Water Conservation Plan

For the Village of Ashcroft

REPORT

1093.0036.03

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The Corporation of the
Village of Ashcroft

VIA EMAIL

February 15, 2013 File: 1093.0036.03

Village of Ashcroft
P.O. Box 129
Ashcroft, BC V0K 1A0

Attention: Michelle Allen, Chief Administrative Officer

RE: VILLAGE OF ASHCROFT – WATER CONSERVATION PLAN

Please find enclosed the Village of Ashcroft's Water Conservation Plan. This document describes the Village of Ashcroft's current water system and water consumption, establishes a water conservation target, and outlines current and planned water conservation measures as an implementation strategy for the Village to achieve their target. This document is intended to satisfy the requirements of the Towns for Tomorrow grant program for the 2012 Sewage Treatment Plant Upgrade project.

Thank you for the opportunity to work with you on this project. Should you wish to discuss further or if you have any questions, please do not hesitate to contact us.

Sincerely,

URBAN SYSTEMS LTD.

Lisa Clark, P.Eng.
Drinking Water Engineer

Heather MacKnee, EIT

/hlm

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REPORT

WATER CONSERVATION PLAN

February 15, 2013

1093.0036.03

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The Corporation of the Village of Ashcroft

URBAN systems

REPORT

WATER CONSERVATION PLAN

February 15, 2013

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1.0 Introduction and Background

The purpose of the Village of Ashcroft (Village) Water Conservation Plan is to provide the Village with information to assist in the development of a coordinated plan for reducing water consumption. Reduced water consumption may delay or reduce capital costs associated with infrastructure expansions, reduce operation and maintenance costs, promote environmental responsibility, and contribute to the long-term sustainability of the community.

The Village of Ashcroft received a grant from the Towns for Tomorrow program for upgrades to the wastewater treatment plant. As a requirement of the grant program, the Village must submit a current, Council endorsed Water Conservation Plan for the community water system. It is therefore a good opportunity to develop a coordinated plan for focussing the Village's water conservation efforts.

The analysis and recommendations in this plan aid in positioning the Village for focused investments in water conservation.

The Corporation of the Village of Ashcroft

2.0 Why is Water Conservation Important?

Fresh water supplies are a global concern; water is becoming more expensive to extract, treat, and distribute. In British Columbia, fresh water resources are under pressure and there is a need for careful stewardship of these resources to ensure the long term sustainability of the Province's fresh water supply. Action is necessary at a local level. Even in communities where fresh water is plentiful, there are long-term benefits to reducing water consumption.

Water is essential to our quality of life. Living Water Smart is the BC government's vision for sustainable water stewardship, to be achieved through actions and targets that include:

- Keeping water in mind when communities are developed to protect sources of drinking water, and by strengthening flood protection to adapt to climate change.
- Ensuring wetlands and waterways will be protected and rehabilitated, and land activities will not negatively impact water resources.
- Modernizing B.C.'s Water Laws to ensure adequate stream flows, ecosystem health, more community involvement, and protection of groundwater.
- Setting strong water efficiency targets and working with all sectors to reduce water consumption.
- Improving science and information so British Columbians can better prepare for the impacts of climate change.

British Columbians must all work together to protect water sources, manage water demands, modernize water systems and infrastructure, and live water smart.

BC has one of the highest per capita water use rates in the world. An increasing population puts pressure on water resources. Using water more wisely is the key to a sustainable water future for everyone. Although the value of water conservation is often defined primarily in terms of avoided costs to supply the water, there are many additional benefits to consumers and society at large. Benefits of water conservation can be seen in many aspects of a community:

- **Social:** Water conservation plans inform the public about where treated water comes from and the cost of delivery and treatment, which allows residents to understand the implications of their water usage. This awareness and appreciation for resources can allow residents to take ownership of water conservation actions.
- **Cultural:** Water conservation actions and behaviours can be embedded into residents' daily lives, which can be seen as a reflection of the culture of the

community. The culture of a community is integral to its existence as a sustainable community.

- **Environmental:** Reducing water use results in reduced treatment and delivery of water, reduced wastewater treatment, and reduced energy requirements.
- **Economic:** Reducing water consumption provides savings in operating and maintenance costs and can also defer the need to expand existing infrastructure to accommodate water demands and wastewater generation.

Water conservation has the potential to benefit the community and the individual in complementary ways. In order to implement a successful water conservation plan, community engagement is critical.

3.0 Water System Background

The community of Ashcroft is located on a flat bench next to the Thompson River just east of the Trans-Canada Highway and about 10 km south of the community of Cache Creek. The population of Ashcroft is 1,628 (2011 census).

