INFRASTRUCTURE SERVICES COMMITTEE

Thursday, October 14, 2021
Held Electronically
and Transmitted via the SCRD Boardroom,
1975 Field Road, Sechelt, B.C.

AGENDA

CALL TO ORDER 9:30 a.m.

AGENDA

1. Adoption of Agenda

PRESENTATIONS AND DELEGATIONS

REPORTS

2.	Water Supply Update General Manager, Infrastructure Services **Regional Water (Voting – A, B, D, E, F and Sechelt)**	Verbal
3.	2021 Drought Response and Emergency Operations Centre –Update General Manager, Infrastructure Services / General Manager, Corporate Services/CFO **Regional Water (Voting – A, B, D, E, F and Sechelt)**	Annex A pp 1 - 4
4.	Drought Response Plan 2021 Summary Water Sustainability Coordinator **Regional Water (Voting – A, B, D, E, F and Sechelt)**	Annex B pp 5 - 17
5.	Summary of Wastewater Feasibility Study Manager, Asset Management **Waste Water (Voting – A, B, D, E, F)**	Annex C pp 18 - 126
6.	RFP 2137008 Contract Award Asphalt works for Henry and Chaster Road Watermain Replacement Manager, Capital Projects **Regional Water (Voting – A, B, D, E, F and Sechelt)**	Annex D pp 127-130
7.	Wood Waste Receiving and Processing - Contract Extension Manager, Solid Waste Services **Regional Solid Waste (Voting – All)**	Annex E pp 131-133
8.	Islands Clean Up Community Check-in Engagement Summary Solid Waste Programs Coordinator / Manager, Solid Waste Services **Regional Solid Waste (Voting – All)**	Annex F pp 134-144

9. Request for Proposal 2161309 Contract Award Supply & Install Pool Facility UV Light Filtration System — Annex G, pp 145-146
Interim Manager, Facility Services
Community Rec Facilities (Voting – B, D, E, F, TOG, Sechelt, SIGD)

10. Water Supply Advisory Committee Meeting Minutes of September 13, 2021 — Annex H, pp 147
Regional Water (Voting – A, B, D, E, F and Sechelt)

11. Solid Waste Management Plan Monitoring Advisory Committee Meeting Minutes of September 21, 2021 — Annex I, pp 148-149
Regional Solid Waste (Voting – All)

COMMUNICATIONS

12. Allan Johnsrude, Regional Executive Director, Ministry of Forests, Lands and Natural Resource Operations and Rural Development dated September 8, 2021 — Annex J, pp 150-153
Regarding Church Road Well Field Project

NEW BUSINESS

IN CAMERA

ADJOURNMENT

SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Infrastructure Services Committee – October 14, 2021

AUTHOR: Remko Rosenboom, General Manager, Infrastructure Services
Tina Perreault, General Manager, Corporate Services / Chief Financial Officer

SUBJECT: **2021 DROUGHT RESPONSE AND EMERGENCY OPERATIONS CENTRE UPDATE**

RECOMMENDATION(S)

THAT the report titled 2021 Drought Response and Emergency Operations Centre Update be received for information;

AND THAT staff be authorized to proceed with completion of the permitting and approvals process of the Edwards Lake Emergency Siphon system project;

AND THAT the estimated total project expenditures of $175,000 be funded from [370] Regional Water Operating Reserves;

AND FURTHER THAT these recommendations be forwarded to the October 14, 2021 Board Meeting.

BACKGROUND

On August 23, 2021, the Sunshine Coast Regional District (SCRD) activated an Emergency Operations Centre (EOC) to coordinate and elevate its efforts to address the impacts of the ongoing drought on the community water supply. The primary focus of the EOC is guaranteeing adequate water supply to users on the Chapman Water System. The SCRD deactivated the EOC on September 21, 2021 after significant rain events occurred in mid-September in the upper watershed.

At its August 27, 2021 meeting the Board adopted the following recommendation:

239/21 THAT the report titled “Financial Implications EOC-2021 Drought Response” be received for information;

AND THAT the Budget for the 2021 EOC-Drought Response 2021 be approved for up to $417,500, whereas $217,500 are for operational items funded from the existing 2021 [370] Regional Water Service [370] Budget and $200,000 for capital items funded from Regional Water Service [370] Capital Reserves;

AND THAT staff work with Emergency Management BC on the potential reimbursement of some of the expenditures associated with the 2021 EOC-Drought response activation thru the BC Disaster Financial Assistance program;

AND THAT the SCRD Board and delegated authorities be authorized to enter into an agreement on the 2021 Emergency Water Supply with the Town of Gibsons; AND FURTHER THAT the 2021-2025 Financial Plan be amended accordingly.

The purpose of this report is to provide the Board with an update on the emergency measures initiated through the EOC and the financial implications of the EOC activation.

DISCUSSION

Status Update on Emergency Measures

The following emergency measures were implemented as part of the EOC activation.

1. Edwards Lake Emergency Siphon System

The development of an emergency siphon system at Edwards Lake was initiated to facilitate the withdrawal of water from Edwards Lake below our current outlet at the lake. This project consisted of several components of which their current status is listed in the table below.

Project component	**Status**
Engineering design	Completed
Environmental Impact Assessment	Started
Archeological Impact Assessment	Initiated, not started yet
Park Use Permit Application	Submitted to BC Parks
Water Sustainability Act Use Approval Application	Submitted to FLNRORD
Rights and Title Review Application	Submitted shíshálh Nation
Procurement	Purchased and received main components (including siphon pipes)
Construction plan	Final draft completed

While this project will no longer be required as part of the 2021 Drought Response, initiated due to water supply conditions in late summer this year, it would be beneficial to complete the assessments and add the Edwards Lake emergency siphon system to the Chapman Water System Emergency Response Plan. This would allow staff to construct and commission the siphon system on short notice in the event of a potential future emergency, for example if water could not be diverted from Chapman Lake due to an infrastructure failure or a natural event.

Staff reached out to the regulators to which applications for this project have been submitted and have received a willingness to consider this project as a long-term emergency measure. Staff therefore recommended to advance the development of this project as part of its regular work plan.

2. Emergency Water Supply Town of Gibsons

The Town of Gibsons and the SCRD signed an agreement that allowed for water supply by the Town of Gibsons during the summer of 2021. This emergency water supply was active between September 1 and 20. During that period 5850 m^3 was provided, equaling approximately 280 m^3 per day, which amount to about 3% of the average daily demand by the community during that period.

One of the terms of this agreement is that the SCRD will provide a similar amount of water to the Town of Gibsons later in 2021.

3. Water shut-off notifications

Staff send out shut-off notices throughout the year, to properties with large, persistent leaks that have received several notifications about the leak and their resulting high water use. On August 27, as part of the EOC efforts to reduce overall water demand, staff sent out 15 shut-off notices to residents and commercial properties, to encourage owners to fix their leaks quickly. Staff

were in contact with all owners throughout September, and scheduled site visits to provide support and confirm the leak had been fixed. Twelve property owners have resolved their leaks, the resolution of the leak on one property is anticipated shortly, and two properties with more extensive infrastructure are actively working to resolve their leaks.

4. Letters to above average water users

On September 1, staff sent 350 letters to water users using over 1,400 litres per day, based on the average use in July, and 338 leak letters as part of the regular quarterly mail out. These letters included information about the EOC and how to sign up for the Monthly Water Use Update. Staff received approximately 50 follow up phone calls about these letters through September and early October, and encouraged all callers to sign up to the Monthly Water Use Update, which increased from 302 to 434 between September and October.

Operational Implications

The staff time required for the EOC activation and the implemented emergency measures have had a substantial impact on the progress on operational and capital projects within the Infrastructure Services Department. Staff are currently adjusting their work plans accordingly.

Financial Implications

As the SCRD is in ongoing discussion with Emergency Management BC regarding financial compensation for some of the expenditures associated with this EOC activation, a full overview of the financial implications of this EOC cannot be provided yet. Such overview will be provided at a future Committee meeting.

Staff have already incurred approximately $135,000 in costs for the development of an emergency siphon system for Edwards Lake. These costs are related to:

- Procurement of materials (incl. pipes and valves) due to purchasing and scheduling lead times during EOC activation
- Off-site assembly of siphon sections
- Environmental Impact Assessment
- Permit applications fees

Additional expenditures related to the completion of an Archeological Impact Assessment and the purchasing of some remaining parts are estimated to be approximately $40,000.

Staff are considering that finalizing this project would be more cost-effective than abandoning the project, and would add redundancy to the Emergency Response Plan for the Chapman Water System.

As the work on the emergency siphon system for Edwards Lake to date has not resulted in a capital asset a 2021-2025 Financial Plan amendment is required that these expenditures, and any further ones associated with this project, are being funded from [370] Regional Water Service Operating Reserves instead of [370] Regional Water Service Capital Reserves.

If the Board supports staff's recommendation to continue with the development of this siphon system as an emergency system a total budget of $175,000 is expected to be required.

Any funding for the actual construction of the siphon system at Edwards Lake during a future emergency event would need to be arranged for at that time.

STRATEGIC PLAN AND RELATED POLICIES

This work is aligned with Strategy 2.1, “Plan for and ensure year-round water availability now and in the future.”

CONCLUSION

On August 23, 2021, the Sunshine Coast Regional District (SCRD) activated an Emergency Operations Centre (EOC) that focused on ensuring adequate water supply to users on the Chapman Water System. SCRD staff designed and procured materials for an emergency siphon system at Edwards Lake, that would access additional water from the lake to help meet community water demand. While the siphon system installation was not required, due to significant rain that occurred in mid-September that resulted in the deactivation of the EOC on September 21, 2021. Staff are now seeking to complete the assessments and permit approvals, and add this option to the Chapman Water System Emergency Response Plan to add an alternative water supply source. This would require a budget of $175,000 to be funded from [370] Regional Water Service Operating Reserves.

To support EOC activities, staff worked on outreach to residents and businesses about leaks and water use. Staff sent out 15 shut-off notices in late August. Twelve properties fixed their leaks, while staff continue to work closely with the remaining properties, including two that have more extensive infrastructure and are actively working to resolve their leaks. Staff sent 350 letters to water users using above average, and 338 leak letters as part of the regular quarterly mail out. These letters included information about the EOC and how to sign up for the Monthly Water Use Update, which now has 434 subscribers.

Reviewed by:			
Manager		Finance	X – B. Wing
GM		Legislative	
CAO	X- D. McKinley	Other	

SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Infrastructure Service Committee – October 14, 2021

AUTHOR: Jen Callaghan, Water Sustainability Coordinator

SUBJECT: **DROUGHT RESPONSE PLAN 2021 SUMMARY**

RECOMMENDATION(S)

THAT the report titled Drought Response Plan 2021 Summary be received for information.

BACKGROUND

The purpose of this report is to update the Board on the implementation of the Drought Response Plan (DRP) in 2021.

The Sunshine Coast Regional District's (SCRD) DRP is the primary tool for minimizing impacts on water supply systems caused by summer drought or unforeseen water shortages. The DRP describes water use restrictions that aim to prioritize water supply for human health, fire protection, and Environmental Flow Needs. Stage 1 Water Conservation Regulations are in place from May 1 to September 30 each year. SCRD staff determine if and when water conservation regulations should be increased, up to Stage 4, based on factors such as seasonal water supply conditions, weather forecasts, and community water use trends.

DISCUSSION

Attachment A includes a summary of the climatological drivers and associated response by the SCRD to ensure adequate community water supply to the community during the summer of 2021.

Use and Effectiveness of Water Conservation Regulations: Chapman Water System

The SCRD proactively implements and escalates Stages to ensure water distribution systems can support demand, maintain operational confidence in water supply capacity for September and October, and reduce the likelihood of implementing Stage 4 regulations.

In 2021, Stage 2 regulations (started July 5) coincided with a rapid increase in water demand during high temperatures and the end of snow melt contributions to water supply in the Chapman watershed. Any reductions in Stage 2 from prohibiting lawn watering or reduced sprinkling times were countered by a subset of properties where staff observed high use from irrigation systems and water use outside of regulations.

Stage 3 regulations (started July 23) prohibited the use of sprinklers and soaker hoses, the cleaning of exterior surfaces, vehicles, and boats, the filling of pools and spas, and the irrigation of sports fields. Stage 3 regulations, particularly those associated with irrigation, reduced the water demand peaks associated with high temperature days. Overall water demand remained

higher than recent years because of persistent drought conditions. Staff observed some non-compliance with the use of soaker hoses and scheduled irrigation systems. Stage 3 also coincided with peak seasonal visitation and population levels, seen each year in August.

Due to extended drought conditions and high water demand in Stages 2 and 3, Chapman Lake level decreased below the operational level of the dam outlet within a period of 40 days.

Stage 4 regulations (started August 10), a ban on outdoor water use, were implemented to reduce community water demand to a rate that could be supplied by the remaining water storage and sources through fall. Stage 4 reduced average community water demand by an additional 6,000 cubic metres per day (Figure 1). Stage 4 was in place for 41 days in 2021.

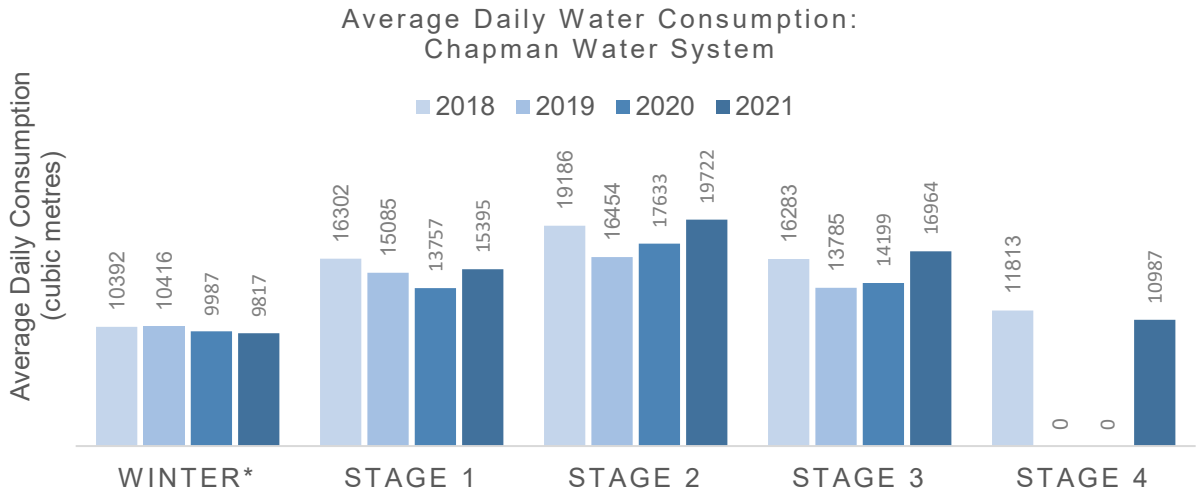

Figure 1. Average daily water consumption for each Stage (2018 to 2021).
**Winter baseline is November 1 to April 30.*

Table 1 depicts the percentage of the total days that the Chapman Water System was in each Stage. In 2021, as per normal practice, Stage 2 was called when the system transitioned to drawing on water stored in Chapman Lake. Water treatment plant and system distribution capacities were also considered. Water supply conditions for the Chapman Water System and the subsequent escalation through Stages are highly influenced by drought conditions, temperature, and the resulting community water demand. The SCRD used Stages 2 through 4 based on these conditions. (See Attachment A).

Table 1. Chapman Water System: Percentage of Days in each Stage (May 1 to September 30)

Year	Stage 1	Stage 2	Stage 3	Stage 4
2018	52%	25%	14%	9%
2019	34%	26%	40%	0%
2020	71%	19%	10%	0%
2021	49%	12%	12%	27%

Community Adaptations to Stage 4

Commercial farms serviced by the Chapman Water System communicated concerns and impacts of Stage 4 regulations before harvest season. On August 17, the SCRD Board passed a bylaw amendment to grant Farm Class properties an exemption from Stage 4 for two weeks to allow time to adjust operations and secure additional water sources. Thirteen registered farms applied for and received this exemption.

The SCRD offered a bulk water filling station in Langdale. One commercial operator registered with staff for filling times.

Staff spoke directly with 25 businesses to discuss approaches to water conservation. Sustainable Sunshine Coast encouraged the hospitality sector to join their Water Conservation Pledge, a project funded through Destination BC in 2021.

Emergency Operations Centre

An Emergency Operations Centre (EOC) was active from August 23 to September 21, 2021, in response to extended drought conditions and severe water supply conditions. The EOC structure provided additional drought response capacity to:

- Advance weather and water supply forecasting
- Secure additional water sources (Town of Gibsons)
- Develop new infrastructure at Edwards Lake (siphon system), including:
    a. Environmental monitoring
    b. Archeological monitoring
    c. Engineering design
    d. Submission of regulatory applications
- Advance resolution of large leaks (water shut-off notifications)
- Advance water conservation focus on above average water users
- Initiate advanced planning activities with other agencies including Vancouver Coastal Health and fire departments.

Water Conservation Regulations: All Water Systems

The Chapman Water System services 85% of SCRD water customers. The other SCRD water systems service smaller populations and experience less escalation in Water Conservation Regulations, except for the Eastbourne Water System (Tables 3 and 4).

Table 3. 2021 Drought Response Plan Stage Implementation: All Water Systems

System	Source	Water Conservation Regulation
Langdale	Groundwater	Stage 1,2
Soames	Groundwater	Stage 1,2
Granthams	Groundwater	Stage 1,2
Chapman	Surface water: Chapman Creek, Chapman Lake, Edwards Lake, Gray Creek Groundwater: Chaster Well	Stage 1, 2, 3, 4
South Pender Harbour	Surface water: Haslam Creek, McNeill Lake	Stage 1, 2
North Pender Harbour	Surface water: Garden Bay Lake	Stage 1
Cove Cay	Surface water: Ruby Lake	Stage 1
Egmont Cove	Surface water: Waugh Lake	Stage 1
Eastbourne	Groundwater	Stage 1, 2, 3, 4

Table 4. 2021 Drought Response Plan Stage Implementation Dates

Water System	Stage 1	Stage 2	Stage 3	Stage 4	Return to Stage 1
Eastbourne	May 1	May 21	Jun 28	Jul 21	N/A
Chapman	May 1	Jul 5	Jul 23	Aug 10	Sep 20
Granthams, Soames, Langdale	May 1	Jul 5	N/A	N/A	Sep 20
South Pender Harbour	May 1	Aug 20	N/A	N/A	Sep 20

Note: Water Conservation Regulations ended on September 30, 2021 for all water systems.

The South Pender Harbour Water System escalated to Stage 2 regulations (started August 20) in response to community water demand exceeding volumes permitted under the water supply licence. Stage 2 regulations, cooler fall temperatures, and small rain events resulted in a reduction of community water demand.

The Eastbourne Water System experiences Stage 3 to Stage 4 regulations when the onset of dry summer weather coincides with the arrival of seasonal residents, and the water system cannot meet demand without the conservation efforts of residents. The SCRD communicates changes to Stages through direct email for distribution to the Eastbourne Community Association and Island Trustee, and displayed at the Eastbourne wharf, focusing on water supply conditions, as extensive outdoor water use is a less common practice in this area.

Lawn Watering Permits

Lawn watering permits were available for water customers establishing new lawns (seed or sod). Permits were only available during Stage 1 regulations and allowed watering from 7 am to 9 am and 7 pm to 9 pm for a period of 21 days, or until Stage 3 regulations were declared. In 2020, an electronic application form and payment option via mySCRD account were introduced

to support permit applications by email or phone. The permit fee of $50.00 remained in place and 53 lawn permits were issued in 2021.

Communication

The SCRD used multiple channels of communication to share Water Conservation Regulations with residents, businesses, and visitors.

- Direct communication with: Town of Gibsons, District of Sechelt, shíshálh Nation, SCRD Parks and Recreation, business owners, and property managers of commercial or multi-unit residential complexes.
- Updates posted on website and social media.
- Videos showing the level of Chapman Lake decreasing from June through to September.
- General Manager Infrastructure Services Water Supply Updates to the SCRD Board were posted on website and social media.
- Launched a campaign called “Put a Dent in Your Percent” in Stage 4 which included an engagement page at Let’s Talk SCRD and daily updates on water use in the Chapman Water System
- Notification for each change between Stages:
    - Media releases
    - Website
    - Radio
    - Social Media
    - Print and electronic advertising in local newspaper
    - SCRD Office
    - Permanent Stage signs on highway in Areas B, D and F
    - Sandwich boards at 8 high volume street intersections (Stage 3 and 4)
    - Banners at 10 locations (Stage 4 – Ban on Outdoor Water Use)
    - Yard Signs at 10 locations (Stage 4 – Ban on Outdoor Water Use)
    - Direct mailout (flyer) to Chapman Water System properties (Stage 4)
- Visitors provided with Water Conservation Regulations information through:
    - Signage on highways
    - Arrival announcements on BC Ferries at Langdale and Earls Cover Ferry terminals when the EOC was in place.

SCRD staff supported public inquiries about Water Conservation Regulations by phone, email, in person, and social media channels.

Compliance and Enforcement

The DRP and corresponding Water Conservation Regulations are outlined in Bylaw 422 and the *SCRD Bylaw Notice Enforcement Bylaw No. 638, 2011*.

The enforcement of Bylaw 422, the SCRD has a compliance approach of: 1) Education; 2) Warning; 3) Fine. As per resolution 127/19, the fine for each infraction of Water Conservation Regulations remained in 2021 at:

Stage 1: $200 Stage 2: $300 Stage 3: $400 Stage 4: $500

SCRD staff interacted with 140 properties related to their compliance with Water Conservation Regulations (Table 5). Approximately one-half of interactions were in response to complaints received from the public. Staff also conducted patrols to ensure compliance with sprinkling hours. Staff left a door hanger notification at properties in violation, or issued a letter notification with a warning citing the specific regulation. Select properties were emailed directly. The volume of complaints and level of staff interaction with the public was higher than previous years.

A total of 83 properties received warnings in 2021. A Bylaw Enforcement Notice (BEN) and the associated fine was issued in the case of ongoing violation, despite knowledge of Water Conservation Regulations. Eight fines were issued in 2021.

Table 5. Water Conservation Regulations compliance interactions by Water System

Water System	Number of Properties
Chapman	134
Granthams	0
Soames	0
Langdale	0
North Pender Harbour	1
South Pender Harbour	5
Egmont, Cove Cay	0
Eastbourne	0

Table 6. Method of reporting Water Conservation Regulation violations to SCRD staff

Method	% Violations Reported
Staff patrol	43%
Phone complaint	18%
Email complaint	12%
Bylaw form submission (website)	21%
In-person complaint (administration office)	6%

Table 7. Category of Water Conservation Regulations violation reported

Category	% Violations Reported
Lawns	56%
Trees, shrubs, flowers	31%
Washing exterior surfaces	9%
Food producing plants	3%
Filling pools, spas, ponds, fountains	1%

Supporting Education and Outreach

Staff continue to emphasize education and incentive programming that supports compliance and a culture of conservative water use. Connecting water customers to their water use data was an area of focus in 2021.

Monthly Water Use Update

Subscription levels to the Monthly Water Use Update continue to grow, with 434 subscribers in October. The update is available for property owners in Electoral Areas A, B, D, E, and F. Residents in the District of Sechelt will be able to participate upon completion of the water meter installations in 2022.

Organizational Implications

The 2021 Drought Response, including the EOC activation, required a significant amount of additional staff resources compared to previous years. Besides the activities initiated post EOC activation, extra staff resources were involved in the communication and engagement with the community regarding the water supply situation in general, Water Conservation Regulations and the resolution of private leaks.

Timeline and next steps

Staff have initiated a review of the *SCRD Water Rates and Regulation Bylaw No. 422, 1995* (Bylaw 422) with the first phase focusing on updating the water conservation related provisions in the bylaw.

Areas of consideration are based on staff observations of the drivers of community water demand and the corresponding regulatory tools. The review will include:

- Impacts of issuing lawn watering permits.
- Promotion of efficient irrigation systems.
- Provisions to support escalation measures when there is non-compliance to Water Conservation Regulations
- Impacts of large water users that are not currently regulated, particularly during Stage 4.
- Tools for regulating high water use.

Staff will bring forward recommendations to the SCRD Board for their consideration in Spring 2022.

STRATEGIC PLAN AND RELATED POLICIES

Strategic Focus Area 2.1: Review and update Drought Response Plan to ensure alignment with water supply capacity.

CONCLUSION

The Drought Response Plan provides direction for the timely and responsive management of water supply systems during times of supply challenges or seasonal drought.

Extended drought conditions and above average temperatures impacted all water systems in 2021. In the Chapman Water System, peak demand was almost 25,000 cubic metres on June 29, which corresponded with record high temperatures. Water supply conditions progressed from Stage 2 (Moderate) in early July, Stage 3 (Acute) in late July, to Stage 4 (Severe) by mid-August in 2021. In addition, an emergency siphon system at Chapman Lake and an Emergency Operations Centre activation were required to ensure water supply security for Chapman Water System users. A rain event occurred on September 17 to 19, 2021, stabilizing Chapman Lake levels and staff deactivated emergency water systems. Chapman Lake was replenished by September 28.

Eastbourne was the first water system to step up Water Conservation Regulations, and progressed to Stage 4 by late July. Granthams, Soames, Langdale Water Systems moved to Stage 2 regulations with the Chapman System in early July. The South Pender Harbour Water System moved into Stage 2 regulations in late August, where the community water demand exceeded the daily maximum water use permitted by the water licence. The North Pender Harbour, Cove Cay, and Egmont Cove Water Systems remained at Stage 1 through the summer.

Staff carried out outreach and education, through various channels such as online and print advertising, one-on-one interactions with residents, and email notifications. In addition, staff patrolled the region to ensure residents and businesses were in compliance of Water Conservation Regulations. Where needed, staff issued 83 notices and eight fines in 2021.

Staff have initiated a review of Bylaw 422, with the first phase focusing on updating the water conservation related provisions in the bylaw. Staff will bring recommendations forward to the SCRD Board for their consideration by Spring 2022.

Attachments:

Attachment A – 2021 Water Supply Summary

Reviewed by:			
Manager	X- M. Edbrooke	Finance	
GM	X- R. Rosenboom	Legislative	
CAO	X-D. McKinley	Other	

Water Supply and Forecasts: Chapman Water System

Spring

The Chapman Water System relies on watershed creek flow from rainfall and snow melt for most of the year, and on water stored in the Chapman Lake reservoir during times of drought.

In Spring 2021, the Chapman snow water equivalent, the amount of water contained in the snowpack, was above average compared to previously measured years (Figure 1). Contributions of snow melt to Chapman Creek flows were observed until the first week of July, meeting the water supply needs of the community.

Total precipitation in Spring 2021 was below historical normals, and below average values from the previous 12 years (Figure 2), and resulted in low contributions to Chapman Creek flows.

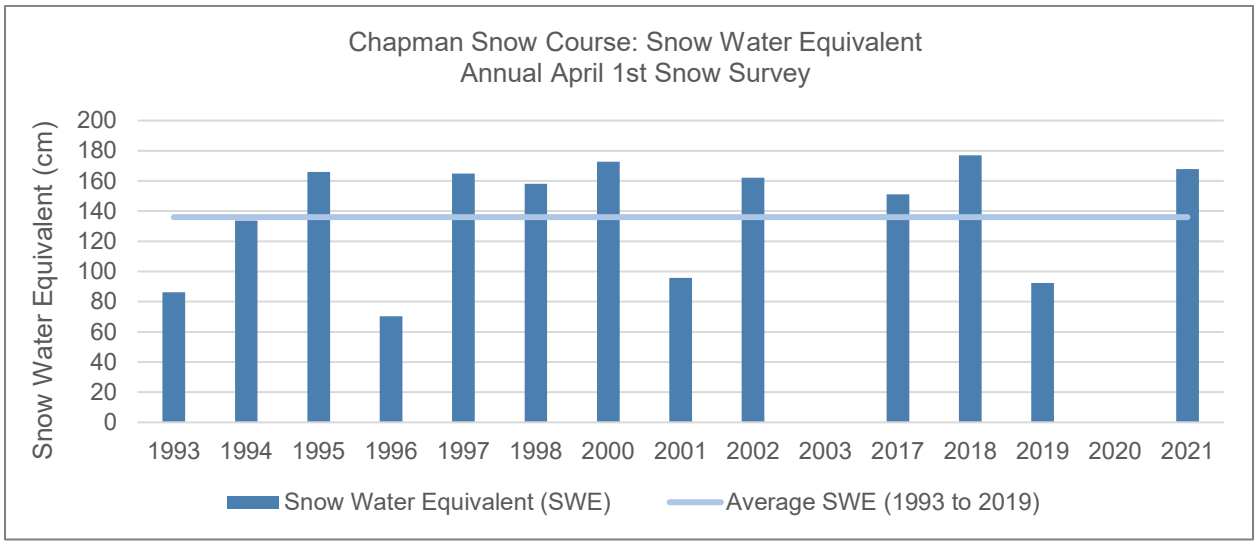

Figure 1. Snow water equivalent in the Chapman snow course.

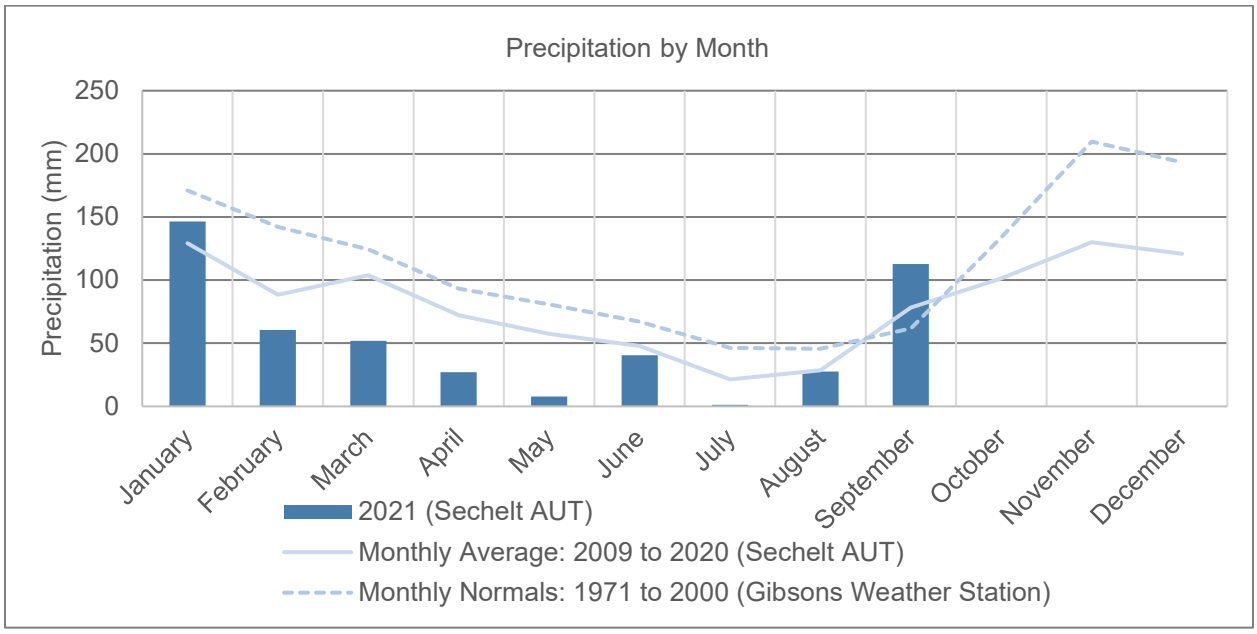

Figure 2. Precipitation by month (Sechelt Airport Weather Station).

Temperature values trended near average in Spring 2021. Environment Canada's seasonal forecast models, issued in late spring, began to indicate the possibility of above average temperatures during the summer months.

Summer

Summer temperatures increased rapidly in late June, with the onset of a "heat dome" caused by a strong ridge of high pressure that trapped hot air for several days across the province. The maximum daily temperatures at the Sechelt Airport weather station exceeded 25°C on 39 days in June, July, and August in 2021, and eight of those days exceeded 30°C. There were 61 days above the average historical temperatures in 2021, an increase compared to the three previous years (Figure 4).

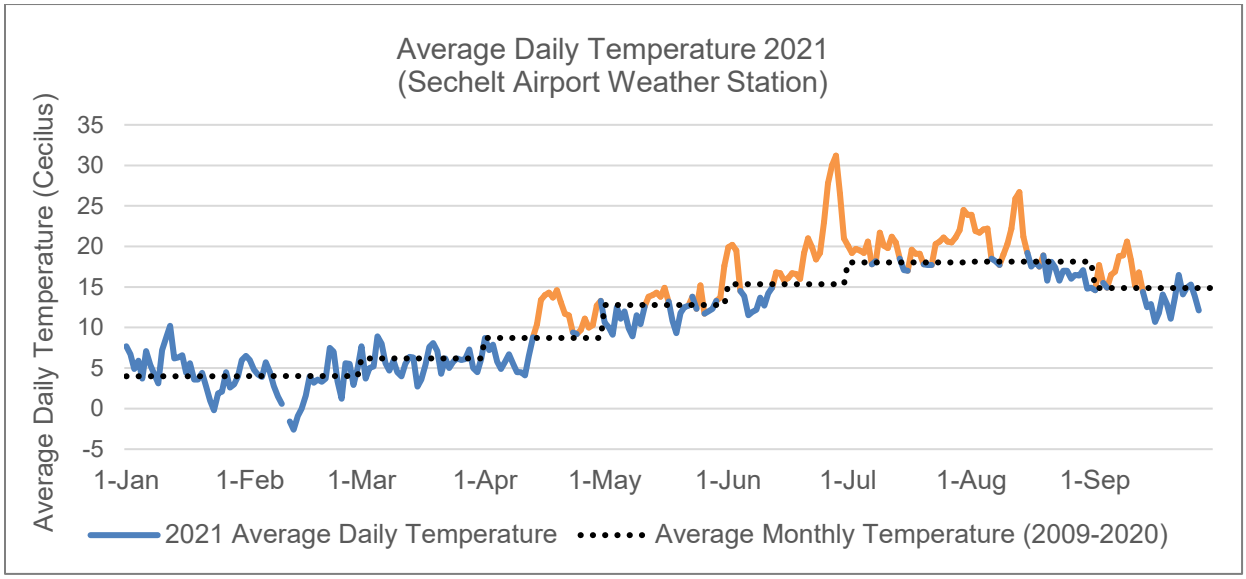

Figure 3. Average daily temperatures at Sechelt Airport Weather Station in 2021.

