

MEMORANDUM



Date: July 6, 2012
To: Jenni Chancey, District of Squamish
Cc: Peter Gigliotti; Ehren Lee, Urban Systems Ltd.
From: Catherine Simpson, Urban Systems Ltd.
File: 1928.0005.01
Subject: Technical Memo #5 – Community Growth and Planning

This technical memo describes community growth and planning as it relates to the District of Squamish's Liquid Waste Management Plan (LWMP).

1. COMMUNITY OVERVIEW / BACKGROUND

The District of Squamish is situated at the northern end of Howe Sound on the Pacific Ocean, adjacent to the mouth of the Squamish River. Squamish lies within a valley (and the floodplain) of five rivers – the Squamish, Mamquam, Cheakamus, Stawamus, and Cheekeye Rivers. At Howe Sound, the community is at sea level, although the terrain within District boundaries rises to elevations of over 900 meters. The total land area of the District of Squamish is 16,360 hectares¹, however only about one-quarter of the land base in Squamish is expected to be developable².

The LWMP includes all areas within the District of Squamish's boundaries which are serviced by community sewer, or will be in the future (i.e. areas identified for future development). The intention is to understand which areas do, or could, contribute to the wastewater collection system within a 20 year study period. A map of the study area is attached in Figure 2.

There are nine First Nations reserves which border the boundaries of the District. A commitment has been made, through the 2008 Protocol Agreement, for the District of Squamish and the Squamish Nation to address issues of common concern, such as land use, economic development, tourism, provision of municipal services, and mitigation of hazards.

Squamish's Official Community Plan (OCP) and Growth Management Strategy (GMS) will be used to guide the LWMP process. Squamish's mission statement, as described in the OCP, is to *"protect and enhance the livability, sustainability and quality of life for our community and to embrace the benefit from the opportunities before us,"* and the GMS has complementary guiding principles. One of the primary objectives of an LWMP is to protect public health and the environment, which directly supports the OCP's mission statement.

¹ Based on the 2011 Statistics Canada Census Profile for the District of Squamish

² According to the Squamish Growth Management Strategy (2005), which used a total area of 11,730 ha and a potentially developable area of 3,094 ha

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The Service Squamish initiative takes this mission statement a step further by defining four categories which encompass the detailed corporate values:

- **Squamish the Community** – partnering with business, industry, community leaders, and neighbours to create a community network demonstrating environmentally sustainable practices. Providing exceptional service to residents, using progressive and leading edge methods of service delivery, and community engagement are an important part of this.
- **Squamish the Environment** – the natural environment in and surrounding Squamish is what defines the community; it is of critical importance for economic growth and economic sustainability. Minimizing environmental impacts and ecological footprint in operations and decision-making, and leading by example to deliver services that respect the natural environment are an important part of this.
- **Squamish the Economy** – a strong, vibrant, and healthy economy is critical for long-term sustainability. Balancing the cost of providing services in a fiscally responsible manner, and taking innovative and calculated risks to develop and apply creative solutions are an important part of this.
- **Squamish the Corporation** – passion, excitement and empowerment drive District Council and staff. This extends from individual to collective roles in creating and implementing both strategic directions and specific community services.

2. INFORMATION REVIEW

The following information was reviewed in consideration of community growth and planning with respect to the LWMP:

- District of Squamish Official Community Plan (2009)
- Growth Management Strategy (July, 2005)
- Public Works Asset Management Plan (January, 2010)
- Long Term Financial Plan: Part A (October, 2011)
- Statistics Canada's District of Squamish Community Profile (2011)
- Technical Memorandum: Review of Alternative Sanitary Sewer Conveyance Strategies from Downtown Squamish (February 10, 2012)
- Technical Memorandum: Mamquam Wastewater Treatment Plant Capacity and Risk Assessment (January 24, 2012)

Key highlights from this review are presented below.

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Community Objectives and Land Use Plan

As indicated by the Ministry of the Environment in the LWMP Guidelines, Squamish's community goals and objectives should form the basis for the development of this LWMP. As such, the OCP was reviewed with respect to broad community objectives, specific policies guiding liquid waste management, and growth as directed by the community's land use plan. There are a number of guiding principles and that relate to environmental stewardship, natural resource conservation, and the responsible provision of services. These principles are aligned with the GMS for Squamish.

Delving deeper, there are a number of OCP policies which are of particular interest to the LWMP process. These policies generally indicate that the District will not extend sewer services to areas located above 200 meters in elevation, unless for public health reasons, and will only extend such services to designated areas (primarily within Waterfront Landing and the Squamish Oceanfront). These areas are described further below. Growth within existing serviced areas will be accommodated within designated areas, primarily through the infill of vacant and underutilized lands (mostly within the downtown). It should be noted that the GMS, which included a preliminary infrastructure analysis for preferred growth options, was used to guide the creation of the current OCP.