The Village of Ashcroft community water system is displayed in the attached composite drawing (Appendix A). The water source for the Village is the Thompson River, and includes three intake systems that convey water from the river to a wet well/high lift pump station (referred to as the River Pump Station). These three intake systems include an infiltration gallery which flows by gravity to the wet well and two river intakes with submersible pumps (P106 and P107) that pump water to the wet well.

The River Pump Station includes two high lift pumps (P101 and P102) that draw water from the wet well and pump it into the distribution system. At present, the water is chlorinated at the River Pump Station as it is pumped into the distribution system. There is a 50 ppd chlorine gas system with two sidestream pumps that are used to eject chlorine gas into water, and inject it back into the watermain.

Including the River Pump Station, there is a total of three pump stations and three reservoirs, which make up the three pressure zones of the Village of Ashcroft system.

4.0 Water Use

Community water use is generally higher in the summer months, when a large amount of water is consumed for irrigation and other outdoor activities. The climate in Ashcroft is hot and arid; therefore, there is a substantial demand for water in summer months. Water use in the winter months is much lower than in summer months, since it is generally used only for indoor consumption.

4.1 Historic Water Use

The Village of Ashcroft water use was estimated by analysing water use data at the River Pump Station for the period from 2002 to 2010. Figure 4-1 displays the water use in cubic metres per day along with the ambient air temperature.

Figure 4-1: Ashcroft Community Water Use for 2002 – 2010

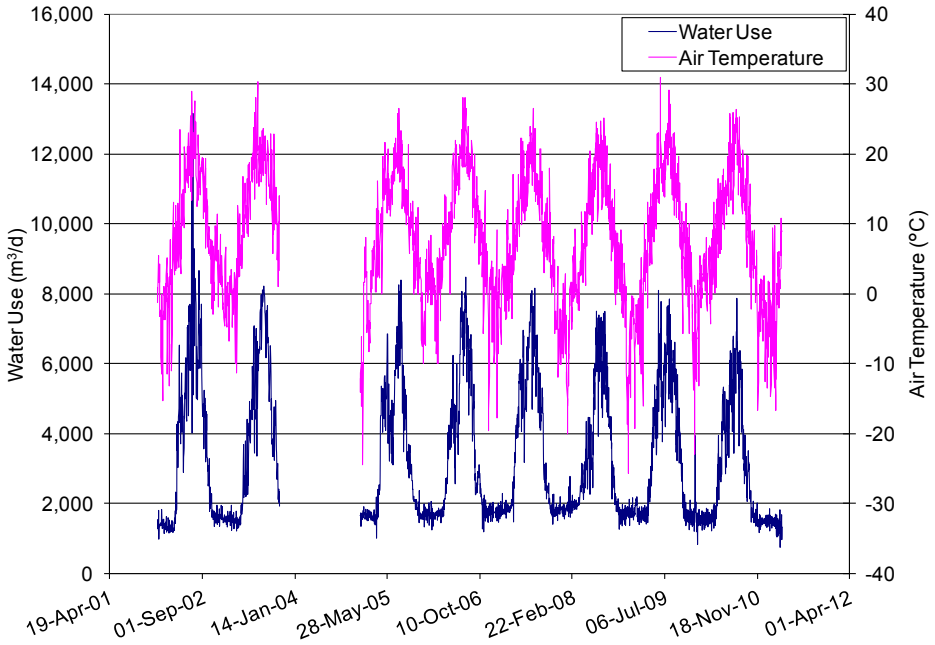


Figure 4-1 displays the seasonal variation in water use observed in 2002 to 2010, as well as a slight decrease in peak water use since 2002. Based on census data, the population of the Village of Ashcroft has decreased by approximately 9% between 2001 and 2011 (1,788 people to 1,628 people). The decrease in population could be one of the causes of the decrease in peak water use from 2002.

Observations regarding the 2002 to 2010 water use in Ashcroft are as follows:

- Peak water use occurs in the summer months.
- Peak water use in 2002 was significantly higher than the following years.
- The observed water use is generally quite high.

4.1.1 Maximum and Average Day Demand

Maximum day demand (MDD) is the highest daily water use in any given year. This is a fundamental number for a water system since it typically defines the capacity (design flow) required for the water system infrastructure. Components of the water system including source(s), treatment equipment, pump stations, distribution mains, and storage. These components are normally sized to provide MDD over 18 to 21 hours, to ensure that MDD can be met if the system is off-line for operation and maintenance activities.

Peak hour demand is the highest water use hour in any given day. Systems are not typically sized for peak hour water use, as the difference between MDD and peak hour is supplied by the system reservoir/storage. Fire flows are also supplied from storage.

Average day demand (ADD) is the total system water use averaged over the whole year. Minimum day demand, or water demands calculated over the winter season (eg. non-irrigation), are often also used to assess water use.