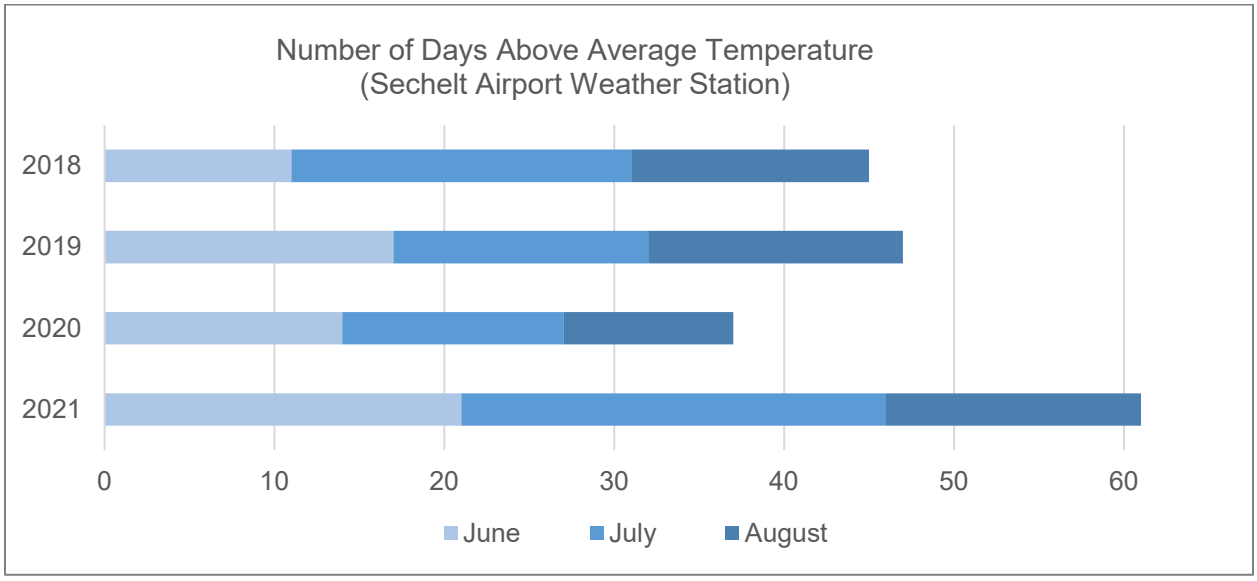

Figure 4. Numbers of days above average temperature (Sechelt Airport Weather Station).

With low precipitation in Spring 2021, the lower Sunshine Coast entered summer with a precipitation deficit, with cumulative precipitation levels trending approximately 100 mm below 2020 levels (Figure 5). Following a moderate rain event on June 15, 2021, the Chapman watershed entered a period of no to low rainfall that lasted until September 17, 2021.

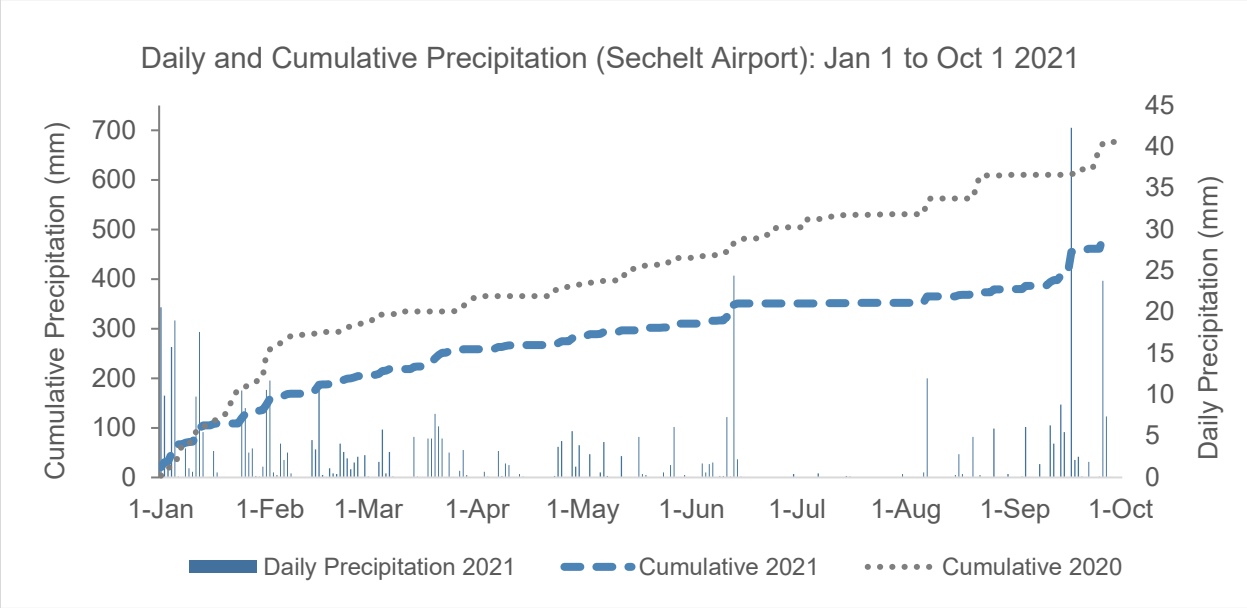

Figure 5. Daily and cumulative precipitation (Sechelt Airport Weather Station).

The dry watershed conditions, lack of rainfall, and above average temperatures resulted in water supply conditions progressing from Stage 2 (Moderate) in early July, Stage 3 (Acute) in late July, to Stage 4 (Severe) by mid-August. As water supply decreased, several sources contributed to the overall water supply of the Chapman Water System (Table 1).

During Stage 4, staff operated an emergency siphon system to gain additional access to water storage in Chapman Lake. Staff also released water from Edwards Lake to sustain flows in Chapman Creek, to meet demand and Environmental Flow Needs. The SCRD holds a Park Use Permit and a Use Approval to operate the siphon system. Staff also operated Chaster Well and Gray Creek, and the Town of Gibsons supported the SCRD during the severe water supply conditions in late summer (Table 1).

Table 1. Contributing Sources to the Chapman Water System Supply

System	Contribution Dates	Volume
Chapman Lake	July 5 to August 10	593,686 m^3
Edwards Lake	Aug 10 to Sep 15	335,227 m^3
Chapman Lake emergency siphons	Aug 19 to Sep 20	
Chaster Well	Jul 6 to Sep 30	79,234 m^3
Gray Creek	Jul 27 to Sep15	102,993 m^3
Town of Gibsons	Sep 1 to Sep 20	5,850 m^3

Fall

A large rain event occurred on September 17, 18, and 19, 2021, resulting in 126 mm of rainfall in the upper Chapman Creek watershed. Chapman Lake levels recovered over the course of a week and gained 2.7 metres of lake elevation. This allowed for staff to deactivate the emergency siphons and return to releasing water through the valve infrastructure at the Chapman dam as of September 20. Following the rain event, additional water sources were no longer used. Chaster Well operated until September 30. Subsequent, smaller, rain events replenished Chapman Lake by September 27.

Water Supply and Forecasts: South Pender Harbour and Eastbourne Water Systems

The drought conditions described above had impacts on all SCRD water systems.

In particular:

- South Pender Harbour Water System uses McNeill Lake for water storage and supply in the summer months. McNeill Lake levels decreased from early July to early September, reaching low levels recorded in previous summers with drought.
- Eastbourne Water System is a shallow groundwater system that relies on precipitation. Severe water supply conditions were experienced for 10 weeks in 2021, requiring system operators to actively manage water distribution in the community.

Water Demand: Chapman Water System

Water demand is influenced by indoor and outdoor water use habits, and seasonal population. Outdoor water use is further influenced by weather patterns, like rainfall and temperature. In 2021, high temperatures and drought conditions led to high water demand levels. Water demand increased rapidly with the onset of record temperatures in June and reached peak demand for 2021 on Tuesday, June 29 (24,996 cubic metres per day), while the system was still in Stage 1 (Figure 6).

The Environmental Flow Need requirement for Chapman Creek is 200 litres per second. During challenging drought and operational conditions the minimum creek flow, during each 24 hour period, dropped just below the required 200 litres per second four times. These instances were reported to the Province and no follow-up was required.

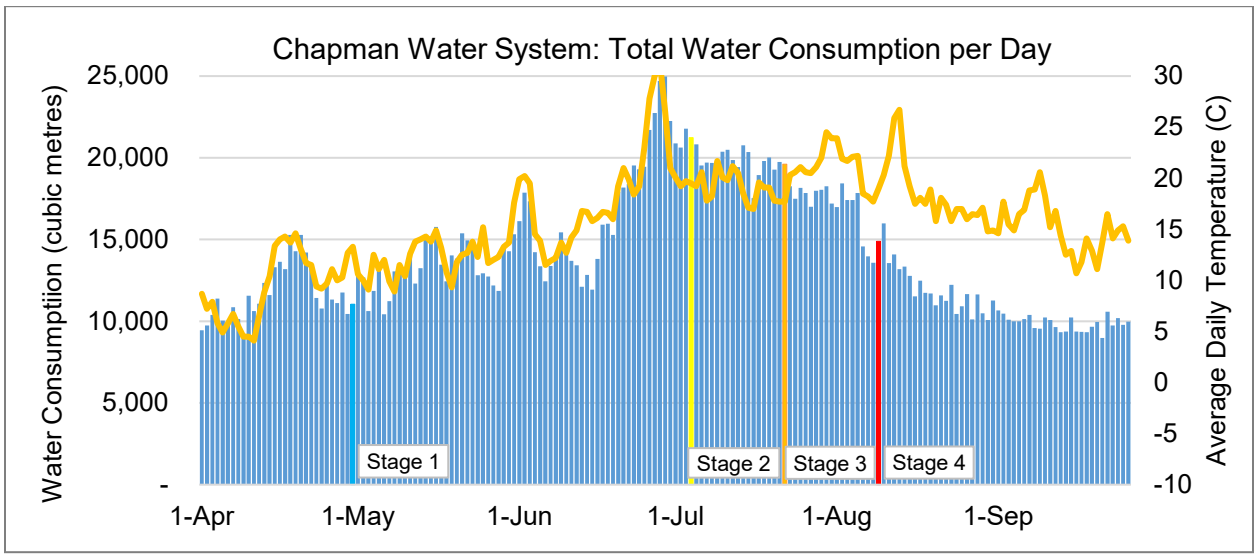

Figure 6. Daily water consumption of the Chapman Water System (all sources).

Water Demand: South Pender Harbour

The South Pender Harbour Water System services Madeira Park residents and businesses. In 2021, community water demand exceeded the daily maximum water use permitted by the water license 31 times. These exceedances will be reported to the Province and a plan to avoid these situations to occur will be developed and implemented prior to the summer of 2022.

SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Infrastructure Services Committee – October 14, 2021

AUTHOR: Kyle Doyle, Manager – Asset Management

SUBJECT: **SUMMARY OF WASTEWATER FEASIBILITY STUDY REPORT**

RECOMMENDATION(S)

THAT the report titled Summary of Wastewater Feasibility Study Report be received for information.

BACKGROUND

Through the Wastewater Service Review some wastewater services were identified as imminently approaching the end of their useful lives. It was determined that further professional guidance would enable the development of a more accurate timeline for capital planning purposes. Several services were identified for this task and were ranked in order of priority. Grant applications were made through two rounds of intakes in an attempt to mitigate the financial impact of the work to be done. Grants were successfully obtained for Merrill Crescent and Greaves Road wastewater services prompting the following resolution from the Board at the July 9th, 2020 meeting:

255/20 AND THAT the Wastewater Treatment Plants Asset Management Plans – Feasibility Studies be approved as follows:

- Greaves Road [381]- $7,500 – up to $6,250 funded by IPGP and $1,250 through Operating Reserves; and
- Merrill Crescent [390]- $7,500 – up to $6,250 funded by IPGP and $1,250 through Operating Reserves;

AND THAT the 2020-2024 Financial Plan be amended accordingly.

Due to the imminent nature of the need at the Langdale wastewater service, it was determined to proceed with a feasibility study regardless of grant status. At the June 25th, 2020 Board meeting the following resolution was made:

244/20 AND THAT $7,500 funding from Operating Reserves be approved for a feasibility study for Langdale Wastewater Service Area.

The feasibility studies contract for the three wastewater systems was awarded to Aurora Professional Group (APG). They proceeded to assess the current performance of the wastewater systems through desktop review, discussions with staff, and onsite assessment of the infrastructure including excavating within the drain fields to review the condition of the soil. APG produced a comprehensive report that outlines their findings and provides recommendations for repair, upgrades and potential replacement options including uninflated Class D estimates (+/- 30%) for the proposed solutions. The estimates provided did not identify the specific treatment technology.

The purpose of this report is to provide a summary of the three feasibility studies. The complete report from APG can be found in Attachment A.

DISCUSSION

These three wastewater services were prioritized to be reviewed by industry professionals due to their age and/or historical performance issues. Based on a 20 to 50-year lifespan of a typical community wastewater treatment plant, all three systems are anticipated to need replacement (or significant refurbishment) before 2032. Subsequent to their analysis APG provided a comprehensive list of observed defects or potential improvements for each facility, recommendations for remediation as well as their impressions of the remaining useful life for each facility given their recommendations are followed.

Options and Analysis

The following is a summary of the remediation/replacement options provided by APG including very preliminary capital cost estimates that do not account for a contingency allowance, staff time or any cost associated with permitting. Estimates of the operational costs for each option are provided in the full report. All provided costs are uninflated Class D estimates (+/- 30%).

Greaves Road

The wastewater treatment plant at Greaves Road is the oldest of the three systems. APG suggests that minor deficiencies observed in the treatment system and severe intrusion of roots within the western drain field could be rectified for approximately $15,000. The eastern drain field was observed to be in satisfactory condition. APG suggests that this work, in conjunction with a maintenance plan that includes inspecting for root intrusion within the drain field, could extend the life of the system for 10-30 years. Previously the system was anticipated to need replacement in 2027. A full replacement of the treatment system and dispersal field is estimated to cost approximately $70,000.

Merrill Crescent

The treatment system at Merrill Crescent was observed to be in good functioning condition. APG noted that the concrete tanks that house the treatment system components are in acceptable condition but are nearing their design life. Select treatment system components and the entire drain field have been replaced recently and are in good working order. APG suggests that the existing drain field could perform adequately for 30 years and beyond with routine inspection and maintenance. The treatment system components currently at Merrill Crescent are an older technology and APG believes they will remain serviceable for approximately 10 years, provided the recommendations in their report are implemented. APG suggests that the installation of a trash tank upstream from the treatment system would mitigate ongoing influent quality issues and extend the life of the treatment system. Additional repairs to limit rainwater infiltration and minimize offensive odors previously reported by residents are also outlined by the APG report. The repairs recommended by the report are anticipated to cost $20,000. A full replacement of the treatment system including the installation of new trash tank has been estimated to cost approximately $80,000.

Langdale

The parameters for the feasibility study at the Langdale wastewater service were slightly different due to the system having failed, with treatment currently occurring at the neighboring wastewater treatment system at the YMCA. For this reason, APG considered the existing Langdale wastewater treatment system to be non-functioning and focused their investigation and review on the YMCA treatment system and the dispersal field at Langdale. Several scenarios were considered by APG; i) permanent connection to YMCA, ii) replace the Langdale treatment system and make repairs to drainfield, and iii) replace both the Langdale treatment system and the drainfield.

The costs associated with transitioning to a permanent tie-in with the YMCA are estimated to be approximately $120,000, which does not account for any costs associated with developing an agreement with YMCA for this arrangement or a contribution to the YMCA's capital investment in the existing YMCA facility.

Replacing the treatment system and either repairing or replacing the drainfield is estimated to cost between approximately $550,000-$600,000 respectively. Based on recent experience with construction of a new wastewater treatment plant at Square Bay staff anticipate that the cost estimates for the replacement of the entire treatment system could increase substantially based on site specific conditions.

Organizational and Intergovernmental Implications

The recommendations made by APG are currently being evaluated by the Utilities Services Division to decide which course of action is most suitable.

Any decision to permanently connect the Langdale wastewater service to the YMCA wastewater treatment plant would require the establishment of long-term agreement between the SCRD and the YMCA.

Financial Implications

Preliminary modelling has been completed to understand the financial impact of the recommendations provided by APG. Uncertainty remains in both the timing in which future replacement may occur and due the uncertainty associated with Class D estimates (+/- 30%). The cost estimates provided by APG will be considered as a part of a 2022 Wastewater Frontage Fee Review report anticipated to be brought to a subsequent committee.

If a permanent connection to YMCA is negotiated, it is anticipated that there will be shared operation costs beyond the annual maintenance costs associated with the new infrastructure recommended by the report from APG. Under this scenario there may be opportunities to dispose of unused land currently allocated for the dispersal field(s) and allocate the proceeds to the capital renewal fund.

Timeline for next steps or estimated completion date

The recommended minor improvements necessary to remediate the issues at Langdale wastewater service, Greaves Road and Merrill Crescent wastewater facilities are expected to be included as individual proposals in 2022 or 2023 budgets.

STRATEGIC PLAN AND RELATED POLICIES

This work aligns with the SCRD's Strategic Plan with respect to Asset Stewardship and promotes ongoing sustainable service delivery by providing guidance long term capital planning.

CONCLUSION

The attached feasibility study report provides professional guidance to the SCRD regarding the condition of three wastewater treatment systems. This report will help to inform capital improvements that will help to mitigate ongoing issues and extend the lifespan of these wastewater treatment plants. The report also provides an understanding of the costs associated with the renewal, replacement or major alterations to these systems that will guide long-term capital planning and assist with ensuring the continuation of wastewater service for SCRD residents.

ATTACHMENTS

A: Feasibility Studies – Replacement/Upgrade of Three Wastewater Systems prepared by Aurora Professional Group Inc. dated July 28, 2021

Reviewed by:			
Manager	X - S. Walkey	Finance	
GM	X – R. Rosenboom	Legislative	
CAO	X – D. McKinley	Other	

2035012 Final Report for

Sunshine Coast Regional District

Feasibility Studies - Replacement/Upgrade of Three Wastewater Systems

Aurora Professional Group Inc.
Jim Andersen Ltd.

Contact Info: Bradley Fossen, P.Eng.
Tel.: 250-930-2426 | **Email:** brad@thinkapg.com
Jim Andersen, AScT, ROWP
Tel.: 250-468-9772 | **Email:** jaltd@shaw.ca

Aurora Professional Group Inc.
Salt Spring Island, BC

File: 2021.02

DATE:	July 28, 2021
To:	Kyle Doyle, Manager – Asset Management
Re:	2035012 (Feasibility Studies - Replacement/Upgrade of Three (3) Wastewater Systems)

Mr. Doyle;

It is with great pleasure that Aurora Professional Group Inc. (“APG”), working with Jim Andersen Ltd. (“JAL”), hereby submits this report to the Sunshine Coast Regional District (the “District”). Within, we have provided our analyses and conceptual costing for the renewal of the Greaves, Merrill, and Langdale wastewater facilities, pursuant to the scope of work.

Should you have any queries, please do not hesitate to get in touch. Your business is appreciated. We thank you for the opportunity to assist you in your long-term asset planning.

Kind Regards,

Bradley Fossen, P.Eng.

Managing Director | Aurora Professional Group Inc.

E: brad@thinkapg.com | T: 250-930-2426

Table of Contents

1 EXECUTIVE SUMMARY

The Sunshine Coast Regional District (SCRD) has retained Aurora Professional Group (APG) to perform replacement feasibility studies for wastewater systems at three locations: “Greaves Road,” “Merrill Crescent,” & “Langdale.” The objective of our study is to assess the current performance of each system and provide recommendations for repairs, upgrades, or replacements if required. Our recommendations are provided with Class ‘D’ conceptual estimates for each option.

The study scope of work includes:

- A desktop review of background documentation provided by the SCRD.
- Formal and informal discussions with operations staff.
- Field activities, including site assessments.
- Conceptual design assessments.
- Conceptual costing assessments (+/-30% in all cases).

Our results are summarized as follows:

Greaves Road

We have found the Greaves Road system to be operating with performance malfunctions. However, these malfunctions can be readily repaired for a projected cost of $15,000 that will extend the life of the system for an estimated 10-30 years and potentially longer. The life of the system can be further extended with routine inspection and maintenance. We have estimated yearly operations costs for these inspection and maintenance costs at $5,000.

Should the system require a complete replacement, we have estimated the total design and installation costs at $70,000. This estimate is based on current flows of residential sewage quality and does not include costs for future studies, conveyance modifications or repairs, or other considerations not directly related to onsite wastewater disposal.

Merrill Crescent

We have found the Merrill Crescent system to be functioning as designed. While the treatment system tanks are near their design life, the structural condition appears satisfactory, based on observable surfaces. Pumps, control systems, and the ground dispersal field have already been replaced. Effluent quality has been sampled and tested and found to be within Type 2 standards, with less than 45 mg/L of total suspended solids and having a 5-day biochemical oxygen demand of less than 45 mg/L.

With influent source control and routine inspection and maintenance, we estimate the treatment system should perform as designed for an estimated 5 to 10 years. We have estimated yearly operations and maintenance costs to be $11,000, in the current configuration. However, this projection would be similar if the system were to be replaced as well.

With routine inspection and maintenance, ground dispersal systems have been found to perform adequately for up to 30 years and sometimes longer. For that reason, we have projected conceptual costs for the Type 2 treatment system alone, should the sewerage system

require renewal. This projected cost is $80,000. This estimate is based on current flows of residential sewage quality and does not include costs for future studies, conveyance modifications or repairs, or other considerations not directly related to onsite wastewater disposal.

Langdale

The Langdale system is currently operating in a bypass capacity, and residential sewage is being transferred to the YMCA treatment facility adjacent to the Langdale WWT site.

Our assessment of Langdale indicated that, while the treatment facility requires replacement, the drainfield components remained in satisfactory condition. However, the current ground dispersal design is likely undersized, and the site, in general, requires storm and groundwater drainage improvements.

Based on our findings, there are three potential options for Langdale. Each of which is priced conceptually.

1) Permanently process sewage via the YMCA treatment facility. In this scenario, we have suggested replacement and remedial activities that are projected to cost $119,500. Operations costs in this scenario would remain the same as current.
2) Repair the Landale treatment system and resume processing sewage. Pursuing this option would require a new treatment system and drainage relief measures, with projected costs of $547,000. Yearly operations costs in this scenario are projected to be $16,000.
3) Replace the Langdale Wastewater Facility. The scope of this option is the same as (2) above, however, with the complete replacement of the ground dispersal system. The projected costs, in this case, are $590,000. Yearly operations costs would be the same as option (2), $16,000.

2 SUMMARY OF FIELD PROGRAM RESULTS

Individual field assessments of each facility have been attached to this report. The most relevant findings have been summarized here for convenience.

Greaves Road

Our field activities for Greaves required considerable excavation efforts, owing to vegetation encroachment and lack of access to system components. The inspection results were positive. Key assessments are as follows.

- The syphon chamber has a performance malfunction and is currently operating via overflow. The syphon mechanism should be replaced. A replacement floating outlet configuration may offer additional usable life for the existing dispersal field.
- The settling tank has a cracked lid which should be replaced for integrity and to prevent rainwater infiltration.
- The effluent manifold, providing flow to two distribution boxes, is uneven. As a result, flow to each distribution box, and its respective dispersal field, is uneven.
- The Eastmost drainfield has been resting for a satisfactory period. Inspection of the dispersal laterals and biomat indicated considerable remaining life, with little indication of clogging or root intrusion.
- The Westmost drainfield is experiencing a performance malfunction. There are indications of severe root intrusion and clogging. Flushing, jetting, and root cutting is expected to return this drainfield to a satisfactory condition, however it will benefit with period of rest.
- There are no flow monitoring devices installed. A flow monitoring device should be installed and monitored for operational considerations and to better inform future detailed design efforts.
- There are no alarm systems installed. An alarm system should be installed, considering there is, at current, minimal “alarm” or “reserve” volume for the system. Solar powered alarm systems are available.
- Vegetation encroachment, primarily Western Red Cedar and Alder trees, is significant. All trees within 3m-5m of the dispersal area should be felled and the stumps removed. Ongoing vegetation management is recommended.
- Test pits and soils assessments indicated approximately 130 cm of soil depth, with a most restrictive layer of favourable loamy sand of single grain / loose consistency, with no indication of a seasonal high water table.
- The existing system is nominally compliant with historical standards and site conditions are favourable for renewal options that meet current day standards.
- A renewed dispersal system should maximize vertical soil separation and include trenches that are constructed at a shallower depth.

- At present, the system is operating without posing a health risk. However, performance malfunctions should be promptly repaired and the maintenance program should be adjusted according to regular inspections.

Merrill Crescent

The Merrill system was found to be operating as designed, producing effluent meeting Type 2 standards. Type 2 standards require less than 45 mg/L of total suspended solids and having a 5-day biochemical oxygen demand of less than 45 mg/L. The drainfield, replaced in 2018, was performing as designed with no indications of overloading or malfunctions. As such, our activities were primarily focussed on the treatment system.

The treatment system was likely installed in 1981 or 1982 and is a legacy NPS (N.P.S. Wastewater Systems) aerated model with sludge return. While it is approaching the end of its design life, its structural condition appeared satisfactory and it has benefited from ongoing component replacements. Key assessments are as follows.

- Areas around the treatment tank indicated periods of surface water ponding and the system hatches do not have a sufficient seal to prevent surface water infiltration. The contact chamber is currently not in use, though it is full of rainwater. While these indications are not conclusive, it is likely that the system experiences surface water intrusion, which could place additional demands on the pumps and drainfield. The tanks should be properly sealed and the drainage around the tanks should be corrected.
- The discharge pump assembly is free-floating. It should be continuously monitored for torque effects or vibration that could result in pump or piping damage.
- The service water point near the treatment system should be labelled as non-potable, if the supply line is within 3m of the treatment system and has not been sleeved.
- The venting is free to atmosphere. Odours were not prevalent. However, if odours are observed, the vents could be readily directed to natural scrubber system.
- While the system is currently performing adequately, it has previously malfunctioned due to influent quality issues. This issue could be prevented in the future with the addition of a small trash tank, situated between the lifting station and treatment system.

Langdale

The Langdale treatment system had previously been assessed as unrepairable. As such, our field assessments of the Langdale facility focussed primarily on the ground dispersal system. Key assessments are as follows.

- The YMCA treatment system and outflow are performing as designed, however there have been periods where effluent testing results for biochemical oxygen demand (BOD) and total suspended solids (TSS) have exceeded prescribed requirements. This could indicate that there are occasions when the system has become overloaded, or has experienced a performance malfunction, diminishing the treatment efficacy.
- The Langdale facility parcel is within two SCRD development permit areas: “DPA 4 – Stream Riparian Assessment Area” & “DPA 5 – Aquifer Protection and Stormwater Management.” A renewal plan may require additional consideration in regards to riparian areas and hydrogeology.

- Preliminary flow analyses indicate that:
  - there is a high likelihood that the original parameters of the permit can be maintained, should the existing system be renewed.
  - average dry weather daily flows increased from 8.6 cubic meters/day in 2015 to 23.0 cubic meters/day by 2020. This trend is considerable and should be further investigated.
  - storm and groundwater infiltration may be a large contributor to treatment flows. Comparing maximum flow events to the dry month average daily flow, indicates that there were wet month recorded daily flows that exceeded the dry weather average flow in a range of 103% to 197%. This can unnecessarily overload the treatment system and could result in diminished treatment.
  - average wet weather daily flows increased from 14.4 cubic meters/day in 2015 to 25.2 cubic meters/day by 2020, with an infiltration rate that ranged from 9% to 69%. Recorded maximum flow events were as high as 52 cubic meters/day.
- The site perimeter has indications of significant surface water runoff. The ditch South of the parcel should be cleared in order to allow stormwater to freely flow.
- The trench dispersal system is nominally compliant with historical standards. However, we have found that the dispersal volumes directed solely to one field or the other, significantly exceed current day standards for linear loading. This could be a contributing factor for breakout incidents that were previously experienced during the operation of the dispersal system. Excessive linear loading can create a groundwater mounding effect, eventually saturating the dispersal soils.
- Coupled with surface runoff, maximum flow events, and drainage issues, the dispersal system may have experienced periods of overloading, potentially contributing to breakout.
- The condition of the laterals and infiltrative surface indicates that there may be significant usable life remaining within the drainfield. The dispersal laterals that were exposed could readily disperse effluent, if required, though regular flushing and jetting is recommended. There were no indications of clogging within the infiltrative surface.
- Test pits and soils assessments indicated approximately 130 cm of soil depth before a limiting layer, with a most restrictive layer of favourable loamy sand of single grain / loose consistency and no indication of a seasonal high water table.
- It is recommended that the existing, decommissioned treatment system is demolished and remediated, regardless of the renewal option selected.
- It is recommended that a vegetation and stormwater management plan (relating to the dispersal area and transmission infiltration) is enacted, as part of the maintenance plan already in place.

3 SUMMARY OF CONCEPTUAL ESTIMATES

Table 1: Greaves - Summary of Conceptual Costs

Option	Conceptual Cost (+/- 30%)	Cost per Parcel
Short-term Renewal (repairs)	$15,000	$2,500
Long-term Renewal (replacement)	$70,000	$11,667
Yearly Average Operational Costs	$5,000	$833

Table 2: Merrill - Summary of Conceptual Costs

Option	Conceptual Cost (+/- 30%)	Cost per Parcel
Short-term Renewal (repairs)	$20,000	$1,429
Long-term Renewal (treatment system replacement)	$80,000	$5,714
Yearly Average Operational Costs	$11,000	$786

Table 3: Langdale - Summary of Conceptual Costs

Option	Conceptual Cost (+/- 30%)	Cost per Parcel
Permanent YMCA Tie-in	$119,500	$2,988
Replace Treatment System and Repair Existing Dispersal System	$547,000	$13,675
Replace Treatment System and Replace Existing Dispersal System	$590,000	$14,750
Yearly Average Additional Operational Costs (YMCA Tie-In)	$8,000	$200
Yearly Average Operational Costs (renewal)	$16,000	$400

4 LIMITATIONS AND DISCLAIMERS

- This report relates only to conceptual estimates for sewerage systems regarding the subject parcels and is valid only at its issuance.
- Our advice may include specific operating and maintenance requirements to be followed by the Owner. The Owner's legal obligation is to operate their sewerage system per the most up-to-date maintenance plan for their sewerage system. If one is not available, the Owner is responsible to have one developed by an authorized person.
- Our investigations and assessments rely on public information that has the potential to be inaccurate. Further, our testing of soils cannot reveal all underground conditions. We endeavour to make all reasonable efforts to manage this uncertainty; however, it cannot be eliminated.
- Should site conditions, flow volumes and characteristics, or owner requirements change, this report becomes void.
- The use of this report shall be in its entirety; that is, assessments can not be used piece-meal.
- Any design drawings or constructed works that are based on the assessments and conclusions in this report should be provided to its author for review.

5 ATTACHMENTS

1. **2021.02-40-STY-001 (**Onsite Wastewater Treatment and Dispersal System Assessment – Greaves Wastewater Treatment Facility)
2. **2021.02-40-STY-002 (**Onsite Wastewater Treatment and Dispersal System Assessment – Merrill Wastewater Treatment Facility)
3. **2021.02-40-STY-003 (**Onsite Wastewater Treatment and Dispersal System Assessment – Langdale Wastewater Treatment Facility)

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Onsite Wastewater Treatment and Dispersal System Assessment – Greaves Wastewater Treatment Facility

PROJECT NO: 2021.02

SITE NAME: GREAVES

DOCUMENT NO.: 2021.02-16-STY-001

FORM NO. APG-40-FRM-009

1: Form Revision Log

Revision #	Date	By	Description
0	31-Oct-2020	BJGF	Issued for Use

Table 2: Summary Information

Project No.	2021.02	**Site Name:**	Greaves
Study Type:	☐New Construction ☒Replacement ☐Repair / Alteration	**Prepared by:**	Bradley Fossen Jim Andersen
Owners / Client:	SCRD	**Jurisdiction:**	Vancouver Coastal Health / SCRD
Legal Description	Lot 6 Of Lot A Block D District Lot 1391 Plan 17397	**PID #** ***(Parcel Identifier Number)***	007-282-966
Common Address	12545 Greaves Rd, Madeira Park, BC	**Folio. #** ***(Tax Assessment Roll #)***	746.03486.030
Engineer of Record	Bradley Fossen	**Project Stage:**	Existing
Influent Type	☒Typical Residential ☐Other_____	**Parcels:**	6
Year of Construction	1977 (est.)	**Design Flow:** *(Estimated, BC SPM)*	7800 L/day
Purpose of Report:	• Assess system performance requirements. • Provide guidance on factors that may affect onsite wastewater treatment system (OSWTS) renewal options. • Assess current system performance and limitations. • Conceptualize OSWTS renewal options. • Conceptualize major cost items for an OSWTS renewal.		

Methodology	• Per scope of work, perform document reviews, attend the site, and perform activities to determine "known and potential existing site constraints," including:
	  ○ Exposing system components and undertaking performance assessments.
	  ○ Assessing current system performance and limitations.
	  ○ Reviewing elements of the facility site and ground conditions that may impede or constrict OSWTS renewal options.		

