

From: Lisa Gordon [mailto:L.Gordon@islandstrust.bc.ca]
Sent: Wednesday, March 23, 2011 1:11 PM
To: Living Water Smart ENV:EX
Cc: Graeme, Ian ENV:EX
Subject: Gabriola volunteer committee response to Water Act policy proposal

Hello Ministry of Environment staff,

Please find attached two sets of policy recommendations authored by the Gabriola Official Community Plan Volunteer Review Committee, a fifteen-member advisory committee appointed by the Gabriola Island Local Trust Committee (which is the land use authority for Gabriola, under the Islands Trust Act).

These two submissions were not solicited or endorsed by the Gabriola LTC and the content has not been vetted by Islands Trust staff. We have noted some inaccuracies, such as the recommendation that the Regional District require rainwater collection in new home construction (the Regional Director for Nanaimo says this is a provincial building code authority).

The Islands Trust submitted its recommendations to the Water Act process under separate cover, and what is here enclosed does not represent the Islands Trust position. However, the Volunteer Review Committee requested that its recommendations be forwarded to the Province, and it might be helpful for the Ministry to receive this grassroots advice on policy changes to protect water.

In that spirit we are forwarding the Volunteer Review Committee's recommendations for your consideration and apologize for the lateness.

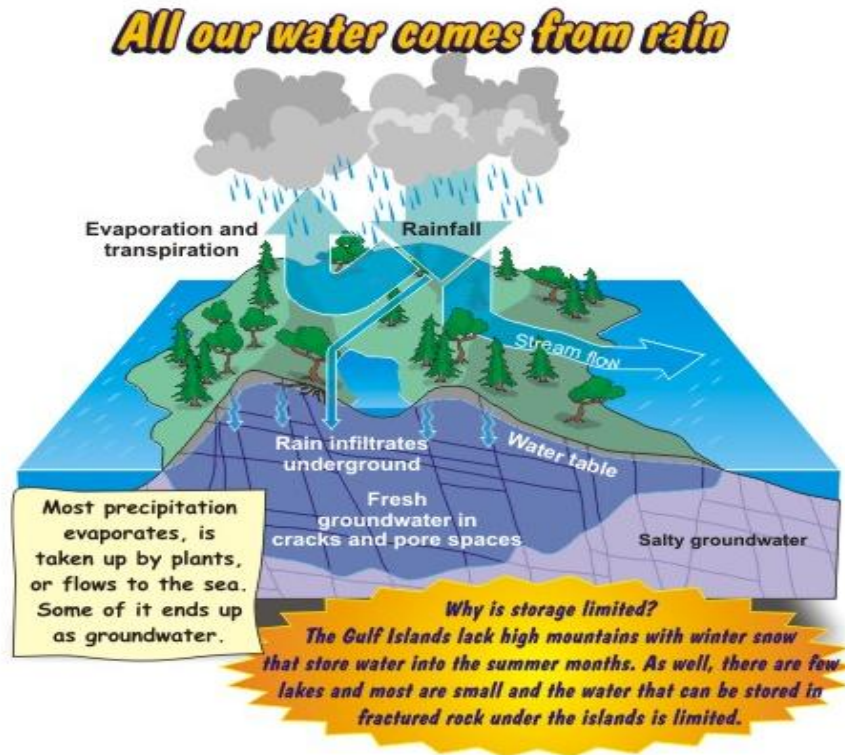
Lisa Gordon
Director, Trust Area Services
Islands Trust
200-1627 Fort St.
Victoria BC V8R 1H8
In Victoria 405-5174
Enquiry BC Toll-free call 1-800-663-7867
or from the lower mainland 604-660-2421

Websites: www.islandstrust.bc.ca | www.islandstrustfund.bc.ca
*Preserving **Island** communities, culture and environment*

8.4 Water Supply

October 4, 2010

Context:



Source: Geoscape Canada – Waterscapes – Gulf Islands

Further Context:

Hydrology of Gabriola Groundwater

by John Peirce, P. Geo., and Nick Doe, P. Eng., June, 2010

(www.nickdoe.ca/pdfs/webp649.pdf)**A. Water Supply Objectives****1. To manage the island's water resources on a sustainable basis.**

Carried 9-0-0

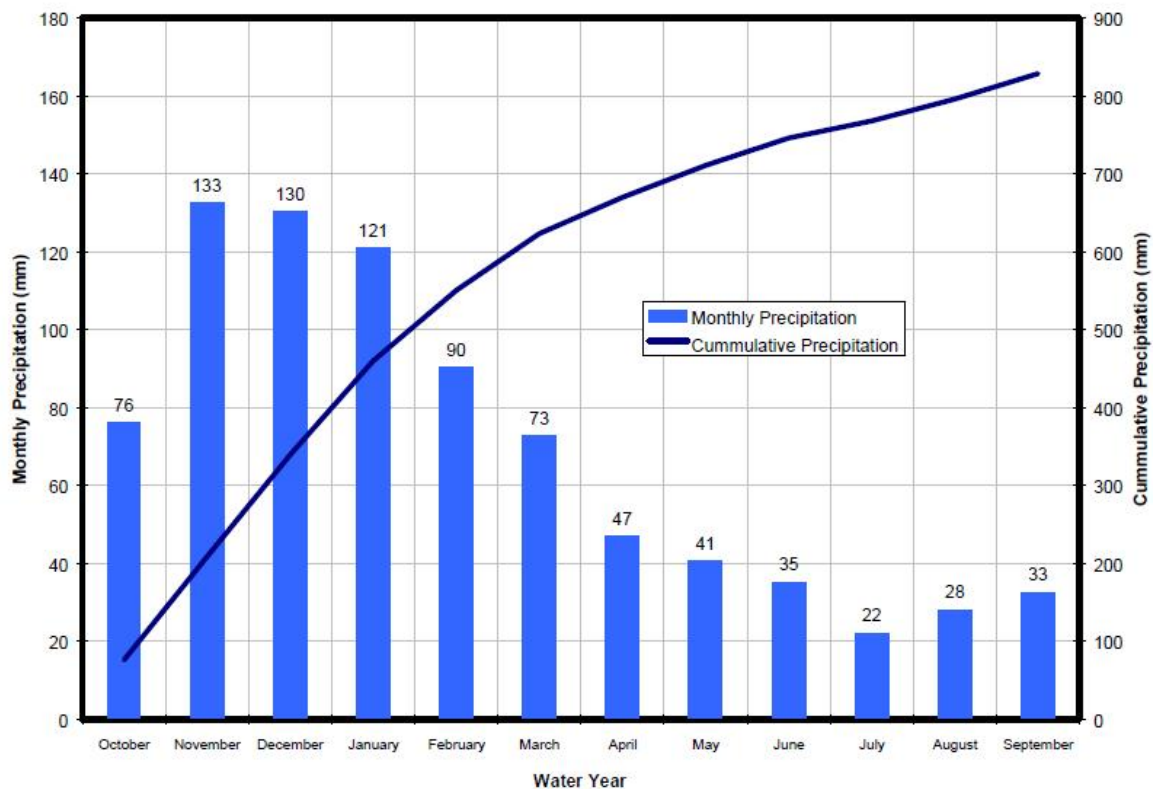
Reasoning:

