From: Water Management Task Force

To: North Canyon Improvement District Board of Trustees November 9, 2009

Subject: Recommendations for Water Management

The Water Management Task Force (WMTF) was formed on September 23rd, 2009 and consisted of 8 landowners from North Canyon Improvement District. The WMTF met on September 30, October 14 and October 28, 2009. Its mandate was to examine water management issues for the district and to make recommendations to the Board of Trustees. As a select committee with a finite life (Local Government Act Part 23 Section 740.1) the WMTF is submitting the report with attached documentation to satisfy that commitment and will be dissolved when the Board of Trustees has addressed and indicated its proposed action on the report.

Although the discussion ranged over concerns about water, in the end the committee considered three issues:

1. A conservation measure – rules for the re-allocation of water and the enforcement of those rules.
2. A measurement initiative – a planned introduction of meters to households within the district to measure usage of water.
3. A dedicated irrigation line – implementing a line from the Goat River pump to the properties requiring large scale irrigation for commercial operation.

Achieving consensus is a challenge. Some believe we need a greater supply of water and others that we simply need to use water more responsibly. We have limited data to support either position.
The three supporting documents describe in detail the conclusions of the WMTF on each of these issues. The following summarizes the recommendations of the special committee…….

Water Supply Conservation
Several attempts at water conservation have been drafted since June, 2009. The WMTF concluded that these attempts were (a) too convoluted (b) too weak (c) ignoring usage by commercial interests (d) lacking an enforcement process. The latest proposal addresses all of these issues. It should be read in conjunction with the assumptions on which the metering proposal is based.

Metering the Usage of Water by NCID Landowners
Metering of water supply usage has been adopted in hundreds of communities for the past 20 years. The resulting reduced consumption is well documented in diverse communities, many with substantial agricultural components. A 20 percent reduction in consumption in the NCID will diminish the probability of a water shortage at peak times. However, this is a strategic solution, not a band-aid. It is designed to enable the water to be managed using operational data over the long term.

Implementing a Dedicated Irrigation Line

Metering and conservation address the demand side of the water issue. Phase 1 of the dedicated irrigation line would address the needs of the 15 agricultural users along Canyon Lister Road. The scope of this project has been documented and highlights some important questions regarding the volume available from the Goat River, the compliance of the landowners, who pays for the facility and who operates the facility. These are important questions which must be answered before this proceeds.

The proposed solutions will take 5 years to implement and will require a sound capital plan. The alternative is to lurch from emergency to emergency. We believe this is unacceptable if we are to preserve the pure potable water for the future and respect the needs of all constituencies. It is time to accept that there in no further room for band-aids.

We recommend that the proposed steps be implemented immediately and that the community is made aware of the plans via the website and traditional means.

Respectfully,

Dan Kusalik
Ken Miller
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Renee Kyle
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North Canyon Improvement District
Water Restrictions and Changes to Water Sources

All landowners are encouraged to preserve water at all times.

'Think before you turn on that tap, the water you save could be your own'

Watering Restrictions:

The following restrictions:

- ➔ apply to all landowners, both residential and commercial.
- ➔ apply to all water use, both domestic and irrigation.
- ➔ are NOT voluntary
- ➔ will be enforced. Infractions of these restrictions could result in fines or the loss of your water connection with NCID
- ➔ have been formulated using NCID By-Law # 43 (see below)

Winter: October 1 – April 30

- Watering: no restrictions on normal domestic and irrigation water uses

Summer: May 1 - September 30

- Watering or irrigating of any kind, other than hand-held, will be restricted as per the chart below:

Assigned Days	**Permitted Hours**	**Addresses**
Monday Wednesday Saturday	7am – 10am and 7pm – 10pm **OR** 4am – 10 am	Even Numbered Properties
Tuesday Thursday Sunday	7am – 10am and 7pm – 10pm **OR** 4am – 10 am	Odd Numbered Properties
Fridays – replenish the aquifer	No Watering	All properties

- Hand-Held Watering: No restrictions on watering with a hand held:
  - container
  - hose with a shut-off nozzle

Changes to Water Sources:

In case of critically low aquifer water levels the Goat River well pump will be activated to supplement existing supply.

