

November 2019

Sunnyside Wastewater Local Service Asset Management Plan



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Version Log

This document was carefully prepared so that it can be maintained as a living document; a document that is continually edited and updated. Through the various edits and updates, this document may evolve and be expanded as needed. This may be as a result of infrastructure replacement or could be due to changes in regulatory requirements, technology, staffing, or environmental conditions. Regardless of the reason, updates to this asset management plan will be key to the ongoing operation of the Sunnyside wastewater local service.

Version	Revised By	Date	Description
1	D. Joseph	November 28, 2019	Final report for Board of Directors approval

Acknowledgements

Completion of this Asset Management Plan would not have been possible without contributions and support from the following staff:

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1. Local Service Information

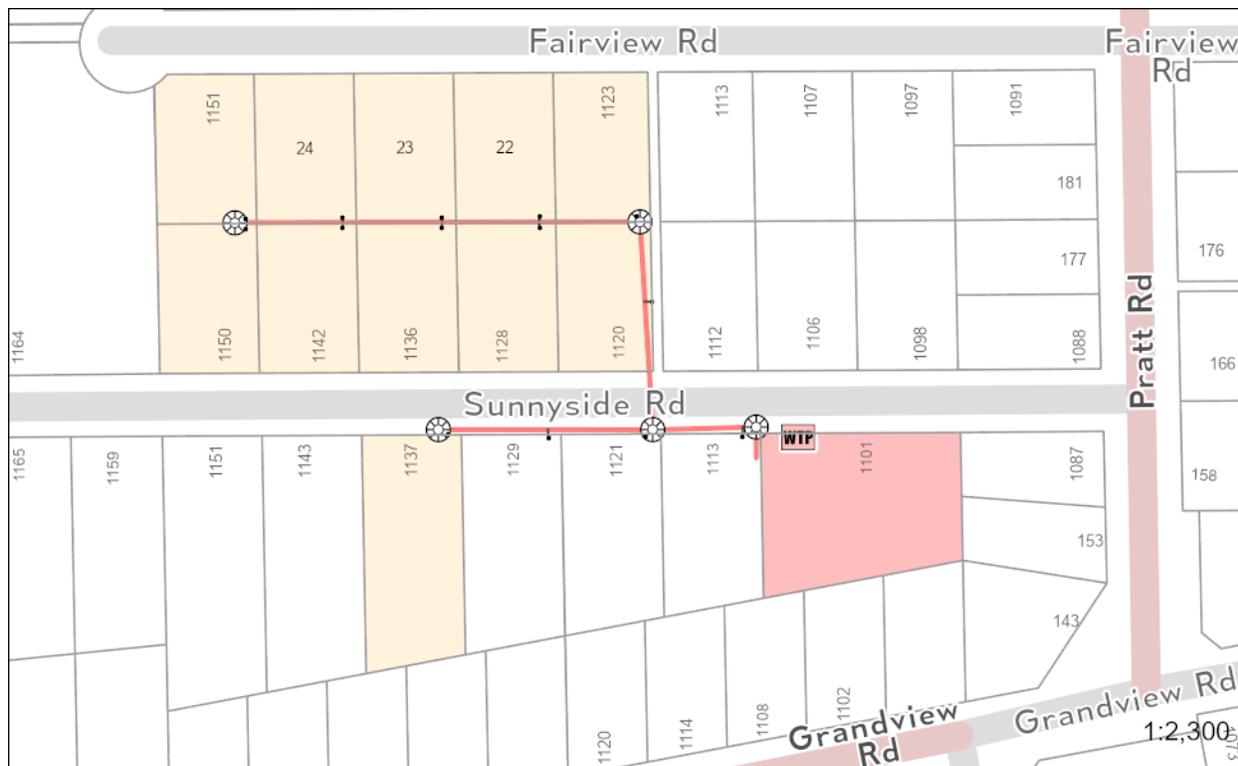


Figure 1 – Map of Wastewater Local Service Area and Infrastructure

- Address: 1101 Sunnyside Road
- Original Construction: 1977
- Taken over by Sunshine Coast Regional District (SCRD): 1979
- Establishment of Local Service: 1996
- Major Upgrades: None to date
- Treatment System Owner: SCR D (on private land)
- Number of Fronting Parcels: 11 Residential
- Number of Users: 8
- Treatment Process: Septic tank
- Treatment Permit #: Not required
- Permitted Discharge Amount: < 22.7 m³/day
- Regulatory Authority: Public Health Act
- Effluent Receiving: Ground
- EOCP Classification: Unclassified
- Statutory Right of Ways: G10580 (registered February 16, 1979, for rear yard access to the collection system)

1.1. Development Details

The Sunnyside wastewater local service area is located in the Elphinstone Electoral Area (Area E) of the SCRD. The treatment and disposal systems are located within a parcel of land also used as a regional park (Sunnyside Park) which is maintained by SCRD Facility Services and Parks Division staff.