Furthermore, it should be noted that the District has a 12-Step Pledge to reduce greenhouse gas emissions (Appendix A). This includes improving efficiency in municipal water and wastewater systems.

Asset Management

As indicated by the Ministry of the Environment in the LWMP Guidelines, careful planning and integration of water, sanitary and stormwater infrastructure can minimize environmental impacts. Asset management is also essential for understanding the long term investments needed in existing and new infrastructure, and how this relates to managing liquid waste over the 20 year study period. The District has completed a number of comprehensive studies with respect to asset management, most notably a Public Works Asset Management Plan and a Long Term Financial Plan. Major sanitary and stormwater assets noted include:

- 105 km sewer mains,
- 31 km storm sewer,
- 72 km ditches,
- 19 km dykes,
- 25 lift stations,
- 4 dyke pump stations, and
- WWTP capacity: 21 million litres/day.

The District of Squamish owns almost \$440 million in public works assets, and has a cash flow of approximately \$40 million annually. Sanitary infrastructure in Squamish has a value of \$92M (21% of the total asset value), drainage infrastructure has a value of \$35M (8% of the total asset value), and flood protection infrastructure has a value of \$76M (16% of the total asset value). It should be noted that not all areas of Squamish are currently being serviced by community sewer.

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Similar to other municipalities throughout the Province, a significant portion of existing infrastructure assets are nearing the end of their service life and need replacement within next 30 years. Between 2011 and 2040 major asset replacement projects include:

- sewer pipe (AC) replacement,
- most sewage lift stations require replacement,
- wastewater treatment plant (WWTP) equipment,
- process piping and electrical refurbishment/replacement, and
- replacement of four dyke pump stations.

Ensuring 'investment is sufficient to sustain the desired service level indefinitely' was one of the guiding principles developed by staff and Council as part of the Long Term Financial Plan. This was backed by a policy indicating adequate renewal/rehabilitation of existing infrastructure, in accordance with respective Asset Management Plans, as being a subset of sustaining existing service levels. A policy was also recommended to fund ongoing rehabilitation/replacement of assets through user revenue, except for projects over the defined threshold (\$0.3 M in the short term, increasing to \$1.0 M in 5 years) which can be funded through a combination of current revenue, reserves and debt. There is also a desire to consider Public-Private Partnerships as a method of service delivery for new capital works and services where there is an appropriate business case.

Population Growth

Historical growth in Squamish was presented in the District's 2005 GMS, and supplemented by the 2009 OCP. It is reproduced in Table 1 (below) along with the newly available 2011 data from Statistics Canada. Squamish is growing significantly faster than the BC average, with cyclical fluctuations from low to high growth.

Table 1 – Historical Population Growth

Year	Population	5 Year Growth Rate
1981	10,272	22.8%
1986	10,155	-1.1%
1991	11,705	15.3%
1996	13,994	19.5%
2001	14,247	1.8%
2006	14,949	4.9%
2011	17,158	14.8%

Establishing target populations and selecting a growth rate is key. The Ministry of the Environment's LWMP guidelines suggest a planning horizon of 20 to 40 years for tasks such as site selection and land acquisition, and shorter horizons for facility capacity planning. For the purposes of this LWMP, a 20 year horizon was selected. This is also aligned with the OCP's planning horizon.

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The GMS and OCP projected that Squamish's population will almost double between 2006 and 2031. Given the newly available 2011 Statistics Canada Census data for Squamish, population trends indicate slower growth than anticipated. However, for the purposes of this study, we have adopted the OCP and GMS numbers which are referenced in Table 2.

Table 2 – Population Projections

Year	Population
2011	20,300
2021	26,100
2031	33,100

In comparison, a population projection of 17,759 people in 2011 and 33,100 people in 2031 was used in the Mamquam WWTP Capacity and Risk Assessment Technical Memo (2012). Factoring in the estimated industrial, commercial and institutional population equivalents from this Technical Memo, the total population equivalents expected for the WWTP are 24,702 in 2011 and 45,789 in 2031. The 2031 population equivalents are presented in Table 3.

Table 3 – Projected 2031 Population Equivalents

Year	Population Projection	ICI* Population Equivalents	Total Population Equivalents
2031	33,100	12,689	45,789

* ICI = Industrial, commercial and institutional customers

Growth will generally be focused in the downtown, within existing neighbourhoods through infill, and into new neighbourhoods that are contiguous to the existing serviced urban area, as identified in the OCP. In general, the majority of new growth (approximately 75%) is anticipated in South Squamish within the 20 year study period³.

