



# REGIONAL DISTRICT OF NORTH OKANAGAN

## GREATER VERNON WATER 2012 MASTER WATER PLAN STAKEHOLDER ADVISORY COMMITTEE MEETING

Thursday, October 1, 2015  
8:00 am

### REGULAR AGENDA

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#### A. APPROVAL OF AGENDA

1. **Greater Vernon Water 2012 Master Water Plan Stakeholder Advisory Committee – October 1, 2015**

(Opportunity for Introduction of Late Items)

#### **RECOMMENDATION 1**

That the Agenda of the October 1, 2015 Greater Vernon Advisory Committee meeting be approved as presented.

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#### B. ADOPTION OF MINUTES

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#### C. DELEGATIONS

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#### D. UNFINISHED BUSINESS

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#### E. NEW BUSINESS

1. **Roundtable Introductions**
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2. **Conduct at Meetings / Release of Information to the Media**
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3. **Meeting Minutes**
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4. **History of Greater Vernon Water**

- Presentation to be provided by the Manager – Greater Vernon Water

- 5. Terms of Reference – Greater Vernon Water 2012 Master Water Plan Stakeholder Advisory Committee** **Page 1**  
- Amended document dated Sept. 16, 2015
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- 6. Master Water Plan List of Assumptions** **Page 4**  
- Amended document dated July 13, 2015
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**7. 2012 Master Water Plan – Distribution / Process Used**

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**8. Meeting Schedule**

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**F. BUSINESS ARISING FROM DELEGATIONS**

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**G. REPORTS**

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**H. ADJOURNMENT**



## REGIONAL DISTRICT OF NORTH OKANAGAN

<b>TERMS OF REFERENCE – Greater Vernon Water 2012 Master Water Plan Stakeholder Advisory Committee</b>	
<b>A SELECT COMMITTEE OF THE BOARD OF DIRECTORS OF THE REGIONAL DISTRICT OF NORTH OKANAGAN ESTABLISHED UNDER s. 795 OF THE LOCAL GOVERNMENT ACT</b>	
<b>ENDORSED BY THE BOARD OF DIRECTORS ON:</b>	September 16, 2015
<b>PURPOSE:</b>	<p>The purpose of the Stakeholder Advisory Committee (SAC) is to provide input on options for the future improvements to the Greater Vernon Water (GVW) System and provide for public participation in the Master Water Plan (MWP) review process. Input provided will be incorporated into decision making to the maximum extent possible. Overall, the SAC shall work together to satisfy the following roles and responsibilities:</p> <ol style="list-style-type: none"> <li>1. Review the assumptions and determine if the objectives, development and recommended direction in each of the Technical Memoranda of the 2012 MWP corresponds with stakeholder and community perspectives,</li> <li>2. Based on the review above, develop recommendations/ suggestions for consideration to amend the Technical Memorandum,</li> <li>3. Ensure all options are considered,</li> <li>4. Assist in effective public communication and education regarding the GVW MWP; and</li> <li>5. Communicate directly with major water users about the water treatment and separation goals and their role in implementing the MWP.</li> </ol>
<b>SCOPE:</b>	The scope of the SAC is to review the 2012 MWP and provide input from a stakeholder and community perspective which will be considered as part of the 2012 MWP review.
<b>DEFINED RESPONSIBILITIES:</b>	<p>Responsibilities of committee members are:</p> <ol style="list-style-type: none"> <li>1. Attend monthly meetings over a six month period.</li> <li>2. Participate in the public meeting(s) (dates to be determined).</li> <li>3. Identify an alternate representative in the event of a conflict with a scheduled meeting time.</li> </ol> <p>Allow us to post your name and organization on the project website.</p>
<b>COMPOSITION:</b>	<p>The overall SAC members are to be made up a group of stakeholders. These stakeholders will have the following characteristics:</p> <ul style="list-style-type: none"> <li>• GVW Customers,</li> <li>• Independent,</li> <li>• Demographically diverse,</li> <li>• Geographic representation within the GVW Service boundary</li> </ul>