These various water use statistics provide valuable information for tracking historical water use, system water use projections/infrastructure sizing, understanding water leakage, and looking for potential water use savings.

Based on the 2010 water use records and population numbers, the following per capita water use measures were calculated:

- ADD is approximately 1,800 L/cap/d;
- MDD is approximately 4,800 L/cap/d; and
- Minimum day demand is approximately 550 L/cap/d.

All of these values are quite high. A generally accepted value for minimum day demand is between 200 and 300 L/cap/d. The elevated minimum day demand in Ashcroft may be attributed to:

- Water system leakage;
- High indoor water use due to water-inefficient or leaking fixtures; or
- Residents running water in winter months to prevent freezing pipes.

The Village of Ashcroft ADD and MDD will be further discussed in Section 4.2.

Per capita water use values can be informative for interpreting water use. Although census data provides the population for the entire Village, it does not provide the water service area population. In calculating the ADD, MDD, and winter water demand, it was assumed that the entire Village population is serviced by the community water system.

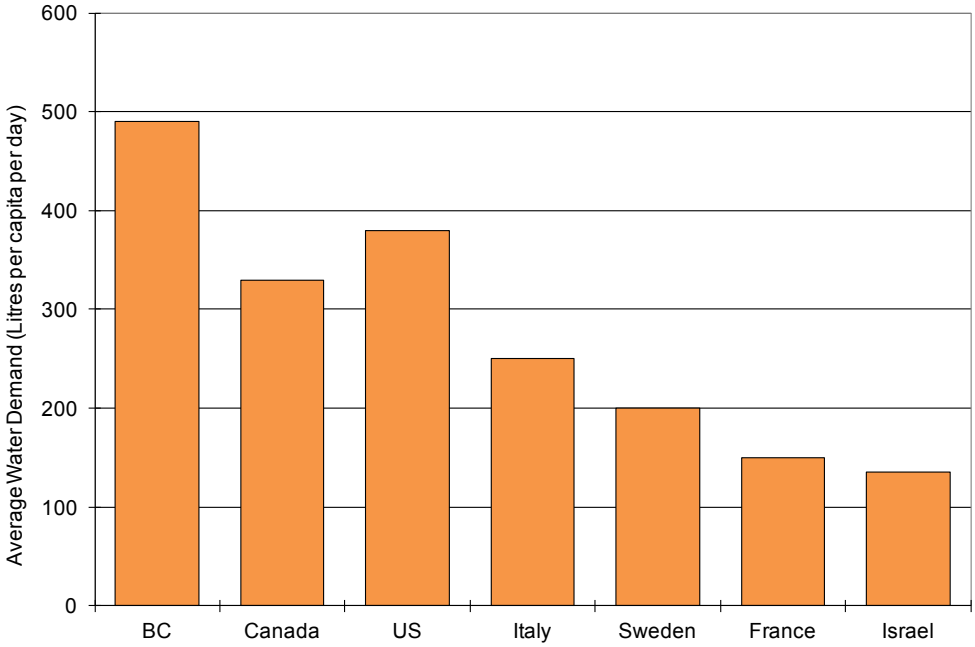
Since there are commercial, industrial and institutional water uses in addition to residential demands, the per capita values are provided as a representative

population equivalent use rather than an exact calculation of the volume of water used by each person in the community.

4.2 Comparison with Other Municipalities

Canadians demand, on average, the second largest volume of water of the six developed countries listed in Figure 4-2. Furthermore, consumption in Canada is 65% higher than the Organization for Economic Development (OCED) average. Ashcroft's ADD (approximately 1,800 L/cap/d based on 2010 records) is significantly higher than the Canadian and BC averages (based on 2007 usage for other locations).

Figure 4-2: Global Water Use Comparison



In order to provide further context, a comparison with communities in BC is provided in Table 4-1.

Table 4-1: Local Water Use Comparison

Community	ADD (L/cap/d)	MDD (L/cap/d)	Peaking Factor
Ashcroft	1,800	4,800	2.7
Kaslo	1,391	3,756	2.7
Clearwater	1,100	2,750	2.5
Nakusp	1,038	3,322	3.2
Salmo	923	2,031	2.2
Golden	902	1,804	2.0
Quesnel	825	1,485	1.8
Kamloops	800	1,840	2.3
100 Mile House	750	1,875	2.5
Fruitvale	699	1,538	2.2
Montrose	617	2,777	4.5
Valemount	426	1,193	2.8

NOTES:
- Ashcroft values are based on 2010 records.
- Clearwater values are based on 2007 – 2011 records.
- Quesnel values are based on 2000 – 2010 values presented in 2011 Water Conservation Plan.
- 100 Mile House values are based on 2008 records.
- Kamloops values are approximate only, based on 2003 – 2007 values.
- All remaining values are based on 2010 Water Smart Action Plans completed through Columbia Basin Water Smart.