A long term reliable water supply is essential for everyone. In addition some climate change models show the likelihood of warmer and somewhat

drier weather in the future. Various models do not predict drier weather with any consistency. They do predict an increase in seasonality, but there is no evidence of this at the moment. What is agreed is that there will be less groundwater. Even more important is the possibility of a longer duration of warm dry summer like weather, and a higher variability of weather.

Water supply over the dry summer period requires storage. The following chart is from “Rainfall Availability and Household Water Consumption for Mayne Island” *Ken Hughes-Adams, Madrone Environmental Services Ltd.* prepared for Islands Trust.

Figure 1. Mean Monthly Precipitation - Mayne Island Weather Station



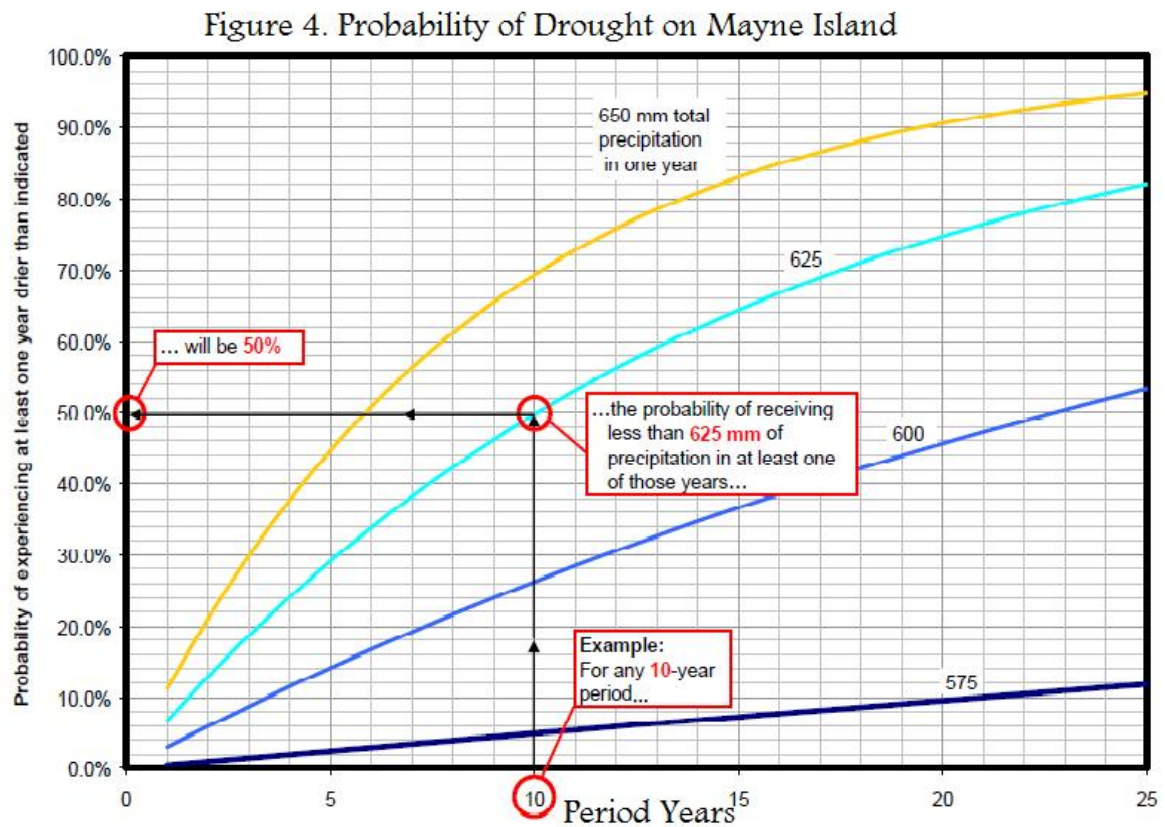
- 2. To have a sustainable long term domestic water supply available to all individual properties sourced from within each property.**

Carried 9-0-0

Reasoning:

Today every property can obtain a sustainable supply by means of rainwater collection and storage. Cisterns of 10,000 Imp. gallons (45,459 liters) are usually considered sufficient for two people to store sufficient domestic

water for the summer dry period. Groundwater resources are also available in many areas, so that existing or new wells provide a sustainable supply, but these depend on water table levels being maintained. Hence the most economic solution may be a mix of rainwater collection, groundwater usage and delivered water depending on individual preference and location. The variability of future rainfall needs to be considered. The following chart is from “Rainfall Availability and Household Water Consumption for Mayne Island” *Ken Hughes-Adams, Madrone Environmental Services Ltd.*



3. To promote groundwater resource conservation in order to maintain water table levels for both domestic and agricultural consumption and protection of tree canopy coverage.

