencies, visual inspections of hatches. Significant drop in cl2 residual would begin investigation.	Reservoir repairs contracted through Stantec Engineering.	Yes	ERP 14.0, 17.0, 20.0	Probable	Minor	8	2	16	No		Town
Reservoir Risks	Contamination of water due to ingress of organic debris as a result of inadequate structure or maintenance.	DWSP-N-038	Chemical contamination Microbiological contamination.	Due to lack of structural integrity of reservoir as a result of poor design or maintenance	More of a problem on earth covered reservoirs where plant roots may penetrate structure.	Divers monitor deficiencies, visual inspections of hatches. Significant drop in cl2 residual would begin investigation.	Reservoir repairs contracted through Stantec Engineering.	Yes	ERP 14.0, 17.0, 20.0	Unlikely	Insignificant	2	1	2	No		Town

Reservoir Risks	Contamination of water due to poor hygiene practice when doing planned inspection or maintenance.	DWSP-N-039	Chemical contamination Microbiological contamination.	Due to poor hygiene practice or use of non-approved chemicals.	Operators should be fully trained in proper hygiene practice	Recreational divers not allowed in reservoirs-accredited divers only. Only approved for use of 12% sodium hypochlorite.	Only approved divers and CL2 is used in reservoirs.	yes	ERP 2.0, 3.0	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Contamination of water due to reservoir running empty due to faulty or no telemetry.	DWSP-N-040	Chemical contamination	Due to disturbance of sediment on floor of reservoir due to low level as a result of lack of alarm.	Regular cleaning will help keep sediment build up to a minimum.	Divers clean reservoirs every three years-whether needed or not.	Divers clean reservoirs every three years-whether needed or not.	yes	SOP 8.0	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Contamination of water as a result of vandalism	DWSP-N-041	Chemical contamination Microbiological contamination.	Due to vandalism, due to lack of secure fencing and structure.	Degree of security required will depend on location.	Visual inspection 365 days per year. Pumphouse over two hatches is locked and alarmed.	8' barbed-wire topped fence, paddle locks, locked hatches, and alarmed pump houses.	yes	ERP 2.0, 3.0	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Contamination of water due to access to reservoir by stock or wildlife	DWSP-N-042	Microbiological contamination	Due to lack of secure fencing round reservoir.	Degree of security required will depend on location.	Visual inspection 365 days per year.	8' barbed-wire topped fence, paddle locks, locked hatches, and alarmed pump houses.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Contamination of water due vermin accessing reservoir	DWSP-N-043	Microbiological contamination	Due to lack of mesh or flap valve on overflow from reservoir.		None	Mesh on all vents and 6" collars on hatches. CL2 residual.	Not sure	no	Medium	Minor	4	2	8	No		Town
Reservoir Risks	Deterioration of water quality due to thermal stratification	DWSP-N-044	Chemical contamination Microbiological contamination.	Due to hot weather and reservoir being above ground and inadequately insulated and poor circulation		Temperature is recorded monthly. Water is between 5 to 10 degrees celcius in summer or winter (wells).	Water is diffused through perforated pvc pipe in all reservoirs to ensure proper mixing.	Yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Deterioration of water quality due to poor circulation in reservoir	DWSP-N-045	Chemical contamination	Due to poor design of reservoir	Design should encourage circulation.	Reservoirs were redesigned in 2002 with all inlets/outlets passing	Reservoirs were redesigned in 2002 with all inlets/outlets passing through perforated pvc	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Deterioration of water quality due to excessive residence time of water in reservoir.	DWSP-N-046	Chemical contamination Microbiological contamination.	Due to long storage time in reservoir and likely loss of disinfectant residual.		CL2 residuals taken weekdays at furthest point in distribution system, and pumphouse. 24 hr cl2 online analyzer samples and alarms if residuals fall below 0.20 mg/L.	CL2 residuals taken weekdays at furthest point in distribution system, and pumphouse. 24 hr cl2 online analyzer samples and alarms if residuals fall below 0.20 mg/L.	yes	ERP 6.0, 8.0	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Failure to meet demand as a result of reservoir being undersized	DWSP-N-047	Loss of supply	Due to inability to allow sufficient throughput.	If reservoir is often running low it is also likely to entrain air.	Volumes recorded daily. The reservoirs are set to refill at 1/4 usage-more of a topping up than a refill. Both high and low level arlarms in the reservoirs.	Volumes recorded daily. The reservoirs are set to refill at 1/4 usage-more of a topping up than a refill. Both high and low level arlarms in the reservoirs.	yes	SOP 7.0	Most Unlikely	Insignificant	1	1	1	No		Town
Reservoir Risks	Failure to meet demand as a result of inability to access reservoir to correct fault	DWSP-N-048	Loss of supply	Due to poor weather making access impossible.	System is within Town limits.	Pump house is inspected 356 days per year-no exceptions.	Pump house is inspected 356 days per year-no exceptions. Two operators and one contracted operator, and two public works employees that live in Town.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Town
Facility Specific Risks		DWSP-N-300												0	No		
Facility Specific Risks		DWSP-N-301												0	No		
Facility Specific Risks		DWSP-N-302												0	No		
Facility Specific Risks		DWSP-N-303												0	No		
Facility Specific Risks		DWSP-N-304												0	No		
Facility Specific Risks		DWSP-N-305												0	No		
Facility Specific Risks		DWSP-N-306												0	No		
Facility Specific Risks		DWSP-N-307												0	No		
Facility Specific Risks		DWSP-N-308												0	No		
Facility Specific Risks		DWSP-N-309												0	No		