GREATER VERNON WATER 2012 MASTER WATER PLAN  
STAKEHOLDER ADVISORY COMMITTEE - REGULAR AGENDA

October 1, 2015 - Item E.5

Terms of Reference – GVW 2012 Master Water Plan Stakeholder Advisory Committee

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	<p>A Technical Advisory Support Group shall be comprised of the following:</p> <ol style="list-style-type: none"> <li>1. RDNO General Manager of Engineering</li> <li>2. Manager – Greater Vernon Water (Alternate)</li> <li>3. RDNO staff (as required for information)</li> <li>4. Interior Health (as required)</li> <li>5. AECOM – Author of 2012 MWP (as required)</li> </ol> <p>The Technical Advisory Support Group shall be non-voting members and will have a supporting function only for the SAC and will be responsible for reporting activities and recommendations from the SAC to the GVAC.</p> <p>Stakeholders of the SAC will consist of a group of up to 20 people who can commit to the MWP review process and with the following representation:</p> <ol style="list-style-type: none"> <li>1. Two (2) representatives from the GVAC who are members of the Stakeholder group and who will act as Chair and Vice Chair of the SAC meetings,</li> <li>2. Two (2) representatives from Agricultural,</li> <li>3. Up to three (3) representatives that are high water use consumers from the Non-Domestic Class,</li> <li>4. Up to three (3) representatives from the Non-Domestic customer class that provides services to sensitive customers (i.e. Vernon Jubilee Hospital, School Board, care facility, etc.)</li> <li>5. One (1) representative from a major Industrial user</li> <li>6. Up to seven (7) representatives from the residential user class</li> <li>7. One (1) representative from the Developer class (Can be the Urban Development Institute or other representative group)</li> <li>8. One (1) representative from a local service group</li> </ol> <p>The role of committee members is to invest time and energy in learning about the GVW System, water treatment and distribution, actively participate in meetings and work constructively and collaboratively with committee members to achieve the committee purpose. This is a voluntary position.</p> <p>Members shall be requested to provide one (1) months notice of membership termination in order to appoint an alternate representative.</p>
<b>APPOINTMENTS:</b>	Appointments shall be selected by the GVAC and forwarded as a recommendation to the Board of Directors.
<b>CHAIR AND VICE CHAIR:</b>	<ol style="list-style-type: none"> <li>1. The GVAC will elect a chairperson for the SAC from among its members and/or the Board of Directors before the first SAC meeting is held.</li> <li>2. The role of the Chair will be to facilitate the SAC meetings according to Robert’s Rules.</li> </ol> <p>In the absence of the Chair, an alternate GVAC member or staff representative will be Acting Chair for that meeting.</p>

GREATER VERNON WATER 2012 MASTER WATER PLAN  
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Terms of Reference – GVW 2012 Master Water Plan Stakeholder Advisory Committee - 3 -

<b>TERM:</b>	<ol style="list-style-type: none"> <li>1. It is anticipated that the SAC will meet monthly over a six month period to review the 2012 MWP and provide recommendations to the GVAC.</li> <li>2. The SAC term for members is six (6) months.</li> </ol>
<b>REPORTING:</b>	The SAC is an advisory Committee to the GVAC and recommendations from the SAC shall be forwarded to the following GVAC meeting for consideration.
<b>REMUNERATION:</b>	Committee member positions are deemed voluntary.
<b>OTHER:</b>	<p><b>1. RECORD OF MEETINGS</b></p> <ol style="list-style-type: none"> <li>1.1 The assigned Secretary (RDNO staff) will be responsible for preparation of the records (minutes) for all Committee meetings.</li> <li>1.2 Records and all documents shall be forwarded to the GVAC to be received for information.</li> </ol> <p><b>2. CONDUCT OF MEMBERS AT MEETINGS</b></p> <p>Committee members are expected to be respectful of one another and to offer input and suggestions that are relevant, constructive and productive.</p> <p>Recommendations will be based on consensus of the stakeholders. No votes will be held to determine the group's position on issues or recommendations to the GVAC. Where consensus exists, it will be noted. Where it does not exist, majority opinions may be considered to have merit and will be noted. In the context of the committee, consensus will be defined as "I will support the decision of the group."</p> <ol style="list-style-type: none"> <li>2.1 Members should be committed to providing advice on developing recommendations.</li> <li>2.2 Members will respect the ideas, concerns and opinions of others.</li> <li>2.3 Everyone will have an opportunity to speak, but only one person shall speak at a time as determined by the Chair. There will be a timekeeper to ensure all persons concerns are heard within an allotted time.</li> </ol> <p>For clarity, these Terms of Reference do not delegate any authority or corporate powers to the SAC.</p>

