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**REPORT TO MAGIC LAKE ESTATES WATER AND SEWER LOCAL SERVICES
COMMITTEE
MEETING OF TUESDAY, JUNE 17, 2014**

SUBJECT WATER CONSERVATION PLAN

ISSUE

A water conservation plan, endorsed by the Magic Lake Estates Water and Sewer Local Services Committee (Committee), is required as a condition of the Building Canada Fund grant agreement for the water system upgrade project.

BACKGROUND

The Magic Lake Estates water service was awarded a grant under the Building Canada Fund in 2009 for up to \$7,875,000 (3/3rds) for water system improvements. The funding agreement obligates the CRD to provide an effective water conservation plan that is endorsed by the Committee. The Province expects that an effective water conservation plan includes:

1. Identify current water consumption (e.g. 600L/capita/day);
2. Set a water reduction target (e.g. 350L/capita/day by a certain year);
3. Outline the communities current and planned water conservation action/measures (e.g. universal metering, incline block rates, conservation plumbing fixtures, leakage reduction, rebate programs, education programs, xeriscaping, etc.);
4. Identify current and planned mitigation and adaptation strategies to address climate change (e.g. installing water meters to secure water supply, lowering demand to reduce pumping requirements);
5. Detail how strategies/initiatives will be implemented (e.g. schedule, funding, staff responsibility, etc.); and
6. Link the plan to other regulatory mechanisms, policies and plans (e.g. Official Community Plan, water master plan, wastewater management strategy, BC Living Water Smart, Climate Action Plan, etc.)

Of the reporting to date by the CRD staff regarding this agreement condition, the Province has confirmed that conditions 3 and 4 as noted above have been achieved. In order to meet the remaining conditions, the CRD staff have prepared a draft Magic Lake Estates Water Conservation Plan for endorsement by the Committee (Attachment 1).

ALTERNATIVES

1. That the Magic Lake Estates Water and Sewer Local Services Committee endorse the Magic Lake Water Conservation Plan.

2. That the Magic Lake Estates Water and Sewer Local Services Committee receive this report.

IMPLICATIONS

Alternative 1

The Magic Lake Estates community has already invested in water conservation through the installation of household water meters. Water demand has decreased by about 19% since 2007, the year before the metering project was launched. The attached plan sets water demand targets that will likely be achieved without additional effort or expense, through gradual replacement by homeowners of existing household fixtures (mainly toilets) with new fixtures that meet current water efficiency standards.

Although further reducing water demand can yield benefits by reducing carbon emissions, improving source water quality and maintaining greater water reserves for droughts or other emergencies, the water source has sufficient capacity to meet current demand and anticipated growth.

The plan is based on an adaptive approach, where demand is routinely monitored and the level of effort and budget are adjusted over time to maintain steady progress toward a desired future target. If water demand per capita does not gradually decrease over the next five years as expected, there may be a need to implement new conservation programs to meet the proposed targets.

Adoption of the Water Conservation Plan will meet the requirements of the grant contribution agreement, and allow the final grant payment to be made at the completion of the project.

Alternative 2

If a water conservation plan is not endorsed by the committee, the CRD will be unable to fulfill its obligations under the grant contribution agreement and may be required to forfeit grant funding.

CONCLUSION

The attached Water Conservation Plan will meet the requirements of the federal/provincial grant agreement, and provides a framework for an adaptive strategy to accommodate growth in the community.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Local Services Committee endorse the Magic Lake Estates Water Conservation Plan.

Tim Tanton, MPA, P.Eng.
Senior Manager, Infrastructure Engineering

Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services
Concurrence

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Attachment: 1



Magic Lake Estates Water Service WATER CONSERVATION PLAN

DRAFT

June 2014

As a condition of the Building Canada Fund grant awarded for upgrades to the Magic Lake water system, this Water Conservation Plan identifies targets and opportunities for sustainable water use in the Magic Lake community.