Summary of Activities:	• Document reviews as part of ongoing exchanges with the SCRD.
	• Site activities and assessments on 08-Mar-2021 and 09-Mar-2021, including:
	  ○ Excavation and locating of site components, including assessments of infiltrative layer and soil conditions.
	  ○ Identification of any design or operational issues, with the current, as-built system.
	  ○ Remediation of any issues that could be immediately addressed.
	  ○ Identification of any current maintenance challenges.
	  ○ Flow testing of components for operational capacity and indications of any potential issues.
	• Formal and informal discussions with SCRD staff.
	• Analysis and compilation of results.
	• Interpretation of results to identify the most practical renewal options.
	• Cost estimation and report reviews.		

Document Revision #	Date	By	Review By	Description
A	06-Mar-2021	BJGF	JA	Issued for Review
B	21-May-2021	BJGF	JA	Issued for Review
0	28-Jul-2021	BJGF	JA	Issued for Use

1 SUMMARY

This report conveys findings and assessments resulting from activities performed onsite and from a review of existing data. While our activities meet or exceed standard practice for inspection, this report should not be considered a substitute for regular inspection activities required of system owners, by regulation. Nor should this report be construed as a basis for detailed design. It has been prepared to aid conceptual design and costing.

Key observations:

- Septic tanks, which reside on individual parcels, are an important part of the wastewater treatment process and should be regularly inspected as part of an updated maintenance plan.
- The syphon chamber has a performance malfunction and is currently operating via the overflow. The syphon mechanism should be replaced. A replacement floating outlet configuration may offer reduced maintenance and additional usable life for the existing dispersal field.
- The settling tank has a cracked lid which should be replaced for integrity and to prevent rainwater infiltration.
- The effluent manifold, providing flow to two distribution boxes, is uneven. As a result, flow to each distribution box, and its respective dispersal field, is uneven.
- The Eastmost drainfield has been resting for a satisfactory period. Inspection of the dispersal laterals and biomat indicated considerable remaining life, with little indication of clogging or root intrusion.
- The Westmost drainfield is experiencing a performance malfunction. There are indications of severe root intrusion and clogging. Flushing, jetting, and root cutting are expected to return this drainfield to a satisfactory condition. However, it will benefit with a period of rest. The West field should be returned to operation in tandem with the East field once flushing, jetting, and root cutting have been performed, and intrusive vegetation has been removed.
- There are no flow monitoring devices installed. A flow monitoring device should be installed and monitored for operational considerations and to better inform future detailed design efforts.
- There are no alarm systems installed. An alarm system should be installed, considering there is, at current, minimal “alarm” or “reserve” volume for the system. Solar-powered alarm systems are available.
- Vegetation encroachment, primarily Western Red Cedar and Alder trees, is significant. All trees within 3m-5m of the dispersal area should be felled and the stumps removed. Ongoing vegetation management is recommended.
- Test pits and soil assessments indicated approximately 130 cm of unsaturated and permeable soil, with favourable loamy sand of single grain / loose consistency, with no indication of a seasonal high-water table.
- The existing system is nominally compliant with historical sewerage design standards, and site conditions are favourable for renewal options that meet current day standards.
- At present, the system is operating without posing a health risk. However, performance malfunctions should be promptly repaired and the maintenance program should be adjusted according to regular inspections.

- Assessment of the infiltrative layer and biomat were favourable for continued use of the dispersal system. We estimate the usable life between 10-20 years, with proper operations and maintenance, including inspection of on-parcel septic tanks and vegetation management.
- A renewed dispersal system, when required, should maximize vertical soil separation and include trenches that are constructed at a shallower depth.
- Renewal options and conceptual costs have been tabulated and can be found in Section 5.

2 GENERAL DESIGN CONSTRAINTS

System renewal options must satisfy the following general design constraints:

- Compliance with the applicable regulation, the BC Sewerage System Regulation, as design flows are less than 22,700 liters per day.
- The system must also comply with the Health Act, Land Use Bylaws, Strata, and other acts and regulations that may be impacted by an OSWTS.
- The system must provide effective wastewater treatment for 6 residential parcels.
    - Daily design flow is estimated as 7800 L/day, based on 1300 L/day per parcel, in accordance with the BC Standard Practice Manual, V.3.
    - The residences connected to the system vary in size between two and three bedrooms, with one four-bedroom residence, as noted on BC Assessment.
- Raw influent quality is assumed to fall within parameters characterized as raw residential sewage, as defined by the BC SPM.
- Effluent must undergo soil-based treatment via ground dispersal.

3 SITE OBSERVATIONS AND ASSESSMENTS

Table 3: Greaves - General Site Observations and Assessments

Element	Assessment	Constraints
Previous or Supplementary Professional Reviews	Previous professional reviews have not been provided.	
Recent Inspections and Maintenance	Previous inspection or maintenance reports have not been provided.	
Site and System History	The subdivision system is assumed to be constructed in 1977, or thereabouts, indicating an approximate age of 44 years.	
Future Site Development	5 parcels are currently developed, with a 6th parcel currently in development.	
Neighbouring Property Features	The system is bordered at North by Lot A, at East by Greaves Rd, and at West and South by the Baker Rd right of way. The neighbouring properties do not have any features that would restrict or impede an OSWTS renewal.	
Title and Land Data	• Land Owner: SCRD	

Element	Assessment	Constraints
	• PID: 007-282-966 • Folio: 746.03486.030 • Lot: 6 • Block: D • District Lot: 1391 • Plan: VAP17397 • Approximate Lot Size: 0.154 hectare Land title information was reviewed and there appeared to be no legal instruments that may restrict or impede an OSWTS renewal.	
Protected Areas	Protected Areas potential was reviewed via the SCRD Maps Service. There are no Protected Areas designated on or near the subject property that would restrict or impeded an OSWTS renewal.	
Development Permit Areas	Development Permit Area potential was reviewed via the SCRD Maps Service. There are no development permit area considerations that would restrict or impede an OSWTS renewal.	
Climate Considerations	Climate is classified as Warm-Summer Mediterranean. Marine weather conditions exist, with warm summers and periods of high rainfall and occasional freezing. Significant cold weather freeze protection is not required, though components should be covered.	
Topography	The general area is East of Bargain Bay, within the Cordillera / Georgia Lowland physiographic region, developed, and generally sloping towards the bay. The dispersal area itself is a constructed level bench, above a bank that slopes down to Greaves Rd.	
Well Registry	BC Water Resources was consulted to indicate whether any water wells were in the area. There are no registered wells within 30m of the subject property.	
Riparian Areas	No inland water bodies or watercourses that would provide fish habitat were observed on the subject property at the time of this report.	
Nitrogen and Phosphorous Reduction	There are no downgrade wells, water bodies at risk of eutrophication, or short-distance up-grade wells in proximity to this dispersal area. Nutrient removal requirements, in this regard, are do not appear to be required.	
Buried Infrastructure	Besides sewer distribution, there are no utilities directly within the dispersal area that would prevent or constrain an OSWTS renewal.	
Boundary Conditions, Exposure Pathways, and Breakout Risks	Breakout risk is the potential of effluent to “surface.” Potential breakout risks are: • Bank at East.	Maintain appropriate distance from the bank as part of any future designs.

Element	Assessment	Constraints
Vegetation	The current dispersal area is grass/herbaceous and is surrounded at West and North by Cedar, Alder, and Fir trees.	Alder and Cedar should be cut back 3-5m from the dispersal area. A vegetation management plan should be enacted.

4 SYSTEM OBSERVATIONS AND ASSESSMENTS

Table 4: Greaves - System Observations and Assessments

Element	Assessment	Observations and Recommendations
Current Configuration Type	The system receives pumped effluent from residential septic tanks from each parcel. Flow is directed to a settling tank at the facility site, which overflows into a siphon chamber. The siphon chamber is designed to provide regular doses to a trench infiltration system via gravity distribution.	An important part of the treatment system, the septic tank, resides on individual residents' properties. Because the overall system efficacy can be affected by the maintenance and performance of an individual septic tank, it is recommended that septic tanks are regularly inspected as part of a maintenance plan. For example, to ensure suitable constituents and septage pump out frequency, along with dosing mechanisms.
Flow Data	No flow data was available for analysis.	
Primary Treatment	As communicated by the SCRD, each parcel has its own septic tank, which pumps to the OSWTS.	The new parcel under development requires a septic tank as well. The OSWTS, as configured, does not manage raw sewage influent. SCRD should ensure that the septic tank and dosing system is properly configured once it is operational.
Effluent Transmission	Effluent transmission from individual parcels, to the system, was not inspected or assessed.	It is recommended that the transmission network is regularly inspected.
Storage and Treatment	**Settling Tank: Estimated volume of 1860 L (~400 I.G.)**	
	• By current standards, this tank could be considered undersized.	A renewed system should include a larger settling tank that meets current standards, as determined by detailed design.
	• The settling tank has a broken lid.	Fix lid to: • prevent rainwater infiltration • prevent odours • mitigate risk to the general public
	• Inlet and outlet heights appear to be properly configured. • Structural degradation appears minimal, as indicated from observable surfaces	
	Siphon Tank: Estimated volume of 700 L (~155 I.G.)	

Element	Assessment	Observations and Recommendations
	• By current standards, this tank could be considered undersized.	A renewed system should include a dosing tank that meets current standards, as determined by detailed design.
	• There is inadequate “reserve” or “alarm” volume.	As configured, should the dispersal field have a performance malfunction, there is minimal reserve volume to allow time for rectifying a performance malfunction. Meaning, the system could overflow relatively quickly should the dispersal system begin to back up.
	• The siphon is experiencing a performance malfunction. Flow is being directed through the overflow to the drainfield.	The siphon should be inspected and fixed or replaced. A floating outlet device may be a more suitable, robust component for this application. Floating outlets do not require power and are typically more reliable than siphons.
	• Overflow height appears to be properly configured. • Structural degradation appears minimal, as indicated from observable surfaces	
Flow Monitoring	• There are no flow monitoring devices installed.	A flow monitoring device should be installed.
Alarms	• There are no alarm systems installed.	An alarm system should be installed, considering there is, at current, minimal “alarm” or “reserve” volume for the system. Solar-powered alarm systems are available.
Ground Dispersal	The system is configured with two distribution boxes, 1 supplying 4 laterals and the other supplying 3 laterals. Each distribution box is controlled with an isolation valve. Laterals are approximately 30 m in length and are constructed of 3” PVC perforated pipe. Effluent is directed to a trench infiltration system. The nominal trench infiltrative surface is at approximately 100 cm. The trenches have been constructed with suitable aggregate type and depth below and above the dispersal laterals and backfilled with sand and cover soil. The trench dispersal system is nominally compliant with historical standards. •A renewed dispersal system should maximize vertical soil separation and include trenches that are constructed at a shallower depth.	
	Effluent Manifold	
	The effluent manifold is constructed with 4” Sch. 40 PVC, complete with a 4” isolation valve for each distribution box. • The valves operate freely. • The manifold has been constructed out of level. As such, an estimated 95% of flow will be through the East distribution box when both valves are open.	The manifold should be reconstructed so that it is level and provides equal distribution to both distribution boxes.
	Distribution Boxes	

Element	Assessment	Observations and Recommendations
	The distribution box at West is a 5-hole/ 4-out configuration. • There were no indications of significant structural degradation. However, the baffles have indications of minor degradation. • Laterals 1 & 2 were root bound; the distribution box is experiencing a performance malfunction. • Flow testing for 1-hour indicated 100% flow to laterals 3 & 4.	Flushing, jetting, and root cutting are recommended to dispersal laterals of roots and build up.
	The distribution box at East is a 4-hole/ 3-out configuration • There were no indications of significant structural degradation. • There were no indications of root infiltration or backup.	This distribution box, and its respective portion of the dispersal field, have had an extended period of rest. It is recommended that flow be directed to this side of the field while the West portion of the field rests.
	Dispersal Laterals: Dispersal Area Approximately 30m x 13m	
	West Laterals • West laterals were inspected and found to be experiencing a performance malfunction. Significant root intrusion exists; the trees at West (primarily Cedar) have encroached over time into the drainfield area.	Trees should be cut back at 3m-5m from the drainfield area and maintained as such, with a vegetation management plan.
	East Laterals • East laterals were inspected and found to be in satisfactory condition, with minimal indications of root intrusion or other blockages.	
Vegetation	The West portion of the dispersal field has significant tree encroachment. This has resulted in root intrusion into the distribution box and dispersal laterals at West.	Trees should be cut back at 3m – 5m from the drainfield area and maintained as such, with a vegetation management plan.
Effluent & Performance	Effluent quality appeared satisfactory, with no irregular odours and no visible indications of treatment failure. Solids sizing may potentially indicate a potential of raw sewage influent. No further sampling was conducted.	It is recommended that septic tanks are regularly inspected as part of a maintenance plan.
Soils Capability	Soils were inspected via excavation of several locations within the dispersal area. Inspection of soils indicated the area is primarily loose grain, structureless sand, with approximately	These are favourable conditions for a renewed dispersal system in compliance with current day standards.

Element	Assessment	Observations and Recommendations
	130 cm of suitable soils until a likely limiting layer.	
Infiltrative Layer	The infiltrative layer and biomat condition were inspected via excavation of several locations within the dispersal area. The infiltrative layer was found to be satisfactory, with no indications of excessive clogging.	These results are favourable for continued use of the dispersal field. We estimate the usable life between 10-20 years, with proper operations and maintenance, including inspection of septic tanks and vegetation management.
Reserve Area	The system does not have provisions for a reserve area. However, the areas in between the existing trenches offer an opportunity for use as a reserve area.	
General System Comments	• "As-built" system drawings do not exist. It is recommended that an as-built drawing set is created, to assist future operations and maintenance. • In the current configuration, there is minimum elevation difference between the dosing tank and dispersal field. As such, without pumped dosing, the dispersal cannot be considered "uniform". Pumped dosing generally provides better uniformity of dispersal, improved soil-based treatment and can improve the longevity of a ground dispersal system. • The are no signs of breakout or backup. The system appears to be performing in a manner that does not currently pose a health risk. However, it should be repaired to address current performance malfunctions. • With suitable repairs and adequate operations and maintenance, this system may continue to perform well for a reasonable time. • The existing system is nominally compliant with historical standards. • Site and soil conditions are favourable for renewal options that meet current day standards. • An OSWTS renewal, whether an alteration or replacement, will need to be designed by an authorized person and the design will need to be filed with the health authority.	

5 RECOMMENDATIONS FOR SYSTEM RENEWAL & CONCEPTUAL ESTIMATE OF COSTS

Our assessment of the Greaves Wastewater facility has provided for two main options for renewal: 1) Repair the system in the short-term; and 2) replace the system in the long term.

We have also provided an estimate of operations and maintenance costs should short-term repairs be performed.

Estimated costs have been presented in the nearest thousand-dollar value. Cost items such as permitting, application fees, and taxes, have not been included.

5.1 GREAVES – SHORT-TERM SYSTEM RENEWAL

Table 5: Greaves – Conceptual Costs for the Short-Term

Item	Description	Costs (+/-30%)
Flushing, jetting, root-cutting	Flushing, jetting and root cutting, along with a period of rest for the West portion of the field, should allow for it to be reinstated.	**$3,000**
Siphon Replacement	Replacing the siphon system will return the dosing system to a functioning state. It is recommended that the dosing chamber is replaced with a larger tank to improve alarm reserve volume and to use a floating outlet system in a dosed-gravity configuration, which should be more reliable. The estimate includes tank decommissioning/removal temporary sewer management, provisions for manifold rework, and the addition of a flow monitoring device and solar alarm system.	**$12,000**
	Total	**$15,000**
	Cost Per Parcel	**$2,500**

5.2 GREAVES – LONG-TERM SYSTEM RENEWAL

Table 6: Greaves – Conceptual Costs for the Long-Term

Item	Description	Costs (+/-30%)
Replacement System	Design and install of a replacement settling, dosing, and dispersal system, not in consideration of any short-term repairs. This cost includes decommissioning/equipment removal, upgrading the system to include a more suitably sized settling tank, a pump-chamber and duplex pumps, and an alarm system.	**$67,000**
Temporary Sewer Management	Pumping on standby, for 2 days, while the settling tank is replaced.	**$3,000**
	Total	**$70,000**
	Cost Per Parcel	**$11,667**

5.3 GREAVES – ONGOING OPERATIONS

The following operational costs are estimated for maintaining the system as-is, with short-term repairs. These activities should provide considerable usable life to the existing dispersal field. These costs would also be applicable for a complete system replacement. However, the maintenance plan for a system replacement will be specified by the system designer.

These cost estimates do not include power costs, nor allowances for amortized costs for long-term replacement, which should also be addressed.

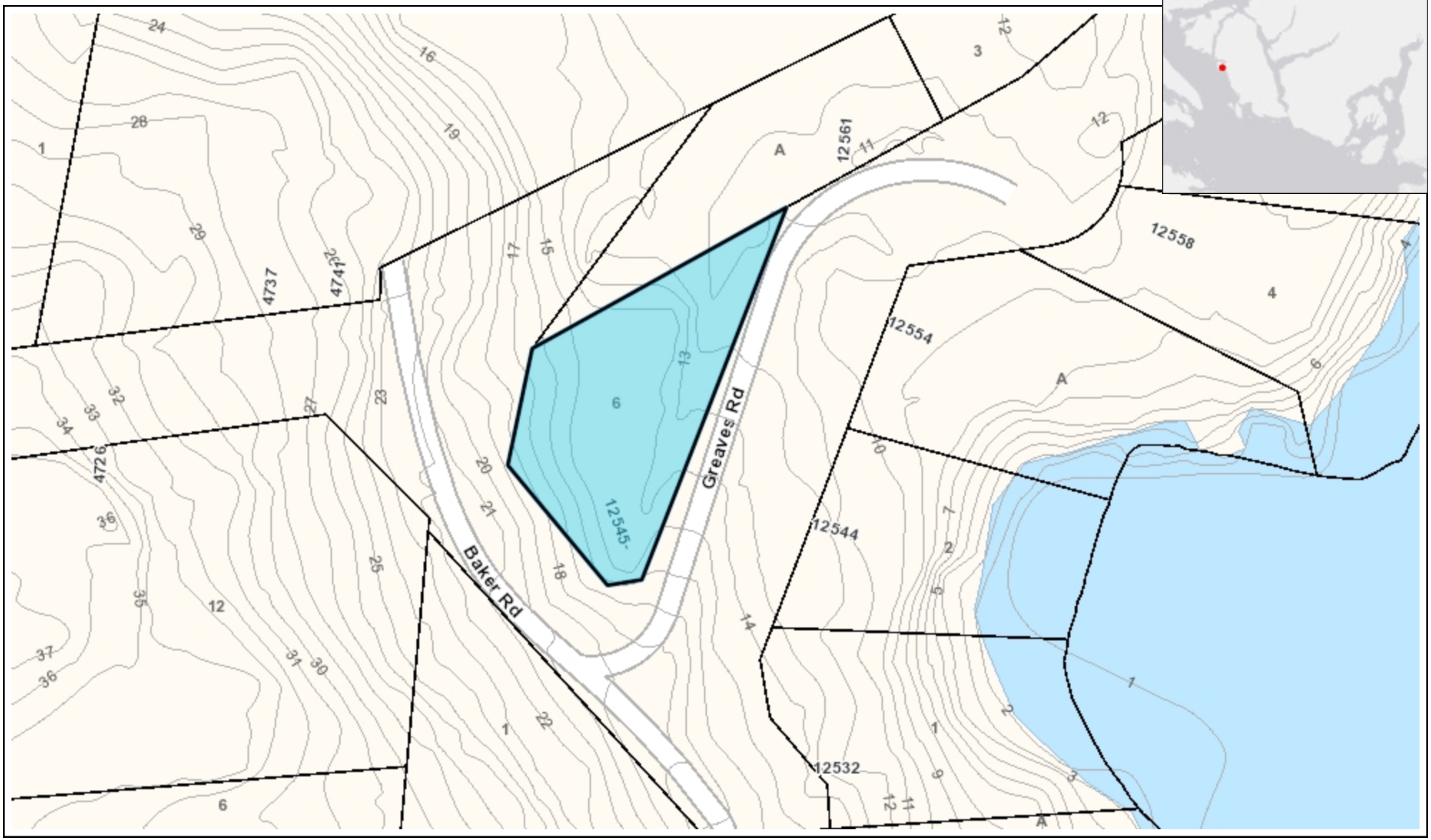
Table 7: Greaves – Conceptual Costs for Operations and Maintenance (Yearly Costs)

Item	Description	Costs (+/- 30%)
Yearly Inspection	Yearly inspection for maintenance, per maintenance plan meeting regulatory requirements.	**$2,000**
Operations	2-year pump out frequency and minor repairs.	**$2,000**
Maintenance	3-year frequency for dispersal field flushing and jetting, yearly average.	**$1,000**
	Yearly Average	**$5,000**
	Cost Per Parcel, Per Year	**$833**

6 ATTACHMENTS

1. Greaves Parcel Map
2. Greaves Property Report
3. Greaves Original Construction Drawing
4. Field Record & Photo Log

Greaves



This information has been compiled by the Sunshine Coast Regional District (SCRD) using data derived from a number of sources with varying levels of accuracy. The SCRD disclaims all responsibility for the accuracy or completeness of this information.

4/26/2021
1: 1,487

Legend

- Parcel Boundaries
- Sensitive Ecosystems Inventory
  - Cliffs
  - Herbaceous
  - Mature Forest
  - Older Forest
  - Riparian
  - Seasonally Flooded Agricultural Fields
  - Wetland
  - Woodland
- Contours
- Unconstructed Roads
- Golf Courses
- Parks
  - SCRD Park
  - Recreation Site
  - Municipal Park
  - Provincial Park
  - Wharf
  - Cemetery
- Band Lands

SCRD Maps

Property Report

4/25/2021

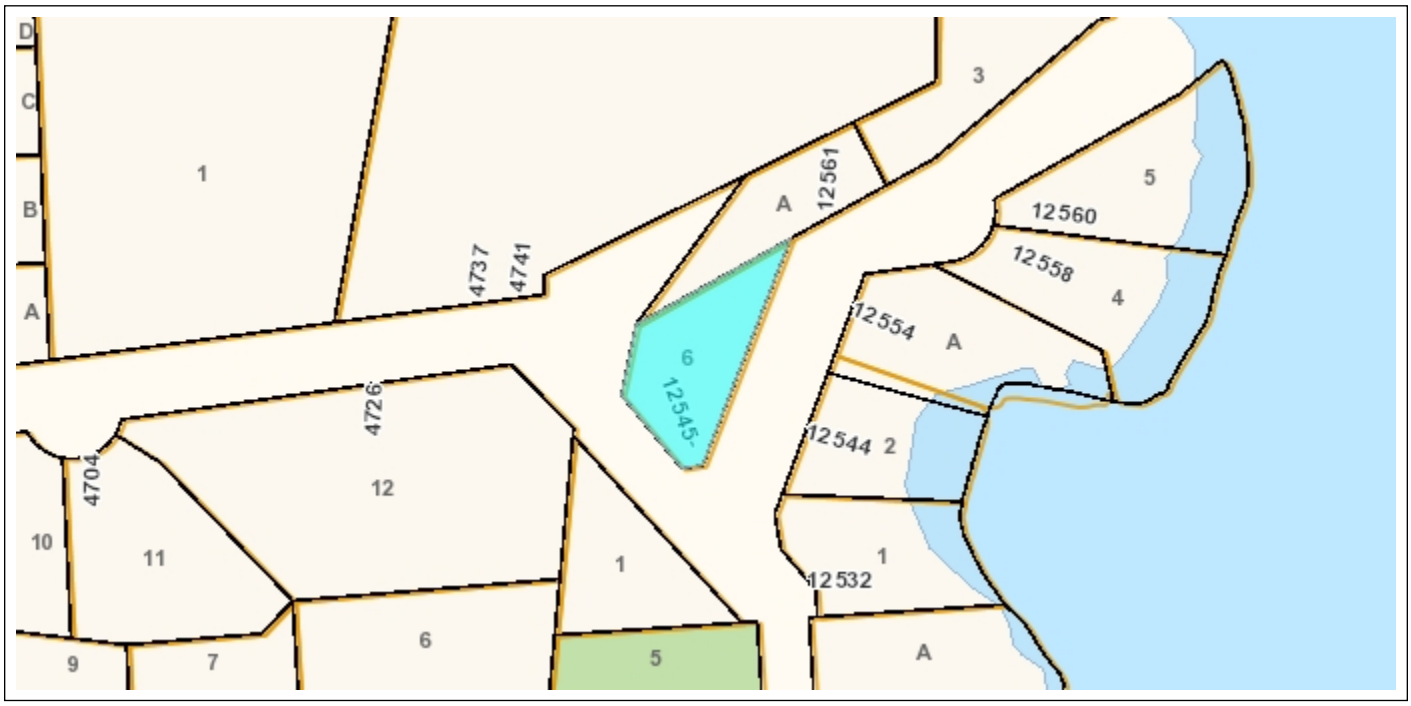
Folio: 746.03486.030 **PID:** 007-282-966

Address: **Jurisdiction:** SCRD

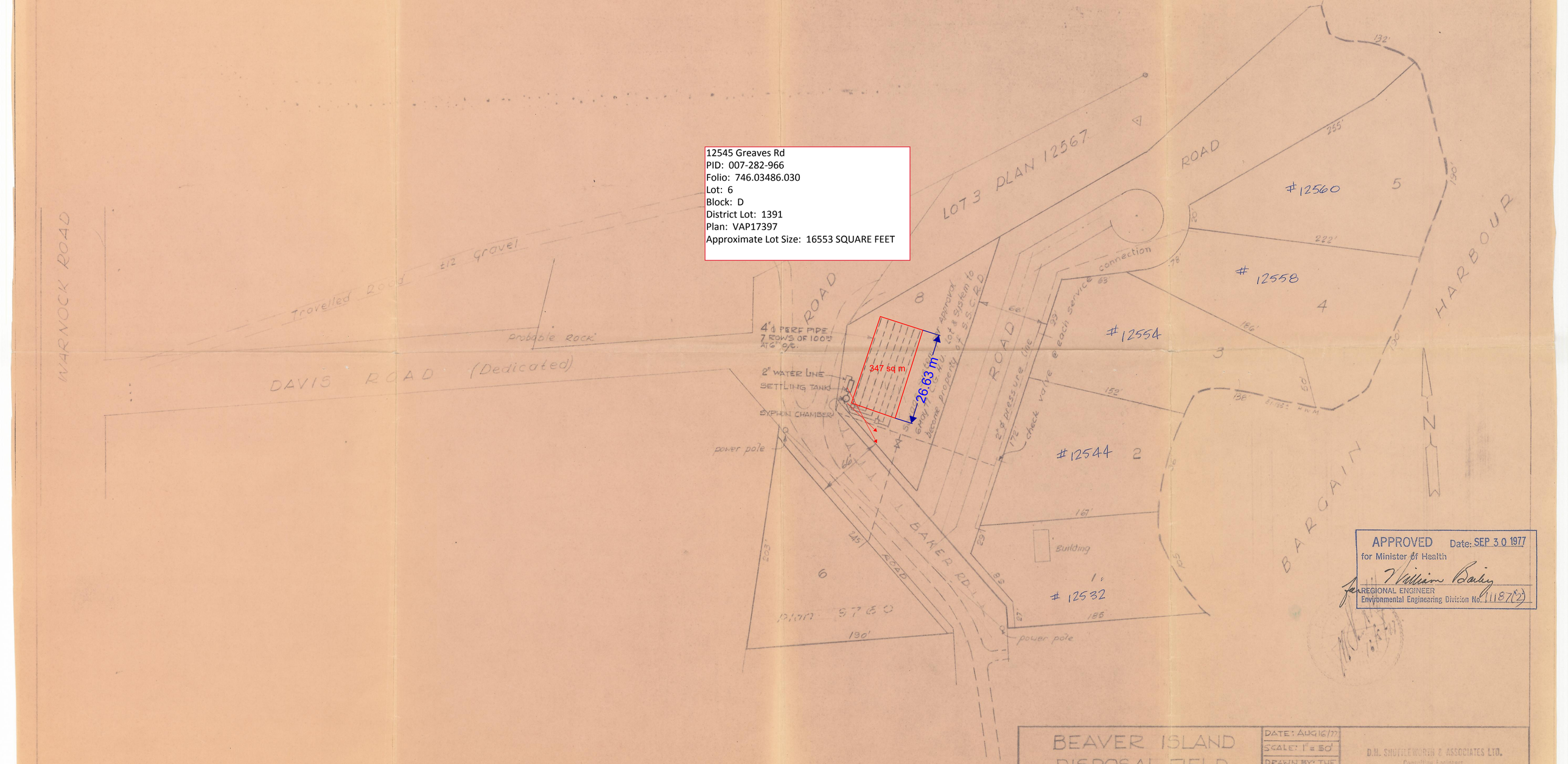
Lot: 6 **Block:** D **Plan:** VAP17397 **District Lot:** 1391

2021 Assessed Value: 182000 **Land Value:** 182000 **Improvement Value:** 0

Approximate Lot Size (BC Assessment): 16553 SQUARE FEET



12545 Greaves Rd
PID: 007-282-966
Folio: 746.03486.030
Lot: 6
Block: D
District Lot: 1391
Plan: VAP17397
Approximate Lot Size: 16553 SQUARE FEET



BEAVER ISLAND
DISPOSAL FIELD
SITE PLAN

DATE: AUG 16/77
SCALE: 1" = 50'
DRAWN BY: TJF
CHECKED BY:
REVISED:

D.H. SHUTTLEWORTH & ASSOCIATES LTD.
Consulting Engineers
P.O. BOX 515, SECHELT, B.C. V0N 3A0

SITE ASSESSMENT - GREAVES

Created: 07-28-2021
Creator: Bradley Fossen (@BFO)
Status:
Dates: 04-13-2021 - 07-28-2021

Recipients

brad@thinkapg.com

Description

Site field activities for the purposes of conceptual system renewal.