As Table 4-1 indicates, the Village of Ashcroft's ADD and MDD are the highest out of the twelve communities listed. Assuming the water use records are correct, this indicates that both indoor and outdoor water use are generally higher than comparable nearby communities and should be addressed by water conservation actions and loss reduction programs.

Kamloops, which is included for comparison in Table 4-1, implemented the Watersmart program in 1992. Since its inception, these conservation efforts have resulted in a 23% reduction in peak water demands (measured as a 5-day subset of the maximum day demand). Prior to these efforts, ADD was approximately 900 L/cap/d, and MDD was approximately 2700 L/cap/d.

4.3 Water Use Customer Types

Since each type of water use customer will have a different water use profile, the breakdown of the water use customers can have a significant impact in water consumption trends. Each community has a different water use customer profile, depending on its demographics and primary industries.

Main water use customer types typically include:

- **Commercial and Industrial:** Commercial and institutional water uses tend to have a lower seasonal peaking factor than residential users since they typically use less water for outdoor uses.
- **Institutional:** Depending on the type of institutional user, both indoor and outdoor use can be quite high.
- **Agricultural:** Agricultural users are typically high water users and very heavily dependent on the climate.
- **Residential:** Residential users in non-agricultural interior communities are typically the largest water users, accounting for approximately 75% of a community's water use[1]. The increase in water use in the summer months is largely attributed to changing behaviours in residential users that result in significant outdoor water use.

The Village could consider creating a summary of the various customer types in order to gain a better understanding of the water use profiles in the community.

4.3.1 Non-Revenue Water Use

Non-revenue water includes water losses (i.e. through leakage) and water that is supplied to non-paying customers. Typical non-revenue water uses include:

- Water system leakage;
- Water system operation and maintenance (e.g. system flushing);
- Fire department (e.g. annual training, emergency events); and
- Freeze prevention (e.g. running taps at residential and commercial connection to prevent freezing).

Water used at Village-owned facilities (e.g. Village Hall) and in Village parks (e.g. for irrigation) can also constitute non-revenue water.

Losses in a water system can make up a significant portion of a community's water use. According to Environment Canada's report entitled *Threats to Water Availability in Canada*, about 20% of all community water goes to distribution system losses and unaccounted-for water use. It is also recognized that losses are generally underestimated and increase with age of the distribution system. Issues such as water meter inaccuracies can also skew results creating the need to calibrate meters routinely.

In 2011, the Ashcroft water system was assessed for leakage using an acoustic leakage detection survey. The results of the survey are further discussed in Section 5.1 and the leakage detection survey report is included in Appendix B.

5.0 What Can Ashcroft do to Conserve Water?

There are many tools available to the Village of Ashcroft to encourage water conservation.

5.1 Current Water Conservation Practices

The Village of Ashcroft has had a leak detection study completed by Mr. J. Budnaryk (J&D Consultants) in 2011. The study detected the following leaks:

- 21 on service connections;
- 5 on main line valves;
- 3 on watermains; and
- 1 fire hydrant problem.

Since then, the Village has been taking action by repairing the identified leaks, when possible.

The leakage detection survey report also indicated that a number of apparent leaks were caused by residents running water inside to prevent freezing of their service lines. The leakage detection survey report is included in Appendix B.

The Village has also been working on a draft watering restrictions document for discussion with Council and community members. When implemented in conjunction with public education, watering restrictions can be an effective method for reducing peak seasonal water demands. This is further discussed in Section 5.4.

5.2 Potential Water Conservation Measures

Reductions in water use can be accomplished through a number of measures which range in cost, administrative burden, and effectiveness. Some water conservation measures may have a greater impact on average water demand, while others may reduce peak water demand. Potential water conservation measures can generally be classified under 11 categories:

1. Water metering;
2. Water accounting and loss control;
3. Costing and pricing;
4. Information and education;
5. Water use audits;
6. Retrofits;

7. Pressure management;
8. Landscape efficiency;
9. Replacements and promotions;
10. Reuse and recycling; and
11. Water use regulation.

5.3 Water Conservation Target

There are numerous options available to the Village for moving ahead with the implementation of a water conservation plan. The selection of a water conservation target will enable the Village to shape their water conservation plan to achieve that target.

Living Water Smart is British Columbia's water plan. This document provides the BC government's vision for sustainable water stewardship. One of the goals of the Living Water Smart plan is that "by 2020, water use in BC will be 33% more efficient".

