Staff Report

OPERATIONS DEPARTMENT

To: Council File: 5600-13
From: Chris Cochran, Manager of Operations Date: December 21, 2021
Subject: Water Conservation Plan – Recommendation to Endorse

RECOMMENDATION

THAT based on the December 21, 2021 report from the Manager of Operations, *Water Conservation Plan – Recommendation to Endorse*, Council RECEIVE and ENDORSE the Town of Golden's *Water Conservation Plan*.

CAO COMMENTS

I support the recommendation. This document is both a statement of accountability and responsibility and as important, a key requirement to be eligible for future water associated infrastructure grants.

BACKGROUND

At the April 6th Regular Open Council Meeting, Council authorized staff to engage our municipal engineering consultant for the purposes of developing a new Water Conservation Plan to replace the recently expired Water Smart Action Plan, which was developed for Golden under the CBT-led Water Smart Initiative.

The expired Water Smart Action Plan's primary purpose was to demonstrate good conservation stewardship and inform conservation related decision making for the municipality. Over time a community water conservation report/study has also become a standard submission requirement for Provincial grant funding applications. As such, this plan has been submitted with funding applications at least a hand full of times over the past several years.

DISCUSSION

Next month staff intends to bring to Council a report requesting authorization to apply for an *Investing in Canada Infrastructure Program* (ICIP) grant. The attached Conservation Plan, similar to previous Water Smart Action Plans is a mandatory requirement for an eligible funding submission to the granter, as is a resolution stating that Council endorses the plan.

Some main points covered in the report are as follows:

Non-revenue water or leakage/unaccounted for water is difficult to accurately calculate without benefit on residential metering or at least district zone metering. Golden has neither. As Council will recall the financial business case to support residential universal water metering is difficult to support. With regards to district zone metering (aka residential neighborhoods with a single supply point which can be metered) are non-existent given how the municipal distribution system is built-out. These two factors result in a calculated non-revenue percentage of water pumped as being estimated at 20 - 30%.

System leakage exists in all water distribution systems to some degree. Given the way in which Golden's water system is constructed (difficult to implement district zone metering); a key recommendation is to begin a process of annual leak detection throughout the

distribution system. This should be done over several years, likely by contract with Public Works support.

Another key recommendation is to undertake replacement or calibration of well meters on a 5-year cycle. Given the potential challenges associated with procurement of appropriate calibration service providers in this region, replacement can be supported out of the annual water meter renewal capital program.

Golden is fortunate to have access to a vast, high quality aquifer. Regardless, conservation measures through regular and rigorous leak detection/repair, as well as the continuation of seasonal conservation education coupled with enforcement of residential sprinkling regulations should return favourable results.

There are many benefits to good conservation stewardship as follows:

- Maximize available pumping capacity (particularly with Well 6 currently out of service);
- Reduce energy costs associated with pumping;
- Provide available pumping capacity and distribution system delivery capacity for additional development and fire-fighting purposes;
- Realize additional reservoir storage for development and fire-fighting purposes;
- Defer the need to look for additional water through additional well development;
- Defer the need to construct additional storage to meet rising demands.

DECISION FACTORS

Council Context

Strategic Lens (Alignment to OCP, Bylaws, Existing Legislation)

Endorsement of the Water Conservation Plan is required as a qualification for eligible grant funding applications such as the current ICIP application intake. Water conservation, for reasons stated herein, is in keeping with Council's Corporate Priorities Guiding Principle of *managing our assets for the future.* The plan also supports OCP community objectives for demand management and conservation.

Climate Change (Mitigation/Adaptation Relevance)

Conservation of resources such as drinking water can be seen as demonstrating good stewardship in terms of Climate Change Adaptation. For reasons stated herein, conservation of the resource will result in additional available system capacity, deferring the need to construct more infrastructure for example. Reduced pumping may be seen as mitigation in terms of a concerted effort in avoidance of constructing assets associated with increased use of the resource.

Communication (Scope and Tactical Outputs)

The Water Conservation Plan will be posted to the Town's website for public information. The plan and a Council resolution endorsing the plan will be used for future grant submissions as required.