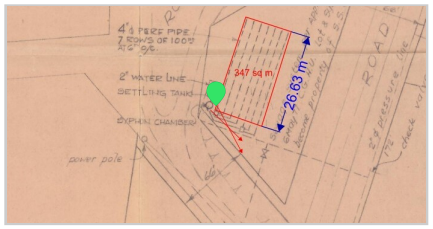
Sheets

2021.02 GREAVES (12545 GREAVES RD)
Greaves Construction Drawing

Table of contents

#19 - DBOX 1 AND FLOW TEST

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Greaves Construction Drawing



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Bradley Fossen	Photo 4	28 Jul 11:36 AM
Bradley Fossen	Photo 5	28 Jul 11:36 AM
Bradley Fossen	Photo 6	28 Jul 11:36 AM
Bradley Fossen	Photo 7	28 Jul 11:36 AM
Bradley Fossen	Photo 8	28 Jul 11:36 AM
Bradley Fossen	Photo 9	28 Jul 11:36 AM
Bradley Fossen	Photo 10	28 Jul 11:36 AM
Bradley Fossen	Photo 11	28 Jul 11:36 AM

Photos

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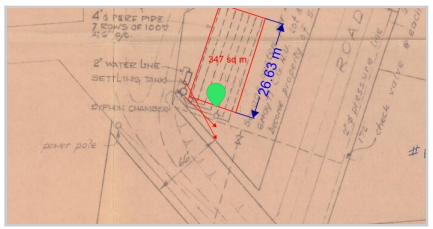
#20 - DBOX 2 AND FLOW TEST

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Greaves Construction Drawing



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Bradley Fossen	Photo 5	28 Jul 11:38 AM

Photos

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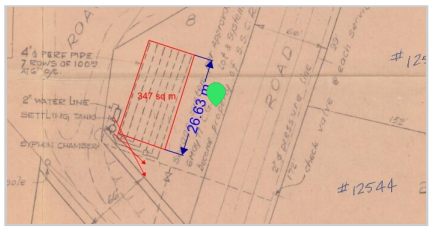
#16 - GENERAL SITE OBSERVATIONS

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Greaves Construction Drawing



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Photos

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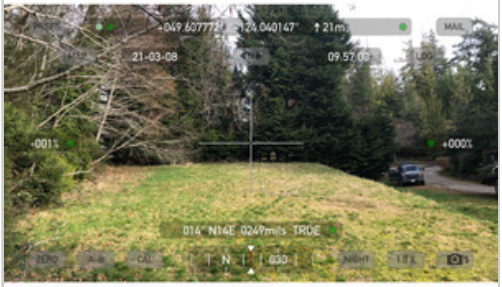

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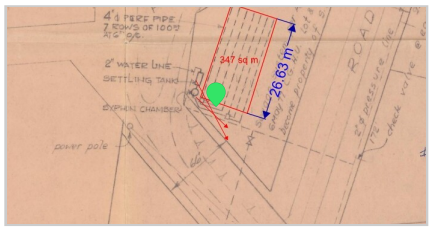
#21 - MANIFOLD AND VALVES

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Greaves Construction Drawing



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Photos

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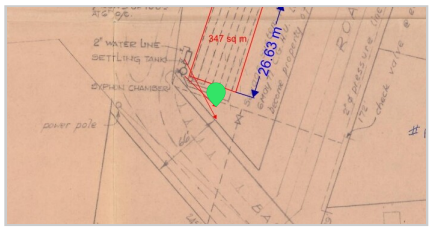
#18 - SETTLING TANK

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Greaves Construction Drawing



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Bradley Fossen	Photo 4	28 Jul 11:32 AM

Photos

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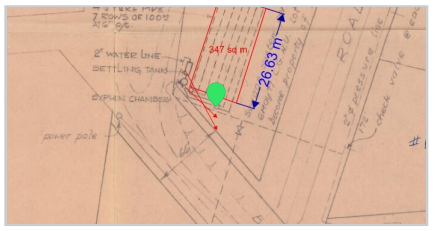
#17 - SIPHON CHAMBER

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Greaves Construction Drawing



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Photos

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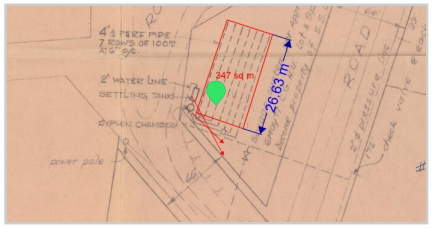
#22 - TEST PIT 1 AND LATERAL EXPOSURE

Completed | Bradley Fossen | 01. TEST PIT

Plan: Greaves Construction Drawing



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Bradley Fossen	Photo 7	28 Jul 11:46 AM
Bradley Fossen	Photo 8	28 Jul 11:46 AM
Bradley Fossen	Photo 9	28 Jul 11:46 AM

Photos

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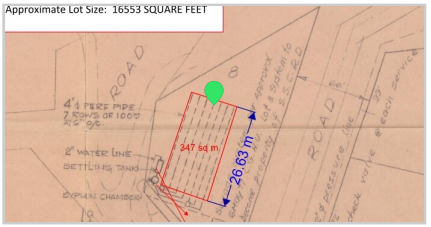
#23 - TEST PIT 2 AND LATERAL EXPOSURE

Completed | Bradley Fossen | 01. TEST PIT

Plan: Greaves Construction Drawing



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Photos

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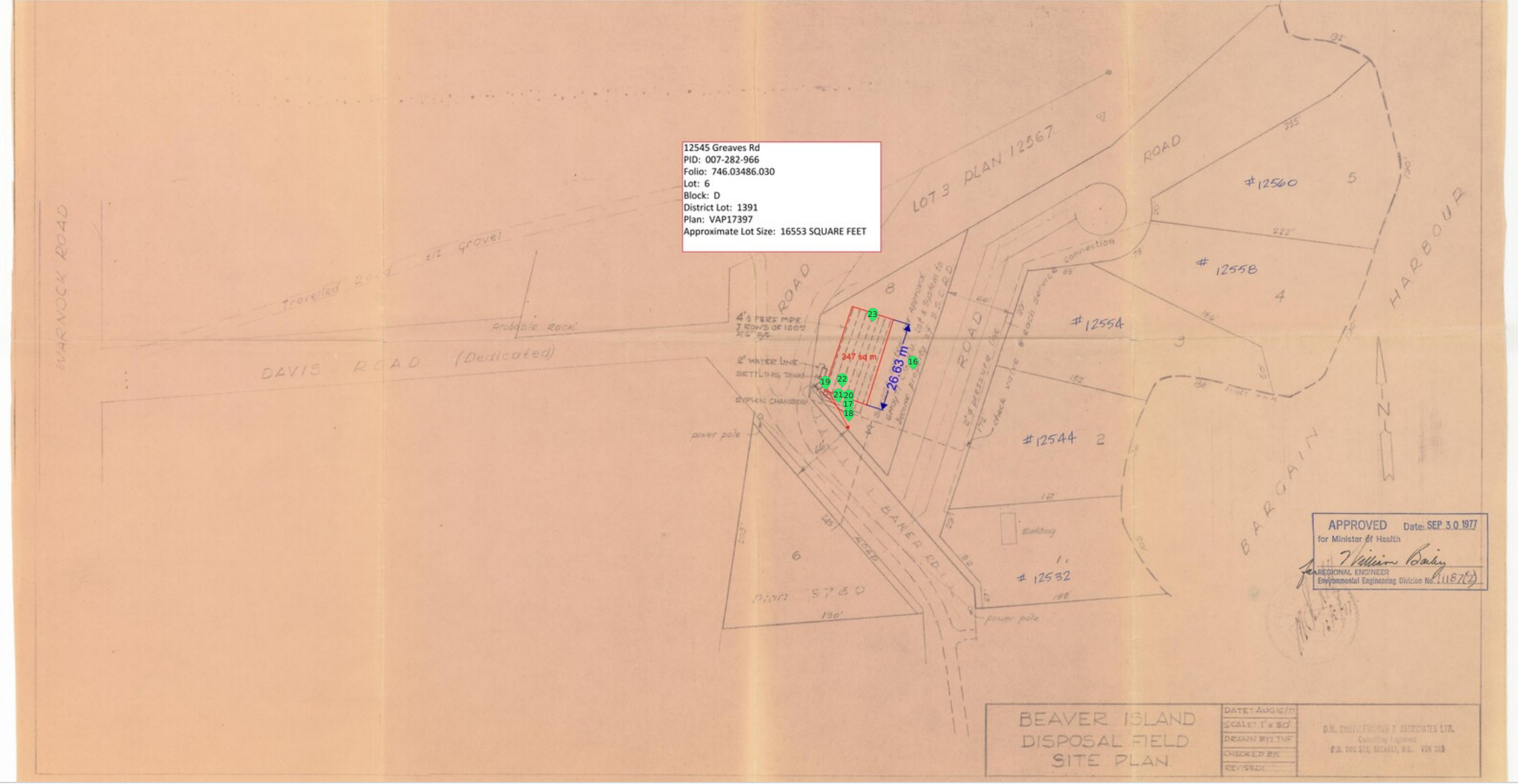

12545 Greaves Rd
PID: 007-282-966
Folio: 746.03486.030
Lot: 6
Block: D
District Lot: 1391
Plan: VAP17397
Approximate Lot Size: 16553 SQUARE FEET
WARNOCK ROAD
DAVIS ROAD (Dedicated)
LOT 3 PLAN 12567
ROAD
HARBOUR
BARGAIN
BAKER RD.
#12560
#12558
#12554
#12544
#12532
347 sq m
26.63 m
APPROVED Date: SEP 30 1977
for Minister of Health
REGIONAL ENGINEER
Environmental Engineering Division No. 11187
BEAVER ISLAND
DISPOSAL FIELD
SITE PLAN
DATE: AUG 16/77
SCALE: 1" = 50'
DRAWN BY: TMF
CHECKED BY:
REVISED:

Onsite Wastewater Treatment and Dispersal System Assessment – Merrill Wastewater Treatment Facility

PROJECT NO: 2021.02

SITE NAME: MERRILL

DOCUMENT NO.: 2021.02-16-STY-002

FORM NO. APG-40-FRM-009

1: Form Revision Log

Revision #	Date	By	Description
0	31-Oct-2020	BJGF	Issued for Use

Table 2: Summary Information

Project No.	2021.02	**Site Name:**	Merrill
Study Type:	☐New Construction ☒Replacement ☐Repair / Alteration	**Prepared by:**	Bradley Fossen Jim Andersen
Owners / Client:	SCRD	**Jurisdiction:**	Vancouver Coastal Health / SCRD
Legal Description	Treatment: LOT 107 BLOCK 2 DISTRICT LOT 1362 PLAN 19110 Dispersal: LOT 106 BLOCK 2 DISTRICT LOT 1362 PLAN 19110	**PID #** ***(Parcel Identifier Number)***	Treatment: 007-084-536 Dispersal: 007-084-528
Common Address	Treatment: 12683UF MERRILL CRES, Madeira Park, BC Dispersal: 4561 MERRILL RD, Madeira Park, BC	**Folio. #** ***(Tax Assessment Roll #)***	Treatment: 746.03283.286 Dispersal: 746.03283.284
Engineer of Record	Bradley Fossen	**Project Stage:**	Existing
Influent Type	☒Typical Residential ☐Other_____	**Parcels:**	14
Year of Construction	1982 (Treatment) 2018 (Dispersal)	**Design Flow:** *(Estimated)*	18,200 L/day
Purpose of Report:	• Assess system performance requirements. • Provide guidance on factors that may affect onsite wastewater treatment system (OSWTS) renewal options. • Assess current system performance and limitations. • Conceptualize OSWTS renewal options. • Conceptualize major cost items for an OSWTS renewal.		

Methodology	• Per scope of work, perform document reviews, attend the site, and perform activities to determine "known and potential existing site constraints," including:
	  ○ Undertaking performance assessments.
	  ○ Assessing current system performance and limitations.
	  ○ Reviewing elements of the facility site and ground conditions that may impede or constrict OSWTS renewal options.		

Summary of Activities:	• Document reviews as part of ongoing exchanges with the SCRD.
	• Site activities and assessments on 08-Mar-2021 and 09-Mar-2021, including:
	  ○ Locating of site components
	  ○ Identification of any design or operational issues, with the current, as-built system.
	  ○ Remediation of any issues that could be immediately addressed.
	  ○ Identification of any current maintenance challenges.
	  ○ Flow testing of components for operational capacity and indications of any potential issues.
	• Formal and informal discussions with SCRD staff.
	• Analysis and compilation of results.
	• Interpretation of results to identify the most practical renewal options.
	• Cost estimation and report reviews.		

Document Revision #	Date	By	Review By	Description
A	06-Mar-2021	BJGF	JA	Issued for Review
B	21-May-2021	BJGF	JA	Issued for Review
C	28-Jul-2021	BJGF	JA	Issued for Use

1 SUMMARY

This report conveys findings and assessments resulting from activities performed onsite and from a review of existing data. While our activities meet or exceed standard practice for inspection, this report should not be considered a substitute for regular inspection activities required of system owners by regulation. Nor should this report be construed as a basis for detailed design. It has been prepared to aid conceptual design and costing.

Key observations:

- The treatment system is a legacy NPS (N.P.S. Wastewater Systems) sequencing batch reactor that uses aeration and a sludge return process. While it is approaching the end of its design life, its structural condition appears satisfactory, and it has benefited from ongoing component replacements.
- Areas around the treatment tank indicated periods of surface water ponding, and the system hatches do not have a sufficient seal to prevent surface water infiltration. The third chamber is currently not in use, though it is full of rainwater. While these indications are not conclusive, it is likely that the system experiences surface water intrusion, which could place additional demands on the pumps and drainfield. The tanks should be properly sealed, and the drainage around the tanks should be corrected.
- The discharge pump assembly is free-floating. Consideration should be given to installing bracing to minimize torque effects or vibration.
- The venting is free to the atmosphere. Odours were not prevalent. However, if odours are observed, the vents could be readily directed to an inground natural scrubber system.
- While the system is currently performing adequately, it has previously malfunctioned due to influent quality issues. This issue could be prevented in the future with the addition of a trash tank situated between the lifting station and the treatment system.

The facility benefited from a dispersal replacement in 2018. Flow tests and other assessments of the dispersal system were performed, concluding that it is operating in its normal manner.

2 GENERAL DESIGN CONSTRAINTS

System renewal options must satisfy the following general design constraints:

- The system must comply with the BC Sewerage System Regulation, as design flows are less than 22,700 liters per day.
- The system must also comply with the Health Act, Land Use Bylaws, Strata, and other acts and regulations that may be impacted by an OSWTS.
- The system must provide effective wastewater treatment for 14 residential parcels.
    - Daily design flow is estimated as 18,200 L/day, based on 1300 L/day per parcel, in accordance with the BC Standard Practice Manual, V.3.
- Raw influent quality is assumed to fall within parameters characterized as raw residential sewage, as defined by the BC SPM.
- Effluent must undergo soil-based treatment via ground dispersal.

3 SITE OBSERVATIONS AND ASSESSMENTS

Table 3: Merrill - General Site Observations and Assessments

Element	Assessment	Constraints
Previous or Supplementary Professional Reviews	Previous professional reviews have not been provided.	
Recent Inspections and Maintenance	Previous inspection or maintenance reports have not been provided.	
Site and System History	The subdivision system is assumed to be constructed in 1981, or thereabouts, indicating an approximate treatment system age of 39.	
Future Site Development	12 parcels are currently developed; the development status of the remaining 2 parcels is not known.	
Neighbouring Property Features	The treatment system is bordered all around by the residences of Merrill Rd and Merrill Crescent. The neighbouring properties at Northwest border the treatment area in close proximity.	

Title and Land Data	• 12683 Merrill Cres (Treatment Area)
	  ○ Pid: 007-084-536
	  ○ Folio: 746.03283.286
	  ○ Lot: 107
	  ○ Block: 2
	  ○ District Lot: 1362
	  ○ Plan: Vap19110
	  ○ Approximate Lot Size: 19166 Square Feet
	• 4561 Merrill Rd (Dispersal Area)
	  ○ Pid: 007-084-528
	  ○ Folio: 746.03283.284
	  ○ Lot: 106
	  ○ Block: 2
	  ○ District Lot: 1362
	  ○ Plan: Vap19110
	  ○ Approximate Lot Size: .8 Acres
	Land title information was reviewed and there appeared to be no entitlement matters that may restrict or impede an OSWTS renewal.	

Protected Areas	Protected Areas potential was reviewed via the SCRD Maps Service. There are no Protected Areas designated on or near the subject property that would restrict or impeded an OSWTS renewal.	
Development Permit Areas	Development Permit Area potential was reviewed via the SCRD Maps Service. There are no development permit area considerations that would restrict or impede an OSWTS renewal.	
Climate Considerations	Climate is classified as Warm-Summer Mediterranean. Marine weather conditions exist, with warm summers	

Element	Assessment	Constraints
	and periods of high rainfall and occasional freezing. Significant cold weather freeze protection is not required, though components should be covered.	
Topography	The general area is adjacent to the Malaspina Straight, straddling a landform between Francis Bay and Gerrans Bay, within the Cordillera / Georgia Lowland physiographic region, and generally developed. The dispersal area itself is downward sloping towards Merrill Rd. The treatment system is in a low-lying depression, receiving gravity flow from the neighbouring residences.	
Well Registry	BC Water Resources was consulted to indicate whether any water wells were in the area. 1 well was noted in the vicinity of the treatment system area. This well was not physically observed during the site assessment, and it is possible that the well location is erroneous, as is common with the well registry.	The proximity of nearby drinking wells would be determined as part of any detailed design. A setback of 30m is required by regulation. If a well exists in this area, additional design measures are required.
Riparian Areas	No inland water bodies or watercourses that would provide fish habitat were observed on the subject property at the time of this report.	
Nitrogen and Phosphorous Reduction	There are no downgrade wells, water bodies at risk of eutrophication, or short-distance up-grade wells in proximity to this dispersal area. Nutrient removal requirements, in this regard, are do not appear to be required.	
Buried Infrastructure	Besides sewer distribution, both electrical and water service lines are buried within the treatment system area.	
Boundary Conditions, Exposure Pathways, and Breakout Risks	Breakout risk is the potential of effluent to "surface." Relating to the treatment system, potential breakout risks are: • Treatment tanks – hatches are not water-tight	Tanks hatches should be made water-tight.
Vegetation	The dispersal area is grassy/herbaceous and is bordered by alder and cedar trees. Relating to the treatment system, there are no vegetation concerns that would restrict or impede an OSWTS renewal.	Trees should be maintained at a distance of 5m from the dispersal area as part of a vegetation management program.

4 SYSTEM OBSERVATIONS AND ASSESSMENTS

Table 4: Merrill - System Observations and Assessments

Element	Assessment	Observations and Recommendations
Current Configuration Type	The system collects raw sewage via gravity collection to a lifting station. The lifting station has duplex pumps that convey raw sewage to an NPS (NPS Wastewater Systems Ltd.) Type 2 treatment system. The treatment system is a 3 chamber, aerated process with sludge return and uses duplex pumps to discharge to a double floating outlet dosing system. The "flout" system provides a significant dose volume which improves distribution each trench dispersal system.	
Flow Data	1 month of flow data was available for analysis. While this does not provide a sufficiently large sample set, it does provide some indications of flows. Within January 2021, effluent flows ranged from 1.5 to 8 cubic meters per day, which appears to be within the capabilities of the ground dispersal system. Both the floating outlet chamber and treatment system control panel are capable of providing flow data.	Flows should be regularly recorded on an ongoing basis prior to an OWSTS renewal. This data will assist the designer in properly sizing a treatment system. Flow data also assists in providing indications of surface/groundwater intrusion. The use of flow data should be incorporated into the system operations and maintenance plan.
Primary Treatment	As communicated by the SCRD, there is no primary treatment, such as on-parcel septic tanks prior to the treatment system. The trash tank that is part of the treatment system is significantly undersized.	It is recommended that a suitably sized trash tank is installed.
Effluent Transmission	Effluent transmission from individual homes to the system was not inspected or assessed.	
Storage and Treatment	**Chambers and Clarifiers**	
	• Chamber #2 is not in use and is full of rainwater. • Hatches are not water-tight. • Areas around the treatment tank indicate periods of surface water ponding.	It is likely that the system experiences surface water intrusion, which could place additional demands on the pumps and drainfield. The tanks should be properly sealed, and the drainage around the tanks should be corrected.
	• The treatment system has a broken hinge on its Eastmost hatch cover.	Fix hatch to mitigate risk to the general public.
	• Discharge pumps are free-floating.	Pumps should be secured.
	• The treatment system currently vents to the atmosphere.	It is recommended that vents should be directed to a peat or mulch scrubber if odours pose an issue with neighbours.

Element	Assessment	Observations and Recommendations
Flow Monitoring	• Flow monitoring, both at the control panel and at the dosing chamber, appears to be functioning as designed.	Flows should be regularly recorded on an ongoing basis prior to an OWSTS renewal. This data will assist the designer in properly sizing a treatment system. Flow data also assists in providing indications of surface/groundwater intrusion. Logging and use of flow data should be incorporated into the system operations and maintenance plan.
Alarms	Alarm systems appear to be functioning as designed.	
Dosing Chambers	A flow test was performed by filling the treatment system with water and engaging the discharge pumps to fill the dosing chambers. The floating outlet devices performed as designed and the flow monitoring counter correctly incremented.	
Ground Dispersal	The system is configured with two distribution boxes, both supplying six laterals. Each distribution box is controlled with an isolation valve. Laterals are approximately 24 m in length and are constructed of 3" PVC perforated pipe. Effluent is directed to a trench infiltration system. The system was installed in 2018, and there were no indications of any performance malfunctions. As such, excavation of dispersal components was not warranted.	
Distribution Boxes	Both distribution boxes were noted to be in satisfactory condition, with no indications of root intrusion or backup. The distribution boxes were monitored during the flow test and performed as per design. The dispersal laterals were receiving effluent appropriately.	
Effluent & Performance	Effluent quality appeared satisfactory, with no irregular odours and no visible indications of treatment failure. One effluent sample was drawn and sent for testing, confirming the system is producing Type 2 quality effluent (containing less than 45 mg/L of total suspended solids and having a 5-day biochemical oxygen demand of less than 45 mg/L.). There have been previous performance malfunctions due to problematic influent constituents.	It is recommended that a suitably sized trash tank is incorporated into a treatment system renewal. This will assist in managing influent quality concerns. Further, additional settling can promote better treatment performance. This becomes more relevant when sewage influent is pumped, as is the case with the Merrill configuration.
Reserve Area	The system is currently utilizing its reserve area.	

Element	Assessment	Observations and Recommendations
General System Comments	• There are no signs of breakout or backup. The system appears to be performing as intended. • The existing system is nominally compliant with current-day standards. • A treatment system renewal will need to be designed by an authorized person, and the design will need to be filed with the health authority. The design will need to be completed by a professional engineer, per the BC SSR, due to the 9100 per the BC SSR, as the flow is in excess of 9100 L/day.	

5 RECOMMENDATIONS FOR SYSTEM RENEWAL & CONCEPTUAL ESTIMATE OF COSTS

Our assessment of the Merrill Wastewater facility has provided for two main courses of action: 1) Repair the system in the short term, and 2) replace the treatment system in the long term.

We have also provided an estimate of operations and maintenance costs should short-term repairs be performed.

Estimated costs have been presented in the nearest thousand-dollar value. Cost items such as permitting, application fees, and taxes, have not been included.

5.1 MERRILL – SHORT-TERM SYSTEM RENEWAL

Table 5: Merrill – Conceptual Costs for the Short-Term

Item	Description	Costs (+/- 30%)
Grade Work	Improving the grade around the treatment tanks will assist in diverting surface water away from the top of the tanks.	**$1,000**
Seal Treatment Tank Hatches	Sealing the hatch assembly to the top of the concrete tank will assist in preventing surface water and rainwater from infiltrating the system.	**$2,000**
Operational Improvements	Design and install of trash tank (2000 IG); Provide additional support for pumps; Inspect and improve mains in treatment area. Including temporary sewer management.	**$17,000**
	Total	**$20,000**
	Cost Per Parcel	**$1,429**

5.2 MERRILL – LONG-TERM SYSTEM RENEWAL

For estimation purposes, a moving bed bioreactor wastewater treatment system was used as the reference treatment system, while leaving the dispersal field as-is.

Table 6: Merrill – Conceptual Costs for the Long-Term

Item	Description	Costs (+/-30%)
Replacement System	Design, supply, and install of a replacement treatment system, complete with trash tank and pump chamber, without consideration of any short-term repairs. Including existing equipment removal and temporary sewerage management.	**$80,000**
	Total	**$80,000**
	Cost Per Parcel	**$5,714**

5.3 MERRILL – ONGOING OPERATIONS

The following operational costs are estimated for maintaining the system after performing short-term repairs and in idealized conditions. These costs would also be applicable for a complete system replacement. However, the maintenance plan for a system replacement will be specified by the system designer.

These cost estimates do not include power costs, nor allowances for amortized costs for long-term replacement, which should also be addressed.

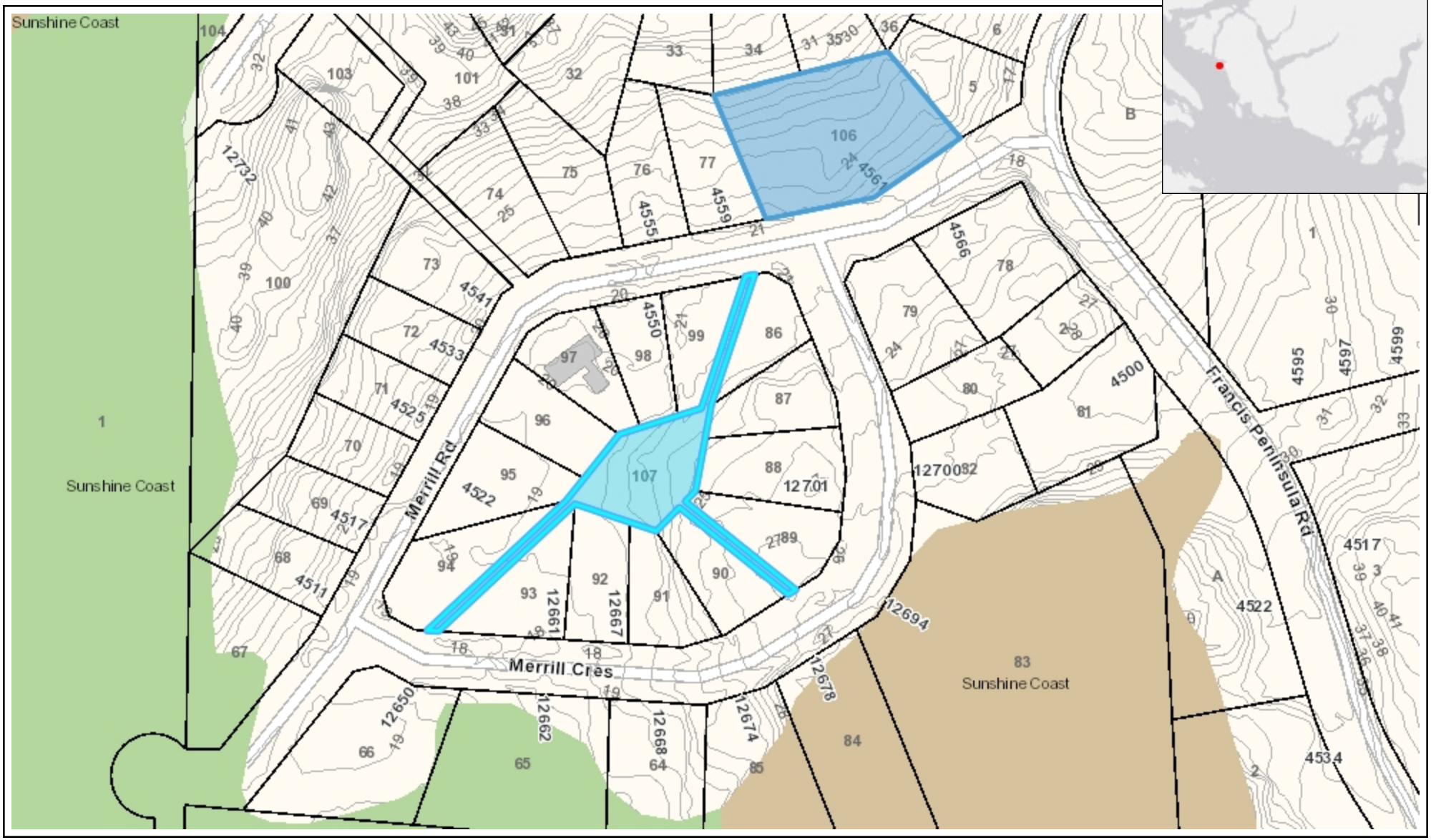
Table 7: Merrill – Conceptual Costs for Operations and Maintenance (Yearly Costs)

Item	Description	Costs (+/-30%)
Yearly Inspection	Regular inspection for maintenance, per maintenance plan meeting regulatory requirements, including minor repairs.	**$3,000**
Operations	6-month pump-out frequency of recommended trash tank, including regular inspection and effluent sampling of the treatment plant. Yearly average.	**$6,000**
Maintenance	2-year frequency for solids removal from dosing chamber and d-boxes 5-year frequency for dispersal field flushing and jetting	**$2,000**
	Yearly Average	**$11,000**
	Cost Per Parcel, Per Year	**$786**

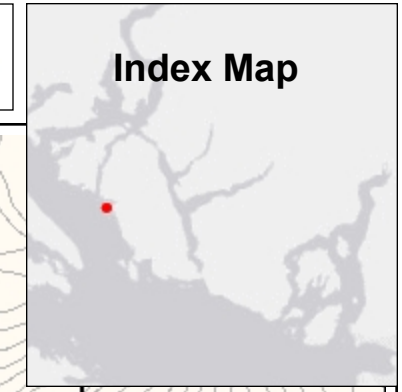
6 ATTACHMENTS

1. Merrill Parcel Map
2. Merrill Property Report
3. Merrill Original Construction Drawing
4. Field Record & Photo Log

Merrill



Index Map



151.1 0 75.56 151.1 Meters

This information has been compiled by the Sunshine Coast Regional District (SCRD) using data derived from a number of sources with varying levels of accuracy. The SCRD disclaims all responsibility for the accuracy or completeness of this information.

4/26/2021
1: 2,975

Legend

- Parcel Boundaries
- Sensitive Ecosystems Inventory
  - Cliffs
  - Herbaceous
  - Mature Forest
  - Older Forest
  - Riparian
  - Seasonally Flooded Agricultural Fields
  - Wetland
  - Woodland
- Contours
- Unconstructed Roads
- Golf Courses
- Parks
  - SCRD Park
  - Recreation Site
  - Municipal Park
  - Provincial Park
  - Wharf
  - Cemetery
- Band Lands

SCRD Maps

Property Report

4561 MERRILL RD

4/26/2021

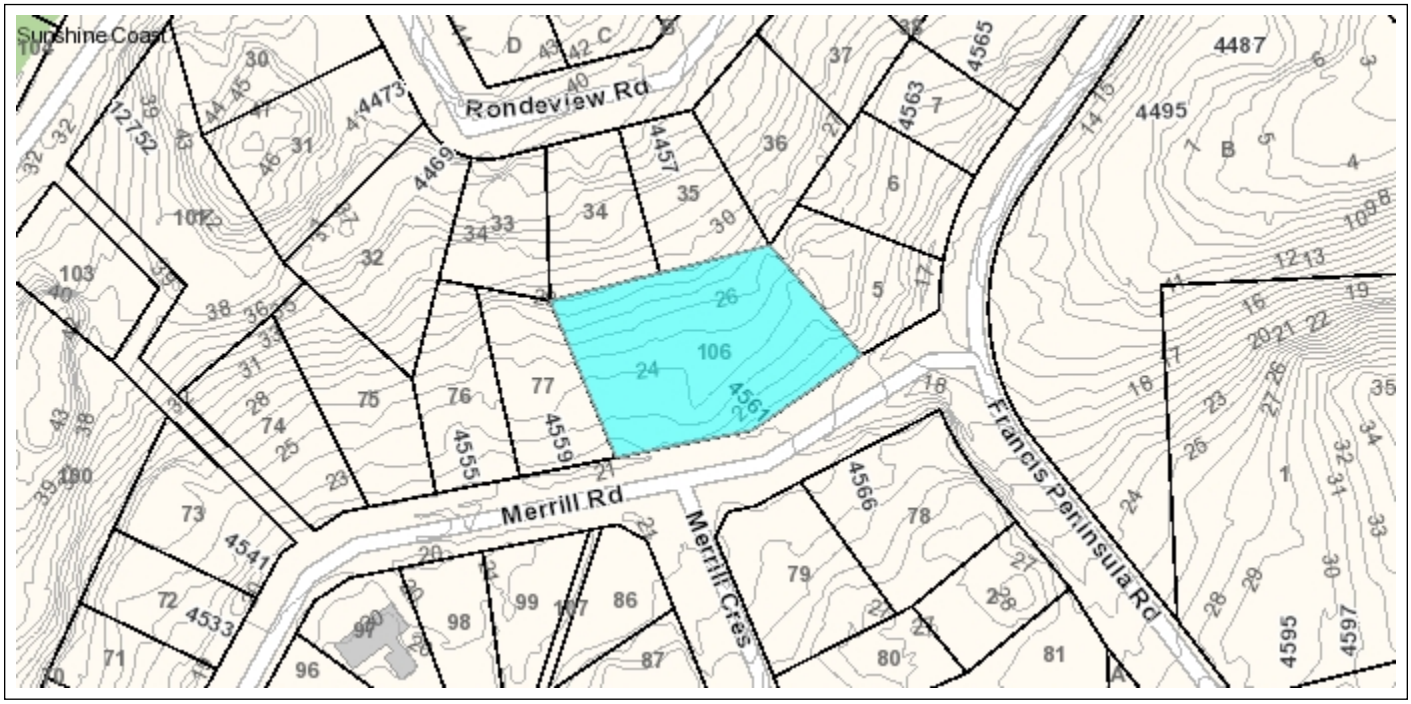
Folio: 746.03283.284 **PID:** 007-084-528

Address: 4561 MERRILL RD **Jurisdiction:** SCRD

Lot: 106 **Block:** 2 **Plan:** VAP19110 **District Lot:** 1362

2021 Assessed Value: 161000 **Land Value:** 161000 **Improvement Value:** 0

Approximate Lot Size (BC Assessment): .8 ACRES



SCRD Maps

Property Report

12683UF MERRILL CRES

4/26/2021

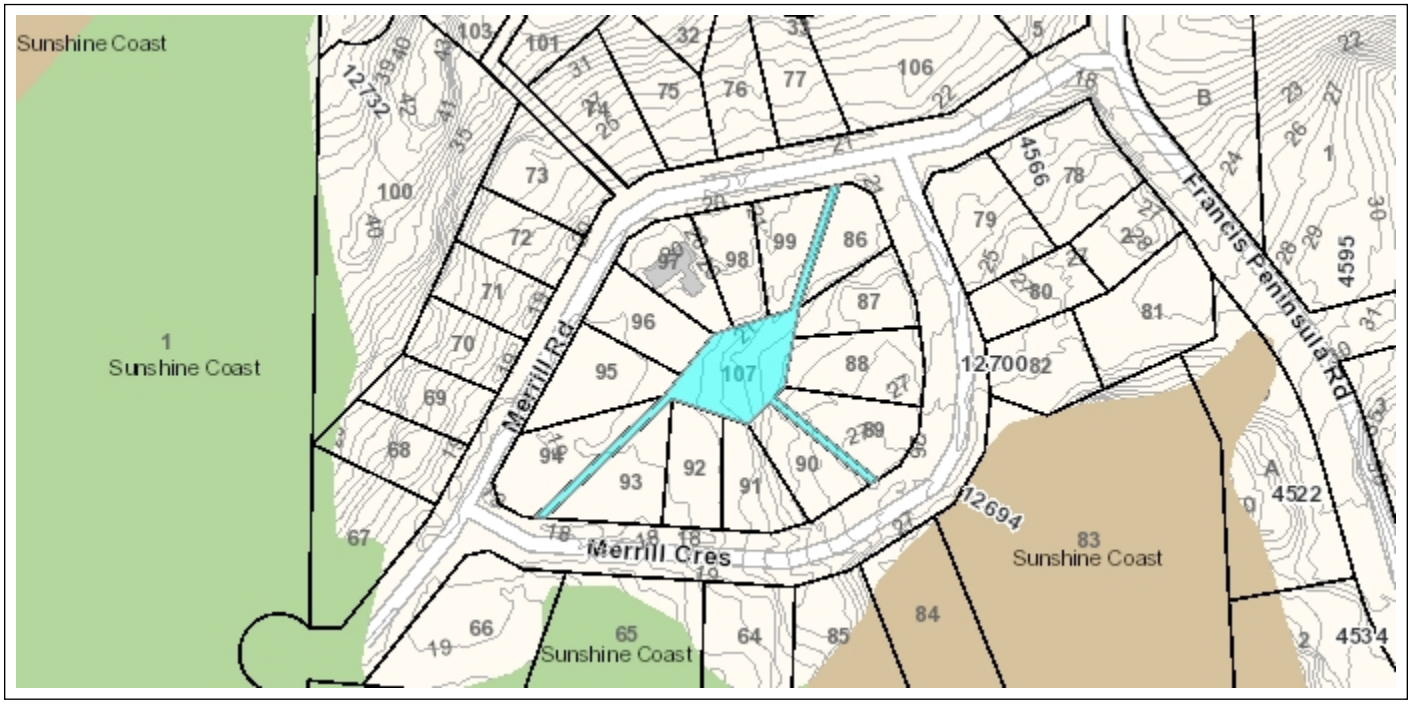
Folio: 746.03283.286 **PID:** 007-084-536