This community wastewater systems were constructed in 1977 to assist with the development of new single-family dwellings in the neighbourhood. The parcels in this service area were identified as having insufficient pervious soil material in their rear yards for constructing an onsite drainfield. The systems were managed by the developer until 1979 when the SCRD began overseeing the service.

The arrangement of a regional park sharing the same land as a drainfield is unique.

1.2. Established Bylaws

There have been various bylaws adopted by SCRD Board of Directors that are relevant to the Sunnyside wastewater local service, as listed in Table 1.

Table 1 – Established Bylaws Pertaining to the Wastewater Local Service

Bylaw No.	Bylaw Name	Purpose
232A	Package Plants Service Unit (1983)	Established a designated area for the purpose of providing sewage collection, treatment and disposal within Areas A, B and E.
1026	Sewage Treatment Facilities Local Service (1996)	Converted the Package Plants Service Unit to a local service.
428.19	Sewage Treatment Facilities Service Unit (2019)	Establishment of, and subsequent updates thereto, sewage treatment facilities frontage and user charges.
512	Sewage Treatment Facilities Reserve Fund (2001)	Established a capital reserve fund for sewage treatment facilities.
608	Sewage Treatment Facilities Service Operating Reserve Fund (2007)	Established an operating reserve fund for sewage treatment facilities.

2. Description of Assets

The following sections outline the current state of the wastewater systems by providing answers to the following questions:

- What do we own?
- Where is it?
- What is its condition?
- What is its useful life?
- What is its value?

2.1. Treatment and Disposal Systems

Primary treatment of the influent takes place in individual household septic tanks located on the residents' properties. Each property's grey water is pumped or gravity fed into the collection system, which terminates at the community treatment tank.

The community treatment tank, which acts as secondary treatment, is an underground concrete septic tank located in northwest corner of 1101 Sunnyside Road. There are four outlets from the tank which allows the effluent to be diverted to multiple fields located throughout the parcel. The fields provide effluent disposal through a combined 770 m of perforated drainage pipe.

2.2. Collection System

The collection system has approximately 300 m of 200 mm diameter, asbestos cement (AC) gravity mains, and five manholes. The infrastructure depth varies between 1.10 m and 2.65 m below grade.

Approximately 180 m of the mains and two manholes are accessed through a Statutory Right of Way that extends from Sunnyside Road through the east side of 1120 Sunnyside Road and through the rear yards of ten of the homes that front on both Fairview Road and Sunnyside Road. Nine of those properties connect to the system through the rear right of way while 1120 Sunnyside Road connects from the right of way on the east side of its property.

2.3. Asset Accessibility

Although the service area for Sunnyside is fairly small, there are multiple accessibility concerns regarding infrastructure maintenance and replacement.

- Access to the wastewater collection system in the Statutory Right of Way will require removal of the existing vegetation, including various bushes and trees. A cedar fence, and fence posts, will also need to be removed.
- The land that the community treatment tank and drainfield is on is not owned by the SCRD. Additionally, a Statutory Right of Way or memorandum of understanding could not be located that authorizes the SCRD to enter the property to construct, install, maintain, and operate a Regional District wastewater system.
- The playground surround, covering approximately 88 m², is situated directly on top of a portion of the drainfield. As previously mentioned, it is assumed that the existing drainfield may be replaced with a smaller one. If that assumption is true, the perforated pipe under the playground could be abandoned and the playground may be able to remain in place without being dismantled. It is also possible that the playground will no longer be permitted when the treatment and disposal systems require replacement. (A Statutory Right of Way does not exist for the playground equipment.)

2.4. Asset Condition

Wastewater treatment system condition was determined by staff based on several factors.

- Previous or immanent failure of the system;
- Frequency of system repairs;
- Age of system; and
- Ability to regularly meet effluent quality regulations.

Based on these factors each system in the local service area was assigned a condition rating from excellent to poor. An excellent condition is assigned to systems in near new condition, good to systems with few minor defects, fair to systems with moderate defects or signs of aging, and poor to systems that cannot currently function as designed, or will soon cease functioning without repair, due to flow volumes, defects, or aging.