Financial (All Term Budget Impacts/Asset Management Impacts/Practicality)

The cost associated with development of the Water Conservation Plan were contemplated and approved during the 2021 budget deliberation process with Council. Potential costs associated with a contracted leak detection program will be determined and brought back to

Council in the future. Costs associated with well meter replacements and conservation education and enforcement can all be funded from established annual budgets.

Administration Context

Administrative (Policy/Procedure Relevancy, Work Plan Impact)

Development of a Water Conservation Plan to replace the expired Water Smart Action Plan is a requirement for qualifying submission to grantors such as the current ICIP funding opportunity.

Ongoing conservation efforts should be sustained with new conservation initiatives pursued as appropriate. Work planning will be required for larger initiatives such as administration of a potentially multi-year contracted leak detection program.

OPTIONS

Option 1: Receive and ENDORSE the Town of Golden's Water Conservation Plan.

Option 2: Receive the Water Conservation Plan for information and ENDORSE it with Council directed changes.

Option 3: Receive the Water Conservation Plan for information but do not resolve to endorse it.

Respectfully Submitted,

Chris Cochran, AScT
Manager of Operations

Attachment

TOWN OF GOLDEN

Water Conservation Plan

Final Report

PREPARED FOR:

TOWN OF GOLDEN

December 2021 | File: 0404.0230.01

URBAN SYSTEMS

200 - 286 St. Paul Street,
Kamloops, BC V2C 6G4
T: 250.374.8311

Contact: John Dumbrell, MCIP
jdumbrell@urbansystems.ca

urbansystems.ca

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1.0 INTRODUCTION

The Town of Golden has a long history of efforts to manage the demands placed on the community's water utility. These efforts began in the mid-2000s with the preparation of a 'Water Conservation Brief' in 2006 (Urban Systems) that outlined the need for demand management, the potential benefits (including cost efficiencies, reduced energy consumption and greenhouse gas emissions, adaptability to climate change) and measures that could be considered. The Town joined a number of other local governments and First Nations communities in 2009 in the Columbia Basin Trust's Water Smart initiative, and prepared its first Water Smart Action Plan in 2011. This Plan was updated as part of that same initiative in 2016. The 2016 version of the Plan noted that the intention was that it be a living document, and that it be revised and updated by the Town. The purpose of this Plan is to provide that update.

Prior to moving forward with this updated Plan, it is worth noting the various water demand management and conservation initiatives which have been undertaken by the Town over the past 15 years. In summary, these include:

- Implementation of public education and awareness initiatives regarding the importance and benefits of water demand management in Golden, with a particular focus on outdoor water use
- Consideration of universal water metering (with most recent update of financial assessment in 2020)
- Completion of municipal irrigation assessments, including installation of meters on 14 Town irrigation connections and monitoring of use
- Participation in water loss management technical training
- Implementation of a pilot residential water metering program
- Inclusion of time-based water restrictions in the Town's Water Rates and Regulations Bylaw

The remainder of this report is set out in the following sections:

- Section 2 – outlines the community vision and objectives with respect to water demand management and conservation
- Section 3 – provides a profile of key aspects of the Town which have bearing on water demands including current and projected population, the nature of land uses connected to the water utility, and key features of the utility
- Section 4 – summarizes the Town's water demands both cumulatively and by major user group, including over time
- Section 5 – sets out a recommended set of actions which the Town can take to further manage water demands.

2.0 COMMUNITY VISION AND OBJECTIVES FOR WATER DEMAND MANAGEMENT AND CONSERVATION

The Town of Golden adopted its most recent Official Community Plan (OCP) in 2008. The OCP articulates a number of Guiding Principles relating to preserving and enhancing Golden's unique character, regional collaboration, and social, economic and environmental sustainability. Those which relate most closely to water demand management and conservation, and provide important context for this Plan, include:

- *Protect environmental quality, including air and water;*
- *Provide efficient and effective Town/municipal services;*
- *Encourage green technologies;*
- *Encourage existing industry, residents and the municipality to become more environmentally sustainable;*
- *Mandate leading edge environmental management practices.*

Part III of the Town's OCP contains specific goals, objectives and policies dealing with water demand management and conservation. The goal statement for Infrastructure reads:

> *"Golden will plan infrastructure services, so that ecological, economic, physical and social factors are integrated in design and provision of the service. Efficient and environmentally sensitive infrastructure servicing will be encouraged and practiced with sensitivity to balancing the capacity of the natural environment with the demands of growth. Golden will ensure sufficient infrastructure services are provided in a timely manner to support community growth."*