Carried 9-0-0

Reasoning:

Tree crowns connect to form a canopy covering the land. Although the trees use a great deal of water, they also keep the land cool, and contribute to micro climate precipitation. Water is stored and gradually released after a rainfall reducing runoff into the sea. We

have seen damage to both cedars and maples after dry summers, with reduced water table levels.

Domestic Consumption

Wells remove water from aquifers, and then return the water to the surface in the septic fields. Most will eventually percolate back into an aquifer, but some will be lost to evaporation. Many methods are available to reduce domestic consumption such as composting toilets, dual flush toilets, and reuse of grey water. Rainwater collection bypasses groundwater consumption.

Horticulture

Vegetable gardens and flowers are a major benefit to Gabriola. Unfortunately much of the water used for irrigation will be lost to evaporation. The volume of irrigation water used and the amount of evaporation can be significantly reduced by using drip irrigation systems rather than sprinkler systems. Responsible users will provide winter storage of water in ponds, cisterns, or tanks for use in summer gardens. A new moisture sensor that does not rust is available for irrigation systems, and has been presented on Gabriola by the RDN. Groundwater usage for horticulture should be discouraged in water table sensitive areas.

Agriculture

Significant quantities of water can evaporate because of irrigation, which is a major issue in other areas. The B.C. Agriculture Department is very sensitive to this issue, with recommendations for required usage. Agriculture numbers for open water stored for irrigation indicate a loss of 14" (35.56 cm) evaporation on Vancouver Island over the summer. Groundwater use for irrigation should be discouraged in water table sensitive areas, and monitored, where permitted, in all areas.

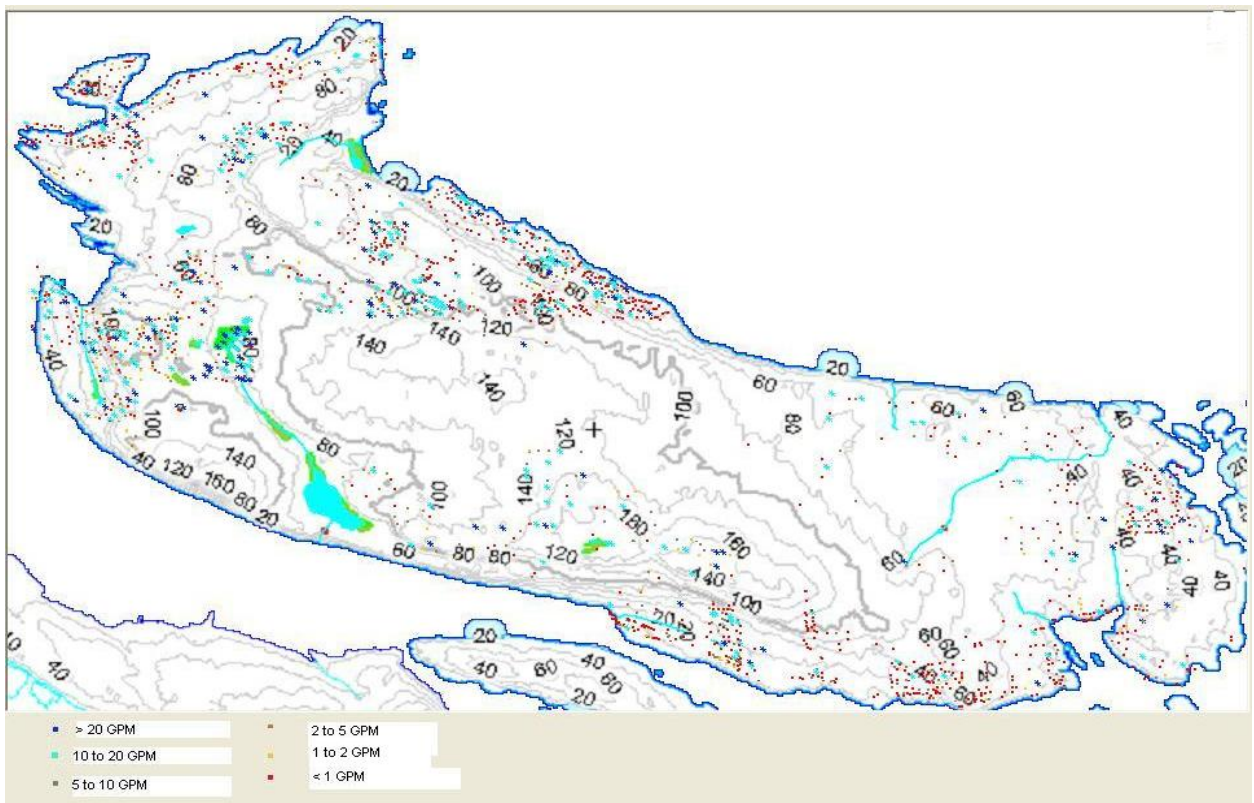
B, Water Supply Policies

Reasoning:

Many, if not most, policies can depend on community cooperation, and other off island authorities. However the use of regulation is necessary where irresponsible action results in damage to another. We have a good method in the 'danger tree letter' used by residents to inform a neighbour that a tree represents a danger. This removed the plea of not being aware of any problems in any legal action. Unfortunately, cause and effect is not as clear in cases where irresponsible use of groundwater runs a neighbour out of water. This situation can be improved by the widespread use of well watchers, which can document water table reductions, and zones of influence of heavy users.

Policies are intended to be limited to areas under the control of Islands Trust. Issues that are under control of other administrations are in the Advocacy Policy section, although the responsible authority is often not clear

The following map shows wells and flow rates when the wells were drilled as reported as reported in the well documentation which may not be repeatable.