Population and Potential Growth

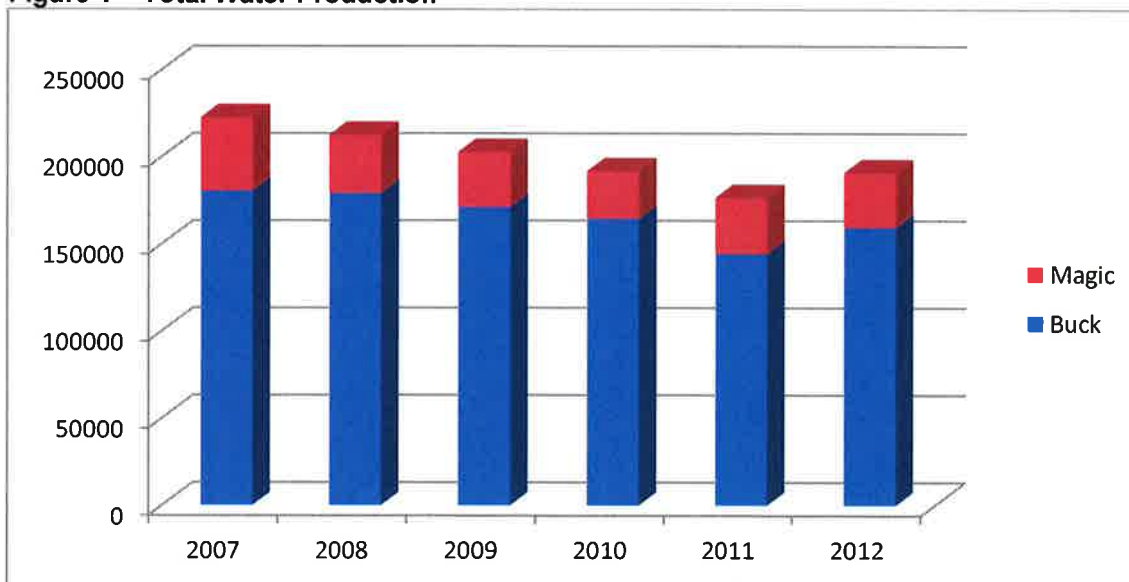
The Magic Lake Water Service Area includes 1,206 taxable folios, of which 1,005 are connected to the water system. All of the connections are for residential use.

There is limited potential for population growth within the existing Magic Lake Water Service Area. The 201 undeveloped folios in the area will likely be connected to the water system in the future. The Islands Trust governs land use on Pender Island. Its environmental protection mandate and supporting land use bylaws and policies strictly limit new development, and effectively prohibit subdivision for new development in Magic Lake Estates. We therefore assume that the population growth will be limited to an ultimate buildout of the 1,206 lots in Magic Lake Estates.

Current Water Demand

Water treated and supplied to the distribution system is measured monthly. Total annual water production for the years 2007-2012 is shown in Figure 1. In 2012, a total of 180,883 m³ of water was produced, or 180 m³ per connection.

Figure 1 – Total Water Production



Customer water meters were installed in 2010 as part of the grantable project, and have been read every three months since June 2010. The total amount of water delivered to customer connections in 2012 was 131,803 m³, or an average of 131 m³ per connection. This compares very favourably to the 235 m³ per connection for the Greater Victoria water system in the same year.

The difference between total production through the plants and total metered customer use (non-revenue water) is 49,080 m³. This equates to 27% of total production, and is excessive compared to other similar systems. Non-revenue water includes system leaks, fire-fighting and system flushing (filters and distribution system) activities. Leaks on private side plumbing are recorded by individual meters at property line and are not considered as non-revenue water. Replacement of watermains through the Water Improvements Project (two-thirds financed by the Building Canada Fund) is an important step in reducing this non-revenue water.

Water Demand Reduction Target

The following water conservation targets are proposed by 2022:

- Reduce annual production to 105 m³ per connection (42% reduction)
- Reduce residential demand to 100 m³ per connection (24% reduction)

These targets are readily achievable by:

1. Elimination of water system leakage losses through replacement of older pipe, especially in higher pressure areas of the system.
2. Gradual adoption of current, cost-effective technologies including high efficiency toilets and front loading washing machines. Rainwater harvesting for nonpotable uses and leak reduction may also be implemented cost-effectively as existing infrastructure is replaced and annual costs of water service increase over the next 10-20 years. In order to achieve the conservation targets, the value of water efficient technologies and practices must be effectively communicated to the community.