Objectives with direct bearing on water include:

- *To promote water demand management and conservation as a component of a sustainable wastewater treatment system;*
- *To ensure an adequate water supply through conservative expansion of the water supply system, water demand management and water quality protection to serve both the current and future population of Golden.*

Specific policies which carry on from these objectives state the following:

- *Implement principles of sustainable development through consideration of alternative technologies for infrastructure;*
- *Encourage alternative development standards to lessen the impact on Town services.*

In addition to the 'Infrastructure' section of Part III of the OCP, the 'Environment' and 'Sustainability' sections contain further guidance with respect to the Town's water conservation objectives. Selected objectives and policies include:

- *To protect the quality and quantity of the Town of Golden's vital water resources. Provide leadership to promote water conservation and further educational programs* (Environment – Objective);

- *Create public awareness regarding energy and water conservation methods such as the following – Xeriscaping (landscaping with dry land plants); drip watering instead of sprinklers for irrigation; setting mowers to 2" minimum height to save water; spot watering by hand rather than using sprinklers; use of barrels to capture rain water for hand watering; and fixing leaky faucets and toilets in households and public areas (*Environment – Policies);

- *Raise awareness amongst individual homeowners and residents regarding beneficial landscaping, gardening and mowing practices that have the potential for considerable water savings and for minimizing chemical pollutants in the environment including training sessions for Town staff and residents; demonstration areas for Xeriscaping, proper mowing practices, etc. (possibly on Town property); printed information booklets, brochures, sheets, etc.; developing handouts for homeowners, providing guidance regarding landscaping in Golden, including hardy species, preferred native species, plants to avoid, etc.; seminars regarding landscaping open to Town staff and residents; and use existing BC Hydro resources for planting around power lines* (Environment – Policies);

- *Increase enforcement of watering restrictions* (Environment – Policies);

- *Leadership in Energy and Environmental Design (LEED),* including *Water Efficiency: Eliminate the need for landscape irrigation, reduce water consumption levels, reduce and/or treat wastewater onsite* (Sustainability - LEED);

- *Water Efficiency – installation of low flow plumbing fixtures (faucets, showerheads, toilets), waterless urinals, efficient appliances that use substantially less water (front-loading washing machines, dishwashers, i.e., Energy Star); eliminate the need for landscape irrigation, install low flow irrigation systems or use grey water for irrigating; and plant native species and apply Xeriscaping strategies* (Sustainability – Additional Green Building).

Achievement of the Town's vision and objectives for water demand management and conservation noted above will advance the community's broader sustainability goals – financial efficiency (capital and operating cost savings), energy use reduction, greenhouse gas generation limitation, and climate change adaptation.

3.0 COMMUNITY PROFILE

3.1 Service Population

Annual population estimates prepared by BC Stats have traditionally been used by the Town to provide current population values within the municipality's boundaries for the purposes of water conservation planning, as they are prepared more frequently than Census values which take place every 5 years. These BC Stats estimates were accessed in September 2021, and peg the Town's population at 4,131 for the year 2020. This value is considered the service population of the Town's water utility.

Golden does experience variability in the water utility service population throughout the year. This variability is due to two factors. First, Golden receives many visitors throughout the course of the year including short-term travelers passing through the community on Highways #1 and #95, as well as those who stay for longer periods to recreate in the community and surrounding mountain environment. Second, Golden has become increasingly popular with non-resident property owners who hold amenity-based recreational property in the community. These service population variables are important to note in the context of this report, yet remain challenging to capture in numeric terms.

3.2 Community Growth Estimates

BC Stats also prepares estimates of anticipated population growth at various geographic scales, the smallest of which are Local Health Areas. The Town of Golden comprises approximately 50% of the population of the Golden Local Health Area, and therefore the estimates for this Area are felt to be representative of the Town. Over the next 5 year period, annual population growth rates are projected to be 0.5% on an annual basis, or approximately 2.5% in total. At this rate, the Town population would increase from 4,131 in 2021 to 4,234 by 2026.