1. To undertake a program to map groundwater availability levels on all of Gabriola.

Carried 9-0-0

Reasoning:

An aquifer groundwater availability map of Gabriola is necessary to provide guidance for development and consumption. Catchment areas usually have a considerable amount of water stored, until it either runs off, or percolates through the aquifers to the ocean. Rubble along cliff faces may store a great deal of water and the higher elevation water runs out at the cliff base. In any case wells directly adjacent to the bottom of the rubble areas can have a large supply and a large flow. The reverse is usually the case for the areas on top of the cliff, as in general, water flows downhill. There are other differences based on fracture geometry, the composition and structure of individual geological formations, and the porosity and permeability of individual layers and fractures.

One line of reasoning says that bulk groundwater removal should not be permitted anywhere on Gabriola. The difficulty with this is that bulk water transport from Nanaimo would become necessary, and ultimately Gabriola would be dependent on the continuity of the Nanaimo supply.

Careful consideration of the following suggestions by Islands Trust is necessary in order to create a reliable aquifer storage map to evaluate the suitability of bulk groundwater extraction as follows:

- a) An independent assessment of the subject location for ground water availability by an independent, registered, professional Engineer/Hydrologist who has a proven history of planning a community water supply, and who has liability insurance to cover potential errors.
- b) The perimeter limits of the subject aquifer shall be delineated by a similarly qualified professional Engineer/Hydrogeologist. Water catchment area boundaries are relevant to bulk water.
- c) A dedicated monitoring well shall be in place for a minimum of one year in the subject aquifer or as recommended by the mapping expert. The monitoring shall be capable of recording daily baseline groundwater levels or as recommended by the mapping expert.

- d) All residents living on the subject aquifer shall be notified one year in advance of application to extract bulk water, to provide existing residents an opportunity to establish pre-existing groundwater conditions in their residential wells.

2. Bulk Water sales from roof catchment shall be permitted as a home activity.

Carried 9-1-0

- a) *Alternate Views:* Paved roads to the property are required to prevent summer dust. All heavy commercial trucking on gravel roads need examination as a separate problem to prevent summer limestone dust.

Reasoning:

Bulk Water sales from Gabriola sources are essential as a safety factor acting as a backup to individual property supplies. The sale of roof catchment water would not affect the groundwater supply, whether the catchment is stored in tanks or storage ponds.

- a) *Alternate Views:* Road paving costs too much.

3. Bulk groundwater extraction (as currently permitted by a Temporary Use Permit in the OCP) as a home activity shall be limited as follows:

- b) **At least two bulk water source extraction areas on Gabriola should be necessary as a long term supply.**
- c) **Sources should be limited to high aquifer groundwater availability areas as defined in the Islands Trust Aquifer Groundwater Availability Map where the high aquifer is determined as follows:**
 - i. **By an independent assessment of the subject location for groundwater availability by an independent, registered, professional Engineer/Hydrologist who has a proven history of planning a community water supply, and who has liability insurance to cover potential errors,**
 - ii. **Where the perimeter limits of the subject aquifer is delineated by a similarly qualified professional Engineer/Hydrogeologist.**
 - iii. **A dedicated monitoring well or wells has been in place for a minimum of one year in the subject aquifer or as recommended by the mapping expert and the monitoring**

- d) Surrounding wells shall be supplied with well watchers, and pumping will cease if water table levels fall to within a reasonable safety level of the bottom of the surrounding well. For a well to continue to produce water, there must be a large enough intercept of the water table to provide sufficient flow, in addition to a working coverage of the pump.**

Carried 7-1-2

- e) Alternate Views:* Base line measurements for a year are irrelevant; it is similar to finding what weather is normal. The critical information is the water table level, and stopping bulk water extraction from groundwater if neighboring wells are in danger.
- f) Alternate Views:* Well safety levels are difficult to determine.
- g) Alternate Views:* Well watchers from producing wells will produce misleading readings during pumping, and until the well has recovered to the static water table level. A formal monitoring well complete with monitoring equipment is necessary.
- h) Alternate Views:* A government run well on public lands should provide water for truckers to distribute on an emergency basis.

Reasoning:

A letter from Gabriola Groundwater Management Society (GGMS) follows:

GABRIOLA GROUNDWATER MANAGEMENT SOCIETY

OCTOBER 29, 2009

ISLANDS TRUST LOCAL TRUST COMMITTEE

Trustee Gisele Rudischer

Trustee Sheila Malcolmson

Dear Sheila and Gisele:

In the recent debates on groundwater pumping of bulk water for sale on Gabriola there have been certain bits of information that do not seem to be completely understood.

First of all, well records of static levels of water in the well kept for a few years prior to the beginning of pumping of groundwater for bulk water sales are very useful. This refers to the Well Watchers we have seen installed around prospective bulk water sales operations.

These records and readings can be used to signal to the homeowner when their well is under stress and when water use should be reduced. They can signal that a well is or is not recovering quickly or if there is a slowing down of the measured recovery rate of water in the well itself.

A body of seasonal records can be used to establish a benchmark level below which the static level of groundwater in the well should not drop (in each season) as this might indicate that the level of the groundwater in the aquifer had dropped and this would indicate that the well (and the aquifer) were under stress.

There is a problem, however, in using this information legally as the well being monitored also is used by the person/family for domestic and/or horticultural and in some cases, agricultural use. It could be argued that the personal use of the water had escalated in the period of time when water levels recorded indicated a drop in the static level or recovery rate of the personal well. That increased personal use could be argued as the reason for the indicated changes in static water level or recovery rate, and the possible result of reduced water quality and/or loss of water to the well.

It can also be argued that when the Well Watcher is installed at or around the same time that the bulk water operation starts that there is no prior data, no control statistics going back a few years to indicate what the performance of the personal well was like before the bulk water extraction process commenced. Therefore there would be no way to prove the reduced or changed groundwater in a well was the result of bulk water extraction.

A true observation well must not be used for any other purpose but recording static water levels and water quality testing. Readings taken from the well would then be a more accurate indication of groundwater conditions in the aquifer.