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Customer Information

Water Supply System	Town of Bentley

Are By-Laws in Place?	Bylaw 91/05
Are there compliance checks?	
Population Supplied	1184
No. of Domestic Properties	372
No. of Business Properties	50
Hospitals	n/a
Other Medical Premises	no
Dialysis Patients	not aware of any
Prisons etc.	n/a
Schools	Elementry and High School.
Care Homes	Care Centre, Westview Apartments.
Is plumbosolvency an issue?	
Comments	

Approval Holder Town of Bentley Mayor
Water Supply System Town of Bentley
Approval Number 18648-01-00
Location Section 26-40-1-W5M (4602 46 Street)

	Risk Description	Risk I.D.	Hazard	Cause of Potential Failure	Comments	Current Monitoring	How Risk is Currently Controlled	Assess if Control is Adequate	Do any Standard Procedures cover this	Likelihood	Consequence	L'Hood Score	Cons. Score	Risk Score	Key Risk	Required Interventions to Prevent Failure	Responsible Party
General Risks	Lead in water in supply picked up from the service pipes and other fittings	DWSP-C-001	Chemical contamination	Resulting from dissolved lead from internal pipework or lead solder.		none	none	no	no	Probable	Moderate	8	4	32	Yes		Home/business owner
General Risks	Contamination of water in supply due to reduction in disinfectant levels resulting from long residence time of water in pipe caused by incorrectly sized/long service pipe.	DWSP-C-002	Chemical contamination Microbiological contamination	Disinfectant decay due to long residence time of water in pipe due to long service pipe	Service may have been installed without any consideration of residence time in service pipe	none	none	no	no	Almost Certain	Moderate	16	4	64	Yes		Home/business owner
General Risks	Contamination of water in supply as a result of chloramine decay and production of nitrites	DWSP-C-003	Chemical contamination Microbiological contamination	As a result of long residence time in network creating chloramine decay and formation of high levels of nitrite	chloramine not used in Bentley	n/a	n/a	n/a	n/a	Not applicable	Not applicable	0	0	0	No		Home/business owner
General Risks	Contamination of water in supply or pressure problems as a result of leaking service pipe	DWSP-C-004	Microbiological contamination Loss of pressure	Due to ingress due to leaking service pipe	If a leaking service pipe is sitting in water and there is a sudden drop in pressure, water may drawn in.	Low pressure telemetry at the pumphouse.	Low pressure telemetry at the pumphouse, standby/emergency pump incase pressure drops.	yes	no	Most Unlikely	Insignificant	1	1	1	No		Home/business owner
General Risks	Contamination of water in supply as a result of unsatisfactory or damaged new connections caused by inadequate installation procedures.	DWSP-C-005	Chemical contamination Microbiological contamination	As a result of unsatisfactory or damaged new connections due to bad installation and failure to follow a suitable code of practice	If the pipe ends are not protected during installation then swarf or dirt may enter the pipe and cause contamination.	none	none	no	no	Probable	Moderate	8	4	32	Yes		Home/business owner
General Risks	Hydrocarbon contamination as a result of laying service in contaminated land.	DWSP-C-006	Chemical contamination.	As a result of fuel/oil leak in soil through which polyethylene pipe is laid.	Hydrocarbons can migrate through polyethylene pipe.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of connection to unwholesome water due to lack of knowledge/supervision.	DWSP-C-007	Chemical contamination Microbiological contamination	Due to incorrect connection to unwholesome water due to lack of knowledge/supervision	Use of non-certified tradesmen may lead to unsatisfactory conditions	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of use of inappropriate material in the presence of contaminated land	DWSP-C-008	Chemical contamination.	Due to the use of inappropriate material due to the presence of contaminated land.	If laying pipes in contaminated land, contractors must install appropriate pipe materials.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of back siphonage caused by the lack of appropriate backflow protection	DWSP-C-009	Chemical contamination Microbiological contamination	Resulting from back siphonage due to the lack of appropriate backflow protection, i.e. non-return valve.	