6.5 Protecting the Aquifer

Groundwater is an important resource. The Gibsons Aquifer supplies approximately 73% of Gibsons' potable water. The Gibsons Aquifer is a confined layer of water-bearing sand and gravel that extends from beneath Gibsons Harbour to the base of Mt. Elphinstone. The Gibsons Aquifer is largely overlaid by a low permeable layer called the Aquitard. The Gibsons Aquifer water quality and quantity can be impacted and influenced by a number of factors, including geological conditions, soils, vegetation cover, impermeable cover, sewage disposal methods, handling and storage of potential contaminants and proximity to salt water. Land use and activities (forestry, mining, urban development etc.) also play a significant role in the quality and quantity of water in the Gibsons Aquifer.

As part of its long-term plan to protect the aquifer, the Town completed an aquifer mapping study (2013) in order to gain a better understanding of aquifer boundaries, hydraulic properties, and recharge and discharge to and from the aquifer. Recharge of the Gibsons Aquifer takes place on Mount Elphinstone, through creeks in the area, and through infiltration in areas where no impervious covering layer (aquitard) is present (areas in Upper Gibsons up to the base of Mount Elphinstone). In the Lower Gibsons area the aquitard covering the Gibsons Aquifer can be relatively thin and this requires extra caution for excavations in the area. The study determined that the aquifer has the potential for providing drinking water for up to 10,000 people.

In recent years water metering has been introduced, resulting in lower per capita usage of water from the aquifer and the Town has constructed infrastructure to separate the Gibsons Aquifer drinking water system from the SCRD water system.

Local Groundwater Objectives

- *To manage and protect the Town of Gibsons' water resources on a sustainable basis and to prevent undesirable impacts to water resources.*
- *To avoid the need for chlorination of the Town's water supply.*
- *To work in conjunction with the Ministry of Environment, Vancouver Coastal Health Authority, Sunshine Coast Regional District, residents, and businesses to maintain high water quality and to ensure the sustainable use and protection of the Town of Gibsons' water resources.*
- *To promote water conservation strategies that will reduce water demand by discouraging non-essential, large-scale uses of potable water (e.g. lawn irrigation).*
- *To update the information contained in the Gibsons Aquifer Mapping Study on a regular basis with data gathered from the groundwater monitoring program and with other hydrogeological information that may be acquired by the Town.*
- *To further our understanding of the Gibsons Aquifer and the influences on groundwater including climate change, sea level rise and impacts of increased water usage.*

Policies

General

6.5.1 All proposals for new development shall be required to analyse the potential impacts of the development on the Gibsons aquifer and aquifer recharge zones and to propose and fund measures to protect it in accordance with DPA9.

6.5.2 The Town will implement appropriate enforcement mechanisms for unauthorized excavations and other activities that could damage or pollute the aquifer.

6.5.3 Work with the Sunshine Coast Regional District (SCRD), for example under a fringe area agreement, and other levels of government to ensure appropriate protection measures for part of the Gibsons Aquifer outside of the Town boundaries including well drilling and development permit guidelines.

6.5.4 Advocacy Policy: Work with relevant organizations and government agencies to prohibit activities that could negatively impact the aquifer, such as well drilling, logging, mining, uses that demand an excessive amount of water, activities that extract and sell water, as well as other forms of development that could negatively impact the aquifer.

Groundwater Monitoring

6.5.5 Conduct ongoing assessments of aquifer capacity, recharge rates, and sustainable yield based on data from an annual monitoring program.

6.5.6 Monitor and refine water demand trends based on water metering, zone metering and leak detection/repair.

6.5.7 Assess the availability and sustainability of the Gibsons Aquifer before approving large-scale groundwater–dependent development.

6.5.8 Require additional monitoring wells as shown in the Aquifer Mapping Study as a condition of rezonings resulting in significant increases in aquifer demand.

6.5.9 Develop a water testing and groundwater monitoring policy.

6.5.10 Update the Aquifer Mapping Study conceptual hydrogeological and numerical models as additional information becomes available thorough studies and data gathered by the Town or other parties over the area of the Gibsons Aquifer and within the recharge area.

Groundwater / Aquifer Protection Policies

6.5.11 Protect the quality of both surface water and groundwater.

6.5.12 Prepare an overarching Water Management Plan according to the recommendations in the Aquifer Mapping Study and include regular updates on watershed / aquifer management and well protection plans to minimize risks of contaminating the Gibsons Aquifer.

6.5.13 Work with adjacent jurisdictions to expand the Groundwater Management Zone from the area defined by the Gibsons Aquifer Development Permit Area to include the full extent of the Gibsons Aquifer and recharge area.

6.5.14 Prohibit in priority areas the use of underground fuel storage tanks, chemical storage, and use/storage of other potential sources of surface water and groundwater contamination.

6.5.15 Update the Town's inventory of potential contamination sources and areas of aquifer vulnerability.

6.5.16 Strongly discourage the use of chemical fertilizers, pesticides and herbicides in order to protect the aquifer and adjacent ecosystems.

6.5.17 Liaise with the Ministry of Environment to ensure that industrial activities involving emission of toxic or irritant material meet the most stringent interpretation of its standards with specific regard for the

protection of groundwater catchment areas, surface water and riparian areas and with respect to air-borne industrial pollutants.

6.5.18 *Conduct ongoing public communication programs to raise awareness about the potential for groundwater contamination and the need for aquifer protection.*

Groundwater / Aquifer Recharge Area Policies

6.5.19 Map significant recharge areas according to the recommendations in the Aquifer Mapping Study.

6.5.20 Work with the Ministry of Environment to designate the Gibsons Aquifer watershed as a groundwater management area to maintain the collection and analysis of data on groundwater use and supply, and undertake comprehensive watershed planning.