In order to ensure that the Village selects a realistic and achievable water conservation long-term target, the Village may wish to consider implementing the following plan:

- Select a water use reduction target of 10% over the next 2 years (by 2015) - this means an ADD of 1,620 L/cap/d;
- In 2015, the Village will have a better understanding of the effectiveness of various water conservation tools. Based on their experience, the Village can then select an ambitious yet achievable water conservation target for 2020.

5.4 Preferred Water Conservation Measures

The purpose of the Water Conservation Plan is to provide the Village with sufficient information to develop a coordinated plan for reducing water consumption.

This report has identified a number of conservation measures available to the Village. Based on the information currently available on water use in the Village of Ashcroft, the following water conservation measures appear to be the most appropriate for the Village. The implementation of the recommended measures is discussed in Section 6.0.

Educational Measures

The development of an active public education campaign can provide significant water savings for very little capital investment. Aspects of the campaign may include:

- Events to promote awareness of the value of water and efficient water use;
- Postings on the Village's website with water conservation plan and tips;
- Clear and informative water bills with inserts such as brochures; and
- Education programs in the community and in schools (which can be as simple as a water conservation poster contest).

In order for public education to be successful, it is important for the message of water conservation to be in front of the public on an on-going basis and for the public to be meaningfully engaged. It is recommended that the Village proceed with a strategy that will provide continuity and direction in the long-term.

Retrofit Program

Retrofitting involves making an improvement to the water use efficiency of an existing fixture or appliance. Retrofit programs can be initiated to encourage homeowners to change fixtures or appliances to more water efficient models. As the per capita minimum day water use for the Village of Ashcroft is quite high, a retrofit program may be beneficial for reducing indoor water use.

It should be noted that retrofit programs usually target plumbing fixtures, but can sometimes negatively affect the performance of the fixture, causing the retrofit devices to be removed by the user. The Village may wish to investigate retrofit programs to select a suitable program for Ashcroft.

Cost-of-Service Accounting

Since water meters are not currently in place in the Village of Ashcroft, user rates cannot be based on actual water consumption. However, full cost-of-service accounting should be considered by the Village to ensure users understand the full costs of providing water. A cost of service study can be completed and can provide on-going benefits for Ashcroft. A cost of service study should include:

- Evaluation of future revenue requirements based on planned system upgrades;
- Assessment of existing rate structure; and
- Comparison of future revenue requirements and revenues achieved with current rate structure.

Communities throughout the province are considering this approach in communicating with the public regarding the costs associated with providing essential services and the importance of community infrastructure. In many instances, the studies are being completed as part of a larger asset management program. These programs also convey accountability, and initiate a proactive, long-term approach to infrastructure management.

Leakage Assessment

Aside from the leaks identified through the leakage detection survey, the repair of water leaks are currently completed on a case-by-case basis under the operation

and maintenance of the water system. In order to gain a better understanding of the magnitude of leakage in the water system, a coordinated long-term leak detection and repair strategy should be considered. While the implementation of a full water metering program would allow the Village to gain a clear understanding of the potential for water savings, such a program is costly. Some relatively low cost actions that can be taken to gain a better understanding of water system leakage include:

- Regular night-time leakage/unaccounted-for water use evaluations for each pressure zone;
- Complete monthly comparisons of water and wastewater flow meters to ensure accuracy and gain an understanding of leakage;
- Regular leak detection surveys (every 1-2 years); and
- Physical inspection of some of the older watermains to assess condition.

It is not uncommon for communities to experience leakage rates of up to 30%. Addressing water system leakage can provide significant savings both in infrastructure cost and operation and maintenance costs.

Water Use Regulation

The Village is considering the implementation of watering regulations. When properly implemented in conjunction with public education, watering restrictions can be an effective method for reducing peak seasonal water demands. Restricting irrigation to morning and evening periods and every other day on a permanent basis is a simple and cost-effective method of community-wide water conservation. This type of restriction should be complemented with a program to encourage residents not to irrigate every other day, but rather to understand landscaping water needs and irrigate twice a week.

Public education is needed to ensure that watering restrictions (e.g. odd/even day watering) don't encourage people to water more days per week than they otherwise would. It should also be noted that time of day restrictions can cause more people to water at the same time. Although water losses through evaporation are reduced, this can potentially put a strain on water infrastructure/equipment.

The Village could consider taking action to implement enforceable water use regulations, as a commitment to enforcement is fundamental to the success of this measure.

Water Metering Study

While a universal water metering program is likely to provide significant water savings, the implementation of such a program is a significant commitment. Not only would there be capital costs required to install water meters for all

customers who currently don't have one, but there are also on-going costs of meter reading.

Due to the high implementation and operating costs of a universal water metering program, it is recommended that a detailed Water Metering Study be conducted to assess whether water metering should be undertaken. That review should include:

- Comprehensive inventory of connections and estimated water use;
- Capital and operating cost estimate;
- Estimate of anticipated water usage; and
- Cost-benefit analysis.