Industrial/Commercial Premises are generally High Risk; Household Customers are generally Low Risk, although preparing pesticides for garden use potentially high.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Pressure problems as a result of leakage caused by corrosion	DWSP-C-010	Loss of pressure	Resulting from leakage due to corrosion of copper pipework due to lack of protection or maintenance	Pitting corrosion or electrolytic or galvanic corrosion may cause leakage or failure.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Increased water temperature as a result of inadequate design of storage facility or internal pipework	DWSP-C-011	Chemical contamination Microbiological contamination	Warm water due to on site storage above required temp due to inappropriate storage facility/lack of insulation	Elevated temperature may encourage microbial growth.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of loss of chlorine residual caused by increased temperature	DWSP-C-012	Microbiological contamination	Resulting from loss of chlorine residual due to increase in temperature.	May give rise to microbial growth.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of inappropriate plumbing	DWSP-C-013	Chemical contamination Microbiological contamination	Resulting from use of inappropriate plumbing materials	Plumbers should only use materials approved for potable water.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of open storage cistern with no lid.	DWSP-C-014	Chemical contamination Microbiological contamination	Due to open storage tank due to inadequate plumbing work.	Open storage tanks may attract birds or other animals that may drown. Dust may be a problem too.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of the situation of the storage tank or lack of maintenance.	DWSP-C-015	Microbiological contamination	Resulting from poor condition of on site storage tanks due to lack of inspection/maintenance.	Inside of Tank needs to be inspected and cleaned Should be situated away from direct sunlight and insulated to keep cool.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of installation of inappropriate appliances	DWSP-C-016	Microbiological contamination	Resulting from installation of inappropriate water filters and cartridges.	Any point of use device should be approved for potable water use.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply caused by bacterial growth in appliances as a result of inadequate maintenance	DWSP-C-017	Microbiological contamination	Due to growth of bacteria in water filters or cartridges resulting from inadequate maintenance.	If cartridges or filters are not changed regularly internal bacterial growth may occur.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of use of drip feed cisterns	DWSP-C-018	Chemical contamination Microbiological contamination	As a result of ingress of contamination due to failure to operate proper hygiene practice.		none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner

General Risks	Contamination of water in supply as a result of cisterns being supplied from tankers	DWSP-C-019	Microbiological contamination	As a result of ingress of contamination due to failure to operate proper hygiene practice.		none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
General Risks	Contamination of water in supply as a result of inadequate hygiene practice at bulk water filling stations	DWSP-C-020	Chemical contamination Microbiological contamination	As a result of ingress of contamination due to failure to operate proper hygiene practice.	If hoses are not properly managed and kept from coming into contact with the ground or other undesirable material contamination can easily occur.	none	none	no	no	Medium	Moderate	4	4	16	No		Home/business owner
Facility Specific Risks		DWSP-C-400												0	No		
Facility Specific Risks		DWSP-C-401												0	No		
Facility Specific Risks		DWSP-C-402												0	No		
Facility Specific Risks		DWSP-C-403												0	No		
Facility Specific Risks		DWSP-C-404												0	No		
Facility Specific Risks		DWSP-C-405												0	No		
Facility Specific Risks		DWSP-C-406												0	No		
Facility Specific Risks		DWSP-C-407												0	No		
Facility Specific Risks		DWSP-C-408												0	No		
Facility Specific Risks		DWSP-C-409												0	No		