Greater Vernon Water - Master Water Plan  
Summary of Key Assumptions that Impact the Master Water Plan

Item No.	Technical Memorandum	Item	Assumption Description	Impact to Plan	Comments
1	All	Level of Service	All customers within the GVW water service boundary shall be equal within their designated service class (i.e. domestic, non-domestic & agricultural class).	Providing domestic water that complies with the Provincial Legislation, Regulations and guidelines to all domestic and non-domestic customers impacts the treatment facilities location options and the long term distribution system costs. Deciding to not provide domestic water to customers in rural areas would save money, however, the legality of doing so is questionable.	Establishing separated service areas within the utility boundary could offer variable cost savings at the expense of administration/parity between users. Issues like serving properties on hillside slopes or near the end of the distribution system have higher cost water due to pumping, rechlorination and long distribution mains would make the analysis of the service areas very complex.
2	All	Level of Service	All water treatment systems would need to be owned and operated by GVW, including Point of Entry/Point of Use water treatment systems	Point of Entry/Point of Use water treatment systems have been investigated and are cost prohibitive from an ongoing operation & maintenance perspective.	See: <a href="http://www.interiorhealth.ca/YourEnvironment/DrinkingWater/Documents/823533_POE%20POU.pdf">www.interiorhealth.ca/YourEnvironment/DrinkingWater/Documents/823533_POE%20POU.pdf</a>
3. a	All	Level of Service	Maintaining cost effective water supply to all customers.		
3. b	All	Level of Service	Maintaining agricultural water supply to all customers that have an agricultural water allocation.	Maintaining the supply of agricultural water to all the current customers with allocation within the service area results in high volumes of treated water being used for irrigation.	Of the options, three general scenarios have been investigated. Full separation, no separation and partial separation (Lavington Area only).
4	All	Interior Health	Provide domestic water that is fully compliant with Federal and Provincial Legislation.	The MWP is based on providing Federal (Health Canada) and Provincial Legislation (Interior Health) compliant treated water to all the domestic customers in a reasonable time period. If compliant treated water is not the goal the capital magnitude of the MWP could be significantly reduced. It may also be feasible to rework the schedule and this would impact financing by stretching the program out over many more years.	To obtain Interior Health approval of the MWP, we will need to prepare a plan that meets the microbiological drinking water treatment objectives for surface water supplies in British Columbia and the requirements of Health Canada.
5	1	Population Projections	Population projections were completed based on discussions with the Planning Department of the Regional District, Vernon, and Coldstream.	The planning is completed based on Regional Growth Strategies and member Planning Departments results in a total residential service population of 80,479 by 2052. The net growth rate to 2031 based on these projections averages to 1.3%/annum and no forecast exists for growth beyond 2031. The plan assumes a declining growth rate of 0.75%/annum system wide from 2032 to 2052.	Note: in the 2004 MWP the projected MDD for domestic consumption was 89 ML/d; the 2012 MWP projects 68 ML/d or a 23.6% reduction. The MDD impacts the size of infrastructure and facilities in the capital works program and overall costs.
6	1	Domestic Demand	Conservation for the per capita domestic demand is assumed to occur within the service area and water demand to be based on 250 l/c/d.	The planning is based on a domestic annual demand of 13,360 ML/yr (36.6 ML/d) and Maximum Day Demand (MDD) of 79 ML/d by 2052 (including leakage allowance). To meet these requirements domestic water conservation needs to occur. The plan reduced the per capita consumption from 270 l/c/d to 250 l/c/d to account for conservation efforts. Higher or lower actual water demand could impact the infrastructure required.	Same note as above, reductions in the demand per capita can have long term impacts on growth because the oversizing of treatment plants and trunk supply mains is based fully on population growth. The current MWP projects both reductions in growth rate and consumption resulting in significantly lower long term demand projections.