Based on the estimated useful life (EUL), the community septic tank has approximately 16% of its lifespan remaining. However when the tank was last pumped out in 2015, there were no reported structural concerns noted. A visual inspection of the tank during its next pump out will provide staff with a better understanding of its current condition and whether it may exceed its EUL. The treatment system is in fair condition.

A percolation test on the drainfield was conducted in 2019 to assess the condition of the perforated pipe (the test determines the water absorption rate at

an exposed section of the pipe). While there has been no surface issues noted with the drainfield, it is now beyond its EUL and poses a concern for potential failure in the near future. The results of the percolation test revealed no issues with percolation over three of the runs tested, however it was noted that the lower run was taking excess effluent compared to the others. The disposal system is in fair condition.

The condition of the collection system was assessed in 2018 through CCTV inspections. During the inspection one pipe segment and two manholes were observed to have moderate defects. The collection system is in fair condition and can be upgraded upon completion of the necessary repairs.

2.5. Asset Replacement Value

It is expected that the treatment process that was installed 43 years ago will not meet regulatory requirements when the community treatment tank is due for replacement. Additionally, the existing drainfield exceeds what would typically be required for the number of parcels that are serviced and may be replaced with a smaller field. To account for these factors, a replacement value was estimated based on the treatment and disposal systems at Canoe Road wastewater local service area.

At Canoe Road, influent is pumped to elevated treatment modules where it is processed through filter media and disposed of in a trenchless drainfield. This process was chosen for determining a replacement cost for Sunnyside based on a similar number of users and relatively low construction cost. A feasibility study should be completed by a professional engineer to determine the treatment and disposal process best suited for the conditions at Sunnyside wastewater local service.

Replacement value for the collection system was estimated based on individual component replacement values. Additional costs for the removal and replacement of bushes, trees, and the cedar fence that extends the length of the statutory right of way were factored into the replacement cost.

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Table 2 – Asset Replacement Value Summary

Asset Type	Replacement Cost (2018 \$)	Year Installed	Estimated Useful Life	Remaining Useful Life
Treatment System	\$ 217,840	1977	50	8
Drainfield	N/A ¹	1977	40	-2 ²
Collection System	\$ 204,278	1977	85	43

3. Operations and Maintenance (O&M) Plan

Operations and maintenance (O&M) are the activities that ensure the wastewater systems are able to continue to function as designed throughout their EUL. These activities include routine inspections and readings, unforeseen repairs, effluent sampling, and ongoing condition assessments. User fees and parcel taxes are collected annually to fund these activities.

As discussed in the Wastewater Service Review, the current fees and taxes are combined and can be used to fund the operational expenditures for the year. The recommendation in the Wastewater Service Review is for user fees to provide sufficient revenue for operational expenditures and for parcel taxes to be invested in capital renewal and replacement.

3.1. Current O&M Fees

The users of the Sunnyside wastewater local service are charged user fees of \$125.00 per year (including a 25% increase in user fees in 2019) and those properties within the service area boundary as outlined in Bylaw No. 1026 are charged \$51.00 in parcel tax per year (including a 2% parcel tax increase in 2019).

3.2. Current O&M Budget

The budgeted and actual expenditures of the Sunnyside wastewater local service from 2015 to 2018 are shown in Table 3. The breakdown between expenditure related to the collection system and the treatment and disposal systems has not

¹ The treatment system and drainfield have been assigned a single replacement cost. Both systems are anticipated to be replaced at the same and have the same estimated useful life.

² A negative Remaining Useful Life indicates that the asset has lasted longer than the expected norm. It is not necessarily directly related to asset condition or that the asset has failed.

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been recorded. As there have been no recent issues identified with the collection system, all expenditures are assumed to have been allocated to the treatment and disposal systems.

Table 3 – Budgeted and Actual Operations and Maintenance Expenditures

Expenditures	2015	2016	2017	2018	Average
Budget	\$ 1,375.00	\$ 1,298.00	\$ 1,159.00	\$ 1,206.00	\$ 1,259.50
Actual	\$ 587.00	\$ 239.00	\$ 318.00	\$ 416.82	\$ 390.21
Variance	\$ 788.00	\$ 1,059.00	\$ 841.00	\$ 789.18	\$ 869.30

Overall, the operations budget decreased by 12% between 2015 and 2018, while the actual expenditure decreased by 29% during the same period of time. The majority of the actual expenditure (92%) was to pay for staffing expenses of operational and administrative staff.