3.3 Water Connection Summary

There are a total of 1,253 connections to the Town's water utility, including 933 residential and 320 industrial / commercial / institutional (ICI) connections. Of the 933 residential connections, 33 have pilot water meters installed. All ICI connections are metered. Figure 1 provides a graphic illustration of water connection by type.

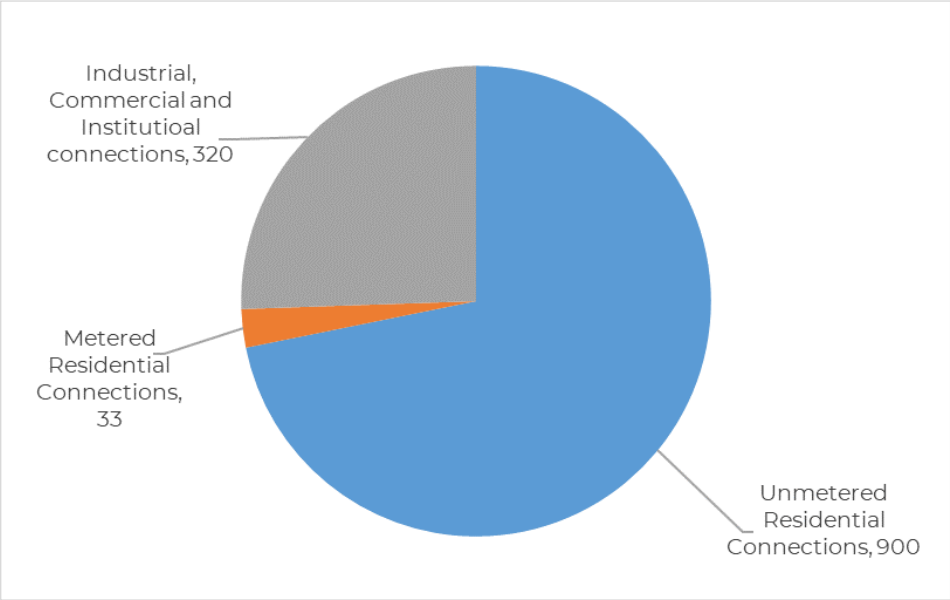

Figure 1: Water Utility Connections

3.4 Infrastructure Summary

The Town of Golden obtains its domestic water supply from five groundwater wells that tap buried sand and gravel deposits within the alluvium of the Columbia River valley. The names, locations and available capacity of these wells can be summarized as follows:

- Well #2 – 9th Street South near 14th Ave. (10 litres per second (lps))
- Well #3 – adjacent to Spruce Drive near 11th Street South (20 lps)
- Well #4 – 11th Ave. North, north of 11th Street (33 lps)
- Well #5 – at Kinsmen Park on 10th Street South and 9th Avenue (39 lps)
- Well #6 – lane north of 14th Street North in-between 11th Ave. North and the Trans-Canada Hwy. (11 lps) – this well is currently offline and not in use.

The total available water supply from the five wells is, therefore, approximately 115 lps. As water system pumps are designed to meet peak day demands by pumping a maximum of 16 to 18 hours per day, the total available supply over a 24 hour period is 75% of this total well capacity, or about 85 lps.

Water quality characteristics vary from well to well, but all parameters are within the Canadian Drinking Water Guidelines.

The Town also has five reservoirs sited at various locations throughout the community. The total storage capacity of these reservoirs equates to approximately 6.9 ML.

3.5 Source Resiliency

Previous water supply investigations (2007 Water Demand Management Strategy[1], 2003 Water Distribution System Study[2]) identified the requirement for additional water supplies to serve the needs of a growing community. The 2007 study noted the fact that well pumping facilities had operated at maximum safe capacity for each of the previous ten summers. Further, the Town had experienced episodes (such as the summer of 2000) when high water demands had resulted in challenges keeping the reservoirs filled during summer months. These circumstances led the Town to move forward with initial water conservation initiatives such as those noted in the Introduction section of this report. From a resiliency perspective, these initiatives have assisted in managing the demand for water in Golden, and thus extended the life of the existing pumping infrastructure. The Town's water pumping capacity is finite, however, and may have to be supplemented depending on the success of future water demand management and conservation initiatives, and magnitude of growth.

