Agenda
Liquid Waste Monitoring Committee
Tuesday, January 28, 2025

Council Chambers - City Hall
413 Fourth Street, Kaslo

Page

1. CALL TO ORDER

We respect and recognize the First Nations within whose unceded lands the Village of Kaslo is situated, including the Ktunaxa, Sinixt, and Sylix People, and the Indigenous and Metis Residents of our community.

The meeting is called to order at _____ p.m.

2. ADOPTION OF THE AGENDA

2.1 Addition of late items

2.2 Adoption of the agenda

Recommendation:

THAT the agenda for the 2025.01.28 Liquid Waste Monitoring Committee Meeting be adopted as presented.

3. ADOPTION OF THE MINUTES

3 - 5

2024.10.21 LWMC Minutes DRAFT

Recommendation:

THAT the minutes of the 2024.10.21 Liquid Waste Monitoring Committee Meeting be adopted as presented.

4. DELEGATIONS

5. INFORMATION ITEMS

5.1 Review of Terms of Reference

6 - 12

Terms of Reference - 2023.pdf

7.8 - Staff Report - Grant Application - Lake Water Quality Monitoring.pdf

5.2 Member Reports 13 - 48

1. Report from A Malik

6. QUESTION PERIOD

An opportunity for members of the public to ask questions or make comments regarding items on the agenda.

7. BUSINESS

7.1 Review of Liquid Waste Monitoring Plan 49 - 56

To outline the process for the Liquid Waste Management Plan 5-Year Review and make recommendations to Council to authorize the staff time and resources for the review.

2025.01.24 LWMC Staff Report.docx

6.1 Letter from Ministry.pdf

Recommendation:

THAT the committee recommend to Council that staff be directed to report back on the Liquid Waste Management Plan 5-Year Review with recommended updates or amendments to the plan within three months; and,

THAT the committee recommend to Council that a qualified consultant be engaged to work with staff to update the plan's cost estimates and identify any relevant changes to technologies, regulations and standards cited in the plan.

8. LATE ITEMS

9. Next Meeting

Unless otherwise specified, the next meeting will be held at the call of the Chair. The committee is required to meet at least annually in November and report annually to Council.

10. ADJOURNMENT

Recommendation:

THAT the meeting be adjourned at _____ p.m.

LIQUID WASTE MONITORING COMMITTEE MINUTES

DATE: 2024.10.21		LOCATION:	Council Chambers – City Hall
TIME: 4:00 p.m.			413 Fourth Street, Kaslo
PRESENT:	Chair:	Mayor Hewat	
	Members:	Councillor Lang, Anne Malik, Lynn van Deursen, Don Scarlett, David Russell	
	Staff:	CAO Baker, CO Allaway, Geoff Scott, Ian Dunlop, Colin Hawkins	
	Public:	0	

1. Call to Order

The meeting was called to order at 4:06 p.m.

2. Adoption of the Agenda

2.1 Adoption of the Agenda for the 2024.10.21 Liquid Waste Monitoring Committee Meeting

Moved, seconded and CARRIED

THAT the agenda for the 2024.10.21 Liquid Waste Monitoring Committee Meeting be adopted as amended to include the following late item:

1. 2025 Sewer user fees.

3. Adoption of the Minutes

3.1 Adoption of the Minutes for the 2023.11.06 Liquid Waste Monitoring Committee Meeting

Moved, seconded and CARRIED

THAT the minutes of the 2023.11.06 Liquid Waste Monitoring Committee Meeting be adopted as presented.

4. Information Items

4.1 Review Committee Terms of Reference

4.1.1 Advancing long term community goals

Staff advised that they are gathering information regarding developing and implementing a source control bylaw and committee members spoke to the urgency of this project.

4.1.2 Project cost recovery

Staff advised that updating the parcel tax bylaw is on the workplan for 2025 and this can include changes to minimum/maximum frontages.