Address: 12683UF MERRILL CRES **Jurisdiction:** SCRD

Lot: 107 **Block:** 2 **Plan:** VAP19110 **District Lot:** 1362

2021 Assessed Value: 72000 **Land Value:** 72000 **Improvement Value:** 0

Approximate Lot Size (BC Assessment): 19166 SQUARE FEET



12683UF MERRILL CRES
SCRD

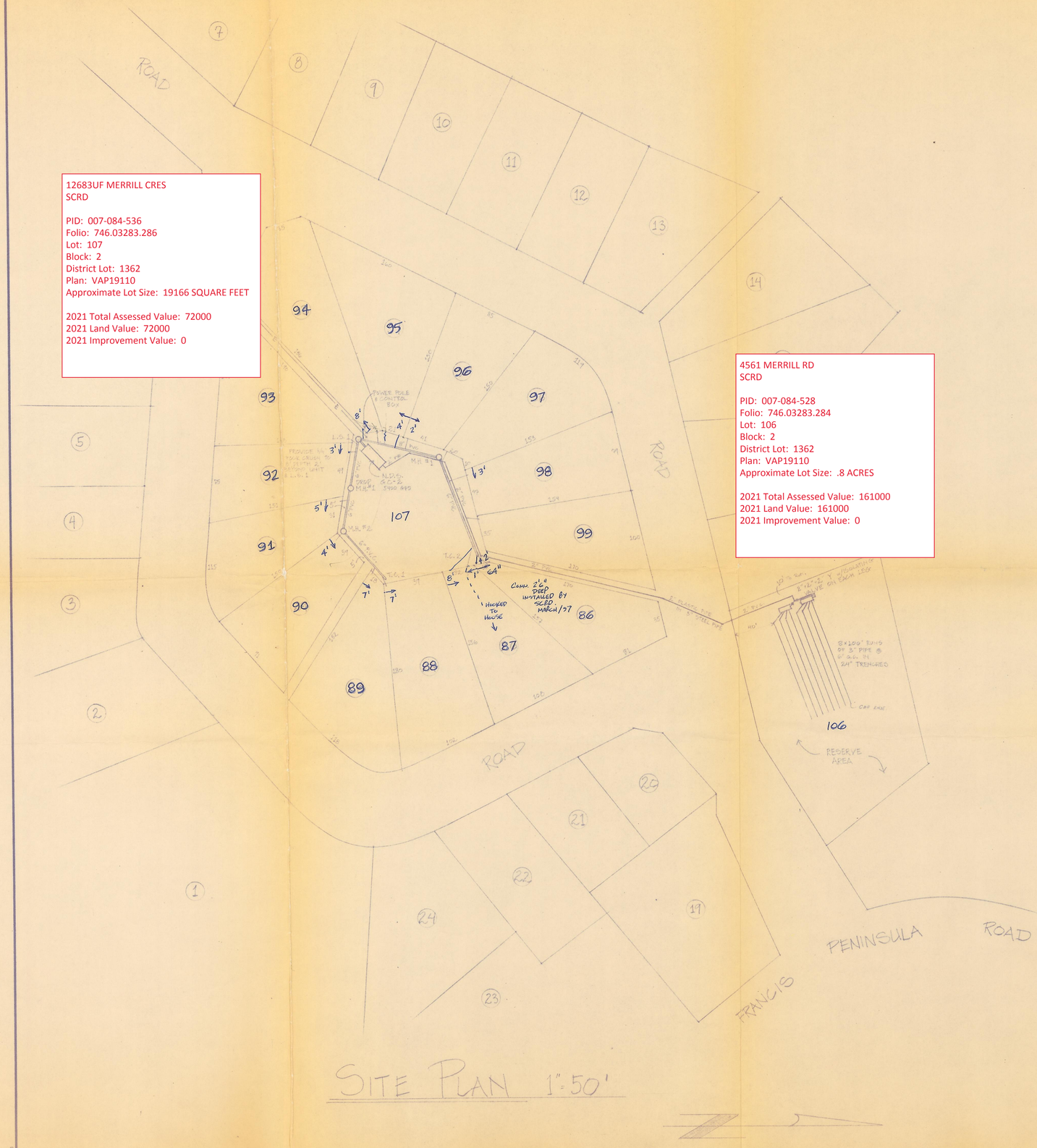
PID: 007-084-536
Folio: 746.03283.286
Lot: 107
Block: 2
District Lot: 1362
Plan: VAP19110
Approximate Lot Size: 19166 SQUARE FEET

2021 Total Assessed Value: 72000
2021 Land Value: 72000
2021 Improvement Value: 0

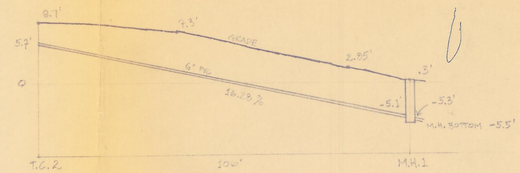
4561 MERRILL RD
SCRD

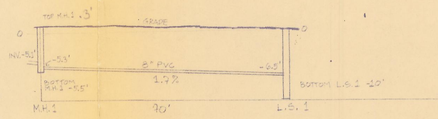
PID: 007-084-528
Folio: 746.03283.284
Lot: 106
Block: 2
District Lot: 1362
Plan: VAP19110
Approximate Lot Size: .8 ACRES

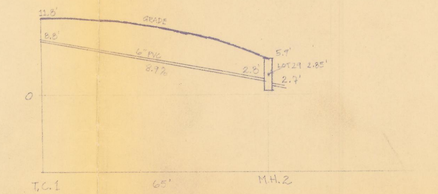
2021 Total Assessed Value: 161000
2021 Land Value: 161000
2021 Improvement Value: 0

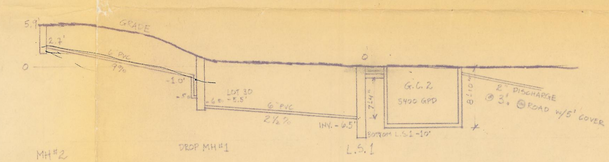


SITE PLAN 1"=50'









SECTIONS

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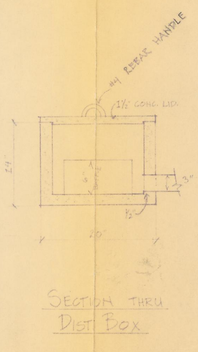
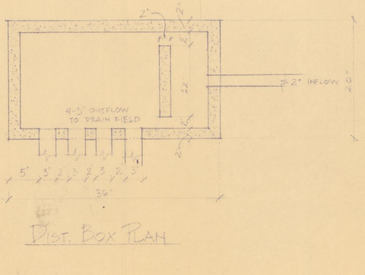
VERTICAL SCALE: 1"=10'





P. H. SHUTTLEWORTH & ASSOCIATES
P.O. BOX 515, SECHELT B.C. V0N3A0

PROPOSED SUBDIVISION SEWER LAYOUT 1/2

PARCEL B OF LOT 3, BLOCK 2, & PART OF LOT 2, BLOCK 2, ALL OF D.L. 1362, PL. 10960 & LOT E, D.L. 1362 PL. 18055

PROFESSIONAL ENGINEER D. H. SHUTTLEWORTH BRITISH COLUMBIA

SITE ASSESSMENT - MERRILL

Created: 07-28-2021
Creator: Bradley Fossen (@BFO)
Status:
Dates: 04-13-2021 - 07-28-2021

Recipients

brad@thinkapg.com

Description

Site field activities for the purposes of conceptual system renewal.

Sheets

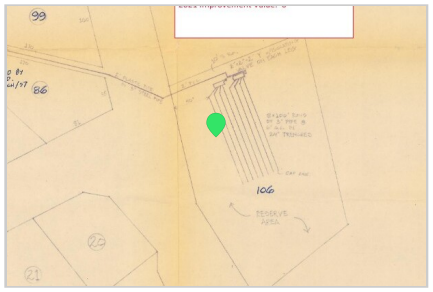
2021.02 MERRILL (12683 MERRILL CRES.)
Merrill Construction Drawing

Table of contents

#24 - GROUND DISPERSAL OBSERVATIONS AND FLOW TEST

Completed | Bradley Fossen | 01. OBSERVATION

Plan: Merrill Construction Drawing



Task messages (time in MDT)

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Bradley Fossen	Photo 4	28 Jul 11:54 AM
Bradley Fossen	Photo 5	28 Jul 11:54 AM
Bradley Fossen	Photo 6	28 Jul 11:54 AM
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Bradley Fossen	Photo 27	28 Jul 11:55 AM
Bradley Fossen	Photo 28	28 Jul 11:55 AM

Photos

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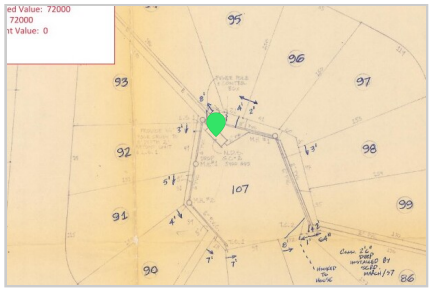
#26 - TREATMENT SYSTEM OBSERVATIONS, FLOW TEST, AND SAMPLE

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Merrill Construction Drawing



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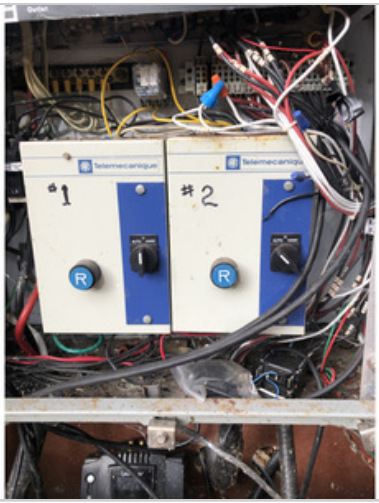

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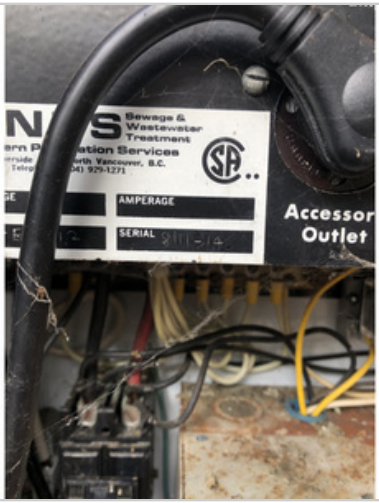

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12683UF MERRILL CRES
SCRD
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Folio: 746.03283.286
Lot: 107
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2021 Land Value: 72000
2021 Improvement Value: 0
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SCRD
PID: 007-084-528
Folio: 746.03283.284
Lot: 106
Block: 2
District Lot: 1362
Plan: VAP19110
Approximate Lot Size: .8 ACRES
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2021 Land Value: 161000
2021 Improvement Value: 0
ROAD
PENINSULA ROAD
FRANCIS
SITE PLAN 1:50'
SECTIONS
HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=10'
SECTION THRU DIST BOX
DIST BOX PLAN
D.H. SHUTTLEWORTH & ASSOCIATES
P.O. BOX 515, PEMBERTON B.C. V0N2L0
PROPOSED SUBDIVISION
SEWER LAYOUT

Onsite Wastewater Treatment and Dispersal System Assessment – Langdale Wastewater Treatment Facility

PROJECT NO: 2021.02

SITE NAME: LANGDALE

DOCUMENT NO.: 2021.02-16-STY-003

FORM NO. APG-40-FRM-009

1: Form Revision Log

Revision #	Date	By	Description
0	31-Oct-2020	BJGF	Issued for Use

Table 2: Summary Information

Project No.	2021.02	**Site Name:**	Langdale
Study Type:	☐New Construction ☒Replacement ☐Repair / Alteration	**Prepared by:**	Bradley Fossen Jim Andersen
Owners / Client:	SCRD	**Jurisdiction:**	Ministry of Environment / SCRD
Legal Description	Lot 41 District Lot 1398 Plan 21531	**PID #** ***(Parcel Identifier Number)***	009-922-385
Common Address	42 Newman Rd, Gibsons, BC	**Folio. #** ***(Tax Assessment Roll #)***	746.03486.030
Engineer of Record	Bradley Fossen	**Project Stage:**	Existing
Influent Type	☒Typical Residential ☐Other_____	**Parcels:**	40
Year of Construction	1981 (est.)	**Design Flow:** *(Estimated)*	52,000 L/day (estimated) 54,600 L/day (permitted)
Purpose of Report:	• Assess system performance requirements. • Provide guidance on factors that may affect onsite wastewater treatment system (OSWTS) renewal options. • Assess current system performance and limitations. • Conceptualize OSWTS renewal options. • Conceptualize major cost items for an OSWTS renewal.		

Methodology	• Per scope of work, perform document reviews, attend the site, and perform activities to determine "known and potential existing site constraints," including:
	  ○ Exposing system components and undertaking performance assessments.
	  ○ Assessing current system performance and limitations.
	  ○ Reviewing elements of the facility site and ground conditions that may impede or constrict OSWTS renewal options.
	  ○ Reviewing elements of the current configuration, as coupled with the YMCA wastewater treatment facility.		

Summary of Activities:	• Document reviews as part of ongoing exchanges with the SCRD.
	• Site activities and assessments on 09-Mar-2021, including:
	  ○ Excavation and locating of site components, including assessments of infiltrative layer and soil conditions.
	  ○ Identification of any design or operational issues, with the current, as-built system.
	  ○ Assessment of current configuration of transport to the YMCA treatment plant
	  ○ Identification of any legacy maintenance challenges.
	  ○ Flow testing of dispersal system components for operational capacity and indications of any potential issues.
	• Formal and informal discussions with SCRD staff.
	• Analysis and compilation of results.
	• Interpretation of results to identify the most practical renewal options.
	• Cost estimation and report reviews.		

Document Revision #	Date	By	Review By	Description
A	06-Mar-2021	BJGF	JA	Issued for Review
B	21-May-2021	BJGF	JA	Issued for Review
C	02-Jun-2021	BJGF	JA	Issued for Review
0	28-Jul-2021	BJGF	JA	Issued for Use

1 SUMMARY

This report conveys findings and assessments resulting from activities performed onsite and from a review of existing data. While our activities meet or exceed standard practice for inspection, this report should not be considered a substitute for regular inspection activities required of system owners, by regulation. Nor should this report be construed as a basis for detailed design. It has been prepared to aid conceptual design and costing. The sewage treatment system was previously inspected in 2019 and found to be unsalvageable. For that reason, assessment efforts disregarded the existing, decommissioned treatment system.

Key observations:

- The YMCA treatment system appears to be performing as designed. However, there have been periods where effluent testing results for biochemical oxygen demand (BOD) and total suspended solids (TSS) have exceeded prescribed requirements. This could indicate that there are occasions when the system has become overloaded or has experienced a performance malfunction, diminishing the treatment efficacy.
- The Langdale facility parcel is within two SCRD development permit areas: “DPA 4 – Stream Riparian Assessment Area” & “DPA 5 – Aquifer Protection and Stormwater Management.” A renewal plan may require additional consideration in regard to riparian areas and hydrogeology.
- Preliminary flow analyses indicate that:
    - there is a high likelihood that the flow parameters of the permit can be maintained, should the existing system be renewed.
    - average dry weather daily flows increased from 8.6 cubic meters/day in 2015 to 23.0 cubic meters/day by 2020. This trend is considerable and should be further investigated.
    - storm and groundwater infiltration may be a large contributor to treatment flows. Comparing maximum flow events to the dry month average daily flow indicates that there was wet month recorded daily flows that exceeded the dry weather average flow in a range of 103% to 197%. This can unnecessarily overload the treatment system and could result in diminished treatment.
    - average wet weather daily flows increased from 14.4 cubic meters/day in 2015 to 25.2 cubic meters/day by 2020, with an infiltration rate that ranged from 9% to 69%. Recorded maximum flow events were as high as 52 cubic meters/day.
- The site perimeter has indications of significant surface water runoff. The ditch South of the parcel should have vegetation removed and should be re-constructed with maximum depth, relative to the outlet culvert, in order to allow stormwater to flow freely.
- The trench dispersal system is nominally compliant with historical standards. However, we have found that the dispersal volumes directed solely to one field or the other significantly exceed current day standards for linear loading. This could be a contributing factor for breakout incidents that were previously experienced during the operation of the dispersal system. Excessive linear loading can create a groundwater mounding effect, eventually saturating the dispersal soils.
- Coupled with surface runoff, maximum flow events, and drainage issues, the dispersal system may have experienced periods of overloading, potentially contributing to breakout. Groundwater monitoring ports should be installed in order to observe seasonal

high water levels during the rainy season. This will assist in the design of a replacement dispersal system. It is also recommended that a groundwater interception drain is placed at South on the parcel.

- The laterals and infiltrative surface condition indicates that there may be significant usable life remaining within the drainfield. The dispersal laterals exposed could readily disperse effluent, if required, though regular flushing and jetting are recommended. There were no indications of clogging within the infiltrative surface.
- Test pits and soil assessments indicated approximately 130 cm of suitable soil before a limiting layer, with a most restrictive layer of favourable loamy sand of single grain / loose consistency and no indication of a seasonal high water table.
- It is recommended that the existing, decommissioned treatment system is demolished and remediated, regardless of the renewal option selected.
- It is recommended that a vegetation and stormwater management plan (relating to the dispersal area and transmission infiltration) is enacted as part of the maintenance plan already in place.
- Renewal options and conceptual costs have been tabulated and can be found in Section 6.

2 GENERAL DESIGN CONSTRAINTS

System renewal options must satisfy the following general design constraints:

- The system must comply with the BC Municipal Wastewater Regulation, as design flows exceed 22,700 litres per day. Two SSR systems could also potentially be suitable.
- The system must also comply with the Health Act, Environmental Management Act, Land Use Bylaws, Strata, and other acts and regulations that may be impacted by an OSWTS or influence its design.
- The system must comply with permitted maximum discharges of 54.6 m3/day, with an effluent containing less than 45 mg/L BOD and 60 mg/L TSS. However, the SCRD needs to inform the permitting authority of any expected changes to the system and determine what parameters may change on the discharge authorization.
- The system must provide effective wastewater treatment for 40 residential parcels.
- Raw influent quality is assumed to fall within parameters characterized as raw residential sewage.
- For the Langdale site, the effluent must undergo soil-based treatment via ground dispersal unless flows are continued to be directed to the YMCA wastewater treatment facility.

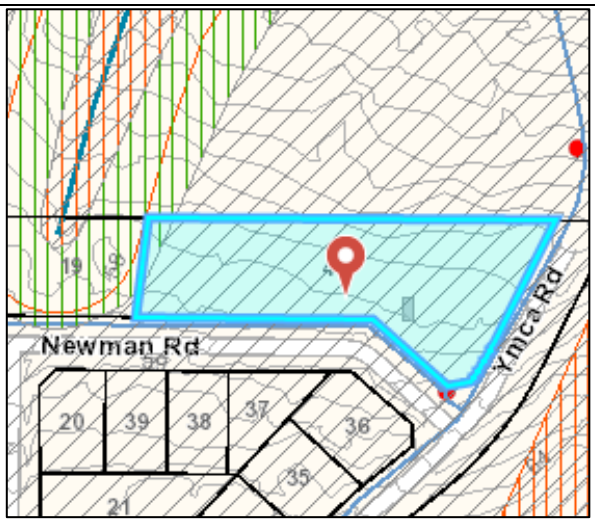
3 SITE OBSERVATIONS AND ASSESSMENTS

Table 3: Langdale - General Site Observations and Assessments

Element	Assessment	Constraints
Previous or Supplementary Professional Reviews	Previous professional reviews have not been provided.	

Element	Assessment	Constraints
Recent Inspections and Maintenance	Hannah Environmental Equipment Inc. (2019), indicating that the RBC treatment system has reached its end of life.	
Site and System History	The subdivision system is assumed to be constructed in 1981, or thereabouts, indicating an approximate age of 39 years.	
Future Site Development	No further subdivision development efforts have been communicated by the SCRD.	
Neighbouring Property Features	The facility parcel is bordered at North by the YMCA wastewater treatment facility, at West by a residence, at East by YMCA Rd., and at South by Newman Rd. The neighbouring properties do not have any features that would restrict or impede an OSWTS renewal. However, the ditch serving Newman Rd shows indications of occasional ponding and flow may be impeded as a result of erosion and vegetation.	Ditches around the perimeter of the facility parcel should be remediated to properly manage stormwater flow. These ditches should be regularly inspected as part of an ongoing maintenance and operations plan.
Title and Land Data	• PID: 009-922-385 • Folio: 746.03652.051 • Lot: 41 • Block: • District Lot: 1398 • Plan: VAP21531 • Approximate Lot Size: 1.51 ACRE • Land title information was reviewed and there appeared to be no entitlement matters that may restrict or impede an OSWTS renewal.	
Protected Areas	Protected Areas potential was reviewed via the SCRD Maps Service. There were no reported Protected Areas designated on or near the subject property that would restrict or impeded an OSWTS renewal.	
Official Community Plans (OCP) & Development Permit Areas (DPA)	Development Permit Area potential was reviewed via the SCRD Maps Service. According to the SCRD Maps service, the facility parcel is within two SCRD development permit areas: "DPA 4 – Stream Riparian Assessment Area" & "DPA 5 – Aquifer Protection and Stormwater Management." However, when reviewing the West Howe Sound Official Community Plan (Bylaw 640), Map 2 – Development Permit Areas, it appears the facility may only fall within the DPA 5 boundary. Regardless, each DPA has its own requirements, which may impact an OSWTS renewal. They are as follows: DPA 4	OCP and DPA requirements should be incorporated in any detailed design studies in order to meet the goals intended by the community plan. Regarding DPA 4, Confirmation of the 30m stream setback at the Northwest of the parcel should be confirmed by a qualified environmental professional prior to

Element	Assessment	Constraints
	- The installation of a septic field requires a development permit. The development permit application requires an assessment report prepared by a qualified environmental professional, confirming the width of the streamside protection and enhancement area (SPEA) and measures to protect the integrity of the SPEA. DPA 5 - The construction of an industrial or commercial building requires a development permit. Further, the OCP provides general guidance on sewage disposal. OCP Section 8.3b.4 Sewage Disposal / Liquid Waste Management - "Common septic fields shall be permitted when: The system proposed is a 'large community system,' i.e. designed for the effluent treatment of greater than 22,700 litres per day and is designed and constructed to SCRD standards, including a treatment level of 10BOD/10TSS, and subject to review by the Ministry of Environment…"	detailed design if a proposed drainfield renewal encroaches on this area. Regarding DPA 5, it is not clear whether any new facilities, such as a treatment system building, would constitute an industrial or commercial building. This should be confirmed within the SCRD for any implications. Regarding OCP Section 8.3b.4, the treatment level prescribed in the bylaw is more rigorous than is currently prescribed by the Ministry of Environment Permit. It should be confirmed within the SCRD whether this policy is enforced and what implications it may have on an OSWTS renewal.
Climate Considerations	Climate is classified as Warm-Summer Mediterranean. Marine weather conditions exist, with warm summers and periods of high rainfall and occasional freezing. Significant cold weather freeze protection is not required, though components should be covered.	
Topography	The general area is West of Thornbrough Channel, within the Cordillera / Georgia Lowland physiographic region, and is a mature development. The dispersal area itself slopes downward from South to North at approximately 4%.	
Well Registry	BC Water Resources was consulted to indicate whether any water wells were in the area. There are no registered wells reported within 30m of the subject property.	
Riparian Areas	As reported in the Development Permit Applications section, a portion of the facility parcel falls within DPA 4 - Stream Riparian Assessment Area. While the area is not substantial, it may prevent some use of the parcel for ground dispersal.	The riparian area SPEA should be confirmed with a QEP prior to the detailed design of a dispersal system renewal.

Element	Assessment	Constraints
	 It is worth noting that while this water body is indicated on the SCRD Mapping Service and within West Howe Sound Official Community Plan (Bylaw 640), Map 2 – Development Permit Areas, it is not listed on other resources, such as iMapBC or BC Geographical Names. The adjacent lot 19 has been developed.	
Nitrogen and Phosphorous Reduction	As reported in the Riparian Areas section, there is one un-named water body in proximity to the facilities dispersal area. Nutrient removal requirements are to be determined.	Following the QEP's assessment, a hydrogeological assessment may be required. If the QEP restates that the un-named stream supports fish or fish habitat, it may have implications on the system's treatment performance requirements.
Buried Infrastructure	Besides sewer distribution, there are utility water and power utilities directly within or near the facility parcel.	Setback distances should be incorporated into any detailed design studies.
Boundary Conditions, Exposure Pathways, and Breakout Risks	Breakout risk is the potential of effluent to "surface". The dispersal area does not have any physical transitions, such as banks or outcrops, that would pose a breakout risk. The ditch along Newman Rd is upslope of the dispersal area.	
Vegetation	The current dispersal area is grassland and is surrounded at the North by primarily Alder trees and blackberry shrubs.	

4 SYSTEM OBSERVATIONS AND ASSESSMENTS

Table 4: Langdale - System Observations and Assessments

<table>
<tr><th>Element</th><th>Assessment</th><th>Observations and Recommendations</th></tr>
<tr><td>Current Configuration Type</td><td>In its original configuration, residential sewage is transmitted into an Rotating Biological Contactor (RBC) treatment system. Treated effluent is directed to two distribution boxes that disperse effluent to two dispersal fields.

In its current configuration, the system utilizes the RBC as a settling tank and pumps raw sewage influent to the YMCA wastewater treatment facility. The YCMA facility treats the sewage via a MicroFAST proprietary system, with further UV treatment before being dispersed to a marine outfall.</td><td>Should the Langdale dispersal system be renewed, it is recommended that the system incorporate uniform dispersal, such as pressurized laterals. This promotes better soil-based treatment, including more uniform dispersal, promoting further longevity.</td></tr>
<tr><td>Flow Data</td><td>Raw flow data was provided for dates 01-Feb-2015 through to 30-Dec-2020. While we do not feel this is a sufficiently large data set to make any firm conclusions, we are able to use the data anecdotally to help understand general flow averages and maximum flow events.
Our analysis is preliminary only and should not be considered a statistically robust examination of the facility.
The data were categorized into wet months (October through April) and dry months (May through September). Daily flows were averaged per month, and wet and dry averages were compared year over year.

<table>
<tr><th></th><th>2015</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th><th>2020</th></tr>
<tr><td>Dry Months (m3/day)</td><td>9</td><td>9</td><td>19</td><td>19</td><td>22</td><td>23</td></tr>
<tr><td>Wet Months (m3/day</td><td>14</td><td>14</td><td>19</td><td>24</td><td>24</td><td>25</td></tr>
<tr><td>% Difference</td><td>69%</td><td>46%</td><td>-4%</td><td>24%</td><td>11%</td><td>9%</td></tr>
</table>

The daily data were further sorted and separated, such that the mean and standard deviation could be determined for dry and wet month days. The data indicates that there were 23 recorded events in the data set when daily flows exceeded the 95% percentile of the mean account of flows. These maximum flow events ranged from 35 m^3/day to 52 m^3/day.

The data also indicates that the average daily flow during dry months within the dataset is 17 m3/day. Comparing maximum flow events to the dry month average daily flow indicates that there was wet month recorded daily flows that exceeded the dry weather average flow in a range of 103% to 197%.</td><td>The flow analysis indicates there is a high likelihood that the original flow parameters of the permit can be maintained.

While this is a preliminary analysis only, it suggests that storm and groundwater infiltration may be a large contributor to treatment flows. This can unnecessarily overload the treatment system and could result in diminished treatment.

While the system may potentially be in compliance with MWR section 44, it is recommended that efforts are made to</td></tr>
</table>

Element	Assessment	Observations and Recommendations
	The MWR, Section 44, "Inflow and Infiltration," states that if the flow exceeds two times the average dry weather flow at the treatment plant, during storm or rainfall events with a less than 5-year return period, that the permit holder either develops a liquid waste management plan or develops and implements measures to reduce inflow and infiltration. As previously mentioned, we feel this data set not sufficiently large enough to make this determination, nor were weather events used in this analysis. However, it does provide valuable anecdotal insights. For reference, as estimation of flows using an average value of 750 L/day, per household results in a daily average flow estimate of 26 m^3/day for the facility. Including a peaking factor of 2 results in a daily design flow of 52 m^3/day.	reduce stormwater and groundwater infiltration. This can improve treatment efficacy, potentially reducing loading on pumps and other components, and in the case of ground dispersal, provide for improved longevity of the dispersal system.
Primary Treatment	As communicated by the SCRD, there is no primary treatment, such as on-parcel septic tanks, prior to the treatment system.	
Effluent Transmission	Effluent transmission from individual homes to the system was not inspected or assessed.	
Storage and Treatment	**Existing Treatment System**	
	• The existing treatment system was previously inspected and noted as unsalvageable. For this reason, it was not assessed. • Based on our preliminary flow analysis, suitable replacement systems must be capable of handling average dry weather flows of 23 cubic m3/day, average wet weather flows of 25 m3/day, and handling peak flows within the maximum authorized rate of discharge, 54.6 m3/day. This is in line with the latest year of flow data. • Treatment requirements, per the Ministry of Environment permit, are 45 mg/L BOD and 60 mg/L TSS.	Conceptual estimates for treatment systems will be based on these flow rates and treatment requirements.
	YMCA Wastewater Treatment Facility	
	• This facility was visited to better understand the current configuration of flows from the Langdale facility.	
	• The Langdale-YMCA tie-in traverses the property line. It is not clear whether the owners have applied any legal instruments in regards to easements or other land and asset ownership concerns.	It is recommended that the SCRD confirm any entitlement matters.
	• Raw sewage is pumped from the decommissioned RBC unit at the Langdale facility to the YMCA. • The RBC building is considered a confined space and is no longer serving its intended use.	It is recommended that this building and tank are demolished and replaced by a fit-for-purpose tank as part of

Element	Assessment	Observations and Recommendations
		a permanent tie-in solution option.
	• The tie-in drawings indicate that piping is 37.5mm diameter PVC and transitions to 50 mm PVC. Considering the large flow volumes being transferred, this could potentially be creating a high-velocity flow condition. The available drawings were not as-built, and line sizing could not be confirmed.	A permanent tie-in solution should re-evaluate pump and line sizing. As-built documentation should be maintained.
Ground Dispersal	A general summary of the ground dispersal is as follows. Additional details have been provided in subsequent sections. • The system is configured with two distribution boxes, 1 supplying the 15 laterals of the East drainfield and the other supplying 17 laterals of the West drainfield. Each distribution box and its respective drainfield are controlled with an isolation valve. • Laterals are approximately 30 m in length and are constructed of 3" PVC perforated pipe. The overall length of each system is approximately 60 m (East drainfield) and 60 m (West drainfield), both in a centre-feed configuration. • Effluent is directed to infiltration trenches. The trenches have been constructed with a suitable aggregate type, and depth, both below and above the dispersal laterals, and the infiltrative surface was prepared with a blinding layer of sand. The trenches were backfilled with sand/loamy-sand and cover soil. • The system, as designed, is intended to disperse to a single zone over a specified duration, allowing the other zone a period of rest. • The trench dispersal system is nominally compliant with historical standards. However, we have found that the dispersal volumes directed solely to one field or the other significantly exceed current day standards. This could be a contributing factor for breakout incidents that were previously experienced during the operation of the dispersal system. For example, excessive linear loading, or effluent dispersal over a unit length, can create a groundwater mounding effect, eventually saturating the dispersal soils.	
	Distribution Boxes	
	Distribution box at East is a 16-hole/ 15-out configuration. • There were no indications of significant structural degradation. However, the lid was cracked and chipped, though still intact. • Flow testing was performed for 3-hours and 20 minutes, using the service water line on site. There were no indications of a flow backup; the laterals freely accepted the full volume of the flow test.	
	Distribution box at East is a 18-hole/ 17-out configuration • There were no indications of significant structural degradation. However, the lid is cracked, though still intact. • There were no indications of root infiltration or backup.	
	Dispersal Laterals	

Element	Assessment	Observations and Recommendations
	Dispersal laterals in two locations were exposed and assessed. • The laterals were in satisfactory condition, showing only minimal indications of root intrusion or blockages. • The laterals were found at a depth ranging from 50 cm to 75 cm. The laterals were installed on top of approximately 20 cm of aggregate and were covered with approximately 15 cm of aggregate. • While not physically observed, it is likely that recent YMCA tie-in work required would have bisected portions of the East drainfield, damaging the laterals in place.	The condition of the laterals indicates that there may be significant usable life remaining within the drainfield. Flushing and jetting of all laterals is recommended, followed by a complete pipe camera inspection to verify the integrity of the laterals and confirm which laterals may require repairs or reconstruction as a result of the YMCA tie-in work.
Infiltrative Layer	The infiltrative layer was constructed with a blinding layer of approximately 10 cm of coarse sand. The infiltrative layer and biomat condition were inspected via excavation of several locations within the dispersal area. • The blinding layer was found to be in good condition with no indications of clogging	The condition of the infiltrative layer indicates that there may be significant usable life remaining within the drainfield.
Vegetation	The current dispersal area is grassy/herbaceous and is surrounded in the North by primarily Alder trees and blackberry shrubs. Satellite imagery indicates that the vegetation has encroached approximately 6m-10m in from the parcel boundary at North.  	Aggressive tree and shrub species should be cleared at least 5m from the dispersal area. A vegetation management plan should be enacted.
Effluent & Performance	Effluent testing results were provided for dates between 15-Jan-2015 through 06-Feb-2020, for both the Langdale and YMCA flows. • The data reports that prior to the Langdale-YMCA tie-in, the YMCA facility consistently produced effluent containing less	Effluent testing results potentially indicate that while the YMCA treatment system

Element	Assessment	Observations and Recommendations
	than 45 mg/L BOD and 45 mg/L TSS, with a median fecal coliform density of less than 14 colony forming units per 100 ml. • Subsequent to the Landale-YMCA tie-in, the YMCA facility may have encountered treatment upsets that resulted in effluent quality containing BOD, TSS, and total fecal coliforms in excess of the Langdale effluent requirements stated above. BOD was reported as high as 63.3 mg/L in the most extreme cases, TSS was reported as high as 83.0 mg/L, and total coliforms were reported as high as 1,000,000. The majority of these upsets were reported during a period between April and October of 2017. These results have not been vetted for data quality, nor have they been corroborated against operations records, so they should be not be considered definitive. • November 2017 onward, the overall YMCA facility treatment performance appears to have stabilized, and effluent quality normalizes within required effluent concentrations of BOD and TSS. • However, fecal coliforms have consistently been reported in concentrations of more than 14 colony-forming units per 100 ml.	initially had difficulty managing new sewage inflows, that it has since normalized. Without further investigation and testing, it is not possible to further assess the performance of the overall YMCA facility. However, qualitatively, the results may suggest that, at times, the additional influent from Langdale can affect the performance of the YMCA facility such that permit discharge parameters are exceeded. This may indicate the system experiences periods of overloading or could possibly be experiencing performance malfunctions.
Soils Capability	Soils were inspected via excavation of several locations within the dispersal areas. Soil assessments indicated the area is primarily loose grain, structureless, medium to coarse sand, with approximately 130 cm of available depth of soils until a likely limiting layer. Excavations outside of the dispersal area in the Southwest portion of the parcel indicated a likely limiting layer at approximately 80 cm. Excavations outside of the dispersal area and in the Southeast reserve portion of the parcel indicated a seasonal high water table and limiting condition at approximately 90cm.	These are favourable conditions for a renewed dispersal system in compliance with current day standards. However, it is likely more cost-effective to re-use the dispersal system as-is, considering the positive assessments noted by the inspections of laterals and the limiting layer.