Supplementing the Town's current sources will prove to be a challenge. Exploration of additional groundwater supplies north of the Kicking Horse River prior to 2009 revealed:

- a need to ensure that future wells are developed in confined aquifers which will limit the susceptibility to contamination;
- a potential for water quality issues associated with use of alternate aquifer sources;
- lower yields experienced when testing alternate aquifer locations and sources; and
- environmental risks which limit the locations of future water wells.

Seeking surface water sources to augment groundwater presents a further range of challenges, including the need for capital and operating-intensive (and therefore expensive) treatment works, and difficulties in system configuration. This led toward the exploration of groundwater supply options, as well as demand management approaches, before investigating alternate surface water sources.

[1] Urban Systems Ltd., Town of Golden Water Demand Management Strategy, 2007 File Reference 0404.0153.01

[2] Urban Systems Ltd., Town of Golden Water Distribution System Study, 2003, File Reference 0404.0019.01

4.0 WATER USE PROFILE

4.1 Background and Assumptions

The water use profile presented in this section of the report is based upon data provided by the Town of Golden, as well as BC Stats with respect to the water utility's service population. Key assumptions used in the preparation of this profile include:

- Service population for the year 2020 of 4,131 (see Section 3 above for more detailed reference)
- Gross water supplied by the Town's wells in 2020, based on meter readings
- Industrial, commercial and institutional (ICI), as well as municipal irrigation, water consumption based on meter readings for 2020

Estimation of residential water demands, as well as unaccounted for water and leakage, presented some challenges. These are more fully described in later parts of this section of this Plan.

4.2 Gross Water Supplied

The total volume of water supplied by the Town of Golden's water utility in 2020 was 964 ML. A generalized profile of water supplied from 2009 to 2020 on an annual basis is provided in the following graph (see Figure 2).

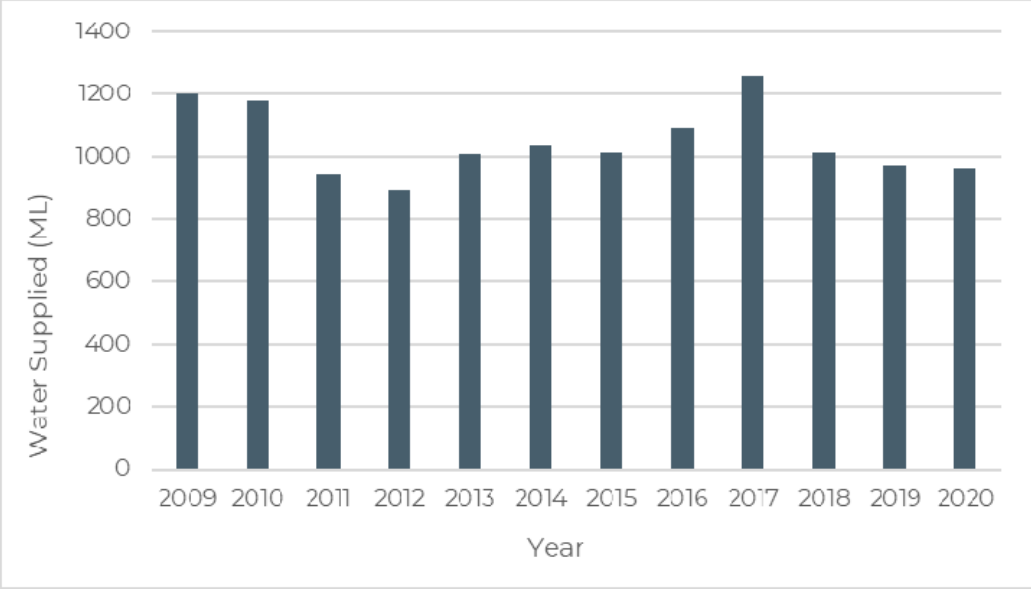

Figure 2: Gross Annual Water Supplied

Using 2009 as a reference year, changes in gross annual water supplied can be expressed in both volumes and percentages. This data is shown in Table 1 below. With the exception of one year – 2017 – the Town's water supply has been called upon to provide less water than was the case in 2009.