Observation wells should ideally be placed not only next to the bulk water source but also in positions that access the same groundwater source (aquifer). This can span a distance of one or two kilometers. This situation is ideal and will give the most nearly complete picture of groundwater conditions.

I am told that to determine which wells are sourced from which aquifer can be determined by water conductivity tests. You can chart the “footprint” of water by matching the chemical components of each groundwater sample. This part of determining a “zone of influence” of the effects of pumping is simple.

To determine the complete “zone of influence” of a groundwater pumping operation would require monitoring the freshwater/saltwater interface to determine whether it was retreating inland in the dry season. This would indicate a decrease in pressure in the aquifer (groundwater) and the possible threat of saltwater intrusion in wells in that interface area.

Conductivity testing also indicates the stress an aquifer might be under. As groundwater levels in an aquifer fall the chemicals (minerals, metals, salts) in the water become more concentrated. This increase in conductivity can also indicate the threat of salt-water intrusion as the pressure within an aquifer drops because the volume of fresh water drops, or the increasing mineralization of the water makes it less than ideal for human consumption.

So we believe that observation wells and testing for bacteria (as per health regulations) should also be accompanied by conductivity testing to give a more nearly complete set of indicators of groundwater quality and volumes available and a better assessment of aquifer health.

Sincerely,
Jenny MacLeod
President
Gabriola Groundwater Management Society

4a) Recommendations for Bulk Water sales from ALR lands will be disallowed in order to sustain water table levels for agricultural uses.

Defeated 3-5-1

Alternate Views:

Bulk water extraction from wells or ponds should be based on water availability and a monitoring system to ensure that neighboring wells are not impacted. ALR lands cover large amounts of our catchment areas that are logical sources of bulk water.

4b) Bulk groundwater extraction other than for personal or agricultural use on the property, (as currently permitted by a Temporary Use Permit in the OCP), as a home activity from ALR lands shall be limited as follows:

a) At least two bulk water source extraction areas on Gabriola should be necessary as a long term supply.

- b) Sources should be limited to high aquifer groundwater availability areas as defined in the Islands Trust Aquifer Groundwater Availability Map where the high aquifer is determined as follows:**
- iv. By an independent assessment of the subject location for groundwater availability by an independent, registered, professional Engineer/Hydrologist who has a proven history of planning a community water supply, and who has liability insurance to cover potential errors,**
 - v. Where the perimeter limits of the subject aquifer is delineated by a similarly qualified professional Engineer/Hydrogeologist.**
 - vi. A dedicated monitoring well or wells has been in place for a minimum of one year in the subject aquifer or as recommended by the mapping expert and the monitoring has recorded the daily baseline groundwater level or as recommended by the mapping expert.**
- c) Surrounding wells shall be supplied with well watchers, and pumping will cease if water table levels fall to within a reasonable safety level of the bottom of the surrounding well. For a well to continue to produce water, there must be a large enough intercept of the water table to provide sufficient flow, in addition to a working coverage of the pump.**

Carried 9-1-0

- 5. Islands Trust staff will maintain a water table map and recording system, using calibrated water depth measurement systems, with records kept on a monthly basis.**

Carried 9-0-0

Reasoning:

Education of new residents and summer residents is necessary in order to achieve our water supply objectives. Current Information is essential to make residents aware of their responsibilities.

The B.C. Ministry of Environment maintains several test wells that are monitored. In other areas there are many water depth measurement systems maintained by individuals. Water table levels can be obtained by calibrating the water depth measurement systems, measuring the distance from the

surface to the water table, and the elevation of the surface. Care must be taken to take measurements without pumping influencing the static water table level. From that point on the water table can be calculated from the water depth measurement systems reading. Generally the aquifer will be filled up to the surface in the winter. Monitoring the dropping water table levels in the summer will indicate problems and provide information to indicate water table sensitive areas.

Saltwater intrusion can be critical for waterfront areas. Buoyancy calculations, confirmed by saltwater intrusions, have shown that a ratio one unit above average tide can produce up to thirteen units of fresh water below the average tide level. The result is that the deeper the well, the higher the water table should be maintained in order to prevent saltwater intrusion.

- 5. Water storage in any form shall be encouraged, particularly in ponds, dugouts, cisterns and wetlands.**

Carried 9-0-0

Reasoning:

Storage of winter rainwater in cisterns for summer use reduces summer demand on the aquifers. Storage in ponds provides some recharge as water table levels drop. If pond water is used for irrigation, then there is less irrigation demand on the aquifers in summer. An attached Rainfall.xls spread sheet simulates the result of installing a rain catchment system on January 1st, for various tank sizes, roof sizes, and people in the home.

- 6. A public education program shall be encouraged to promote water conservation practices.**

Carried 9-0-0

Reasoning:

Keeping lawns green in the summer by using groundwater or purchased water is not part of the island social contract. This and quite a few other conservation methods may be the reverse of common practice in urban areas.