4.1.3 Monitoring & sampling of the receiving environment

Staff outlined a proposed grant application to conduct lake water testing (see agenda item 6.2). Committee members recommended adding upstream testing, and testing at depth and well as e.coli testing.

4.1.4 Monitoring & documentation of private septic system performance
Staff has lists of private septic systems in lower Kaslo from 2018 and advised that IHA will provide updated data, at no cost to the Village, about type of system and installation date for each address, as well as notes of all repairs/alterations.

4.1.5 Incremental expansion of the system and service areas
No expansion plans at present.

4.1.6 Assisting with public initiatives and public education
Committee members expressed support for public education regarding septic system operation.

4.2 Member Reports – None

4.3 Correspondence

4.3.1 2024.06.21 Correspondence from A. Malik, D. Russell, D. Scarlett, L. van Deursen

5. Question Period – None

6. Business

6.1 Review of LWMP

Moved, seconded and CARRIED

THAT members are directed to review the Liquid Waste Management Plan and submit their comments by December 31, 2024 for inclusion in a draft report that will be presented to the committee for review at the January 28, 2025 Liquid Waste Monitoring Committee meeting.

6.2 Infrastructure Planning Grant Program

Moved, seconded and CARRIED

THAT the committee recommend to Council that the Village apply for an Infrastructure Planning Grant from the Province of BC to offset the costs of conducting water quality sampling in Kootenay Lake.

7. Late Items

7.1 2025 Sewer User Fees
Setting sewer user fees is outside the scope of the committee. An updated schedule to the Fees & Charges bylaw will be presented to Council this fall.

8. Next Meeting

Moved, seconded and CARRIED

THAT a Liquid Waste Monitoring Committee meeting be scheduled for 4:00 p.m. on Tuesday, January 28, 2025.

9. <u>Adjournment</u>

The meeting was adjourned at 5:20 p.m.

CERTIFIED CORRECT:

_____ _____

Corporate Officer Chair

Village of Kaslo

STATUS UPDATE

DATE: January 22, 2025 FILE NUMBER: 0540-20-09

TO: Liquid Waste Monitoring Committee

FROM: Catherine Allaway, Manager of Corporate Services

1. **Advancing long term community goals**
   Development of a source control bylaw continues but may be delayed due to staff capacity.

2. **Project cost recovery**
   Revisions to the parcel tax bylaw are planned for 2025.

3. **Monitoring & sampling the receiving environment**
   An application has been submitted to the Infrastructure Planning Grant Program to fund lake water quality monitoring. A copy of the staff report regarding the application is attached.

4. **Monitoring & documentation of private septic system performance**
   The Village has lists of private septic systems in lower Kaslo from 2018 and is seeking updated data from IHA.

5. **Incremental expansion of the system and service areas**
   No expansion plans at present.

6. **Assisting with public initiatives and public education**
   No planned initiatives at present.

RESPECTFULLY SUBMITTED

Catherine Allaway

Catherine Allaway, Manager of Corporate Services

ATTACHMENTS:

- Staff report - IPGP application (Lake Water Quality Monitoring)

CAO COMMENTS:

APPROVED FOR SUBMISSION TO COMMITTEE:

_____	_____
Robert Baker, Chief Administrative Officer	Date

Village of Kaslo

TERMS OF REFERENCE

LIQUID WASTE MONITORING COMMITTEE

EFFECTIVE DATE: January 10, 2023 RESOLUTION #: 13/2023

PURPOSE: The Liquid Waste Monitoring Committee (LWMC) is required by the Village of Kaslo's Liquid Waste Management Plan (LWMP).

Mandate

The role of the LWMC is to ensure that the commitments of the LWMP are carried out in accordance with the Implementation Schedule (Section 7.1 of the LWMP), which include:

- Advancing long term community goals

- Project cost recovery

- Monitoring & sampling of the receiving environment

- Monitoring & documentation of private septic system performance

- Incremental expansion of the system and service areas

- Assisting with public initiatives and public education

Reporting

The committee will report to Council at least annually.