Table 1: Changes in Gross Water Supplied from 2009 to Future Years

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Change in Gross Supply from 2009 (%)	-20%	-19%	-16%	5%	-9%	-16%	-14%	-16%	-26%	-21%	-2%	-
Change in Gross Supply from 2009 (ML)	-237	-230	-190	60	-108	-187	-163	-195	-308	-253	-19	-

The annual gross water supplied can also be translated into supply per person by dividing the supplied amounts by the service populations for each year. These results are shown below in Table 2.

Table 2: Average Daily Water Supplied by Service Population (litres per capita per day)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Total Average Daily Flow (litres per capita per day) *Total water use / services population / 365 days*	-20%	-19%	-16%	5%	-9%	-16%	-14%	-16%	-26%	-21%	-2%	-

The data presented in Tables 1 and 2 show general trends of reduction of water use (gross and per person) over the last 11 years in the Town of Golden.

4.3 Major Users and Leakage Analysis

The following sections describe the methods used to analyze major users and unaccounted for water and leakage.

Residential

Residential water usage was obtained from the volunteer-based pilot residential metering program. Meter data was captured on an annual basis from 33 residential meters, and 2.83 persons per household[3] were assumed. The combined indoor and outdoor average for 2020 was 187 liters per capita

[3] Average occupancy rate for the residential pilot meter program (provided by the Town of Golden)

per day (lpd). With a service population of 4.131, this equates to 29% of gross water supplied being attributed to residential water use.

Total residential use can be separated into the fractions used inside homes, and that used outside. The Town's 2016 Water Smart Action Plan contained a breakdown of indoor vs. outdoor residential use over the period 2011 to 2014 (see Table 1: Indicator Results in that report). This data showed that, on average over the period 2011 through 2014, 77% of overall annual residential water demand was attributed to indoor water use, and 23% to outdoor.

Industrial, Commercial and Institutional (ICI)

ICI connections are the largest group of metered users, and has the highest water usage among any of the user groups. Collective meter readings from this group show total annual demand in 2020 of 369 ML or 38% of annual total demand. Given the frequency of ICI meter readings, it is also possible to separate this value into indoor (36%) and outdoor (2%) fractions of overall water demands.

Municipal Irrigation

Metered water consumption data for four washrooms and 10 irrigation meters, including public parks, campgrounds, highway-adjacent areas, and the cemetery was provided by the Town for 2020. This data revealed a total annual demand of 15ML in 2020, or 2% of the annual total demand.

Unaccounted-For Water and Leakage

The Town undertook some work in the mid-2010s to quantify unaccounted-for water and leakage in the water utility. This work proved to be quite challenging from various perspectives, including limited discreet and easily-measured areas within the Town's water utility (only North Bench, and remainder of the Town), and lack of daily-use data for night-time water users (when readings are done to attempt to quantify unaccounted-for water). The results of this work were indeterminate, and cannot be relied upon to estimate unaccounted-for water and leakage with confidence.

An alternative method for estimating total leakage is to subtract the accounted for water from the total water use. This was completed using the provided annual water data. It should also be noted that using monthly data would be preferred, as it provides more details in flow variability throughout the year. For calculating the unaccounted for water and leakage, monthly data from winter are preferred as no outdoor water usage can be assumed during the winter season.

The following calculation was used to provide and estimate of unaccounted for water and leakage:

Gross water supplied:

964 ML ⟶ Data Provided by the Town of Golden

Residential Demand[4]:

$$\frac{6{,}323\ m^3\ \text{of Total Usage}}{363\ \text{days} \times 33\ \text{houses}} \times \frac{\text{house}}{2.83\ \text{people}} \times \frac{1000\ L}{m^3} = 187\ \text{lpd} \rightarrow \frac{187\ L}{\text{person} \times \text{days}} \times 4{,}131\ \text{people} \times 365\ \text{days} \times \frac{ML}{1{,}000{,}000\ L} = 282\ ML$$

Metered ICI:

$$\frac{1{,}010\ m^3}{} \times 365\ \text{days} \times \frac{ML}{1{,}000\ m^3} = 369\ ML \rightarrow \text{Data provided by the Town of Golden}$$

Municipal Irrigation:

$$\frac{15{,}114\ m^3\ \text{of total usage}}{\text{measurement period of 360 days}} \times 365\ \text{days} \times \frac{ML}{1{,}000\ m^3} = 15\ ML$$

Estimated Unaccounted-for Water and Leakage:

Gross water supplied of 964 ML – Residential Demand of 282 ML – Metered ICI of 369 ML – Municipal Irrigation of 15 ML = 298 ML of Unaccounted – for Water/Leakage

The above calculation indicates that about 30% of the Town's water supply comprises unaccounted-for water / leakage. This value should not be considered definitive, with a range of 20% - 30% representative of this component of the Town's water balance.