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Item No.	Technical Memorandum	Item	Assumption Description	Impact to Plan	Comments
7	1	Agricultural Demand	The agricultural design demand to remain at 17,400 ML/yr.	The master plan is based on maintaining the current annual agricultural demand of 17,400 ML/yr and a peak demand of 213 ML/d. The agricultural demand has remained unchanged and it was determined that the demand will vary up and down in the future in response to climate change, variable crops, improved technology and potentially increased agricultural land. The peak instantaneous flow is limited by bylaw; however, currently we have no provisions in place to control peak flows. Excessive use over and above the allocation results in additional water consumption fees.	In 2013, we implemented an additional fee for agricultural consumption exceeding their allocation through an inclining block water rate (domestic rates) is applied to over-consumption. This rate is for overall consumption for each property during the Irrigation Season and does not limit instantaneous flow.
8	2	Water Transfer	Diverting raw water from one watershed to another was assumed to be feasible and unlimited water licences could be obtained for all proposed Options.	The interbasin transfer of water would require the completion of a detailed environmental assessment report. It is expected that the interbasin transfer of water from Duteau Creek to Kal Lake (or vice versa) will be a long and arduous process requiring approvals from US and Canadian government approving agencies, Canadian Environmental Assessments, environmental groups and stakeholders and First Nations. The Province has indicated that formal applications must be made for assessment to determine the feasibility of water licence transfers or new water licence acquisitions.	From a GWV perspective an interbasin transfer impacts the Fraser River Basin and Columbia River Basin.
9	2	Kalamalka Lake Supply	The current water licence on Kalamalka Lake is at capacity; however, it is assumed that obtaining water licences and changing points of diversion are not a constraint.	The current water licence on Kalamalka Lake is 8,842 ML/yr, if we could transfer the full Coldstream Creek water licence to Kalamalka Lake it would increase this source by only 4.7% (415 ML/yr) to a maximum of 9,257 ML/yr. The water licence from Deer Creek/King Edward would not be transferred as this water is fully separated and used solely as a non potable irrigation supply.	It may be feasible to transfer the water licence (within water basin transfer) from Coldstream Creek (415 ML/yr) to Kalamalka Lake; however, there is a strong desire by fisheries to increase the base discharge from Kalamalka Lake to Vernon Creek.
10	2	Water Supply Source	At the end of the current 50-year planning horizon it is expected that more raw water supply will be required. It is recommended that a 50,000 ML/year water licence reserve be established on Okanagan Lake to meet long term demands.	A review of the water sources feeding into GWV was made, with consideration given to climate change, future water demand, population growth, water efficiencies, and irrigation types. It is assumed that beyond the current planning horizon of this report, more raw water supply is expected to be required. Once the capacity of the Duteau Creek and Kalamalka Lake sources is reached the next logical raw water source is Okanagan Lake. For long term planning it is recommended that a water licence reserve from Okanagan Lake for 50,000 ML/yr be established.	We have been in discussions with the Ministry of Environment with respect to this water licence and they are suggesting that we consolidate all our water licences from Okanagan tributaries not currently being used and request to move these to Okanagan Lake and then request an allocation in addition to these consolidated water licences to meet the 50,000 ML/yr, which they would support.
11	3	Water Storage	Options that require expansion of the Duteau Creek Water Supply system must include the 2 projects: Aberdeen Dam be raised by a minimum of 4 metres and the Gold Paradise extension be constructed .	The proposed Gold Paradise diversion will provide a portion of the additional water required to fill the raised Aberdeen Reservoir and fully utilize the existing water licences in the Duteau Creek watershed to meet storage requirements for future development and for extended periods of drought.	The raising of Aberdeen Dam will increase the storage in the Duteau system by 11,670 ML and the diversion Gold Paradise extension will increase the annual supply by 3,000 - 7,600 ML/yr.
12	4	Domestic Water System Analysis	All options were completed based on design criteria from the GWV Waterworks Regulation Bylaws.	Provides consistent standards that are used in the development of all options and these are then used to develop costs, which again are consistently applied to all options.	