Element	Assessment	Observations and Recommendations
Reserve Area	The system has reserve areas in two places. The first reserve area is in the Southeast portion of the parcel. A second reserve area is noted on the original design drawings, West of Lot 18. The status of this reserve area has not been confirmed.	If a dispersal renewal option is pursued, it is preferential to maintain the reserve areas as-is. This is supported by the positive assessments noted by the inspections of laterals and the infiltrative layer.

5 GENERAL SYSTEM COMMENTS

In consideration of our above assessments, we offer the following general comments on the system as a whole.

- "As-built" system drawings do not exist. It is recommended that an as-built drawing set is created to assist future operations and maintenance as part of any future design efforts.
- The existing system is nominally compliant with historical standards. However, there are indications that linear loading is in excess of current day standards. This can result in groundwater mounding beneath the dispersal area and be a contributing factor to performance malfunctions.
- There is a high likelihood that surface water infiltration and other inflows have contributed additional flow volumes to the original Langdale system during its operation through wet seasons. These inflows would also be currently contributing to the YMCA treatment facility since it was tied in.
- The existing, decommissioned treatment system should be demolished.
- A replacement treatment system should be capable of managing average flows of 25 m^3/day, with peak flows ranging as high as 54.6 m^3/day (the current permit maximum rate of discharge), meeting effluent concentrations of 45 mg/L BOD and 60 mg/L. A detailed design should include further discussions with the permit authority regarding treatment requirements and confirm that a permit revision alone is sufficient for dispersal system renewal.
- With suitable repairs and adequate operations and maintenance, the existing dispersal system can be expected to have a considerable amount of remaining usable life.
- Improving stormwater and shallow groundwater flow conditions around the perimeter of the facility will likely assist in reducing groundwater mounding effects. This can promote improved soil-based treatment and mitigate conditions that have previously contributed to performance malfunctions.
- Site and soil conditions are favourable for renewal options that meet current-day standards.
- A riparian assessment, completed by a QEP, should be budgeted for as part of any dispersal renewal options. The Riparian study can advise on any setback considerations in relation to DPA 4 – "Stream Riparian Assessment Area."
- A hydrogeological assessment should be budgeted for as part of any dispersal renewal options. The hydrogeological assessment will inform any design constraints relating to the riparian area

and nitrogen or phosphorous reduction requirements. Further, a hydrogeological assessment could potentially prescribe a fit-for-purpose loading rate for the dispersal area, based on field flow and stress tests and water table monitoring.

- An environmental impact study may not be required if the system renewal maintains the parameters of the permit. However, the permitting authority should be kept abreast of planning efforts and will be able to guide the SCRD regarding that requirement.
- A repaired dispersal system option should include the following activities and components.
    - Groundwater monitoring ports should be installed and regularly checked to confirm fluctuations in the seasonal highwater table. An interceptor drain placed at South on the parcel may be required to relieve shallow groundwater flows.
    - The existing field should undergo a complete flushing and jetting program.
    - A complete pipe camera inspection should be performed to confirm what repairs may be required.
    - Repair any laterals damaged as part of the YMCA tie-in.
    - The dispersal system should be converted to a uniform pressure dispersal configuration. This would involve running pressure laterals within the existing perforated pipe laterals. These pressure laterals would receive effluent from newly constructed manifolds that would receive flow from the new treatment system.
    - The repaired system should direct flow to the entire length of the combined dispersal area, alternating between North and South potions. This can be achieved either by a duplex pump and valve configuration or through the use of an indexing valve. In this configuration, the drainfields would not experience alternating periods of long-term rest, and the permit would need to be amended.
- An improved or renewed dispersal system would involve a complete reconstruction of the dispersal components.
    - Groundwater monitoring ports should be installed and regularly checked to confirm fluctuations in the seasonal highwater table. An interceptor drain placed at South on the parcel may be required to relieve shallow groundwater flows.
    - A replacement dispersal system should maximize vertical soil separation and include trenches that are constructed at a shallower depth.
    - Effluent Flows should be distributed over a longer contour, taking advantage of the length of the parcel as much as is allowable considering any riparian considerations.
    - The dispersal system should utilize uniform, pumped distribution.
    - The dispersal system should be configured into North and South dispersal areas, which would be regularly alternated between, either in short or long periods, depending on the conditions of the permit.

6 RECOMMENDATIONS FOR SYSTEM RENEWAL & CONCEPTUAL ESTIMATE OF COSTS

Our assessment of the Langdale Wastewater facility has resulted in the following three options for consideration.

1) Permanently tie into the YMCA Treatment Facility. Any future improvements to the YMCA facility have not been considered.

2) Replace the sewage treatment system and repair the existing drainfield.

3) Replace the sewage treatment system and replace the existing drainfield.

The projected cost of these options is estimated below, presented in the nearest thousand dollar value. Cost items such as permitting, application fees, and taxes have not been included.

The replacement treatment systems considered have varying costs based on operational controls and other secondary features. For estimation purposes, the reference treatment system used was similar to the quality of the YMCA facility. We note that simpler system configurations can be considered to offer significant cost efficiencies, though potentially with a compromise to features required by the SCRD.

Maintenance and operations costs have also been provided. These costs are estimated for maintaining the system if the Langdale facility is placed back into service and in idealized conditions. However, these are provided with no consideration to previous or future operations costs related to the YMCA facility.

Estimates do not include power costs, nor allowances for amortized costs for long-term replacement, which should also be addressed.

6.1 LANGDALE – PERMANENT YMCA TIE-IN

Table 5: Langdale – Permanent YMCA Tie-in

Item	Description	Costs (+/-30%)
Demolition	Pump out RBC, demolish building and foundation, properly dispose of hazardous materials.	**$11,500**
Tankage	Design/Supply/Install: Supply and Installation of a settling and equalization tank configuration and duplex pumping system, including costs for temporary sewer management and tie point reconfiguration.	**$108,000**
	Total	**$119,500**
	Cost Per Parcel	**$2,988**

6.2 LANGDALE – REPLACE TREATMENT SYSTEM AND REPAIR EXISTING DISPERSAL SYSTEM

Table 6: Langdale – Replace Treatment System and Repair Existing Dispersal System

Item	Description	Costs (+/-30%)
Replacement Treatment System & Repair/Upgrade Dispersal System	Studies/Design/Supply/Install: Treatment system capable of managing 25 m^3/day, with peak flows ranging as high as 54.6 m^3/day (the current permit maximum rate of discharge), meeting effluent concentrations of 45 mg/L BOD and 60 mg/L TSS, repair dispersal system after complete flushing and camera inspection and upgrade to pressure distribution, including costs for existing equipment removal and temporary sewer management.	**$503,000**
Drainage Improvements	Installation of a parcel interceptor drain, at South, to manage shallow groundwater flows.	**$44,000**
	Total	**$547,000**
	Cost Per Parcel	**$13,675**

6.3 LANGDALE – REPLACE TREATMENT SYSTEM AND DISPERSAL FIELD

Table 7: Langdale – Replace Treatment System and Dispersal Field

Item	Description	Costs (+/-30%)
Replacement Treatment System & Replace Dispersal System	Studies/Design/Supply/Install: Treatment system capable of managing 25 m^3/day, with peak flows ranging as high as 54.6 m^3/day (the current permit maximum rate of discharge), meeting effluent concentrations of 45 mg/L BOD and 60 mg/L TSS, replace dispersal system, including costs for existing equipment removal and temporary sewer management.	**$546,000**
Drainage Improvements	Installation of a parcel interceptor drain, at South, to manage shallow groundwater flows.	**$44,000**
	Total	**$590,000**
	Cost Per Parcel	**$14,750**

6.4 LANGDALE – ONGOING OPERATIONS WITH PERMANENT YMCA TIE-IN

Table 8: Langdale – Conceptual Costs for Operations and Maintenance (Yearly Costs) – Permanent YMCA Tie-in

Item	Description	Costs (+/-30%)
Semi Annual Inspection	Assessment of solids, usage issues, settling tank components and functionality.	**$2,000**
Pumping	6-month partial pump outs.	**$6,000**
	Yearly Average	**$8,000**
	Cost Per Parcel, Per Year	**$200**

6.5 LANGDALE – RESUMING OPERATIONS WITH LANGDALE FACILITY

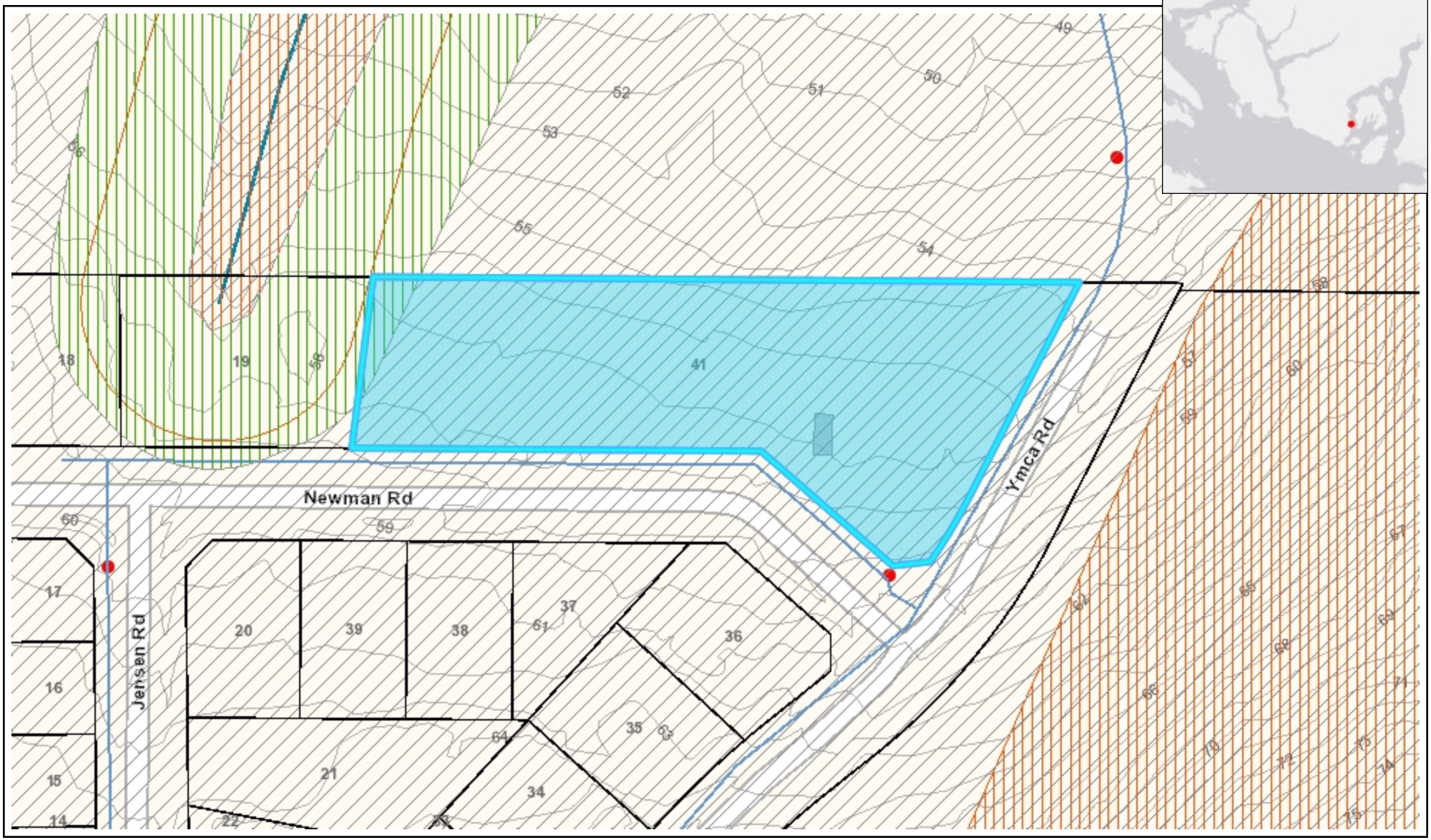
Table 9: Langdale – Conceptual Costs for Operations and Maintenance (Yearly Costs) – Resuming Operations with Langdale Facility

Item	Description	Costs (+/-30%)
Yearly Inspection	Yearly inspection and regular effluent testing for maintenance, per maintenance plan meeting regulatory requirements.	**$5,000**
Operations	6-month pump-out frequency, including inspection and sampling, until inspection supports a longer interval.	**$7,000**
Maintenance	1-year frequency for dispersal field flushing and jetting until inspection supports a longer interval.	**$4,000**
	Yearly Average	**$16,000**
	Cost Per Parcel, Per Year	**$400**

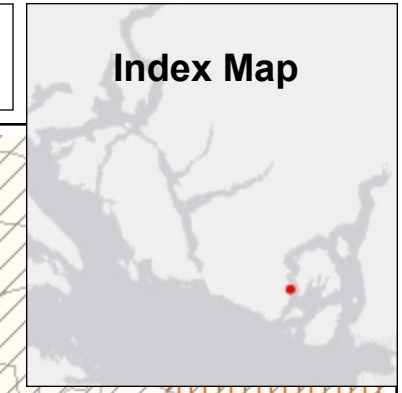
7 ATTACHMENTS

1. Langdale Parcel Map
2. Langdale Property Report
3. SCRD West Howe OCP Map
4. Langdale Original Construction Drawing
5. Field Record & Photo Log

Landale



Index Map



91.5 0 45.73 91.5 Meters

This information has been compiled by the Sunshine Coast Regional District (SCRD) using data derived from a number of sources with varying levels of accuracy. The SCRD disclaims all responsibility for the accuracy or completeness of this information.

4/27/2021

1: 1,801

Legend

- Parcel Boundaries
- Development Permit Areas
  - Agricultural Buffering
  - Environment
  - Flood
  - Form and Character
  - Hazard
  - Shoreline
  - Stormwater Management
- Water Mains
- Fire Hydrants
- Contours
- Unconstructed Roads
- Golf Courses
- Parks
  - SCRD Park
  - Recreation Site
  - Municipal Park
  - Provincial Park
  - Wharf
  - Cemetery
- Band Lands

SCRD Maps

Property Report

4/27/2021

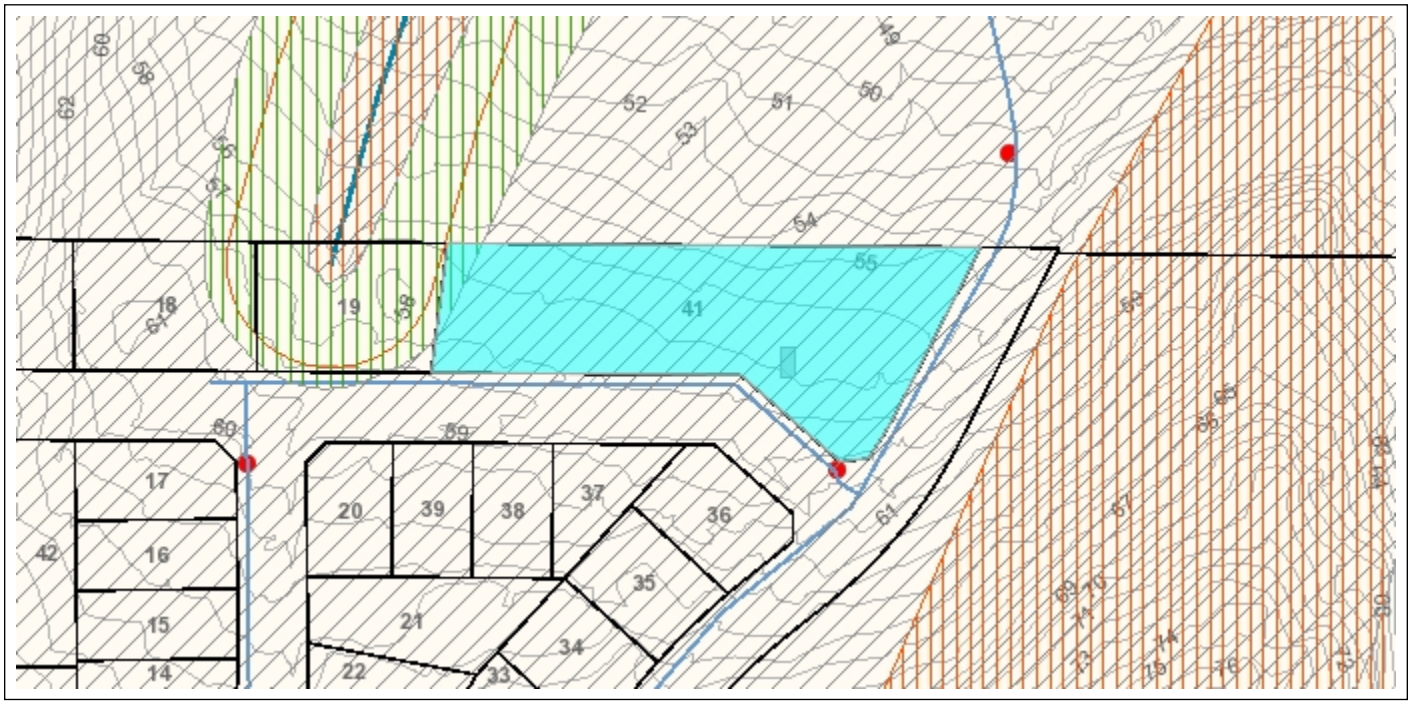
Folio: 746.03652.051 **PID:** 009-922-385

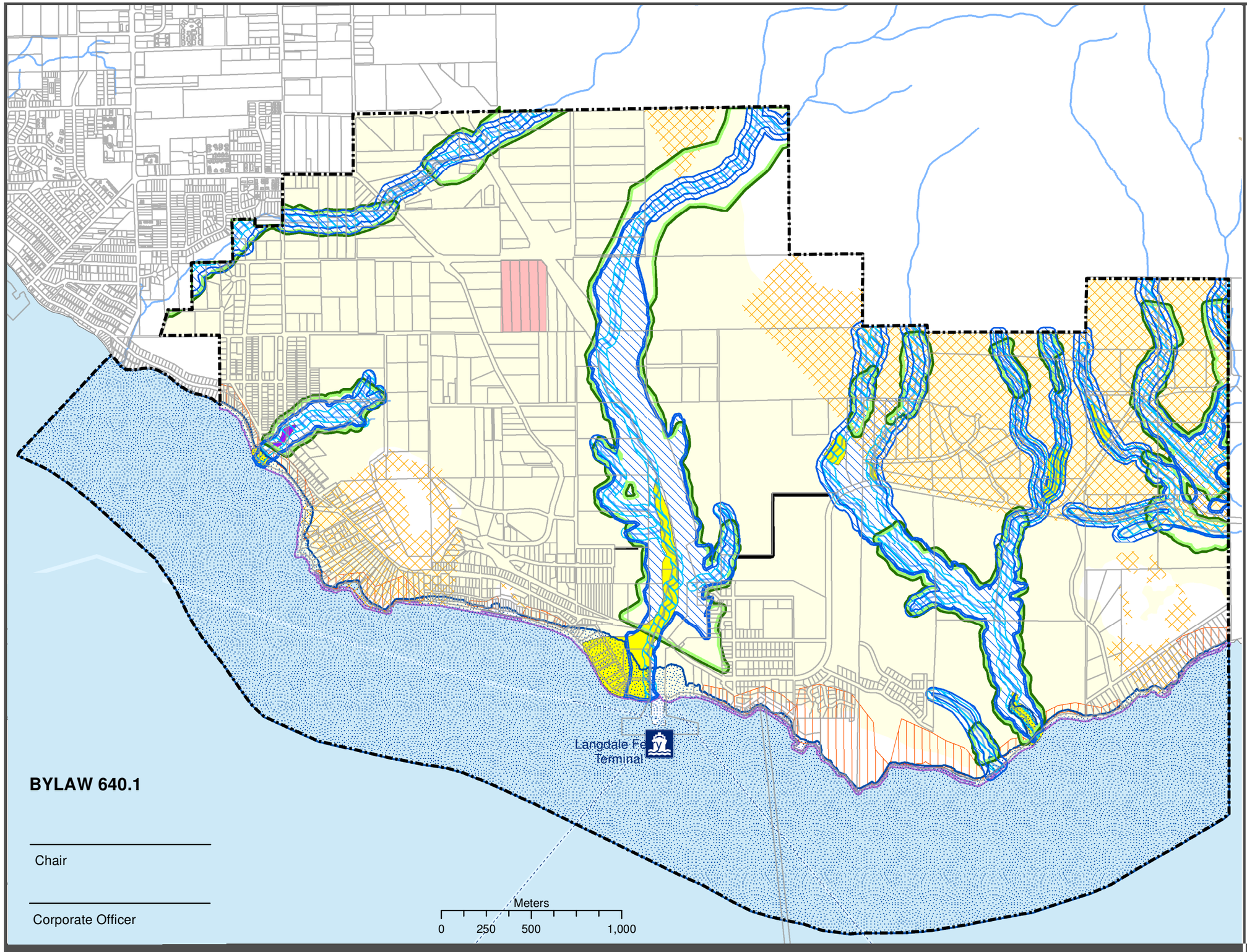
Address: **Jurisdiction:** SCRD

Lot: 41 **Block:** **Plan:** VAP21531 **District Lot:** 1398

2021 Assessed Value: 437000 **Land Value:** 437000 **Improvement Value:** 0

Approximate Lot Size (BC Assessment): 1.51 ACRES





BYLAW 640.1

Chair

Corporate Officer

Legend

- Plan Area Boundary
- Stream
- Land Parcels
- Local Roads
- BC Ferries Route
- DPA #1A - Coastal Flooding
- DPA #1B - Coastal Slopes
- DPA #2A - Creek/River Corridor
- DPA #2B - Ravines (15m)
- DPA #2B - Ravines (30m)
- DPA #2C - Floodplain
- DPA #2D - Low Channel Confinement
- DPA #3 - Slope Hazards
- DPA #4 - Stream Riparian Assessment Areas
- DPA #5 - Aquifer Protection and Stormwater Management
- DPA #6 - Shoreline Protection Management
- DPA #7 - Residential Agricultural Buffering
- DPA #8 - Stewart Road Light Industrial

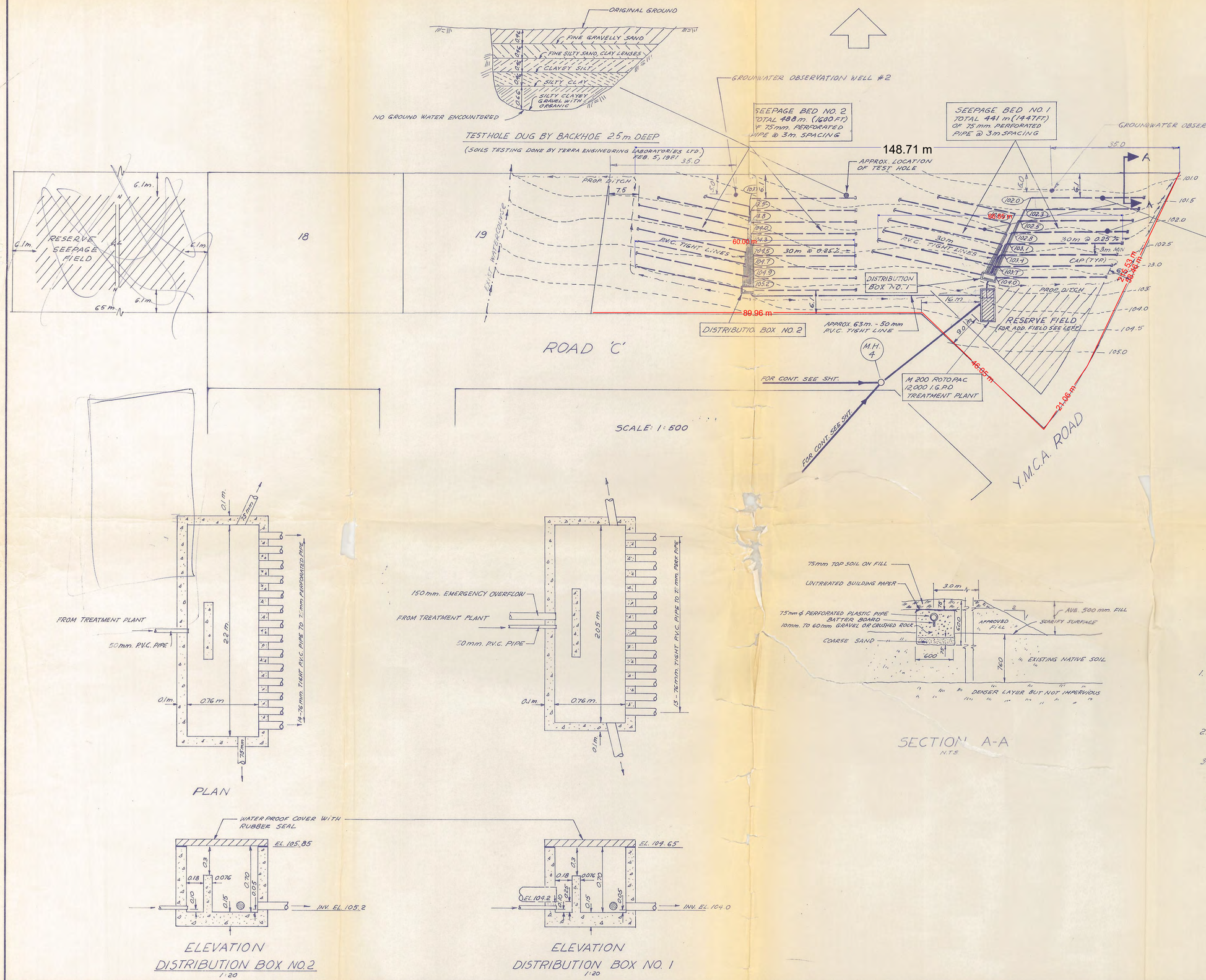
All mapped and unmapped streams are designated DPA No. 4.

Sunshine Coast Regional District

ESTIMATED DAILY SEWAGE FLOW — 12,000 IG.P.D
AEROBIC TREATMENT UNIT — M 200 ROTOPAC
PERCOLATION RATE — 5 MIN. PER 1 INCH
TOTAL TILE FIELD — 1947 + 1600 = 3047
POLLUTION CONTROL PERMIT NO PE-6209 DATED OCT. 23/81

INSTALL OBSERVATION TEES ON AT LEAST TWO TILE RUNS IN EACH GROUND ABSORPTION DISPOSAL FIELD TOGETHER WITH A MAXIMUM OF TWO GROUNDWATER OBSERVATION WELLS AS SPECIFIED BY THE REGIONAL MANAGER.

SCRD
42 NEWMAN RD, GIBSONS
PID: 009-922-385
Folio: 746.03652.051
Lot: 41
Block:
District Lot: 1398
Plan: VAP21531
Approximate Lot Size: 1.51 ACRES
2021 Total Assessed Value: 437000
2021 Land Value: 437000
2021 Improvement Value: 0



PLAN

ELEVATION
DISTRIBUTION BOX NO. 2
1:20

ELEVATION
DISTRIBUTION BOX NO. 1
1:20

SECTION A-A
N.T.S

NOTES:

1. ALL WORKS SHALL BE INSTALLED IN ACCORDANCE WITH THESE DWGS, THE MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES AND IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE B.C. POLLUTION CONTROL ACT AND PERMIT NO PE-6209 AND THE WASTE MANAGEMENT OFFICIALS OF THE SUNSHINE COAST REGIONAL DISTRICT, INCLUDING ANY FILL PLACED AT DISPOSAL FIELD
2. TREATMENT PLANT STRUCTURE TO BE CONSTRUCTED WITH ACCORDANCE WITH MANUFACTURER'S SPEC'S AND DETAILED DRAWINGS.
3. TREATMENT PLANT SHALL BE EQUIPPED WITH AN ALARM SYSTEM WHICH WILL ACTIVATE IN CASE OF BREAK-DOWN OR POWER FAILURE OF THE PLANT. LOCAL WASTE MANAGEMENT OFFICIALS SHALL BE NOTIFIED IMMEDIATELY FOLLOWING SUCH STOPPAGE OF THE PLANT

REVISION No.	REVISIONS	DATE	MADE BY	CHK'D BY

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — D. RANNALA

RANNALA & ASSOC. ENG. (1979) LTD.
• SURVEYORS • ENGINEERS
14649-108th AVENUE TELEPHONE: 584-6828 SURREY, B.C. 3VR9

DEVELOPER
LAKE NEWELL DEVELOPMENTS
209 - 1046 AUSTIN AVE. COQUITLAM, B.C.
ENGINEERING DEPT.

TITLE
SEEPAGE BED

DESIGNED BY: P.E	SCALE: HOR. 1 : AS SHOWN; VERT. 1 :
DRAWN BY: P.E	DATE: NOV. 21/81
CHECKED BY: BR	DWG. No.: 81064
APPROVED BY: B Rannala	SHEET No.: 9 of 9 R-

DESTROY ALL PRINTS PRIOR TO

BCAL-7559A1-R.A.

SITE ASSESSMENT - LANGDALE

Created: 07-28-2021
Creator: Bradley Fossen (@BFO)
Status:
Dates: 04-13-2021 - 07-28-2021

Recipients

brad@thinkapg.com

Description

Site field activities for the purposes of conceptual system renewal.