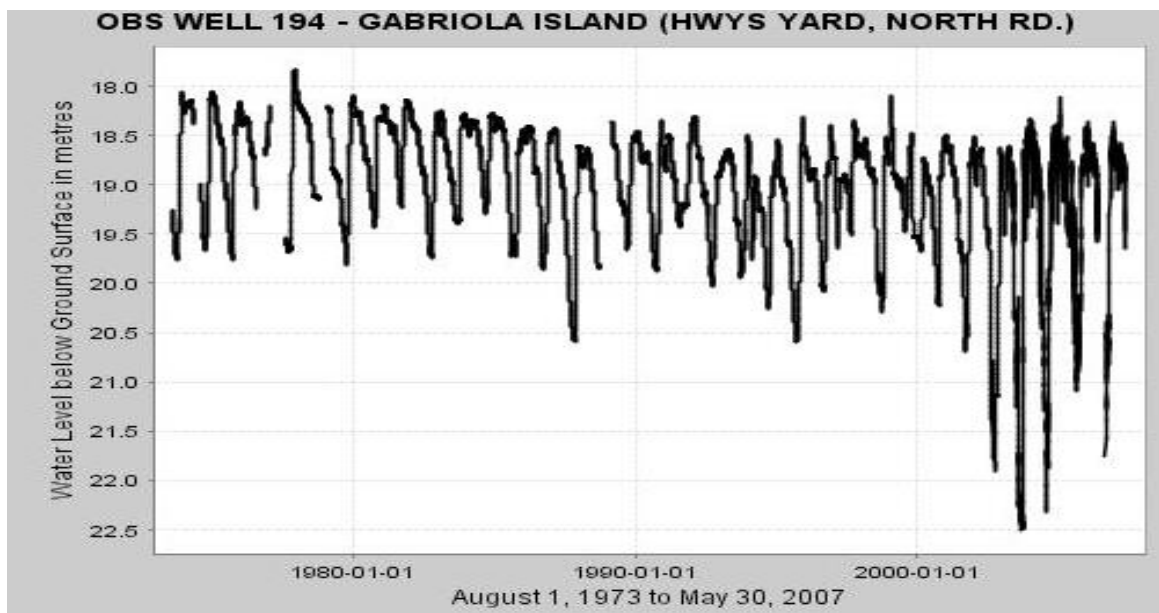
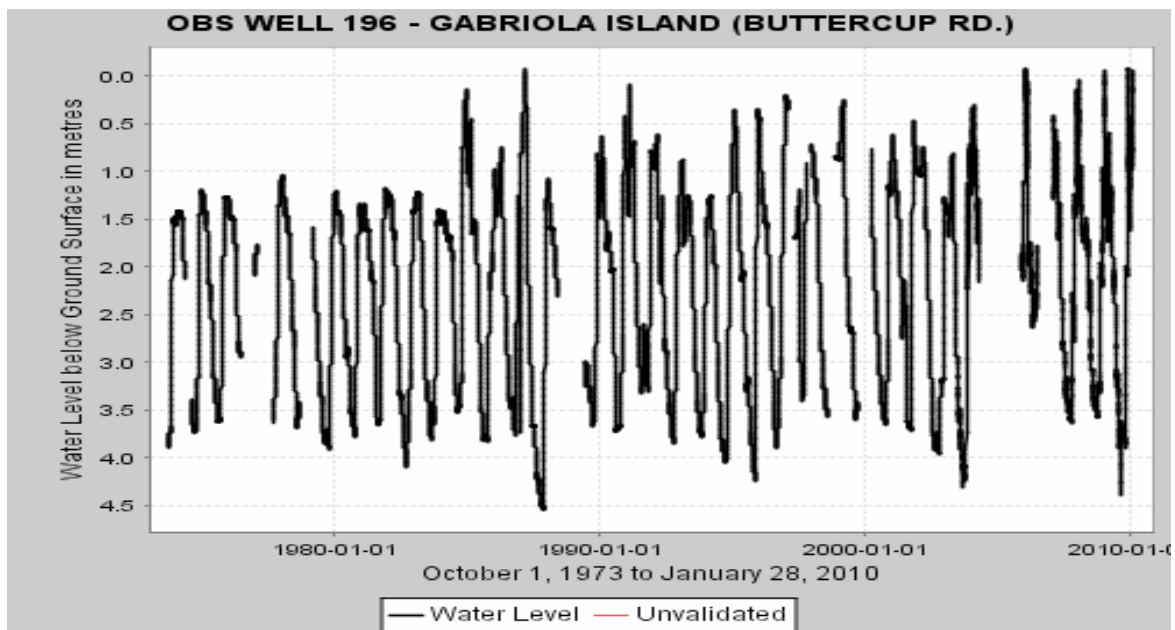
- 7. The Islands Trust commercial development permit approval will include requests for permeable parking lot surfaces to reduce run off.**

Carried 10-0-0

Reasoning:

The following are graphs of the Ministry of Environment logs of water level from two observation wells on Gabriola. Note that there is a variation of about 1.5-4.0 m in water level between winter and summer.

At the well 196 on Buttercup Road there has been little significant change in water levels over the last 27 years, except that there is an increase in summer to winter variability. At well 194 at the Highways Yard on North Road there has been a marked decrease in summer water levels since 2001.



Reasoning:

Advocacy Policies are indented to reflect requests to other authorities. Often the scope of particular administrations is not clear, particularly when B.C. regulations are silent on a particular subject.

C. Water Supply Advocacy Policies

- 1. The RDN parks shall be requested to provide a study of the feasibility of a pond in the swamp area of the 707 Acre Wood.**

Carried 10-2-1

Reasoning:

The swamp area of the 707 would be a good location to encourage a beaver pond. The elevation would feed aquifers stretching across the central area of Gabriola.

- 2. The RDN will be requested to modify building permit approval to require cisterns and rain catchment plumbing and filters in all new houses in water catchment areas marked on the aquifer storage map as having minimal groundwater.**

Carried 9-1-3

- 3. The RDN will be requested to modify building permit approval to include requirements for house tanks in all new house construction not requiring cisterns.**

Carried 9-1-3

Reasoning #2 & #3:

A different interpretation of building requirements is necessary for rural areas without water and sewerage services, such as Gabriola. House tanks allow wells to be pumped slowly, reducing local drawdown. They also allow for hydrogen peroxide treatment of water to help with bacterial problems and also with manganese. The following is an excerpt from:

“Dissolved Manganese in Drinking Water on the Gulf Islands: Occurrence and Toxicity” *Dr. Diana Allen and Krista Pelude, Department of Earth Sciences, Simon Fraser University*

2.3 Chemical Relations

Manganese often occurs together with iron. It resembles iron in its chemical occurrence in groundwater, but is less abundant. Dissolved manganese concentrations in ground and surface water can reach several milligrams per litre under poor oxygen conditions. This often occurs in deep wells. If exposed to oxygen, manganese can form insoluble oxides that may result in the formation of deposits and colour alteration. Soluble manganese can become insoluble through the following chemical reaction:



Therefore, when soluble manganese bicarbonate dissolved in water is exposed to higher concentrations of oxygen, oxidation of the compound takes place. A new insoluble manganese oxide is formed and precipitates out of solution. Carbon dioxide is lost from the system as gas. In other words, it is expected that elevated manganese concentrations will exist in anaerobic conditions. The manganese hydroxide precipitate has the consistency of gel and may over time develop into black scale deposits.