Consideration of the approach used to estimate total residential water use is also important in the context of this conversation. While it is very useful to have the meter reading data from 33 residences in Golden, this relatively small data set has been extrapolated to an additional 900 residences which may have different characteristics in terms of water use (indoor and outdoor), occupancy (number of people living in the home) and other factors. The reliability of the aggregate residential water demands presented above is therefore uncertain.

[4] 4,131 people is the Population for 2020 from the British Columbia Regional District and Municipal Population Estimates

4.4 Water Use Balance by Sector

Figure 3 and Table 3 compare the 2020, 2015 and 2009 water use by sector (in graphic and numeric table formats) based on available data and using the calculation methods set out above.

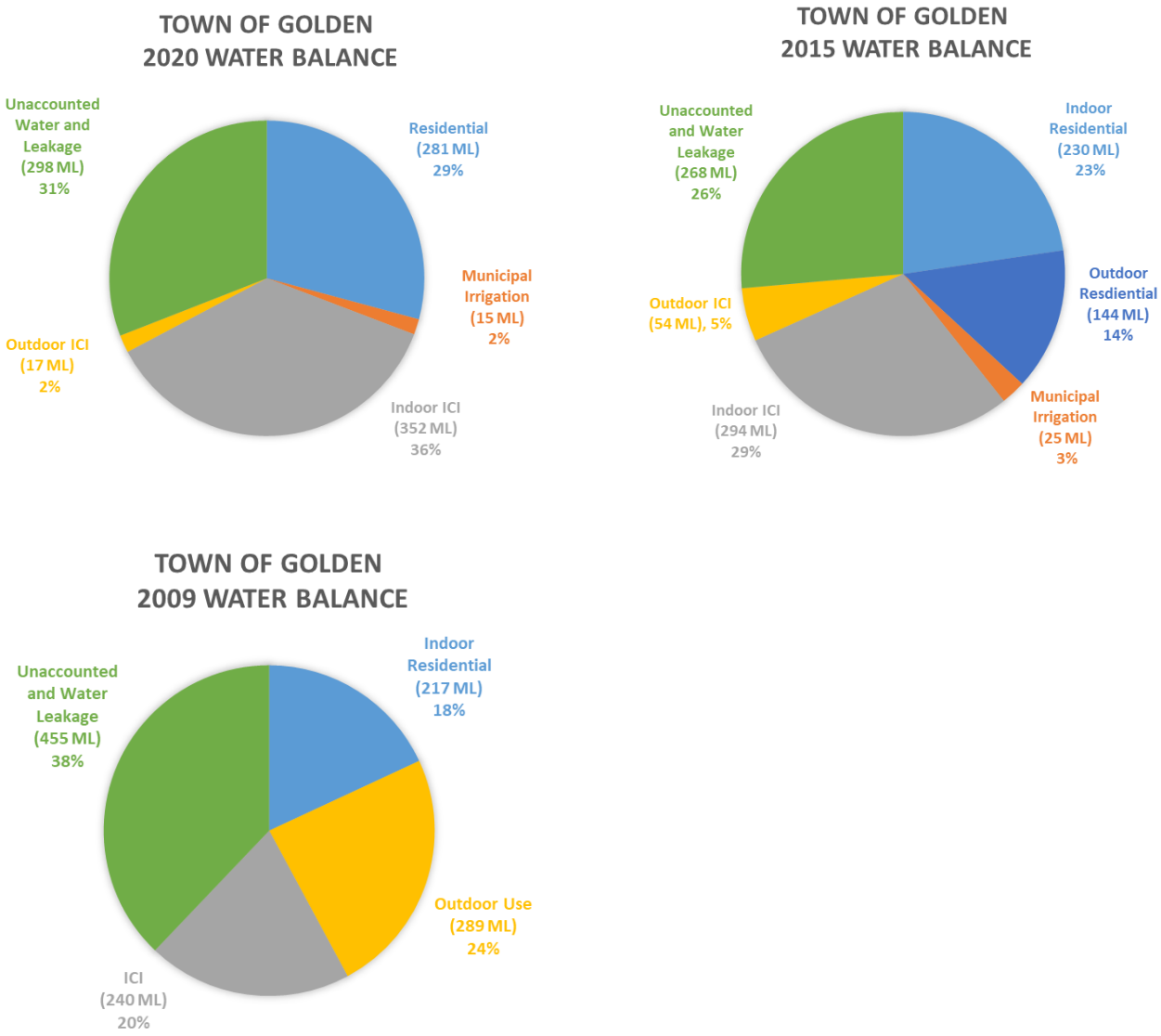

Figure 3: Comparison of the Town of Golden 2020, 2015 and 2009 Water Use Balance

Table 3: Comparison of 2009, 2015, and 2020 Water Use Balances

Water Use Balances	2009		2015		2020	
	Volume (ML)	Percentage of Total (%)	Volume (ML)	Percentage of Total (%)	Volume (ML)	Percentage of Total (%)
Indoor Residential	217	18%	230	23%	281[5]	29%
Outdoor Residential	289	24%	144	14%		
Municipal Irrigation			25	3%	15	2%
Indoor ICI	240	20%	294	29%	352	36%
Outdoor ICI			54	5%	17	2%
Unaccounted for water and Leakage	455	38%	268	26%	298	31%
Total	**1201**	**100%**	**1014**	**100%**	**964**	**100%**

[5] Only total residential demand is presented here as that was the only recorded meter data for 2016 to 2020

5.0 RECOMMENDATIONS

5.1 Background

As noted above in Section 4, the Town has experienced reductions in both gross and per capita water demands since water conservation efforts began in conjunction with the Columbia Basin Trust's Water Smart initiative in 2009. The Town, its residents and businesses are to be applauded for these savings and the resulting financial (capital and operating cost savings), environmental (energy and greenhouse gas reduction, climate change adaptation) and other benefits.

There are opportunities to continue and potentially bolster the Town's water demand management and conservation efforts. Understanding these opportunities could be enhanced through a more thorough understanding of the community's water balance, as portrayed in Sections 4.3 and 4.4 of this report. There are two areas where major assumptions have had to be made to calculate this water balance:

- Unaccounted for Water and Leakage volumes
- Projection of all residential demand for 933 residences based upon meters installed in 33 of those residences.