6.0 Implementation Strategy

There are a variety of cost-effective conservation measures which can be implemented in Ashcroft. In order to maximize the efficiency of the measures, the Village should use a comprehensive approach that incorporates several of the water conservation measures. A phased implementation strategy, to be included in the Village's capital and operating budgets over the next several years, is recommended. It should be noted that this is one potential approach. Should the Village wish to achieve results sooner, they may choose to accelerate the program.

This implementation strategy by itself will not achieve the desired water conservation measures. A Water Conservation Implementation Program should be completed, which would provide an approach for achieving the desired water conservation goals over a defined timeframe. Such a program would establish direction for the Village with respect to water stewardship and the efficient use of water resources.

In addition to the steps required to implement a successful Water Conservation Plan, there are several specific tasks that should be completed as soon as possible. These tasks will provide valuable information on current water use and will help to identify opportunities to reduce water use with minimal investment.

The suggested next steps in the Village's Water Conservation Plan are as follows:

- Create a summary of water use customer types in the Village of Ashcroft to gain a better understanding of the water use profile in the community;
- Complete a night-time water use study by monitoring the reservoir water level during the night to assess unaccounted for water use (this should be a regular study);
- Complete monthly comparisons of water and wastewater flow meters to ensure accuracy and gain an understanding of leakage (on-going);
- Public open house to highlight the major findings of the Water Conservation Plan and outline potential options for implementing water conservation measures;
- Complete a Water Conservation Plan Implementation Review to:
  - set water conservation targets (water use target and timeframe) and priority next steps;
  - complete a cost-benefit analysis for various water conservation measures; and
  - develop an Implementation Strategy.
- Consider selecting a group of people or local advisory committee to head the implementation of Ashcroft's selected water conservation measures.

A draft table of water conservation measures and implementation timelines are provided in Table 6-1 for the Village's consideration. This table can be used as a guide for further discussions and budget setting. Detailed work programs would need to be developed for specific tasks if the Village would like to pursue these items. Some items could be completed by the Village operators or led by Village staff or community members (i.e. if a Water Conservation Committee is formed).

Table 6-1: Implementation Summary

Water Conservation Measure	Proposed Implementation Timeline	Estimated Budget*
Educational Measures	Early 2013 (2-3 events per year)	Assumed to be Village-managed. Allow $5,000-10,000/year.
Night-time Water Use Study	Winter 2012/3013	To be completed by Village operators. Allow $5,000-10,000 for instrument rental, analysis of data and review of results.
Public Open House on Water Conservation Plan	Early Spring 2013	Allow $5,000-10,000 depending on extent of materials desired and/or whether completed by Village staff.
Water Conservation Plan Implementation Review	Spring 2013	$10,000
Initiate Water Conservation Advisory Committee	Spring 2013	Assumed to be Village-managed.
Cost of Service Study	Spring 2013	$20,000
Water Use Regulation	Spring/Summer 2013	$20,000
Water Metering Study	Fall 2013	$20,000

* Estimated budget values are provided for information only, and are not based on detailed work programs. These values should be updated before the Village pursues these initiatives.