In this case:

- a BOIL WATER advisory will be issued.
- 72 Hours notice will be given.
- additional chlorination may be required following this action.

Criteria Triggering Change:

- Dynamic Head Above the 10" Pump hits 23' on 2 consecutive days
- 20 Consecutive Days Without Significant Precipitation
- Average Daytime Temperature > 30 degrees Celsius

Water By-Law #43

Should large amounts of additional water be required for purposes other than normal domestic or irrigation uses, this By-Law requires written permission be obtained from the board.
(E.g. filling swimming pools, large ponds, watering stock)

Metering Water Usage in North Canyon Improvement District

The current NCID water supply and demand situation is not sustainable, due to

- high peak seasonal irrigation water demand, mainly from the agricultural sector (1700+ gpm)
- aquifer groundwater supply unable to meet peak demand
- over-allocation of water supply (1400+ gpm shortfall)

Demand-side water management strategies, such as water metering, involve policies and actions that decrease water demand. There are numerous advantages to the NCID in metering agricultural irrigation users to reduce demand, instead of increasing supply. For the NCID, demand reduction is

- the least-cost option (lower capital and operating costs)
- able to help the district avoid, postpone, or reduce the capital costs associated with upgrading pipeline infrastructure, sizing water treatment facilities, and augmenting water supply capability
- applicable for the 2010 peak water demand season
- favored by provincial and local government authorities (has implications for financing applications)
- well-established in other improvement districts in the BC Interior

80% of water use in the summer is outside of the home. 85% of water used during the peak demand season is for irrigation. Of this, over 70% of water demand is accounted for by agricultural operations such as orchards, vegetable market gardens, vineyards, and hay and livestock producers. – *SEKID*

"…by 2012, the provincial government will require all large water users to measure and report their water use," and "metering water use, particularly for large users such as irrigators, can help identify leaks and inefficient use, and help users find ways to use less water." - *Living WaterSmart*

Water meters combined with a regulatory rate structure are an essential element of a demand-oriented water supply management strategy. The following Okanagan water purveyors - improvement and irrigation districts - have metered their agricultural connections: Vernon, Glenmore-Ellison, Westbank, Summerland, Black Mountain, Lakeview, and Southeast Kelowna. Metering reduces water demand significantly; for example, the Southeast Kelowna Irrigation District realized a 32% reduction in their water demand by metering their agricultural water connections.

Metering of agricultural operations not only saves water, it

- focuses water users and water purveyors on water sustainability
- ensures water users stay within the flow allotment for their property
- fairly allocates water during shortages; allows equitable distribution of the resource
- assists districts in reducing future infrastructure and repair costs
- provides water users with more control over their water consumption through reduced use and efficient conservation practices

Effective agricultural water conservation involves metering accompanied by a regulatory rate structure. Several Okanagan water purveyors have instituted a rate structure that has helped them achieve effective conservation; a flat rate is charged for a basic water allotment, and a volumetric rate for water use beyond that amount. In some districts, the volumetric rate has evolved into a punitive increasing block rate for

excessive use. The authority to levy such charges is included in the NCID's Bylaw #43, s.26.

A five-year capital plan is required for NCID. Metering would be part of such a plan. However, some initial assumptions can be made to promote the program:

1. All new connections will have a meter installed
2. All major repairs where the opportunity occurs will have a meter installed at the relevant connections.
3. Residents will be invited on a voluntary basis to have a meter installed
4. 2010 will be an observation year – gathering data. Tolls will be initiated in the 2011 peak season for metered connections based on usage.