3.3. Potential O&M Budget

The potential O&M budget was created based on an optimal level of service for the systems at Sunnyside local service area. Similar to the existing O&M budget, staff wages account for the majority of the potential annual O&M budget for Sunnyside. The required monthly and annual tasks are primarily completed by a Utility Technician. Due to the relative simplicity of the infrastructure, the hours required to complete an optimal level of service at Sunnyside are much less than treatment systems with mechanical equipment.

Significant expenses included in the potential operating budget are:

- Staffing expenses, including
 - O&M staffing requirement;
 - Administration of the wastewater system by Utilities Services staff;
 - SCRD Administration Services contribution;
- Proportioned charges for non-annual contracted services; and
- Proportioned share of service vehicles, tools, and miscellaneous expenses.

Future replacement of the treatment system may result in an increased O&M budget. The treatment system mentioned in the Section 2.5 would increase the required O&M hours by as much as 80%. Other expenses relating to that type of

treatment system include B.C. Hydro utility charges and scheduled filter media and equipment replacement.

With the inclusion of all ancillary charges, the potential operating budget for Sunnyside wastewater local service is \$3,416. The potential user fee for the eight users in this service area is \$427, a 242% increase from 2019 rates. This increase is primarily attributed to the separation of property tax revenue from the operating budget and improving the level of service delivered to this local service area.

4. Capital Plan

Capital expenditure is required for the periodic renewal or replacement of wastewater systems or system components. A capital plan considers many of the topics already covered in this plan including asset replacement values and EULs, asset condition, and following a well-developed O&M plan.

The SCR D does not have a long-term capital funding plan in place for the wastewater infrastructure at Sunnyside.

4.1. Reserve Balances

As of the end of 2018, there was \$17,487.53 in capital reserves and \$7,251.62 contributed to operating reserves. Under the existing method of revenue collection and use, these reserves could be combined to invest in capital renewal or replacement projects if required.

There is currently no requirement for Sunnyside to have a reserve balance that is defined by either denomination or percentage. Based on the current reserve balance and 2019 budget transfers, Sunnyside's reserves are 6% of the estimated replacement value of the infrastructure.

4.2. Potential Capital Budget

Budget models considering four different time frames (10, 20, 50, and 80 year periods) were prepared for consideration, each with varying impact on parcel tax and with different systems requiring replacement over the selected time frame. For each model two plans were prepared: a 10% parcel tax increase every five years, or a fixed parcel tax throughout the model time frame.

Each model factors in funding the full cost of the infrastructure requiring replacement within the life of the model. Any debt incurred during the timeframe

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of the model is paid off in full with interest and the model terminates with a reserve balance equal to 10% of the projected value of the infrastructure in the last year of the model.

The highlighted budget plans represent the shortest term in which all infrastructure (i.e. the treatment, disposal, and collection systems) will need to be replaced.

Table 4 – Potential Capital Budget Options Based on Model and Payment Method

Capital Budget	Model	Infrastructure Replaced	Payment Method	Total Revenue	Parcel Tax (Year 1)
Plan 1	80-Year	Treatment System (2) Drainfield (2) Collection System (1)	Even Annual Contribution	\$ 3,579,200	\$ 4,067
Plan 2	80-Year	Treatment System (2) Drainfield (2) Collection System (1)	10% Increase Every Five Years	\$ 5,128,229	\$ 2,594
Plan 3	50-Year	Treatment System (1) Drainfield (1) Collection System (1)	Even Annual Contribution	\$ 1,464,500	\$ 2,663
Plan 4	50-Year	Treatment System (1) Drainfield (1) Collection System (1)	10% Increase Every Five Years	\$ 1,694,945	\$ 1,934
Plan 5	20-Year	Treatment System (1) Drainfield (1) Collection System (0)	Even Annual Contribution	\$ 408,700	\$ 1,858
Plan 6	20-Year	Treatment System (1) Drainfield (1) Collection System (0)	10% Increase Every Five Years	\$ 418,502	\$ 1,640
Plan 7	10-Year	Treatment System (1) Drainfield (1) Collection System (0)	Even Annual Contribution	\$ 334,750	\$ 3,043
Plan 8	10-Year	Treatment System (1) Drainfield (1) Collection System (0)	10% Increase Every Five Years	\$ 336,263	\$ 2,911

In addition to the replacement of the wastewater systems, the capital budget also includes proportioned short-term debt payments for the purchase and replacement of two service vehicles.