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Summary of Key Assumptions that Impact the Master Water Plan

Item No.	Technical Memorandum	Item	Assumption Description	Impact to Plan	Comments
13	4	Fire Flow	It is assumed that bylaw compliant fire flow is provided eventually across the service area from either the domestic or agricultural distribution system.	Providing fire flow from either the domestic or agricultural results in a significant cost savings, but requires that the agricultural distribution system be designed to function all year. Based on the assessments completed during the MWP this is expected to be the lowest cost solution.	
14	5	Cost of System Separation	All Options are based on unit costs for reservoirs, pump stations and water mains complete with the associated restoration.	The infrastructure needed to further separate the agricultural and potable distribution systems is a function of the engineering requirements. The estimated cost to build the infrastructure is the direct result of the estimated unit costs. For all Option estimates, current and future options, the same unit prices, contingency (30%) and engineering (15%) must be utilized throughout to enable proper financial comparison.	
15	5	Independent Agricultural Distribution System	A fully separated agricultural system is technically feasible.	The total current replacement cost of existing infrastructure is \$137,207,000 and the estimated construction cost of the infrastructure required to complete separation is \$80,855,000.	
16	6	Water Conservation Strategies	The long term water demand projections are the direct result of climate change and assumed implementation of water conservation measures.	Recommendations include 1.90 full-time equivalent staff and a capital budget of \$215,000/yr, maintaining and updating water use databases, reducing unaccounted for water losses, updating bylaws, and supporting research for general GVW operations. For user consumption, strategies include promoting workshops and marketing, performing audits, implementing education, reviewing consumption fees, and implementing rebate programs. If these measure are not implemented it is possible that the long term water demands are higher than currently projected resulting in the need for more infrastructure and more capital investment.	We currently have a 1.0 FTE staff member and utilize summer students (0.5 FTE) for education dedicated to Water Conservation. In assessing water use trends, staff must also consider climate change, drought, metering improvements and water losses.
17	7	Duteau Creek and Mission Hill WTPs	Moving towards filtration as it is a requirement of Interior Health to meet the Drinking Water Protection Act Regulations.	Biofiltration combined with ozonation is recommended to enhance the treatment for the Duteau Creek WTP. Membrane/granular filtration are the recommended treatment processes to be added to the existing Mission Hill WTP	These treatment options provide the basis for treatment plant estimates.
18. a	8	GVW Financial Issues	None of the costing for the Options is based on senior government grant funding.	The availability of senior government grants is variable and unknown. If senior government grants are available the cost impact to the GVW rate payers of implementing the MWP will be reduced.	
18. b	8	GVW Financial Issues	That the timing for the implementation for the Master Water Plan will consider the availability of funding from senior levels of government.		
19	9	Option Analysis	The options analysis is based on the long term supply of water were compared on a life cycle basis (50 year life cycle, inflation rate 2%, and discount rate 5%).	Life cycle cost ratio was used to evaluate the options to include the long term operations and maintenance costs of each Option. Using the life cycle cost ratio resulted in the selection of Option 2. If this approach is not followed and only capital cost is considered Option 1 is the preferred solution.	Changes to the inflation rate and discount rate did not appreciably affect the net results.



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Item No.	Technical Memorandum	Item	Assumption Description	Impact to Plan	Comments
20	9	Option Analysis	The Options analysis was also conducted based on non-cost considerations, for example: System Operational Ease & Flexibility; Governance & Administration Variances; Emergency Preparedness; Average Finished Water Quality; Reliability & Availability of Supply; Ease of Implementation; Future Expansion ; Environmental Impacts; other non-cost considerations determined by the committee.		The evaluation factors and weighting to be confirmed. Must take emergent issues (i.e. mussels) into consideration.
21	9	Option Selection	The selected option be based on both financial and non-cost considerations.	The overall best solution to the Regional District was Option 2 that resulted in a slightly higher cost with more overall value.	Each group on the MWP Technical Advisory Committee completed the evaluation independently and each group was consistent in choosing Option 2 as their number 1 option based on the Benefit-to-cost Ratio (NPV) they rated Option 1 as the number 1 option based on the Benefit-to-cost Ratio (Capital).