The District is anticipating capacity issues with sanitary sewer infrastructure due to recent and proposed development. Two major developments which are expected to have the largest impact on future servicing include:

- Waterfront Landing; and,
- Squamish Oceanfront, overseen by Squamish Oceanfront Development Corporation (SODC)

³ Using 45,789 new Population Equivalents (PE) in 2031 community-wide from the Technical Memorandum: Mamquam Wastewater Treatment Plant Capacity and Risk Assessment (January 24, 2012), and 15,542 new PEs in South Squamish based on the Technical Memorandum: Review of Alternative Sanitary Sewer Conveyance Strategies from Downtown Squamish (February 10, 2012)

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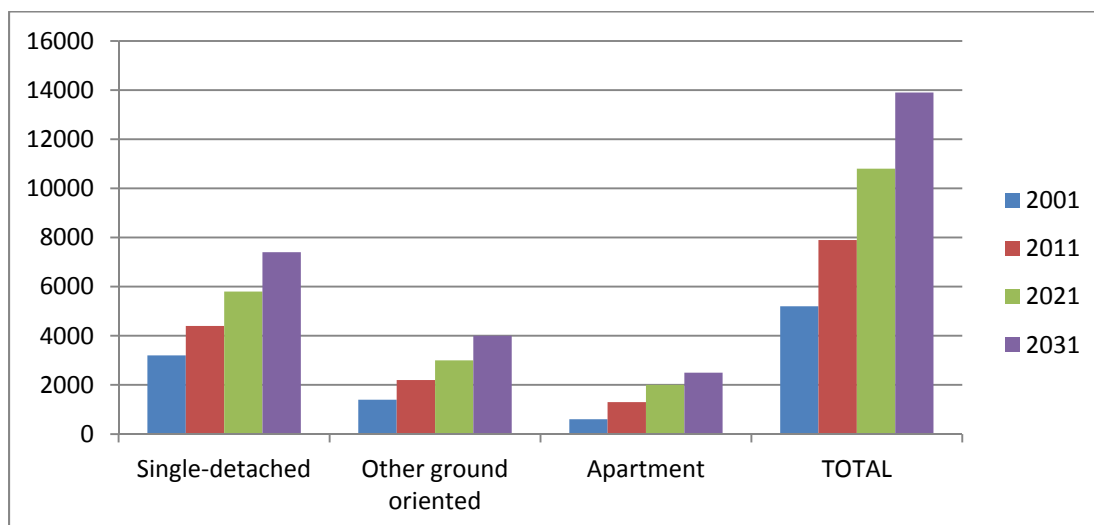
Waterfront Landing is planned to reach full build-out in 20-25 years, and the Squamish Oceanfront will likely take 30 years to reach full build-out. Both developments will affect sanitary loading in the current sewer catchments⁴.

There are a number of smaller applications for development in the downtown area as well; some have been approved and some are under construction. Outward expansion beyond the downtown area in South Squamish is expected to experience slow growth (i.e. Valleycliffe, Dentfille, Business park, and North Yards areas)⁴. Overall, the District intends to direct new growth to areas immediately adjacent to existing developed land (as opposed to leapfrog development). Projected population equivalents for Waterfront Landing, the Squamish Oceanfront, and other areas of South Squamish are provided in Appendix B. A map of developable areas is attached in Figure 3, and the growth areas described above are shown in the attached Figure 4.

Types of Development

The GMS and OCP projected dwelling units by structural type in Squamish for 2011, 2021 and 2031 as shown in Figure 1.

Figure 1 – Projected of Dwelling Units by Structural Type



Residential building permits from 2011 years show significantly less growth than predicted; according to Statistics Canada Census data for 2011, there are 6,953 private dwellings in Squamish, which is 16% growth from 2006 compared to the 52% that had been expected according to the GMS and OCP.

Looking at the correlation between population and dwelling units, there are currently 2.5 people per dwelling unit which is very similar to the 2.4 people per dwelling unit projected for 2031.

⁴ Technical Memorandum: Review of Alternative Sanitary Sewer Conveyance Strategies from Downtown Squamish (February 10, 2012)

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New development will be focused in South Squamish, consisting of mixed use residential, employment, commercial and institutional development. A series of mixed-use neighbourhood nodes are also planned for each major residential area, consisting of neighbourhood scale retail shopping, services and institutional uses. The intention is to minimize municipal infrastructure costs for servicing growth and development.