- 4. The Ministry of Transport (Highways) shall be encouraged to use run-off areas called infiltration swales leading from highways ditches to allow water to soak into the aquifers prior to being channeled into creeks to the ocean.**

Carried 13-0-0

- 5. The Ministry of Environment should prohibit fracturing with water or explosives.**

Carried 13-0-0

Reasoning:

Fracturing can permanently change groundwater availability for surrounding wells.

- 6. The Ministry of Environment should discourage excessive well extensions.**

Carried 13-0-0

Reasoning:

The 'race to the bottom' in order to improve water recovery often does not work and may have a negative effect on surrounding wells. In coastal areas it may result in salt water intrusion which makes the well unusable.

Saltwater intrusion can be critical for waterfront areas. Buoyancy calculations, confirmed by saltwater intrusions, have shown that a ratio one unit above average tide can produce up to thirteen units of fresh water below the average tide level. Drilling wells beyond this amount will result in salt water intrusion.

Future:

- A revised B.C. Water Act is in process, currently in the proposal stage. Whether any of the above proposals are included we will have to wait to find out.

Desalination is currently commercially viable, being used in boats and several marine installations that have access to docks and piers. Care must be taken to ensure that wells are not used for source or bypass as the saltwater intrusion will contaminate the local water table.

8.5 Liquid Waste Management

October 27, 2010

A. Liquid Waste Management Objectives

- 1. To ensure domestic, commercial and agricultural sewage does not produce biological contamination of groundwater, surface water, and the marine environment.**

Carried 10-0-0

Reasoning:

Health dangers exist not only in well water contamination, but contamination can also result from recreational activities, and affect marine products such as clams and oysters. A current indicator of such a problem is the Fisheries and Oceans closure areas for marine harvests surrounding Gabriola.

- 2. To ensure chemical and other contaminated runoff and seepage does not pollute the groundwater, surface water, and the marine environment.**

Carried 10-0-0

Reasoning:

Petrochemical contamination of groundwater from leaking storage tanks is frequent, particularly as the tanks age and corrode. Every year we treat our roads with chemicals for ice removal and dust suppression. Wear from rubber tire and break pad wear on the roads end up in ditches together with discarded plastic. Prevention of toxic chemical spills should require a permit for transport of hazardous chemicals. Do we have emergency responses able to deal with spills?

- 3. To preserve groundwater aquifers as a viable storage medium for domestic and commercial consumption.**

Carried 10-0-0

Reasoning:

The original Gabriola Groundwater Management Society signs at Gabriola entrances proclaiming that 'Gabriola is a groundwater sensitive area' were necessary because in most large urban areas groundwater quality is

irrelevant. As we move to more and more rainwater collection, it is tempting to ignore groundwater contamination. ‘Out of sight, out of mind’ is tempting, but for long term sustainability we need the aquifer storage option.

B. Liquid Waste Management Policies

Reasoning:

From the *Sewerage System Standard Practice Manual* the “Authorized Person planning, constructing, or maintaining an installed sewerage system, has the responsibility to ensure that all local zoning and/or bylaws are complied with”. Islands Trust, through zoning and bylaws, thus has the ability to create policy concerning sewage systems.

A much larger problem is the maintenance and operation of existing sewage systems. Often constructed many years ago, these existing systems may or may not have been maintained. The likelihood that such septic fields remain in good condition is even lower.

C. Liquid Waste Management Advocacy Policies

Reasoning:

Sewage installations for either domestic or small commercial new construction are the responsibility of the Ministry of Healthy Living and Sport under the *Health Authorities Act*. As detailed in the *Sewage System Standard Practice Manual Version 2* the statutory authority includes:

- Administer and enforce the Sewage System Regulation
- Carry out legal remedies such as orders or tickets
- Accept documents for filing and certification of systems, providing record of filing and letters of acknowledgement of certification
- Ensure documents meet the Sewage System Regulation
- Ensure that only Authorized Persons plan, construct or maintain installed sewage systems

- Inspect and take corrective action to alleviate health hazards related to onsite wastewater system

Recent procedure changes apparently have reduced this responsibility to filing of the application, with action only taken in the event of a contamination problem.

Property owners have the responsibility to:

- Ensure that the system is maintained in accordance with the maintenance plan
- Keep a record of all maintenance service performed on the system

- 1. The Ministry of Healthy Living and Sport shall be requested to allow a pit toilet on appropriate soils conditions for all single family properties that do not have a well or cistern.**

Carried 8-0-0

Reasoning:

In spite of our wish to be modern and progressive, the old pit toilet is perhaps one of the most environmentally sound sewage methods. As no water is involved, sewage decomposes gradually, and seldom migrates into the aquifers. Eventually the material becomes compost. Vegetative grey water disposal is reasonable for small volumes.

- 2. The Ministry of Agriculture should require farms with intensive livestock operations located on sloping properties or containing winter running streams to install ponds and vegetative buffering systems to process agricultural runoff. An exception for closed feeding systems such as chicken farms, where all waste is removed to a second location should be allowed.**

Carried 8-0-0

Reasoning:

Agricultural runoff can range from nothing at all to enough to turn the Black Sea into a dead zone. Living fish in a runoff pond are proof of viable biological oxygen demand in the water. The quality of our present activities is indicated by the number of shell fish closure areas mandated by the Federal Department of Fisheries and Oceans.