Verifying these assumptions is challenging given the Town's limited ability to complete night flow analyses to estimate unaccounted-for water / leakage, and the relatively few residential water meters currently in place. Given this situation, the following recommendations are intended to assist the Town in moving forward with its water demand management and conservation program.

5.2 Water Demand Data

The accuracy of the source meters connected directly to the Town's five (5) supply wells (4 of which are online at the time this report was prepared) is vital to establishing solid gross water supply trends. These meters should be calibrated or replaced on a regular basis (approximately every 5 years) to maintain accuracy, and to allow continuing illustration of overall trends in water consumption.

5.3 Water Loss Management

Given the challenges documented in Section 4 regarding conduct of unaccounted-for water analyses in Golden, it is recommended that a continuing program of locating and remedying points of significant leakage within the public portion of the utility be undertaken. This can be accomplished with acoustic leak detection, supplemented by anecdotal knowledge and observation by both Town staff and community residents.

Moving beyond the public portion of the utility to the private services leading from the curb stop to the home or other building, the Town may wish to engage with water utility customers where there is evident or suspected leakage. This engagement could be triggered by various events – building permit, main replacement, or acoustic testing by the Town on the adjacent public part of the water utility are all examples.

5.4 Managing Peak Demands

The Town's water demands exhibit a very familiar pattern – increases during the May through September period due to higher air temperatures and increased outdoor water use for lawn and garden irrigation as well as other activities. Similar to other communities, the Town has established permitted watering periods, as well as undertaken various public education and awareness efforts. It is recommended that compliance with the Water System Rates and Regulations Bylaw be monitored through observation by staff, and that additional effort be dedicated if compliance appears to be waning. This additional effort could take the form of the Water Smart Ambassador program with which Golden has had success in the past, and which could include both further public education / awareness, and gentle yet effective reminders by the Ambassadors in instances when compliance is not being achieved.