3. SUMMARY

The following is a summary of community growth and planning considerations and opportunities in Squamish as it relates to the LWMP. It is recommended that the LWMP Committee consider the level of confidence regarding the following statements:

- Growth will occur as stated in the GMS and OCP
- Most of the community's growth will be located in South Squamish, particularly in Waterfront Landing and the Squamish Oceanfront
- Timing of projected growth and development (population, equivalents, and dwelling units), within the 20 year study period, will occur as stated in Section 3
- Growth projections sufficiently encompass the expanded District boundaries since the GMS was completed
- New boundary expansions are not anticipated within the 20 year study period

Furthermore, some opportunities have been identified which the LWMP process should consider further:

- Municipal Type Servicing Agreement – Should such an agreement be something the District of Squamish and the Squamish Nation are interested in moving forward with in the 20 year study period, the impacts of extending the District's municipal sanitary services to areas within the Squamish Nation should be considered as part of this project.
- Asset management – Major sanitary and stormwater assets need replacement within next 30 years. Renewal of existing assets, particularly sanitary and stormwater infrastructure, has important implications for options that will be developed throughout the LWMP process. This is something that should be considered further as part of this project.
- Preserving the natural environment – In support of Squamish's continued vision and branding as the Outdoor Recreation Capital of Canada, there are many opportunities to consider the adequate preservation of the natural environment in and around the District as part of the LWMP process.
- Energy – The management of energy is an important element of the OCP, including innovative approaches to district energy generation in the downtown. There may be an opportunity to explore this further with respect to managing liquid waste in support of the District's commitment to

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investigating the feasibility of a District energy utility and system. Furthermore, it would support the District's 12-Step Pledge to reduce greenhouse gas emissions.

- Grey water – The OCP has policies regarding Green Building, and has committed to preparing a Municipal Green Building Policy. There may be an opportunity to explore incentives, guidelines and regulations regarding grey water use (in municipal and non-municipal buildings and facilities) further as part of this LWMP.

4. ISSUE DEFINITIONS

The following community growth and planning issues have been defined to support development of the LWMP:

- **Land Use Planning** – The OCP and GMS provide the District's direction for future growth and development, and the L WMP process will take its direction from these documents. The OCP and GMS lay the groundwork for understanding existing and future infrastructure servicing needs, and protecting potential waste management or natural resource sites. Population growth in Squamish, given 2011 Statistics Canada Census data, is growing at a much slower rate than predicted in the GMS and subsequently prepared OCP, upon which the sanitary system analysis was based. Clarity regarding the location, type, amount, and timing of planned growth and development will prevent large expenditures in future treatment, storage and other related waste management facilities.
- **Asset Management** – Over the life of the District's assets, the largest portion of these assets need replacement within the next 30-35 years. This includes major sanitary and stormwater infrastructure. In conjunction with new development, consideration should be given to the renewal of existing assets and the implications on liquid waste management options being considered. More detail on the District's sanitary and stormwater assets is provided in Technical Memo # 1: Collection.
- **Growth and New Development** – Major new development is expected over the next 20-30 years, in addition to high population growth, and approximately 75% of growth is expected to occur in South Squamish. The capacity of existing infrastructure, evaluated during the GMS, was noted as limited and undersized for projected growth scenarios. Significant work has already been undertaken to determine how best to accommodate this growth and development. The outcomes of will significantly affect the District's options for managing liquid waste into the future.
- **Boundary Expansions** – The District's boundaries have grown by 40% since the GMS was completed. Boundary expansions result in additional servicing requirements, and would affect loads on the sanitary system. By not considering the impacts of potential boundary expansions, planned treatment, storage and other related waste management facilities may be undersized. This could result in significant expenditures to accommodate the additional capacity needed. Further information would need to be collected to consider recent or potential new boundary expansions in the LWMP process.
- **Municipal Type Servicing Agreements** – The District of Squamish and the Squamish Nation have a commitment to explore opportunities for extending the District's municipal services to Reserves that contain residential development, subject to appropriate servicing agreements. As with additional

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servicing requirements related to boundary expansions, this would affect loads on the sanitary system and could result in significant future expenditures to accommodate the additional capacity needed. If the District and Squamish Nation are interested in pursuing a servicing agreement, this should be considered as part of the LWMP process.

- **Environmental Protection** – Squamish is the Outdoor Recreation Capital of Canada, and the natural environment in and around the District is essential to future growth and sustainability of the community. This extends beyond land use planning to active ecosystem protection, air quality initiatives and energy conservation. In order to maintain the community's vision and branding into the future, the LWMP must adequately consider how to preserve these valued natural resources moving forward.

5. RELEVANT MAPS

The attached maps illustrate the LWMP study area for this project (including serviced areas and the current municipal boundary, potentially developable areas as indicated in GMS, and projected growth areas in South Squamish (where the majority of new development is expected to occur).

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