Town of Bentley Mayor

Town of Bentley

18648-01-00

Section 26-40-1-W5M (4602 46 Street)

Last run: December-18-2013 09:29

Risk Description	Risk I.D.	Hazard	Cause of Potential Failure	Comments	Current Monitoring	How Risk is Currently Controlled	Assess if Control is Adequate	Do any Standard Procedures cover this	Likelihood	Consequence	L'Hood Score	Cons. Score	Risk Score	Key Risk	Required Interventions to Prevent Failure	Responsible Party

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Summary of Actions Required to Mitigate the Main Risks identified

Approval Holder	Town of Bentley Mayor
Water Supply System	Town of Bentley
Approval Number	18648-01-00
Location	Section 26-40-1-W5M (4602 46 Street)

Standard Operating Procedures

List here all operating procedures that apply to the operation of your water supply system

Identifying Code or Number	Description
1	Well Pump Operation
1.1	Manual Well Pump Operation
1.2	Recording Pump Hours
1.3	Recording Pump Usage
1.4	Well Pump Flow Rate
2	Superchlorination of Well
3	Water Depth Measurements
4	Site and Wellhead Security
4.1	Site Security
4.2	Wellhead Security

LACOMBE COUNTY

WHERE PEOPLE ARE THE KEY

HIGHLIGHTS OF THE REGULAR COUNCIL MEETING
January 31, 2022

COVID-19 UPDATE
Council was provided with an update on the latest COVID-19 restrictions, statistics and the Province's current vaccine statistics.

LOCKHART ROAD WIDENING & PAVING
Due to increased construction and engineering costs for the paving of Lockhart Road in 2022, Lacombe County Council authorized an increase of $123, 927.80 to the 2022 paving program.

PAID PARKING AT SUNBREAKER COVE/SANDY POINT
Council received information into regarding the implementation of a paid parking system at Sandy Point Beach, Sandy Point Boat Launch, and Sunbreaker Cove Boat Launch. Council authorized the County Manager to establish a Digital Parking System through at the Sandy Point Beach, Sandy Point Boat Launch and Sunbreaker Cove.

In addition, a user fee schedule was adopted and will be added to the *Lacombe County Rates & Fees Bylaw.*

ROAD BANS – WOODY NOOK / ASPELUND ROAD
Council authorized the County Manager to remove the 90% road bans from the Woody Nook and Aspelund Roads, effective immediately.

ENVIRONMENTAL ACTION PLAN UPDATES
County Council received the 2021 Environmental Action Plan Update for information. This document is updated annually to identify projects or practice changes that assist Lacombe County in meetings its goals/targets for priority areas of the Environmental Management Plan.

Updates to the Environmental Action Plan for 2022 have also been completed and were adopted by Council as presented.

SOLAR UPDATE
Lacombe County installed a 115 kWDC solar PV system on the roof of the County Public Works Shop in June 2021. The actual solar energy production has exceeded the estimated production.

MUNICIPAL ENERGY CHAMPIONS
Council received a presentation regarding Lacombe County's selection to the Municipal Energy Champions (MEC) Program. The Municipal Climate Change Action Centre puts on this program, which supports small municipalities to become Energy Champions by managing energy use, and identifying opportunities to reduce energy consumption and save money.

Lacombe County was one of six communities selected to participate in the 2022 program.

LACOMBE ATHLETIC PARK ASSOCIATION (LAPA) FUNDING REQUEST
Lacombe County Council approved $250,000 in funds and/or work-in-kind support for the Lacombe Athletic Park running track project. Further funding may be considered in 2023 and is subject to further funding by the City of Lacombe.

TOWN OF ECKVILLE – NURSE PRACTITIONER
Lacombe County Council agreed to invite the Wolf Creek Primary Care Network and Town of Eckville Council and Administration to an upcoming Council meeting to discuss the Nurse Practitioner Program.

LACOMBE COUNTY

WHERE PEOPLE ARE THE KEY

LACOMBE COUNTY AGRICULTURAL SERVICE BOARD AGENDA

The Lacombe County Agricultural Service Board was established in compliance with the Agricultural Service Board Act. The Board promotes the long-term sustainability of the agriculture industry and addresses local agriculture concerns.