REPORT

WATER
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PLAN

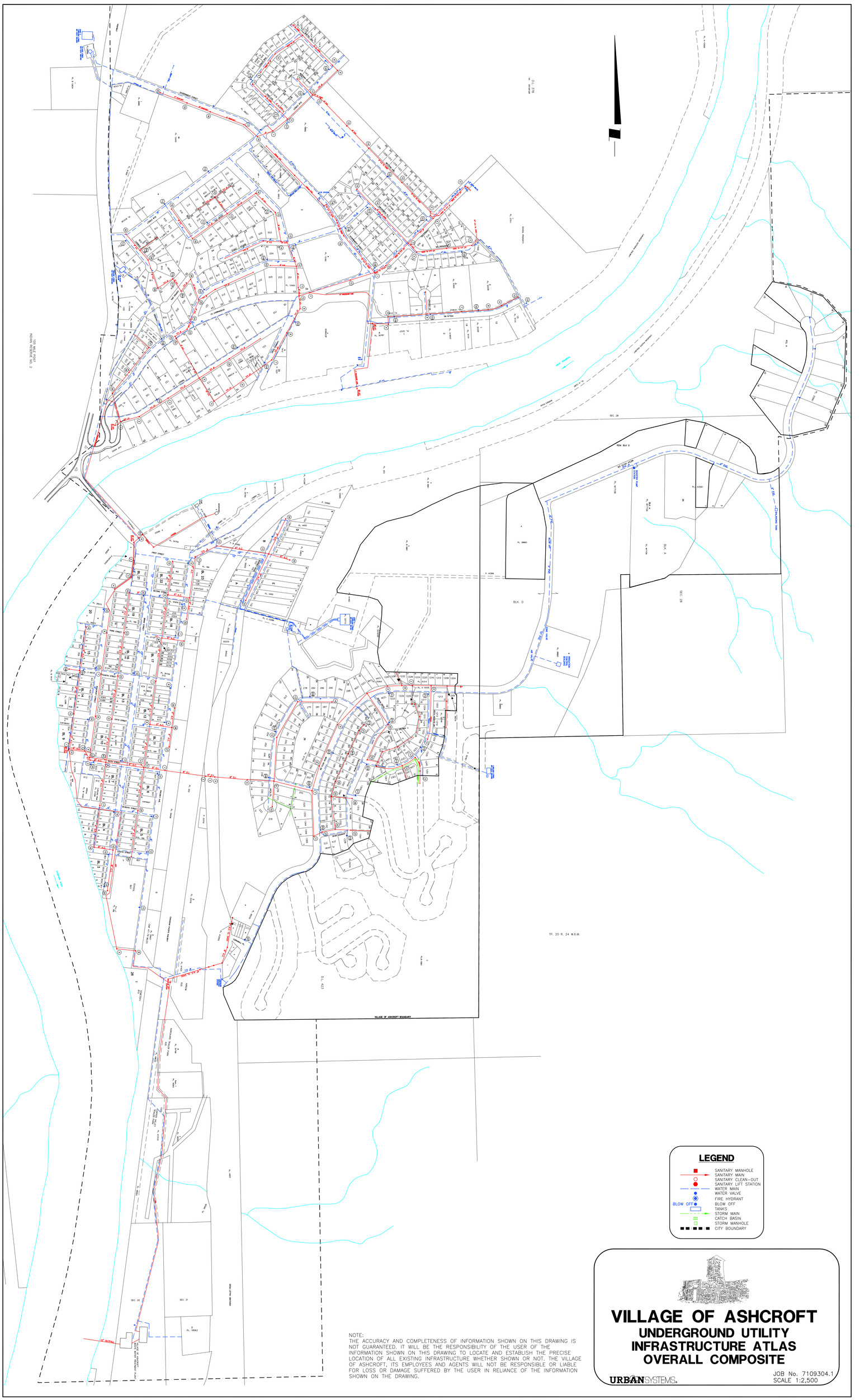
February 15, 2013

1093.0036.03

Appendix A

Village of Ashcroft Composite Map – Water and Wastewater System

The Corporation of the
Village of Ashcroft



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VILLAGE OF ASHCROFT
UNDERGROUND UTILITY INFRASTRUCTURE ATLAS OVERALL COMPOSITE

URBAN SYSTEMS.

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February 15, 2013

1093.0036.03

Appendix B

Leak Detection Survey Results Report, March 2011

The Corporation of the
Village of Ashcroft

McElhanney

21 March, 2011

313-01-2

RECEIVED

MAR 23 2011

The Corporation
Village of Ashcroft

Village of Ashcroft
PO Box 129
Ashcroft, B.C.
V0K 1A0

Attention: Ms. Michelle Allen, CAO

Re: Village of Ashcroft
Domestic Water System – Leak Detection Surveys

Dear Madam:

Leak detection surveys were conducted for the domestic water system at the Village of Ashcroft in the months of November 2010 and February 2011. The survey was conducted by Mr. J. Budnaryk, using a metal detector and the Fuji DNR-18 acoustic water leak detector.

Leak Detection Results

The procedure utilized was to locate the alignment of the mains and service connections as best as possible, and slowly walk each alignment, listening with the leak detector. The above-ground hydrants and standpipes were also checked. The leaks detected are listed on Tables 1 and 2.

A summary of results is given in Table 1 below:

Table 1 – Leak Detection Results

Location	Number of Leaks
Service Connections • Owner's Side 9 • Municipal Side** 12	21
Main Line Valves	5
Watermain Leaks	3
Fire Hydrant Problems	1

****Some leaks shown as Municipal may be from an Owner's side, once exposed**

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Observations

The following observations were made:

- There were no leaks detected on most watermain lines. The only leak detected on a main line was the older section of downtown servicing Lot 3 across from the Safety Mart.

- Several valve risers were covered with debris that made them difficult to receive a proper reading. There were possible leaks at a few service connections on Brunswick and Riverside Drive.

- The majority of apparent leaks detected were from residents running water inside, to prevent freezing of their service lines.

Conclusions

1. Observations from most residential areas suggest that some education be undertaken to inform residents that they do not require running a tap or toilet full out to prevent freezing during the winter months. This recommendation will eliminate significant water waste for the Village of Ashcroft.