Current and Planned Water Conservation Measures

A planned adaptive strategy for water conservation is proposed for Magic Lake Water System, enabling conservation measures to be tailored to meet the changing needs of the community over time. This approach has proven successful for the CRD Greater Victoria water system. The following conservation measures are proposed as elements of a water conservation plan for Magic Lake:

1. **Universal metering** (complete) – As part of the grantable project, each customer connection to the water system was retrofitted with a water meter. The meters have been read quarterly since June 2010. Water production has decreased from 223 m³/connection to 180m³/connection (19%) since 2007, the year before the first meters were installed.
2. **Reporting usage on water bills** (current) – Information about water use has been displayed on water bills since January 2011, raising customer awareness about their water use. Further information is presented at annual general meetings and in community newsletters, enabling customers to compare their own usage with the range and average in their community and others.
3. **Consumption based water billing** (current) – Starting on July 1, 2013, Magic Lake Estates has implemented consumption based billing, comprised of the following charges:
 - \$62.50 fixed fee (payable by all water users)
 - \$0.50/ m³ extra charge for quarterly usage over 50 m³ (applies to top 15% of water users only)
 - \$1.00/ m³ extra charge for quarterly usage over 80 m³ (applies to top 6% of water users only)

Such a structure maintains stable revenue for fixed costs, provides a sufficient quantity of water at an affordable cost for essential customer needs, and provides a strong price signal to reduce excessive usage in any of the four billing cycles. Based on recent implementation of similar structures in other CRD water services, further reductions in overall demand reduction are expected.

4. **Community Awareness and Education** (current) – Information about water use and conservation is provided in community newsletters and at typically well attended annual general meetings in August. A more formal conservation awareness program has been implemented by linking information presented by mail and at the AGM with a community homepage on the CRD website that includes:
 - a. water use statistics, and comparison with other areas and benchmarks/targets
 - b. best practice guides (e.g. fixture and appliance standards, rainwater harvesting, leak prevention)
 - c. links to CRD regional water conservation resources
 - d. links to other organizations that provide water conservation resources tailored to the Gulf Islands (e.g. Mayne Island Integrated Water Systems Society, Salt Spring Island Water Council).

5. **Watering Restrictions** (current)
As a further measure, the Magic Lake Water and Sewer Local Services Committee encourages water conservation through voluntary adoption of the Stage 1, 2 and 3 watering restrictions described in the Greater Victoria Water Conservation Bylaw:
 - Stage 1:
 - in effect from May 1 to September 30 every year
 - even numbered addresses may only water lawns 4-10am and 7-10pm on Wednesday and Saturday
 - odd numbered addresses may only water lawns 4-10am and 7-10pm on Thursday and Sunday
 - micro-drip irrigation allowed anytime
 - Stage 2:
 - in effect as determined by the Magic Lake Estates Water and Sewer Local Services Committee
 - even numbered addresses may only water lawns 4-10am and 7-10pm on Wednesday
 - odd numbered addresses may only water lawns 4-10am and 7-10pm on Thursday
 - micro-drip irrigation allowed anytime
 - Stage 3:
 - in effect as determined by the Magic Lake Estates Water and Sewer Local Services Committee
 - no lawn watering
 - micro-drip irrigation allowed between 4-10am and 7-10pm.

6. **Water Conservation Plan Renewal** (2019, and every five years thereafter) – A review of this plan will be conducted approximately every five years to update forecasts and targets, consider new information, and adjust program activities as required to meet targets.

Program Implementation Responsibility, Cost and Schedule

This Water Conservation Plan will be implemented by CRD staff, under the authority of the Magic Lake Estates Water and Sewer Local Services Committee, and the CRD Board.