- 3. The BC Ministry of Environment should sample runoff from the Village area by having a sampling sump downstream of the Village area. Samples should be tested in the same manner as industrial areas, and the results published on a regular basis.**

Carried 8-0-0

Reasoning:

Education of island residents requires hard data rather than appeals to motherhood. Many industrial areas have run off water sampling and testing, usually by using trout fingerlings. 'The fish died' has a direct incentive to do better on all of the various things we can control.

- 4. The Ministry of Transportation and Infrastructure will be requested to encourage sand instead of salt for winter road maintenance.**

Carried 8-0-0

Reasoning:

Sooner or later all road treatment chemicals eventually end up in the groundwater. Winter rural roads have been traditionally a challenge. We have gradually moved into the assumption that we would not install winter tires and chains, but would expect the roads to be maintained to a summer level. Not driving in snow is an option, but eventually people get caught with changing weather conditions.

- 5. The Ministry of Transportation and Infrastructure will be requested to replace gravel residential roads with chip seal roads if justified by a cost/benefit study.**

Carried 8-0-0

Reasoning:

Gravel roads come with dust suppression chemicals much appreciated by residents in the summer. Unfortunately all salts eventually end up in the groundwater. While paving is expensive, a chip seal program should be established to eventually replace the rural gravel roads. Chip seal road surfaces have lasted for many years on low traffic roads, depending on the quality of the base. Gravel roads have a much higher maintenance cost with gravel additions, grading, and summer dust remission. Driver's costs for damaged brake linings are significant.

- 6. The Regional District of Nanaimo Wastewater Services Division will be requested to work with the Vancouver Island Health Authority to actively monitor all pump and haul septic systems on Gabriola by the means of recording the address of the source of all pump and haul disposals into the Regional District of Nanaimo wastewater systems. Given a significant lapse in the regular disposal, the Regional District of Nanaimo will be requested to initiate a certified inspection and contract pump and haul removal for that address should it be necessary, charging the property owner with the cost.**

Carried 7-0-1

Reasoning:

Pump and haul systems will overflow into the environment without the benefit of a field. Although there may not be active use for some summer residents, problems have surfaced with property transfers when the responsibilities are not clear.

- 7. The Regional District of Nanaimo Wastewater Services Division will be requested to institute an inspection system of all traditional septic tank systems, recording either the address of septic tank pumping when disposed in the RDN wastewater system, or by means of an inspection report signed by a certified inspector.**

Carried 7-0-1

Reasoning:

Traditional Septic systems tanks can last as long as 20 years without requiring pumping, but can clog up in a few years depending on the input material. A satisfactory status inspection report submitted and verified by the RDN should be necessary every 5 years. Recording of the address during dumping at the RDN site would constitute such a satisfactory status inspection report. A satisfactory inspection report from a certified person other than the property owner would be allowed, thus saving the property owner the cost of pumping.

More as a process of education, existing property owners should be aware that their septic tank can plug up mostly from float or sediment. The primary tank outlet is 24 inches below the tank top and 24 inches above the bottom. Float tends to dome and is deeper at the boundaries, so 16 inches of float will be very close to plugging the outlet. Inspection is not difficult, but requires finding and removing the septic tank main cover, and pushing a

stick into the float and sediment to measure the thickness. Unfortunately many property owners would prefer to ignore the whole process.

- 8. The Regional District of Nanaimo will be requested to contract a certified inspector for septic fields who does not have vested interest in maintenance.**

Carried 7-0-1

- 9. The Provincial authority shall be requested to allow a vegetative grey water treatment in single family housing construction given an approved vegetative grey water treatment system. The Ministry of Healthy Living and Sport shall be requested to allow composting toilets without a septic system.**

Carried 7-0-1

Reasoning:

An existing septic system is still required to handle kitchen sinks, bath tubs and showers, unless there is an alternative grey water system. Vegetative systems have been developed and do work for grey water. They have not been proven for sewage.

The British Columbia Plumbing Code, section 4.2.1.(1) "Every fixture shall be directly connected to a sanitary drainage system..." followed by exceptions. "Fixture means a receptacle, appliance, apparatus or other device that discharges sewage or clear-water waste, and includes a floor drain." Whether a vegetative grey water system is an approved sanitary drainage system may be the responsibility of the Nanaimo Regional District. A composting toilet is clearly not a sewage fixture.

- 10. The British Columbia Real Estate Association will be requested to provide a due diligence inspection requirement for septic systems, including tanks, treatment systems and fields, specifically targeted to the Islands Trust mandated area.**

Carried 7-0-1

Reasoning:

Property transfer is an ideal time to bring sewage maintenance up to a reasonable standard. Although sellers are responsible for full disclosure of defects prior to sale, the more frequent response is that they were unaware of any problems. Although the process is voluntary on both parties, Real estate

sales include many pieces of paper, and often some of the warnings go unheeded in the fine print.

11. Local volunteer biological water testing should be supported.

Carried 7-0-1

Reasoning:

Current testing procedure limits the knowledge of test location and test results to one person in order to keep them strictly confidential. Often questions are asked as to why results should not be released for general areas as a public service. Unfortunately this would have a deviating impact on individual property owners and values without any clear legal proof of a problem.

12. The Gabriola Island Official Community Plan and Land Use Bylaw Volunteer Review Committee supports the Provincial or Federal authorities providing financial assistance for septic upgrades.

Carried 7-0-1

Reasoning:

Many Gabriola septic systems need ongoing maintenance and upgrades to meet current standards.

Future:

- Energuard and grey water regulations are expected in the future. How far these go is not clear at this time, and should not delay changes that are worthwhile.
- Reverse osmosis for drinking water is an accepted system, with the four to one bypass being easily stored for irrigation. Whole house systems have also been demonstrated, suitable for brackish or contaminated water. Some systems also include bypass recirculation which greatly reduces bypass volumes.