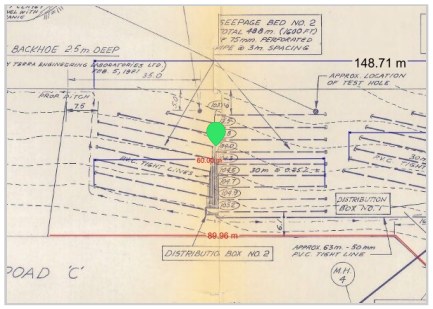
Sheets

2021.02 LANGDALE (42 NEWMAN RD, GIBSONS)
Langdale Construction Drawing

Table of contents

#35 - DBOX 1

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Langdale Construction Drawing



Task messages (time in MDT)

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Bradley Fossen	Photo 3	28 Jul 12:28 PM
Bradley Fossen	Photo 4	28 Jul 12:28 PM
Bradley Fossen	Photo 5	28 Jul 12:28 PM
Bradley Fossen	Photo 6	28 Jul 12:28 PM

Photos

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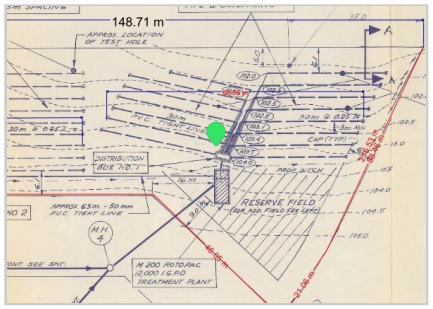
#36 - DBOX 2 AND FLOW TEST

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Langdale Construction Drawing



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Bradley Fossen	Photo 5	28 Jul 12:30 PM
Bradley Fossen	Photo 6	28 Jul 12:30 PM

Photos

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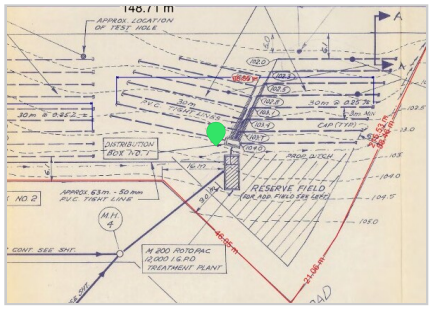
#28 - DISTRIBUTION VALVE BOXES

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Langdale Construction Drawing



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Photos

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#27 - GENERAL SITE OBSERVATIONS

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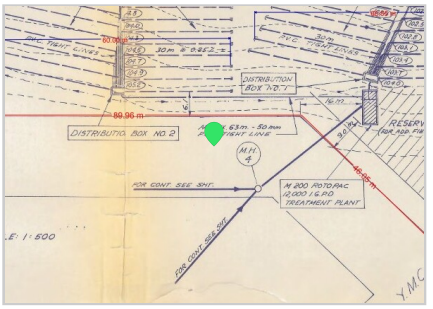
Plan: Langdale Construction Drawing



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Bradley Fossen	Photo 6	28 Jul 12:09 PM
Bradley Fossen	Photo 7	28 Jul 12:09 PM
Bradley Fossen	Photo 8	28 Jul 12:09 PM
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Bradley Fossen	Photo 10	28 Jul 12:09 PM

Photos

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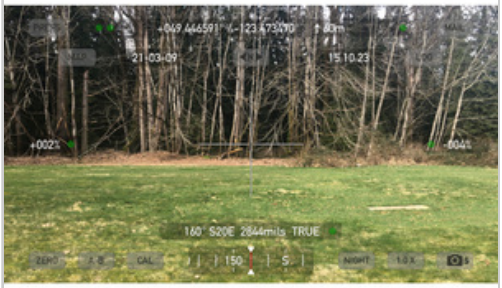

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#30 - TEST PIT 1 AND LATERAL EXPOSURE

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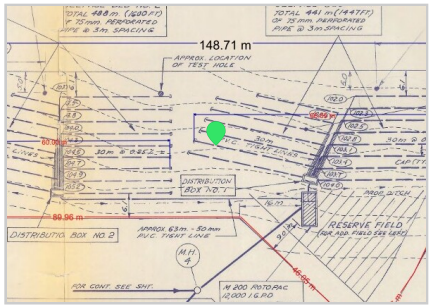
Plan: Langdale Construction Drawing



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Photos

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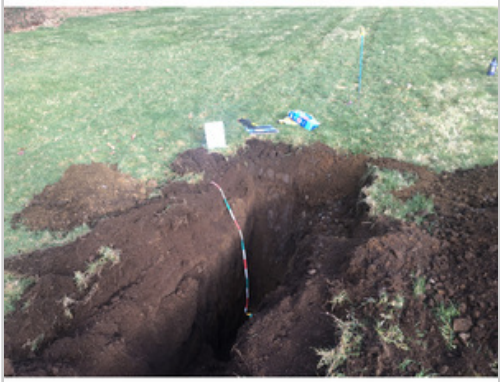

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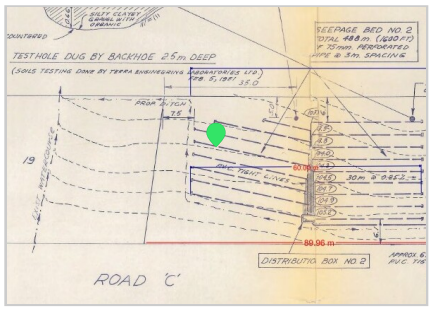
#32 - TEST PIT 2 AND LATERAL EXPOSURE

Completed | Bradley Fossen | 01. TEST PIT

Plan: Langdale Construction Drawing



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Bradley Fossen	Photo 5	28 Jul 12:23 PM

Photos

1

2

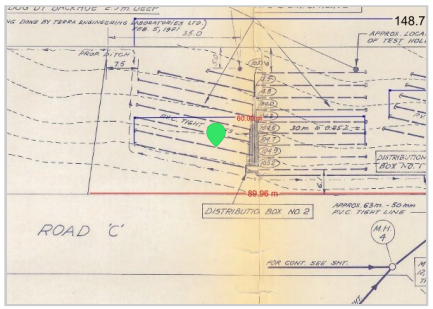
3

4

5

#33 - TEST PIT 3

Completed | Bradley Fossen | 01. TEST PIT
Plan: Langdale Construction Drawing



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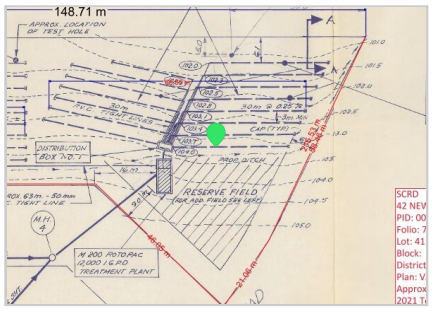
Plan: Langdale Construction Drawing



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Photos

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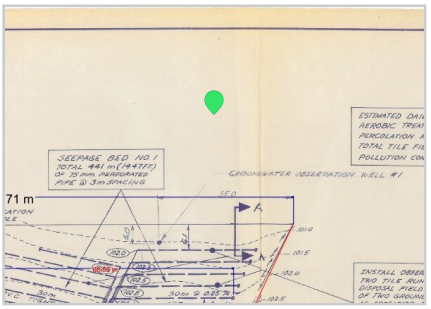
#29 - YMCA GENERAL OBSERVATIONS

Completed | Bradley Fossen | 01. OBSERVATION
Plan: Langdale Construction Drawing



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Bradley Fossen	Photo 9	28 Jul 12:13 PM
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Bradley Fossen	Photo 11	28 Jul 12:13 PM
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Bradley Fossen	Photo 15	28 Jul 12:13 PM

Photos

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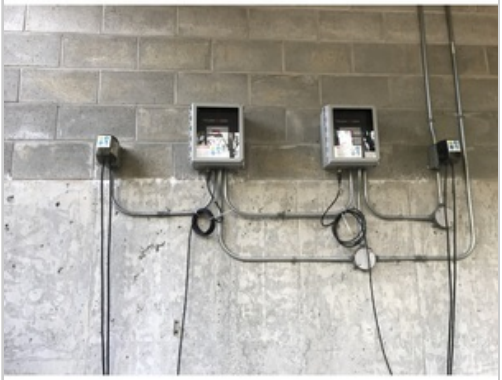

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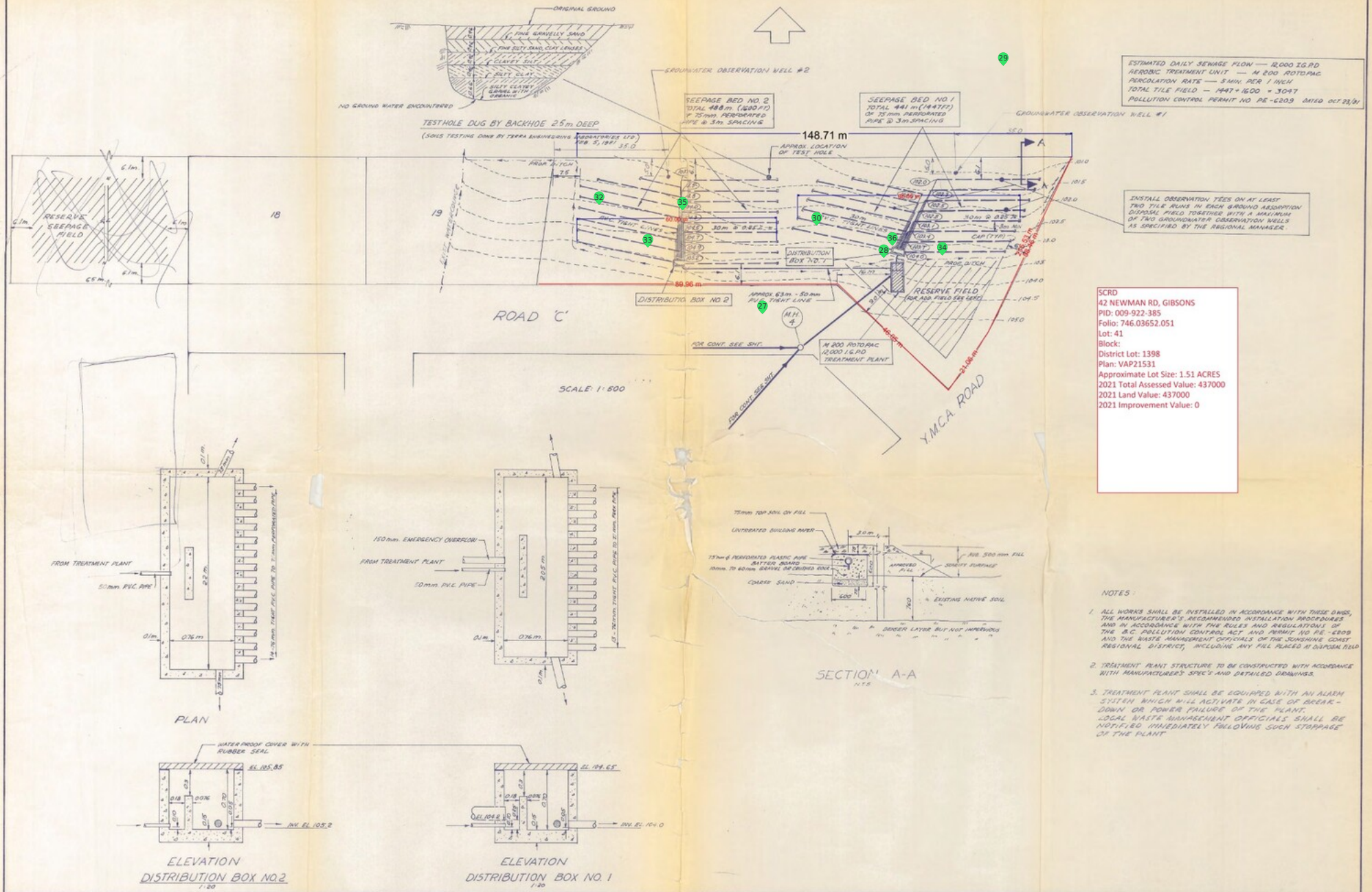

ORIGINAL GROUND
FINE GRAVELLY SAND
FINE SILTY SAND, CLAY LENSES
CLAYEY SILT
SILTY CLAY
SILTY CLAYEY GRAVEL WITH ORGANIC
NO GROUND WATER ENCOUNTERED
TEST HOLE DUG BY BACKHOE 2.5m DEEP
(SOILS TESTING DONE BY TERRA ENGINEERING LABORATORIES LTD. FEB. 5, 1981)
GROUNDWATER OBSERVATION WELL #2
SEEPAGE BED NO. 2 TOTAL 488 m. (1600 FT) OF 75mm. PERFORATED PIPE @ 3m. SPACING
SEEPAGE BED NO. 1 TOTAL 441 m (1447FT) OF 75 mm. PERFORATED PIPE @ 3m SPACING
GROUNDWATER OBSERVATION WELL #1
148.71 m
APPROX. LOCATION OF TEST HOLE
ESTIMATED DAILY SEWAGE FLOW — 12,000 I.G.P.D
AEROBIC TREATMENT UNIT — M 200 ROTOPAC
PERCOLATION RATE — 5 MIN. PER 1 INCH
TOTAL TILE FIELD — 1447 + 1600 = 3047
POLLUTION CONTROL PERMIT NO. PE-6209 DATED OCT 23/81
INSTALL OBSERVATION TEES ON AT LEAST TWO TILE RUNS IN EACH GROUND ASSORPTION DISPOSAL FIELD TOGETHER WITH A MAXIMUM OF TWO GROUNDWATER OBSERVATION WELLS AS SPECIFIED BY THE REGIONAL MANAGER.
RESERVE SEEPAGE FIELD
ROAD 'C'
DISTRIBUTION BOX NO. 1
DISTRIBUTION BOX NO. 2
RESERVE FIELD (FOR ADD. FIELD SEE LATER)
M 200 ROTOPAC 12,000 I.G.P.D TREATMENT PLANT
FOR CONT. SEE SHT.
Y.M.C.A. ROAD
SCALE: 1:500
SCRD
42 NEWMAN RD, GIBSONS
PID: 009-922-385
Folio: 746.03652.051
Lot: 41
Block:
District Lot: 1398
Plan: VAP21531
Approximate Lot Size: 1.51 ACRES
2021 Total Assessed Value: 437000
2021 Land Value: 437000
2021 Improvement Value: 0
PLAN
FROM TREATMENT PLANT
50mm. PVC. PIPE
150mm. EMERGENCY OVERFLOW
SECTION A-A
NOTES:
1. ALL WORKS SHALL BE INSTALLED IN ACCORDANCE WITH THESE DWGS, THE MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES AND IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE B.C. POLLUTION CONTROL ACT AND PERMIT NO PE-6209 AND THE WASTE MANAGEMENT OFFICIALS OF THE SUNSHINE COAST REGIONAL DISTRICT, INCLUDING ANY FILL PLACED AT DISPOSAL FIELD
2. TREATMENT PLANT STRUCTURE TO BE CONSTRUCTED WITH ACCORDANCE WITH MANUFACTURER'S SPEC'S AND DETAILED DRAWINGS.
3. TREATMENT PLANT SHALL BE EQUIPPED WITH AN ALARM SYSTEM WHICH WILL ACTIVATE IN CASE OF BREAK-DOWN OR POWER FAILURE OF THE PLANT. LOCAL WASTE MANAGEMENT OFFICIALS SHALL BE NOTIFIED IMMEDIATELY FOLLOWING SUCH STOPPAGE OF THE PLANT
ELEVATION DISTRIBUTION BOX NO. 2
ELEVATION DISTRIBUTION BOX NO. 1
RANNALA & ASSOC. ENG. (1979) LTD.
• SURVEYORS • ENGINEERS
14649-108th AVENUE TELEPHONE: 584-6828 SURREY, B.C. V3R 8
DEVELOPER
LAKE NEWELL DEVELOPMENTS
209-1046 AUSTIN AVE. COQUITLAM, B.C.
ENGINEERING DEPT.
TITLE
SEEPAGE BED
DESIGNED BY: P.E
DRAWN BY: P.E
CHECKED BY:
APPROVED BY:
SCALE: HOR. 1: AS SHOWN
VERT. 1:
DATE: NOV. 21/81
DWG. No.: 81064
SHEET No.: 9 of 9
REVISION No. REVISIONS DATE MADE BY CHK'D BY
DESTROY ALL PRINTS PRIOR TO

SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Infrastructure Services Committee – October 14, 2021

AUTHOR: Trevor Rutley, Capital Projects Coordinator

SUBJECT: **REQUEST FOR PROPOSALS (RFP) 2137008 CONTRACT AWARD – ASPHALT WORKS FOR HENRY ROAD AND CHASTER ROAD WATERMAIN REPLACEMENT**

RECOMMENDATION(S)

THAT the report titled Request for Proposals (RFP) 2137008 Contract Award – Asphalt Works for Henry Road and Chaster Road Watermain Replacement be received for information;

AND THAT the contract for supply of asphalt paving services for Chaster Road and Henry Road Water Main Replacement Projects be awarded to BA Blacktop Ltd. in the amount of $241,738.38 (plus GST);

AND THAT the delegated authorities be authorized to execute the contracts;

AND FURTHER THAT this recommendation be forwarded to the October 14, 2021 Board Meeting.

BACKGROUND

Staff have identified two sections of water main to be replaced under the Regional Water System [370] annual water mains replacement base budget – Henry Road, north of Reed Road; and Chaster Road between Frank West Hall and Pratt Road.

The Henry Road section has been selected to replace the existing asbestos cement pipe with ductile iron pipe, enhancing system reliability and further reducing the amount of remaining in-service asbestos cement water main. The water main will also be upsized from 200 mm diameter to 300 mm diameter, which will enable more efficient filling of the Henry Road reservoir.

The Chaster Road section has been selected as the existing water main has experienced multiple leaks in recent years. Test digs completed in 2019 identified that the pipe is in deteriorated condition between Pratt Road and Frank West Hall. The section of Pratt Road between Chaster Road and Malaview Road will also be replaced to eliminate the short bottleneck of 150 mm diameter pipe.

In order to complete these projects as planned, a contract is required for the supply of asphalt restoration services to reinstate the sites following construction.

Staff prepared a Request for Proposal for asphalt paving services as per SCRD Procurement Policy. The RFP was posted on BC Bid as well as being advertised locally.

DISCUSSION

Analysis

One compliant bid was received in response to this RFP. Led by Purchasing, staff undertook the evaluation of the proposal against the criteria stipulated in the RFP documents. Based on the evaluation staff recommend that the contract for asphalt works be awarded to BA Blacktop. They satisfied all of the requirements of the RFP and their bid price of $193,390.70 (plus GST) was within the anticipated budget for the work.

Staff recommend awarding the contract with a contingency of 25% added to the bid value. This will alleviate the need to issue a contract amendment should there be additional asphalt restoration required due to unanticipated conditions encountered during construction. The total recommended 'not to exceed' contract value for BA Blacktop is $241,738.38, excluding taxes.

Summary of Bids Received

Name	Contract Value
BA Blacktop Ltd	$ 193,390.70

Financial Implications

The Chaster Road and Henry Road water main replacement projects fall under the water main replacement annual base budget of $1,258,940 which is funded from [370] Regional Water parcel taxes. To date, $661,883 has been committed from this base budget for other contracted services related to the Chaster Road and Henry Road projects, as well as for engineering services related to other water main projects in the Secret Cove area.

Due to the nature of the paving services required, the work on Chaster Road will be completed in two Phases. Phase one will consist of restoring the asphalt immediately above the areas disturbed during construction, and will occur as near to the completion of construction as possible. Phase two will consist of milling (or grinding) the upper portion of the full single travel lane width, which was disturbed by construction, and repaving with a finished course of asphalt. As per Ministry of Transportation and Infrastructure (MOTI) permit requirements, this will occur a minimum of three months after the first phase of paving has been completed and will therefore be funded out of the 2022 water main replacement annual base budget.

The total value of the new recommended contracts is $241,738.38. Of that amount, $118,135.94 (includes 25% contingency) will be funded by the 2021 mains replacement base budget. The remaining $123,602.44 will be funded from the 2022 mains replacement budget when the final phase of paving for the Chaster Road and Pratt Road project is completed.

As shown in the following table, there is a remainder of $478,921 under the 2021 mains replacement base budget.

2021 370 RWS Mains Replacement Base Budget	**Allocated Budget**
RFP 2137008 – Asphalt Works, Chaster and Henry Roads Phase 1	$118,136
Pipe and Fitting Supply, Henry and Chaster Roads	285,318
Contracted Equipment, Henry and Chaster Roads	255,000
Wescan Engineering Services (pending approved contract amendment)	92,798
Sans Souci Bridge Engineering Services	28,767
Total	**$780,019**
Budget	**$1,258,940**
Remainder	**$478,921**

The remaining budget is sufficient to cover all costs related to the construction of the Henry Road and Chaster Road water mains excluded from the proposed contracts (archaeology, traffic management, etc.).

Estimated completion date

The estimated end date for construction on Chaster Road and Pratt Road will be October 22, 2021 or shortly thereafter. Phase one of the Chaster Road and Pratt Road paving is anticipated to be completed in November 2021. Phase two will be completed a minimum of 90 days following Phase one, with a target of completing Phase two during spring break 2022 to minimize disruption to Cedar Grove Elementary School.

The estimated end date for construction on Henry Road is November 12, 2021. Paving is anticipated to be completed in the week of November 15, 2021. This schedule is weather dependent.

STRATEGIC PLAN AND RELATED POLICIES

These water main replacement projects reflect the objectives identified in the Strategic Plan, including the Strategic Focus Area of *Asset Stewardship.*

CONCLUSION

In accordance with the SCRD's Procurement Policy, RFP 2137008 were issued for asphalt works for the Henry Road and Chaster Road water mains replacement projects. One compliant bid was received.

Staff recommend awarding a contract for the completion of the asphalt restoration to BA Blacktop Ltd. for the amount of $231,738.38 (plus GST). This includes a 25% contingency.

Reviewed by:			
Manager	X –S. Misiurak	Finance	X–B. Wing
GM	X - R. Rosenboom	Legislative	
CAO	X – D. McKinley	Purchasing	X-V. Cropp

SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Infrastructure Services Committee – October 14, 2021

AUTHOR: Robyn Cooper, Manager, Solid Waste Services

SUBJECT: **WOOD WASTE RECEIVING AND PROCESSING – CONTRACT EXTENSION**

RECOMMENDATION(S)

THAT the report titled Wood Waste Receiving and Processing – Contract Extension be received for information;

AND THAT the contract with Salish Environmental Group Inc. for wood waste receiving and processing be extended for an additional three (3) year period in the amount up to $2,456,250 (not including GST);

AND THAT the delegated authorities be authorized to execute the contract;

AND FURTHER THAT these recommendations be forwarded to the October 14, 2021 Board Meeting.

BACKGROUND

The SCRD has a contract with Salish Environmental Group Inc. to receive and process waste wood diverted from Sechelt Landfill (SL) and Pender Harbour Transfer Station (PHTS) as awarded in 2019 from Request for Proposals 19 376. The contract was for a one-year period and was extended for an additional one year period in 2020. The contract expired on August 31, 2021 and can be extended for one additional three-year period. This would be the final extension option.

The purpose of this report is to seek Board approval to extend the existing contract with Salish Environmental Group Inc. for receiving and processing wood waste.

DISCUSSION

Currently, Salish Environmental Group Inc. provides two services for processing wood waste for SL and PHTS. The details are as follows:

- Wood waste is received directly at Salish Soil's facility in Sechelt (instead of at SL).
- Wood waste is received at PHTS and transported in bulk, by Salish Environmental Group Inc., to their facility in Sechelt.
- Once received, Salish Environmental Group Inc. segregates the wood waste into various categories and grinds it into wood chips. The chips are then forwarded to local end users such as Howe Sound Pulp and Paper.

- A minimum of 2,000 m^3 of wood chips is hauled to the SLF for use as cover material at no additional cost to SCRD. This is helping to offset some of the soil required for this purpose.

The SCRD has benefitted from Salish Environmental Group Inc.'s ability to provide this service. The details within the contract support the SCRD's Solid Waste Management Plan, outlining greenhouse gas reduction and waste diversion.

As such, staff recommend to extend the contract for the final three-year term.

Financial Implications

Salish Environmental Group Inc.'s original pricing submission was re-evaluated and compared to current market pricing. Table 1 shows the breakdown of the overall contract value. Table 2 details the annual contract values for budgeting purposes.

Table 1: Contract Value Details

	Cost
Original Contract Value – 1 Year	$491,250
First Contract Extension Value (1 Year)	$491,250
Second and Final Contract Extension Value (3 Year)	$1,473,750
Total Contract Value	**$2,456,250**

Table 2: Annual Contract Details

	Totals
Hauling and Processing	$485,250
Bin Rental at SLF	$6,000
Total	**$491,250**

The actual total annual costs are based on tonnage of material received. Therefore, the more wood the SCRD receives and that requires processing, the higher the costs for processing.

The current tipping fee for clean wood is $170 per tonne and $265 per tonne for contaminated/dirty wood. The revenues received fully fund the processing costs.

The current budgeted amount for this service is $491,250, therefore a Financial Plan amendment is not required.

STRATEGIC PLAN AND RELATED POLICIES

The wood waste receiving and processing contract aligns with the Board's Strategic focus areas of Regional Collaboration and Partnership and Climate Change and Resiliency as well as the Board's Purchasing Policy and social procurement.

CONCLUSION

The SCRD entered into a one year contract in 2019 with Salish Environmental Group Inc. for wood waste receiving and processing from Pender Harbour Transfer Station and Sechelt Landfill. The contract was extended for a one year period and has since expired on August 31, 2021. The original contract includes the option to extend the contract for a three year term. This would be the final extension option.

The contract costs are fully funded from tipping fees collected on wood waste diverted at the Pender Harbour Transfer Station and Sechelt Landfill.

Staff recommend extending the contract for the final three year term.

Reviewed by:			
Manager		Finance	X - B. Wing
GM	X– R. Rosenboom	Legislative	
CAO	X– D. McKinley	Other (Purchasing)	X – V. Cropp

SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Infrastructure Services Committee – October 14, 2021

AUTHOR: Andrea Patrao, Solid Waste Programs Coordinator
Robyn Cooper, Manager, Solid Waste Services

SUBJECT: **ISLANDS CLEAN UP COMMUNITY CHECK IN ENGAGEMENT SUMMARY**

RECOMMENDATION(S)

THAT the report titled Islands Clean Up Community Check In Engagement Summary be received for information;

AND THAT staff bring forward an Islands Clean Up – Hardy Island and Surrounding Islands budget proposal to the 2022 Budget Process for consideration.

BACKGROUND

At the October 15, 2020 Infrastructure Services Committee the Islands Clean Up Program Update Staff Report (pp. 132-136) was provided to the SCRD Board for information on the annual service provided to Nelson Island.

At the October 22, 2020 meeting the Board adopted the following recommendations (in part):

350/20 **Recommendation No. 6** *Islands Clean Up Program 2020 Update*

THAT the report titled Islands Clean Up Program 2020 Update be received;
AND THAT the SCRD provide annual islands clean up service for Nelson Island.

350/20 **Recommendation No. 7** *Islands Clean Up Program Review*

THAT staff engage in a community consultation process to review the service scope, the number of islands serviced and the scope of materials accepted in the Islands Clean Up program.

The Islands Clean Up program is a series of annual events that provides residential waste disposal and recycling services and the type of event is based on the island serviced and access. Service is provided at individual docks for residents that do not have road access. For those residences that do have road access, containers are delivered onto the island and residents self-haul materials to the containers. To provide the Islands Clean Up service, a barge, containers and hauling services are required and are provided by a contracted service provider.

Currently, the SCRD provides the Islands Clean Up program to the following islands within Electoral Areas A, B, and F: Gambier (and surrounding), Keats (and surrounding), Nelson, Thormanby and Trail.

The SCRD conducted a Community Check In Engagement with Islands Clean Up participants between June 9 and September 13, 2021 in the form of a Questionnaire to receive feedback on the service scope, the number of islands serviced and the scope of materials accepted.

The purpose of this report is to present the findings of the Islands Clean Up Community Check In Questionnaire as per Recommendation 350/20 No. 7.

DISCUSSION

Scope of Islands Clean Up Community Check In

The Islands Clean Up Community Check In consisted of a questionnaire hosted on a dedicated SCRD Lets Talk webpage and promotion by staff throughout the duration of all of the 2021 Islands Clean Up events.

The Community Check In was promoted in conjunction with the annual promotion of the Islands Clean Up event information in the Coast Reporter, on the SCRD website and social media. The questionnaire was available online and linked through the dedicated Islands Clean Up webpage.

The questionnaire contained background information to inform residents of the program's service scope, the number of islands serviced and the materials accepted. The questionnaire then asked for input on these topics with the opportunity to provide written answers on each topic separately, as well as on the program as a whole.

A summary of the results of the questionnaire can be found in Attachment A. The detailed questionnaire results including summaries of responses to questions, a copy of the questionnaire, comments received and copies of outreach materials is available on the SCRD website via the SCRD Islands Clean Up Community Check In Public Engagement Summary Report.

Options and Analysis

Based on the feedback from the questionnaire, staff recommend the following:

1. No change to the frequency of the service – continue with annual service.
2. No change to the frequency of special items schedule – continue with every-other-year.
3. Reinstate full scope of household recycling collection once safe to do so.
4. Expand the Islands Clean Up to include Hardy and smaller islands in proximity to Hardy and Nelson Islands.

Only the 4th staff recommendation requires Board direction. As such, staff prepared two options for the Board's consideration.

Option 1 – Staff bring forward an Islands Clean Up – Hardy Island and Surrounding Islands Proposal to the 2022 Budget Process for consideration (recommended)

The responses from the Islands Clean Up Questionnaire and responses from residents contacting staff directly indicate that residents of Hardy Island and surrounding islands are

interested in being included in the Islands Clean Up Program. This would expand the service to include approximately 30-40 properties or at least 20-30 participants.

Initial discussions with the contractor has indicated that they are amendable to adding Hardy Island to the Nelson Island Clean Up and that it would not significantly impact the budget and would not impact the ability to service Nelson Island.

Program expansion requires Board direction to do so and the process would be that an Islands Clean Up Program Proposed Initiative be brought forward to the 2022 Budget process for consideration. If approved, the expansion would be in place for the 2022 Islands Clean Up.

Option 2 – No expansion to the Islands Clean Up Program for Hardy and Surrounding Islands

Should the Board determine that the Islands Clean Up Program not be considered for expansion to include Hardy and surrounding islands, then nothing further is required and staff would inform the respondents that reached out by email.

Staff do not recommend this option.

Organizational and Intergovernmental Implications

The workload associated with the continuation of this program could be absorbed within the current workload of the Solid Waste Services Division.

Financial Implications

An increase to taxation from Regional Solid Waste [350] would be required to fund any Islands Clean Up program expansion.

Should the Board support bringing forward a proposal to the 2022 budget process for consideration, the required budget for an expansion to Hardy and surrounds islands would be identified at that time.

Timeline for next steps

If the Board direction is for the program to be considered for expansion Staff will bring forward a Proposed Initiative to the start of the 2022 Budget Process. If approved, the contract for barge and hauling services would require an amendment. However, the contracted service provider has indicated that it could be included in the 2022 program.

If the program is not being considered for expansion, nothing further is required and staff will inform the engagement participants.

Communications Strategy

Staff will continue to communicate about the Islands Clean Up Program as part of the Solid Waste Programming, will provide an update on the SCRD Let's Talk Page and inform Island Volunteer Coordinators that engagement summary results are available.

STRATEGIC PLAN AND RELATED POLICIES

The Islands Clean Up Program supports the 2019-2023 Strategic Plan Strategy of Achieving Sustainable Solid Waste Management.

CONCLUSION

The 2021 Islands Clean Up Community Check In Engagement confirmed that the Islands Clean Up Program is a well-supported program with high participation from the island communities that receive the program.

All of the island communities are represented by respondents in the questionnaire and results indicated that there is no change required to the frequency of the service; no change to the frequency of or list of in-scope materials collected. However, there was sufficient feedback to consider expanding the program to include Hardy and surrounding islands to the Nelson Island Clean Up event. The addition of Hardy Island requires additional budget and staff recommend that a 2022 Proposed Initiative be brought forward to the 2022 Budget process for consideration.

ATTACHMENTS

Attachment A – Summary of Questionnaire Results

Reviewed by:			
Manager		Finance	X – B. Wing
GM	X – R. Rosenboom	Legislative	
CAO	X – D. McKinley	Other	

2021 Islands Clean Up Community Check In Engagement
Summary of Questionnaire Results

Questionnaire Participation

A total of 159 responses were received to the questionnaire and all of the islands currently a part of the Islands Clean Up program are represented with responses. The majority of responses came from the most populated islands and both flag stop and land events received feedback. Figure 1 provides the percentage of responses by island that respondents reported to be from or represent.

The questionnaire asked respondents about how often they participate in the Islands Clean up program and the majority of responses indicated that they participate every year or every other year at 74% combined. Approximately 15% have never participated or aren't included and 4% did not know of the event's existence. Figure 2 shows the percentage of all the responses and Table 1 provides the breakdown of frequency of participation with the island that the respondents indicated they are from.

15 or 9% of responses indicate that they have not participated because they are not included and the majority of those responses are from Hardy Island residents.11 or 6% of responses that indicated they never participate and of the 11, 8 provided an answer to the question why they do not participate. Of the 8 responses 2 are able to deal with their own waste, 1 doesn't find the list of items collected useful and 5 selected the "other" option and the reasons included were because of age, that they weren't aware of the program, or they're building and are dealing with materials on their own.

Figure 1 - Response Distribution by Island

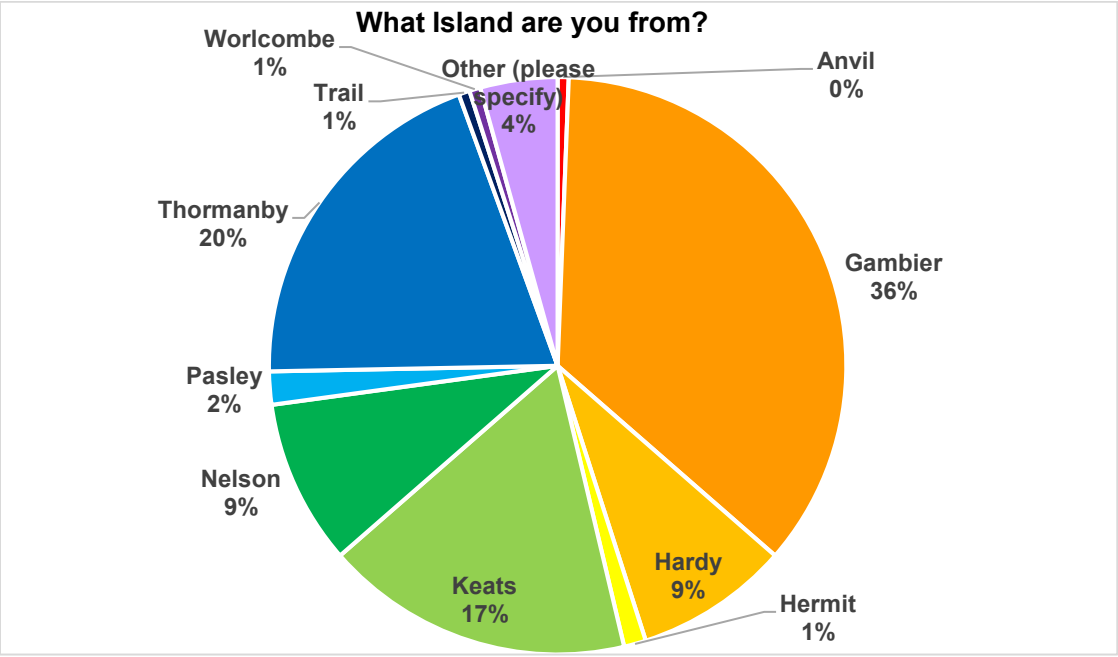


Figure 2 – Percentage of responses by frequency of attendance

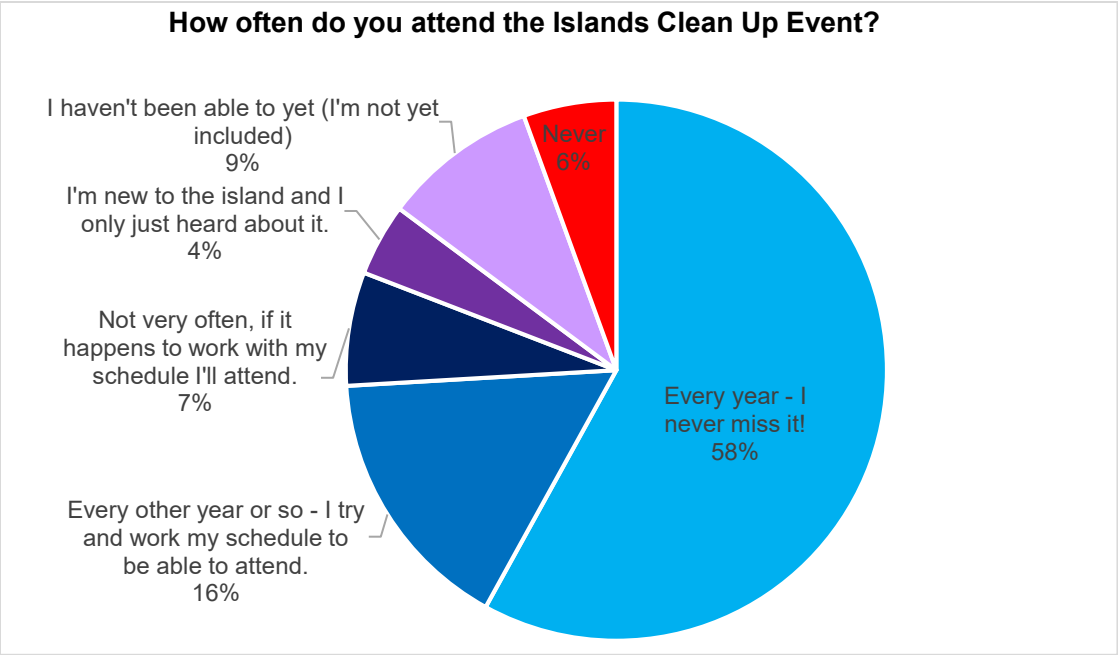


Table 1 – Participation frequency by island

	Every year - I never miss it!	Every other year or so - I try and work my schedule to be able to attend.	Not very often, if it happens to work with my schedule I'll attend.	I'm new to the island and I only just heard about it.	Never	I haven't been able to yet (I'm not yet included)	Totals
Anvil	1						**1**
Gambier	39	8	4	3	2		**56**
Hardy					3	13	**16**
Hermit	1	1					**2**
Keats	18	6	2	2			**28**
Marr						2	**2**
Nelson	9	3	2		1		**15**
Little Popham					1		**1**
Pasley	2	1					**3**
Thormanby	22	8	2				**32**
Trail	1						**1**
Worlcombe	1						**1**
Other*						1	**1**
Totals	**94**	**27**	**10**	**5**	**7**	**16**	**159**

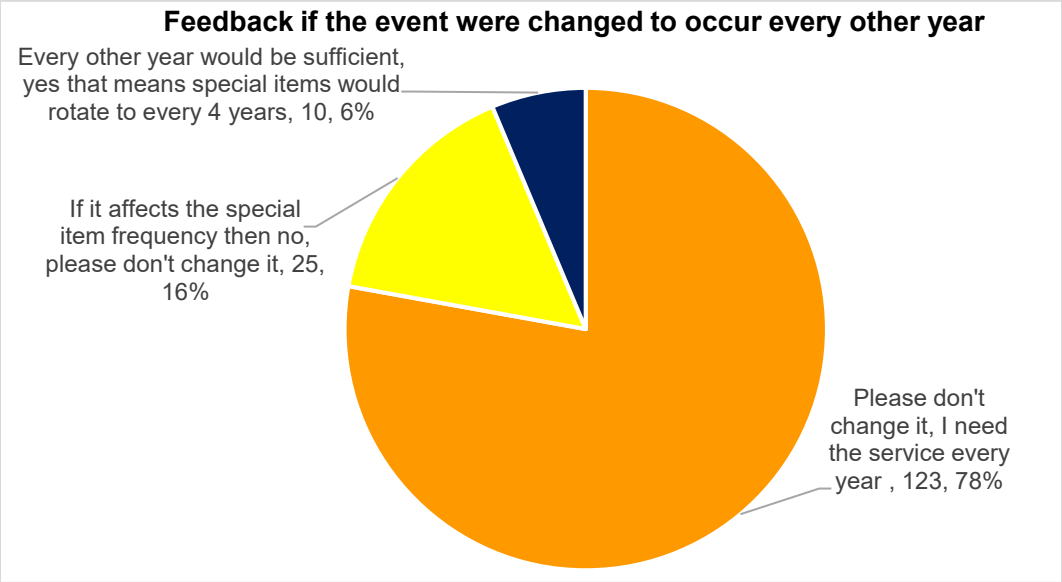
*One respondent indicated that they are not from an SCRD island.