The following are the recommended steps to introduce objective, verifiable measurement – water metering - as part of an NCID demand-side management program:

- Seek Board approval of a metering program.
- Communicate rationale for metering program to landowners, including timetable for implementation. (This is a priority for heavy users given the proposed needs assessment – see below).
- Liaise with MoCRD, IHA and others (e.g. SEKID) to ensure cost effective implementation.
- Implement SCADA upgrade to capture accurate reservoir outflow measurements 24x7. This SCADA upgrade is necessary with or without metering.
- Conduct a needs assessment to identify heavy users. This should occur in 2009.
- Create a best-practices design for meter installation (insulated vault, valves, remote reading device, locked entrance, etc.) and blueprint drawings for the design, contractor?
- Identify the classes of meter and the costs to install and maintain 2009 onward. Use this information to determine a feasible schedule for implementation given budgetary constraints.
- Decide on scope of metering program for 2010 identifying properties to be metered?
- Develop a schedule for metering all properties in the NCID by 2016(?).
- Create final budget - include maintenance, meter reading, financing costs, construction
- Identify funding options, draft and register borrowing bylaw, landowner consent? (Jan 2010)
- Establish repayment options, sign agreements with landowners
- Meters will be installed at each of the major users, spring 2010 program start-up
- Meter tolls bylaw drafted and registered for 2011 peak season (Sept 2011)

The BC provincial government is exclusively oriented towards demand-side water management, as evidenced by their 2009 *Living WaterSmart* program. This means government will encourage current water users to reduce their water consumption, instead of taking more from water supply sources, such as the NCID's groundwater aquifer or surface sources. The *Living WaterSmart* program identifies strong water conservation targets: "every sector of the economy can cost-effectively reduce water use by 20 to 50 percent or more," and "by 2020, water use in British Columbia will be 33 per cent more efficient."

All financing for NCID water projects would have to be approved by the Ministry of Community and Rural Development. Their recommendation as to the acceptability of any financing proposal has a direct consequence upon the Ministry of Finance's decision to loan money to an improvement district. The availability of grant monies is also closely tied to the demand-side management of water resources in the province; that's not to say there's a lot of money to be had currently, but any money that is is tied to demand-side management.

A Dedicated Irrigation Line (DIL) for North Canyon Improvement District

Opinion on a dedicated irrigation line is polarized.

Those in favor believe that the flow from the Goat River pump is adequate to supply the 15 properties mentioned repeatedly. They believe that the community as a whole should pay for the construction.Those opposed believe that that metering and restrictions should be a priority before additional supply is considered. Between these are those who believe that price, means of funding and feasibility of the DIL should be confirmed before proceding. At the heart of the disagreement are two opposing views:

1. Providing irrigation water to the heavy users benefits the whole community by preserving the potable water and so the whole community should pay.
2. The DIL is being constructed for a subset of users and so they should pay.

A "middle ground" view is that the whole community should pay but the cost should be recovered from the users of the DIL over a defined period.

The heavy irrigation users have been noticeably absent from discussion.

The following are proposed tasks which may define the initial stages of a DIL. This is limited to the Goat River as a source - not Camp Run Creek. We shall refer to this as Phase 1.

1) Confirm the theoretical maximum demand from the heavy users.

2) Check the flow rate from the Goat River pump and confirm it exceeds the theoretical maximum demand. If it does not determine if the risk of shortage is acceptable to all parties. If not, project is not feasible. If it does, proceed.

3) Contact the 15 main irrigation users. Present the DIL plan for implementation, metering and funding. Indicate that after a given date only water from the Goat River pump will be available for irrigation. Obtain written confirmation that they will use the facility and pay for that usage as agreed. If users do not agree and want to supply their own water then determine whether project is feasible. If it is, proceed.

4) Confirm physical separations between potable and non-potable water lines.

5) Confirm identification of potable and non-potable water lines.

6) Determine if machinery is available to bore under roads. If not – consider options.

   The next tasks depend upon 1-6

7) Install a line to the potable water line west on 48th St to the Gartland and old Ken Hoag residence, as I believe they are now on the 10" line.

8) Cut the 10" line from Goat River and install valves and quick-change adapters to reconnect