2. Recommendations:

   - Repair the leaks that were detected.

   - Clean out all valve boxes to allow proper valve operation.

   - Repair valves that have leaking packing glands or other leaks and ensure proper valve operation.

   - Regularly scheduled flushing of hydrants. Have the fire hydrants inspected for functionality, and repair systematically or replace as required.

   - Excavate and inspect the mains and services in selected locations, to gain better knowledge of size, materials, and the present condition. If possible, excavate with hydro-vac operations to avoid damaging the pipes and services. Ensure all information is documented.

   - Try to locate, mark, and document the service curb stops, with the assistance of the residents. Ensure this information is documented.

   - Education for residents, to minimize water running for the purpose of avoiding service pipe freezing.

   - Consider leak detection and leak repair, within the water system and fire hydrant maintenance program, to occur every year or two years.

We understand that you Public Works personnel are entirely capable of making these repairs. However, it is sometime reassuring and/or helpful to have a second opinion on how to approach the repair work.

We at McElhanney are experienced in repairing these types of problems and would be more than pleased to offer any assistance in this regard. We would also be interested in working with the Village in assessing or planning for other infrastructure or development needs as we have experienced engineers, planners, environmentalists and surveyors on staff.

If you have any questions, please call.

Yours very truly,

McElhanney Consulting Services Ltd.

David B. Kneeshaw, P.Eng.

DBK/ts

Enclosure Tables 1 and 2

H:\313\01\Report\2011-03-18 VoA Leak Detection Survey Report.doc

Table 1

Village of Ashcroft Water System

Leak Detection Survey (November 23 to 25, 2010)

Nature of Leak Detected		Location
1)	Service Connection	Owner's side at 502 Bancroft
2)	Mainline Valve	Packing gland in the mainline valve in front of the United Church on Bancroft
3)	Mainline Valve	Village Office in front, mainline valve is full of mud and water
4)	Service Connection	Owner's side at 712 Brinks
5)	Service Connection	Leaking outside tap at 711 Brinks
6)	Service Connection	Bath tub faucet leaking at 208 Brinks (Owner unable to shut off)
7)	Valve Box	Water in valve box at NE corner of Brinks and 6th Street
8)	Watermain	Leak on a 4-inch main on 7th Street west of Bancroft

Table 2

Village of Ashcroft Water System

Leak Detection Survey (January 31 to February 3, 2011)

Nature of Leak Detected		Location
1)	Mains	No leaks detected
2)	Services	No leaks detected on Ash Street
3)	Valve Box	Water found in bottom of valve box at corner of Ash Street and Copper Crescent
4)	Service Connection	Possible leak at 304 Copper Crescent on municipal side
5)	Service Connection	Leak detected at 105 Tingley
6)	Service Connection	Leak detected at 107 Tingley
7)	Fire Hydrant	Hydrant leak at 82 Old Cariboo Road, but valve might not be closed. Fire hydrant could not be isolated as there were rocks and debris in the bottom of valve box.
8)	Service Connection	Leak at 81 Old Cariboo Road
9)	Mains and Services	No leaks detected on Birch and Birch Crescent
10)	Service Connection	Leaks detected from 907 to 913 Hill Street – residents claim to have water running to prevent freezing.
11)	Service Connection	Leak detected at 703 Elm Street – Owner's Side
12)	Service Connection	Leak detected at 719 Elm Street because resident has toilet running.
13)	Mainline Valve Box	Frozen water found in mainline valve box at corner of Cedar Crescent and Elm Street. It appears packing gland is leaking.
14)	Mainline	No leaks detected on mainline to Ashcroft Pool
15)	Service Connection	Leak detected at 1321 Brunswick Place, but resident is running large amounts of water to prevent freezing.

Table 2 (cont'd)
Village of Ashcroft Water System
Leak Detection Survey (January 31 to February 3, 2011)

Nature of Leak Detected		Location
16)	Service Connection	Possible leak detected at 1303 Brunswick Place
17)	Service Connection	Possible leak detected at 1258 Brunswick Place, but resident had outside tap running.
18)	Valve Box	No inspection of valve at the intersection of Western Avenue and Ranch Road. Could not locate.
19)	Service Connection	Possible leak detected at 1423 Riverside Drive
20)	Service Connection	Possible leak detected at 1443 Riverside Drive
21)	Service Connection	Leak detected at 418 Ranch Road
22)	Service Connection	Leak detected at 1326 Western Avenue
23)	Service Connection	Two major leaks detected at Desert Hill Ranch. The one and one-half inch service feeding the water troughs is leaking.
24)	Main Line	In older section of downtown, leak detected in the main line to the old service Lot 3 across from Safety Mart.
25)	Service Connection	Leak detected at service box at 118 Barnes