Council approved the Lacombe County Agricultural Service Board meeting agenda for March 1, 2022.

BYLAW NO. 1359/22 TAX PENALTY BYLAW

Bylaw No. 1359/22 is a bylaw of Lacombe County to authorize a tax installment payment plan (TIPP) and the levying of penalties on unpaid property taxes. For the past two years (and tax seasons), Lacombe County has deferred the first tax payment deadline by one month from August 31 to September 30.

Bylaw No. 1359/22 will return the County's first tax payment deadline to August 31, returning it to its pre-Covid date. For 2022, tax payment deadlines will be August 31 and November 30, and the deadline to enroll in the TIPPs program would also change to August 31.

Council approved Bylaw No. 1359/22 as presented.

BYLAW NO.1358/22 BORROWING BYLAW

Council approved Bylaw No.1358/22, which authorizes borrowing for the purpose of financing operating expenditures. Pursuant to Section 251(1) of the Municipal Government Act, a municipality may only make a borrowing if a borrowing bylaw authorizes the borrowing. The County's financial services provider, Servus Credit Union, requires the County to maintain a temporary line of credit borrowing bylaw.

Council approved Bylaw No. 1358/22 as presented.

BDO DELEGATION

Council received for information BDO Canada LLP's plan for the audit of the consolidated financial statements of Lacombe County for the period ended December 31, 2021.

RED DEER RESTORATIVE JUSTICE PRESENTATION

County Council received a presentation on the Rural Red Deer Restorative Justice Program for information.

IN CAMERA MATTER – LEGAL MATTER

Regarding the Statement of Claim served upon Urban Dirtworks Inc., County Council endorsed the Formal Offer to Settle dated January 13, 2022.

Next Regular Council Meeting is
Thursday, February 10, 2022 - 9:00 a.m.

Next Committee of the Whole Meeting is
April 5, 2022 – 9:00 a.m.

Lacombe County Administration Building

****For more details from Lacombe County Council meetings, please refer to the meeting minutes. All meeting minutes are posted on the website (www.lacombecounty.com) after approval.**

LACOMBE COUNTY

WHERE PEOPLE ARE THE KEY

HIGHLIGHTS OF THE REGULAR COUNCIL MEETING
February 10, 2022

COVID-19 UPDATE
Council was provided with an update on the latest COVID-19 restrictions, statistics and the Province's current vaccine statistics.

LACOMBE & DISTRICT CHAMBER OF COMMERCE TRADE SHOW
Lacombe County will arrange to have a booth at the Lacombe & District Chamber of Commerce Trade Show being held April 22 and 23, 2022. Council and staff will work the booth.

BYLAW NO. 1360/22
Bylaw No. 1360/22 is a bylaw of Lacombe County to repeal Lacombe County Bylaw No. 1062/07. Bylaw No. 1062/07 established the Sylvan Lake Regional Wastewater Commission in 2007. In January 2021 the Wastewater Commission was formally merged with the Sylvan Lake Regional Water Commission. As such, Bylaw No. 1062/07 is now redundant.

MINISTER OF ALBERTA TRANSPORTATION
Council agreed to request to meet with the Minister of Alberta Transportation at the Rural Municipalities Association (RMA) Spring Conference in March, 2022.

BLACKALDS RCMP DETACHMENT
Staff Sgt. Dan Martin, detachment Commander of the Blackfalds RCMP provided Council with an overview of the activities, personnel numbers, criminal statistics and future initiatives of the Blackfalds Detachment.

RCMP DETACHMENTS – MEETING WITH COUNCIL
Commanders from Bashaw, Blackfalds, Ponoka, Rimbey and Sylvan Lake detachments will be invited to meet with Council at the June 13, 2022 Committee of the Whole meeting.

ALIX AND AREA COMMUNITY RESOURCE CENTRE TOUR
Following the Council meeting Council toured the Alix and Area Community Resource Centre.

Next Regular Council Meeting is
Thursday, February 24, 2022 - 9:00 a.m.

Next Committee of the Whole Meeting is
April 5, 2022 – 9:00 a.m.

Lacombe County Administration Building

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