As mentioned in Section 2.3, replacement costs and timing were based on the infrastructure recently constructed at Canoe Road. Different treatment and

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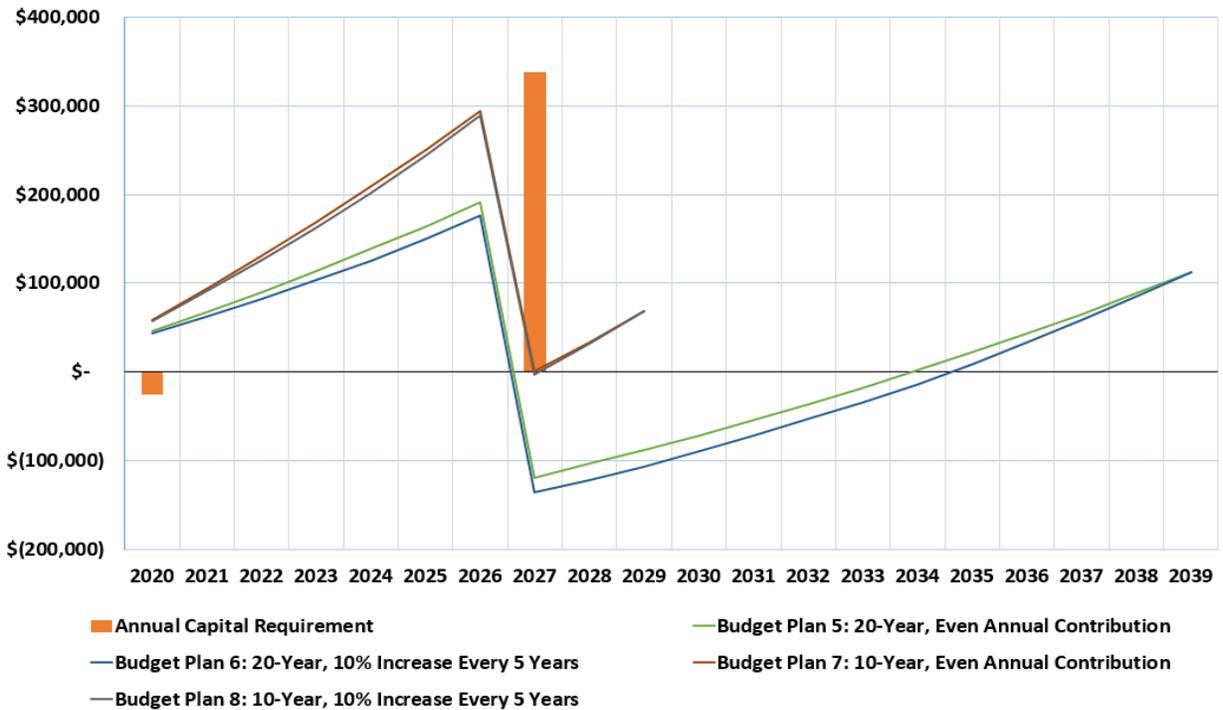
disposal systems may have different replacement times than noted in Table 4. For example, the proposed trenchless drainfield was assigned a longer EUL than a drainfield with perforated pipe. If a piped drainfield were to be installed it is assumed that, based on its EUL, it would need to be replaced in the 50-Year model, prior to the treatment system replacement.

The above models do not factor in costs associated with parcel transfer in order for the SCR D to secure land ownership of the wastewater treatment and disposal property.



Figure 2 – Wastewater Local Service 50-Year and 80-Year Capital Plans

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5. Additional Local Service Improvement Actions

Additional operational work is required in the Sunnyside wastewater local service area that falls outside of the typical operational and maintenance plan. These items have been listed due to the potential financial impact that they may have on the users and fronting properties of the local service.

Table 5 – Local Service Improvement Actions

Action Item	Target Year	Cost Estimate	Result
Engage consulting services to complete a feasibility study on potential options for treatment system replacement.	2020	\$ 7,500	To be determined.
Review Bylaw No. 1026 to ensure fronting properties in the local service area have been correctly identified.	2020	Staff time to review.	To be determined.

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Action Item	Target Year	Cost Estimate	Result
<p>Investigate potential for a transfer of title on 1101 Sunnyside Road prior to the treatment and disposal systems requisite replacement. If transfer of title cannot be obtain, secure a Statutory Right of Way for legal access onto the property in conjunction with a restrictive covenant that would limit the use of the property to a community wastewater treatment and disposal site.</p>	2021	Dialogue with property owner required prior to cost estimate.	To be determined.
<p>Repair the moderate rated defects in the collection system noted in the CCTV inspection.</p>	2021-2023	\$ 4,100	To be determined.