6.5.21 Council will seek protection under the Forest Act / Land Act of Aquifer re-charge areas which are located outside the Town boundaries.

Water Sustainability and Demand Management Policies

6.5.22 Support the efforts of the Sunshine Coast Regional District to take an integrated approach with the Town of Gibsons for preserving water quality and conserving water use.

6.5.23 Establish and work towards appropriate targets for per capita water use.

6.5.24 Reduce demand-side pressures on the Gibsons Aquifer through water conservation measures to minimize per capita consumption.

6.5.25 Develop a stewardship program with an educational component along with active involvement by landowners aimed at responsible management of the watershed and associated groundwater resources.

6.5.26 Prohibit commercial uses that are reliant on large quantities of water.

6.5.27 Encourage water conservation measures such as the use of low water use fixtures and rainwater harvesting.

Water Asset Management Policies

6.5.28 Include the Gibsons Aquifer in the Town's asset registry and use established asset management policies to operate, monitor and maintain the aquifer.

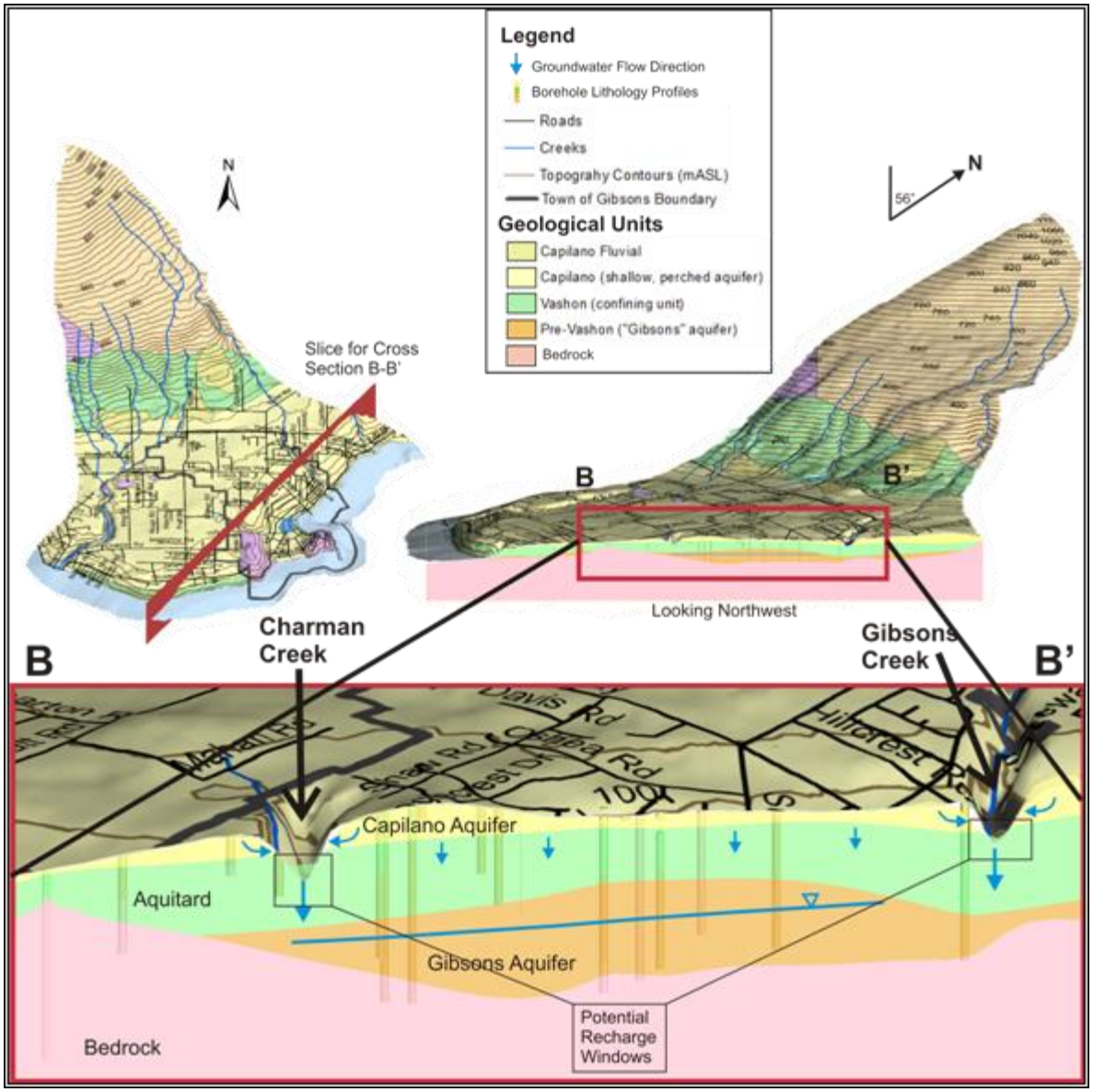
6.5.29 Review metered water charges on an ongoing basis to ensure appropriate water rates are in place to manage all assets, including the natural asset of the Gibsons Aquifer.

6.5.30 Establish an inspection and maintenance regime for the Town wells.

6.5.31 Conduct ongoing assessments of well infrastructure to ensure that the wells and pumps are being operated in the most cost-efficient manner.

6.5.32 Conduct ongoing water main replacements to minimize water losses from the Town distribution system.

6.5.33 Minimize artesian flow losses from Town production wells wherever possible.



Source: Gibsons Aquifer Mapping Study, 2013

Figure 6-1: An overview of the extent and geology of the Gibsons Aquifer