Service Scope

The Islands Clean Up Program is currently provided on annual basis.. Respondents were asked for feedback regarding changing the frequency to every-other-year and to consider that impact on the special item frequency.

Figure 3 shows that 78% or 123 respondents did not want to change the frequency from every year to every-other-year and 16% or 25 respondents did not want to change if it affected the special item collection frequency. Only 6% or 10 respondents indicated support every-other-year instead of annually. There were written responses provided at the end of the questionnaire that reported that reductions to the service would not be helpful as the containers are always full and instead would rather the event occur more frequently.

Figure 3 – Feedback on event frequency



Islands Serviced

The questionnaire respondents were also given the opportunity to provide feedback on whether there were other islands that should be considered for inclusion and Table 2 below shows the number of respondents and the islands represented in their requests.

The most requested island to be added to the program is Hardy Island with 17 requests. One of the respondents requesting service for Hardy Island indicated to staff that their response was on behalf of all Hardy Island residents. Copper, Eagle, Victory, Marr and Oyster Island are surrounding Islands between Hardy and Nelson Island. Of the islands suggested, Pasley is already included and staff will reach out to the contacts available and have them ensure the residents are aware.

Staff have received feedback in prior years from residents of Hardy Island who would like to be included as part of the Nelson Island Clean Up day. This year, staff received 6 emails from residents of Hardy island who may or may not have filled out the questionnaire but have indicated they wish to be part of the program.

Table 2 – Responses for program expansion

Question: If the SCRD were to expand its collection services, where would island residents need the service?	
Hardy Island	17
Copper Island	1
Marr Island	2
Oyster, Victory and Eagle Islands	1
Pasley	1
The whole SCRD (non-island response)	1

Respondents were asked to provide feedback regarding whether they would be willing to utilize a consolidation point on another island if their individual island was not able to be included as a specific stop. Of the 21 responses, 17 indicated that another island would not be likely and 4 provided written responses. For those that could make another island work they indicated that it might be able to work for smaller items, but not likely for bigger or bulkier items. Others utilized the written response to reiterate that they wanted service on their own island and to not use another island.

Event Materials Collected

The questionnaire included questions about materials that are collected and which materials respondents utilize. There were questions about which materials that have been brought to an event and what they may need in the future. There were also questions about materials that residents would consider dealing with on their own and the opportunity was provided to allow for feedback on materials of their choice.

Figure 4 summarizes the materials that respondents utilize the program for. The top 5 most selected materials are scrap metal, general garbage, scrap metal appliances, Styrofoam and mattresses or boxsprings.

Figure 5 shows the materials that residents would like to see the program to continue collecting. Most respondents chose that they would prefer that all items are collected and there were 17 respondents who selected “other” and their responses included materials out of scope such as marine debris, boats, abandoned vehicles, abandoned industrial equipment, hazardous materials, such as engine oil or antifreeze and construction waste, including drywall and lumber.

Figure 6 provides the percentage of responses that asked what materials respondents felt that they would never need collection for or would prefer deal with on their own. From the responses it was made clear that the most common items for collection, household garbage and scrap metal are widely used and several respondents indicated that they would like more options available for collection.

Figure 4 – Distribution of responses to which materials are utilized by users of the program.

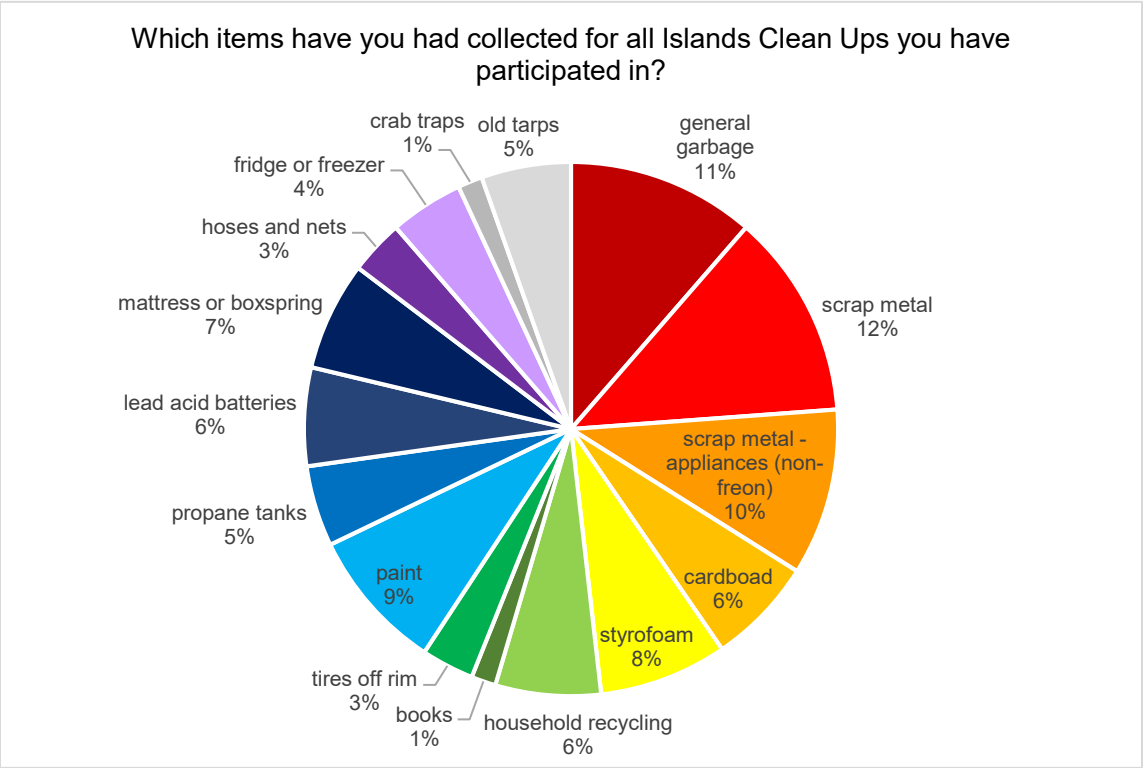


Figure 5 – Materials respondents would like to continue receiving collection for

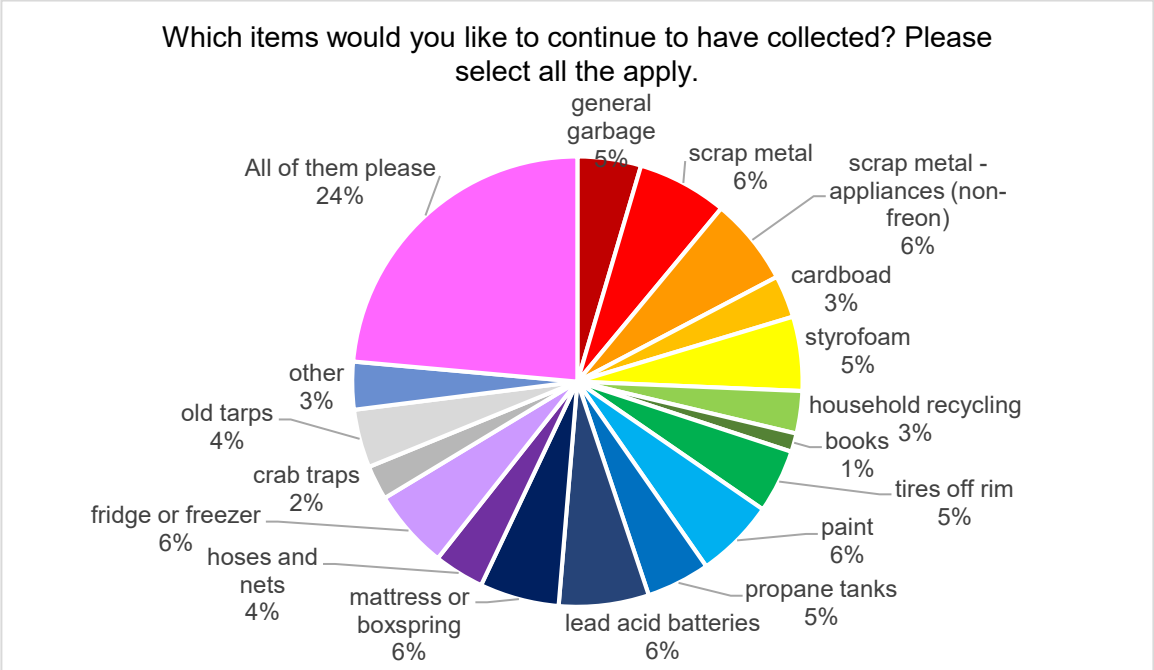
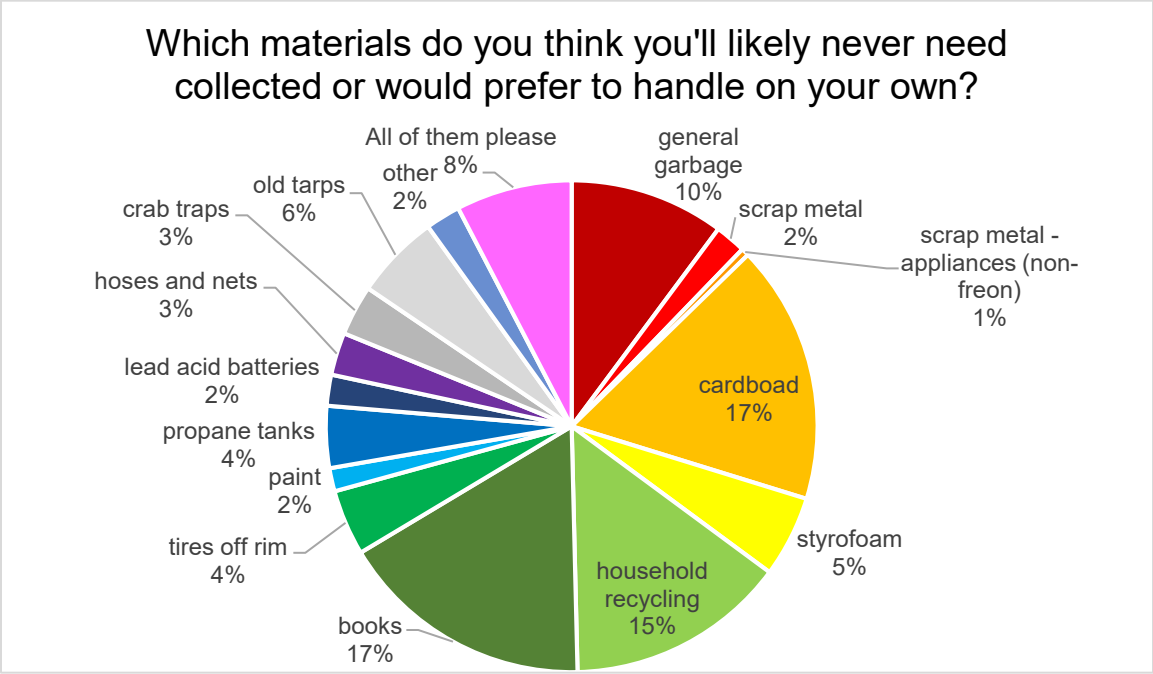


Figure 6 – Responses to which items respondents would rather handle on their own or not need for collection



SCRD staff have limited the collection of household recycling to select items due to the pandemic for the 2020 and 2021 Islands Clean Up events. In 2021, cardboard and Styrofoam were collected as well as books. However, plastic and metal containers, paper, film plastic and other flexible plastic were not collected.

This was due to staff having to assist event participants with their sorting which would be hindered by the need to physically distance. The questionnaire asked respondents for feedback about discontinuing household recycling permanently. 57% of responses to the question indicated that they do not need household recycling, however 20% of responses indicated that they really need it as they live on their island full time and find it very difficult to recycle because they are either boat access only or do not have a vehicle off the island to transport their materials to the recycling depot.

The questionnaire inquired about the materials that require special handling and their frequency of collection. These materials require special handling either because they are either hazardous, too bulky or cannot be buried in the landfill and require that they have dedicated space on the barge. The current frequency for these items is every other year with a “Year A” and a “Year B” set of materials. Year A is the collection of fridges, freezers, mattresses and boxsprings. Year B is the collection of lead acid batteries, paint, propane tanks and tires.

Figure 7 provides feedback on whether these items are collected often enough or could use more frequent collection. Approximately between 49% and 61% of respondents indicated that the current frequency of collection for most of the items was sufficient. With approximately 5%-9% of all responses indicating less frequent collection would be sufficient. Between 22% and 40% of the responses would like more frequent collection than every other year. Lead acid batteries and paint had the higher request for more frequent collection.

Fridge, freezer and tires had the higher response for keeping frequency at the current collection schedule. There were no written responses to these questions.

Household garbage and scrap metal are collected on an annual basis and staff asked for feedback to determine if their frequency could be changed. Figure 8 shows that between 78% and 81% believe the current frequency of annual collection should remain for household garbage and scrap metal.

The responses to the frequency of collection for materials requiring special handling and annually collected materials show that the frequency does not need to be changed at this time.

Figure 7– Feedback on the frequency of materials collected that require special handling

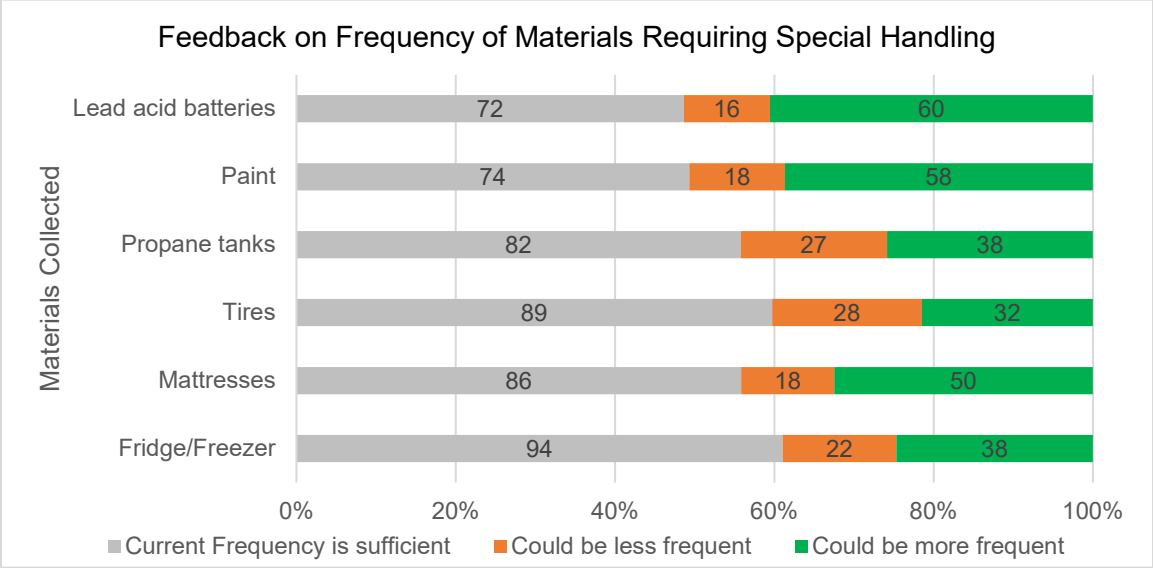
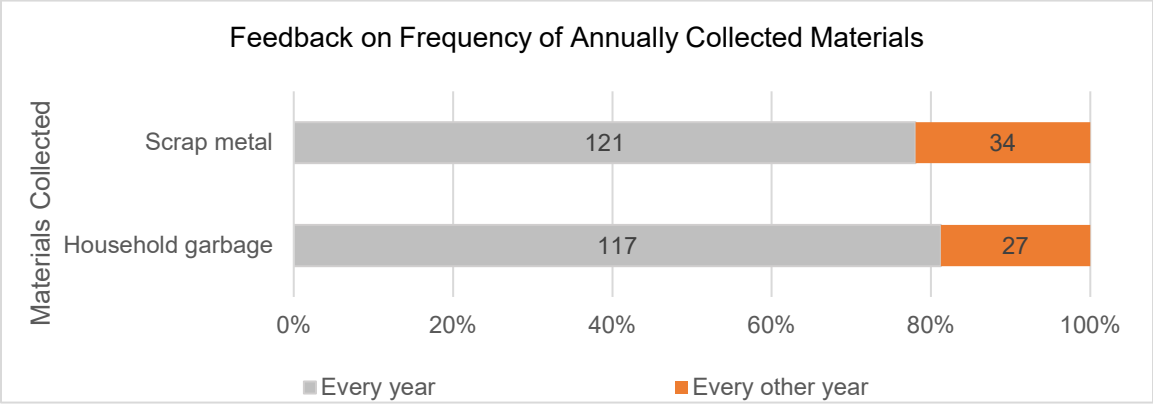


Figure 8 – Feedback on the frequency of materials collected on annual basis



SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Infrastructure Services Committee – October 14, 2021

AUTHOR: Allen van Velzen, Interim Manager, Facility Services

SUBJECT: **RFP 2161309 SUPPLY & INSTALL POOL FACILITY UV LIGHT DISINFECTION SYSTEM (SECHELT AQUATIC FACILITY)**

RECOMMENDATIONS

THAT the report titled RFP 2161309 Supply & Install Pool Facility UV Light Disinfection System (Sechelt Aquatic Facility) be received for information;

AND THAT a contract for the Supply and Install of a Pool Facility UV Light Disinfection System for the Sechelt Aquatic Center be awarded to DB Perks & Associates Ltd. for up to $113,027 (plus GST);

AND THAT the delegated authorities be authorized to execute the contract;

AND FUTHER THAT this recommendation be forwarded to the Oct 14, 2021 Regular Board meeting.

BACKGROUND

The purpose of RFP 2161309 is to remove the existing Lap Pool and Swirl Pool UV lights and replace them with ETS Wafer UV lights or equivalents at the Sechelt Aquatic Centre (SAC).

The ETS Wafer UV lights are a more efficient, energy saving light and will provide better disinfection qualities for the Lap Pool and Swirl Pool. The existing ETS UV lights are 12 years old and have reached the end of their service life.

Ultra Violet light disinfection has been used to provide enhanced disinfection, reduce chemical usage for disinfection and reduction of chloramines in the Lap and Swirl pools at SAC since it was installed in 2009.

DISCUSSION

Request for Proposal (RFP) Process and Results

Request for Proposal 2161309 Supply & Install Pool Facility UV Light Disinfection System was published on August 9, 2021 and closed on September 7, 2021. No addendums were issued.

One compliant proposal was received for RFP 2161309. Led by the Purchasing Division, the evaluation team consisted of three team members. The evaluation committee reviewed and scored the proposal against the criteria set out in Section 7 of the RFP document. Based on the best overall score and value offered, staff have recommended that a contract be awarded to DB Perks & Associates Ltd as they met the specifications as outlined and are the best value for the above-mentioned project.

Summary of Bids Received

Name	**Total Value Contract**
DB Perks & Associates Ltd.	$ 107,645 (before GST)

Financial Implications

As per the Recreation capital plan, the 2021 approved budget for this item is $113,500. The bid proposal is $107,645 plus GST. Staff recommend an additional contingency fund of 5% or $5,382 be allocated to this project for unforeseen additional installation expenses. This contingency is included in the total "up-to" contract award amount.

Timeline and Next Steps

Following Board decision, the contract award will be made. Estimated project completion is 6 weeks from the date of contract signing. This project can be completed while the facility is in operation and will not impact the normal operating hours of the facility.

STRATEGIC PLAN AND RELATED POLICIES

N/A – Operational

CONCLUSION

In accordance with the SCRD's Procurement Policy, RFP 2161309 was issued for Supply & Install Pool Facility UV Light Disinfection System. One compliant proposal was received. Based on the best overall score and value offered, staff recommend that the SCRD enter into a contract agreement with DB Perks & Associates Ltd. for the amount of $107,645 (plus GST), plus a 5% project contingency of $5,382, and that the delegated authorities be authorized to execute the contract.

Reviewed by:			
Manager		Finance	X – B. Wing
GM	X – S. Gagnon	Legislative	
CAO	X – D. McKinley	Purchasing	X – V. Cropp

SUNSHINE COAST REGIONAL DISTRICT
WATER SUPPLY ADVISORY COMMITTEE

September 13, 2021

RECOMMENDATIONS FROM THE WATER SUPPLY ADVISORY COMMITTEE MEETING HELD VIA ZOOM

PRESENT:	Vice-Chair	D. McCreath
		T. Beck
		A. Skelley
ALSO PRESENT:	Director, Area F	M. Hiltz
(Non-voting)	Manager, Strategic Initiatives	M. Edbrooke
	Water Sustainability Coordinator	J. Callaghan
	Strategic Planning Coordinator	A. Wittman
	Administrative Assistant/Recorder	T. Ohlson
	Recorder	G. Lawrie
	Public	4
REGRETS:		S. Thurber
		T. Silvey
		M. Hennessy

Directors, staff, and other attendees present for the meeting participated by means of electronic or other communication facilities in accordance with Sunshine Coast Regional District Board Procedures Bylaw 717.

CALL TO ORDER 3:31 p.m.

As a quorum of 5 committee members was not reached, the agenda was not adopted and the meeting was adjourned.

NEXT MEETING November 1, 2021 @ 3:30 p.m.

ADJOURNMENT 3:34 p.m.

SUNSHINE COAST REGIONAL DISTRICT
SOLID WASTE MANAGEMENT PLAN MONITORING ADVISORY COMMITTEE

September 21, 2021

RECOMMENDATIONS FROM THE SOLID WASTE MANAGEMENT PLAN MONITORING ADVISORY COMMITTEE MEETING HELD VIA ZOOM

PRESENT:

(Voting Members)	Chair	I. Winn
	Members	J. Boyd
		D. New-Small
		P. Robson
		M. Cambon

ALSO PRESENT:

(Non-Voting)	Director, Electoral Area E	D. McMahon
	Director, Electoral Area A	L. Lee
	District of Sechelt	P. Appelt
	Manager, Solid Waste Services	R. Cooper
	Solid Waste Programs Coordinator	A. Patrao
	Manager, Strategic Initiatives	M. Edbrooke
	Strategic Planning Coordinator	A. Wittman
	Recorder	C. Cotton

Directors, staff, and other attendees present for the meeting participated by means of electronic or other communication facilities in accordance with Sunshine Coast Regional District Board Procedures Bylaw 717.

CALL TO ORDER 11:00 a.m.

AGENDA The agenda was adopted as presented.

MINUTES

Recommendation No. 1 *PMAC Meeting Minutes of July 20, 2021*

The Solid Waste Management Plan Monitoring Advisory Committee recommended that the Solid Waste Management Plan Monitoring Advisory Committee meeting minutes of July 20, 2021 be received for information.

PRESENTATIONS AND DELEGATIONS

The Strategic Planning Coordinator provided the Committee with an overview of the Solid Waste Management Plan Amendment-Pubic Engagement Approach.

Discussion included the following:

- Suggestions for locations for public engagement sessions for amendment to Solid Waste Management Plan

- Timelines for a new landfill or transfer station and status of the work being done toward potential sites
- Potential transfer station infrastructure required at the Sechelt Landfill or at Hillside Industrial Park
- Timing of the Plan Technical Advisory Committee (PTAC), dissolution of current PMAC and future PMAC.

BUSINESS ARISING FROM MINUTES AND UNFINISHED BUSINESS

REPORTS

Recommendation No. 2 *September 2021 Solid Waste Staff Reports*

The Solid Waste Management Plan Monitoring Advisory Committee recommended that the report titled September Solid Waste Staff Reports be received for information.

Discussion included the following:

- Scale use at Salish Soils
- Future destination for green waste processing
- Confirmed current use of SCRD's South Coast Green Waste Drop-off Depot is residential self-haul only
- Possibility of tipping fees for green waste at all SCRD green waste sites instead of taxation
- Future of green waste sites on the South Coast and who can use them
- Status of SCRD Home Composter Pilot Rebate Program
- Status of SCRD Waste Reduction Initiatives Program (WRIP) and who qualifies

COMMUNICATIONS

NEW BUSINESS

Communications of schedule changes for SCRD contracted curbside collection services (garbage and green bin)

Discussion included the following:

- Disruption to SCRD curbside garbage and green bin service causing upset residents and concerns over wildlife and participation in Green Bin
- Types of communication methods used to share service disruptions
- Alternative service providers
- Status of financial compensation discussions for disruption to curbside service
- Use of split body truck to collect two streams of materials in separate compartments
- Possible use of radio stations to announce curbside disruptions
- PMAC members to support communication to residents regarding service disruptions or future schedule changes

NEXT MEETING October 19, 2021

ADJOURNMENT 12:00 p.m

BRITISH COLUMBIA

Reference: 266773

September 8, 2021

VIA EMAIL: Lori.Pratt@scrd.ca

Lori Pratt, Chair
Sunshine Coast Regional District
1975 Field Road
Sechelt, British Columbia
V0N 3A1

Dear Lori Pratt:

Thank you for your letter of August 26, 2021, to Honourable Katrine Conroy, Minister of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD), regarding the Church Road Well Field Project (Church Road) and Sunshine Coast water supply. I have been asked to respond on behalf of the Minister.

We appreciate that drinking water supply is a priority for the Sunshine Coast Regional District (SCRD). SCRD's Church Road water licence application is one of FLNRORD's highest priorities while it is also one of our most complex files and we need to ensure a sustainable approach for present and future generations. Under section 15 of the *Water Sustainability Act (*WSA*)*, the decision maker must consider the Environmental Flow Needs (EFN)[1] of a stream when deciding on a water licence application on an aquifer that is reasonably likely to be hydraulically connected to that stream. The technical assessment of SCRD's Church Road application was delayed due to the loss of data supporting the EFN assessment; however, we are expecting SCRD to submit a detailed EFN assessment with additional data soon. This submission will support the final stages of the technical assessment.

The Town of Gibsons (Gibsons) has also submitted water licence applications for the same aquifer source, and the province has been working in a collaborative manner with staff from both SCRD and Gibsons to understand and manage this important shared groundwater resource in a responsible manner.

Our staff recently issued an Order under Section 37(1) of the WSA that provides temporary authorization for the extension of rights under Gibsons current water licence, thus allowing Gibsons to provide emergency water supply to the SCRD. We will continue to work in a collaborative manner with SCRD to address the water supply challenges and to find innovative solutions, such as using an adaptive management plan as a tool to expedite the

[1] Under the *Water Sustainability Act*, EFN means the volume and timing of water flow required for the proper functioning of the aquatic ecosystem of the stream.

Ministry of Forests, Lands, Natural Resource Operations and Rural Development

South Coast Natural Resource Region

Suite 200, 10428 - 153 St
Surrey BC V3R 1E1
Phone: (604) 586-4400
Fax: (604) 586-4444

licensing process. Consultation with Squamish Nation is ongoing and will continue throughout the development of an adaptive management plan.

In summary, FLNRORD shares SCRD's interest in supporting the sustainable development of a secure water supply, while also balancing the interests of other users, known environmental issues and aboriginal interests. I appreciate that our staff are working well together to resolve outstanding application requirements in order to move this to the needed licensing decision.

Sincerely,

Allan Johnsrude, RPF
Regional Executive Director
South Coast

pc: Honourable Katrine Conroy
Minister of Forests, Lands, Natural Resource Operations and Rural Development

Sunshine Coast Regional District
1975 Field Road
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Canada V0N 3A1
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August 26, 2021

The Honourable Katrin Controy
Minister of Forests, Lands, Natural Resource
Operations and Rural Development
Box 9049, Stn Prov Govt
Victoria, BC V8W 9H2

COPY

Via email: FLNR.Minister@gov.bc.ca

Dear Honourable Katrine Conroy,

Re: Church Road Well Field Project and Sunshine Coast Water Supply

I am writing regarding the anticipated water licence for the Church Road Well Field project that will increase water supply to Sunshine Coast Regional District (SCRD) residents. At UBCM in 2019, we discussed with former Minister Donaldson about expediting a water licence to ensure adequate water supply in the region for health and safety reasons. We are seeking a water licence so we can initiate construction as soon as possible.

BACKGROUND

Our region is experiencing long, hot summers, and this year has brought an unprecedented and extended drought to the lower Sunshine Coast. While we are adapting to the changing climate, the current impacts could not have been anticipated. In addition, the Environmental Flow Needs requirement for the Chapman Creek watershed has reduced our ability to rely on local watersheds which supply drinking water to most residents in the region. As part of our Drought Response Plan, we have escalated the Chapman Water System to Stage 4, our most stringent water conservation regulations that ban outdoor water use, earlier than previous years, to conserve drinking water and for fire protection. Additional water supply sources are urgently needed to avoid similar impacts to the Sunshine Coast community next year.

Given the ongoing drought situation, the SCRD activated an Emergency Operations Centre on August 23, 2021 to coordinate the drought response.

The Church Road Well field project, initiated in 2017, is one of three main projects underway that will significantly increase drinking water supply. We completed the final design, and drilled two production wells and a monitoring well. In July 2020, through an Alternative Approval Process, residents approved a low-interest, thirty-year loan to finance the project. Staff will post an Invitation to Tender for construction as soon as a water licence is approved.

NEXT STEPS

The SCRD is taking a multi-prong approach to meet our water needs, that includes increasing water supply, promoting water conservation, and improving efficiency. The SCRD will continue exploring further conservation measures until we can provide adequate water supply to our community, which may include a moratorium on the issuance of water service connections for

new developments. While a moratorium would have significant impacts on the entire region, it may be required if provincial regulatory and First Nation consultation timelines and processes are not improved to better align with the needs of our community and others across the province.

At an emergency Board meeting on August 17, 2021, the following was Resolved:

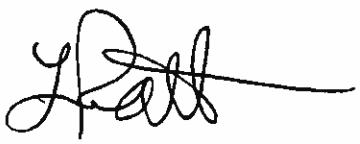
232/21 *THAT the SCRD write a letter to Katrine Conroy, the minister responsible for FLNRORD, outlining:*

- *that a water license for the Church Road well field was promised expediency by the previous minister at a 2019 UBCM meeting due to the health and safety concerns around ensuring an adequate water supply;*
- *that climate change and the increased water flow requirement for the Chapman Creek watershed under the provincial Environmental Flow Needs (EFN) policy that was implemented in 2016 have resulted in challenges to our current ability to rely on Chapman and Edwards Lakes and watersheds, and that additional sources of supply are urgently needed;*
- *that conservation alone is insufficient to meet the demands of our growing community;*
- *that the SCRD Board will be considering further conservation measures, including a potential moratorium on new connections, until such time as we are able to guarantee adequate water supply for our community.*

The issuance of a Water Licence for the Church Road Well Field in the upcoming weeks is essential to avoid risking another year of severe water shortage in our region.

Sincerely,

SUNSHINE COAST REGIONAL DISTRICT



Lori Pratt
Chair