Schedule

The committee will meet at least annually each November or at the call of the Chair

MEMBERSHIP: All appointments to voting positions must be made by resolution of Council.

Term

Appointments shall be for a 4 year term. Appointments may be rescinded at any time by Council and vacancies may be filled by Council resolution.

Composition

The voting members of the Committee shall be:

- The Mayor of Kaslo or their designate
- 1 additional member of Council
- 5 members of the public, 2 of whom must own property within the sewer service area

Staff may attend meetings at the discretion of the CAO, to provide procedural or subject matter advice, but will not have voting rights.

Quorum

Quorum shall be 4 voting members of the Committee.

RESOURCING:

The Corporate Officer or their designate will ensure that meeting notices are posted, agenda packages are distributed, minutes are recorded, and meeting materials are available for public inspection.

With the approval of the CAO, municipal staff will prepare reports and analysis as requested by the committee.

PROCEDURE:

The Mayor shall act as Chair of the committee. If the Mayor is not present, staff will call for a chair to be selected by the members present at the meeting.
The following non-voting members may have privilege of the floor on any matter before the committee:
- The CAO and Foreman or their designates
- A representative of IHA
- A representative of the RDCK
- A representative of the Ministry of Environment

Village of Kaslo

STAFF REPORT

DATE: November 6, 2024 FILE NUMBER: 1855-03-24

TO: Mayor and Council

FROM: Robert Baker, Chief Administrative Officer

SUBJECT: Grant Application - Lake Water Quality Monitoring

1.0 PURPOSE

To consider a recommendation from the Liquid Waste Monitoring Committee that the Village apply for grant funding for lake water quality monitoring.

2.0 RECOMMENDATION

THAT the Village applies to the Province of BC's Infrastructure Planning Grant Program for funding to conduct lake water quality monitoring as described in the Staff Report titled Grant Application - Lake Water Quality Monitoring dated November 6, 2024; AND if successful with its grant application,

THAT the Village conduct lake water quality monitoring in accordance with its Liquid Waste Monitoring Plan.

3.0 BACKGROUND

The Village operates and maintains a wastewater collection and treatment system [sewer/liquid waste]. The Environmental Management Act (EMA) allows local governments to develop a Liquid Waste Management Plan (LWMP) for approval by the Minister of Environment (MoE). The approved LWMP authorizes a local government, in accordance with operational certificates, to proceed with measures in the plan to accommodate existing or future development with a strategy to ensure the management, resource recovery, and disposal of treated waste occurs in a manner that sufficiently protects public health and the environment. The Village voluntarily developed a LWMP in 2012 and attained MoE approval in 2014, followed by updates to the LWMP as recently as 2018 with MoE approval in 2020. Approval was given on the condition that a Monitoring Committee be established to oversee and evaluate implementation of the LWMP.

In accordance with conditions of the LWMP approval, the Village established a Monitoring Committee whose Mandate includes:

- Advancing long term community goals
- Project cost recovery
- Monitoring & sampling of the receiving environment
- Monitoring & documentation of private septic system performance
- Incremental expansion of the system and service areas
- Assisting with public initiatives and public education

The LWMP suggests that when planning for future incremental sewer expansion, the Village should consider monitoring and documentation that includes sampling of the receiving environment. This could

include lake water quality monitoring along the foreshore, as well as installation of groundwater monitoring wells, if needed, for areas of specific interest.

Accordingly, the Liquid Waste Monitoring Committee passed a recommendation at their October 21, 2024 meeting requesting the Village apply for grant funding that would enable lake water quality monitoring to proceed. The purpose of this Staff Report is to provide supplemental information regarding the Committee's recommendation.

4.0 DISCUSSION

The LWMP Monitoring Committee's recommendation is within the scope of its Mandate and would support implementation of the LWMP. Grant funding for lake water quality monitoring would offset contractor costs, and any staff time spent administering the contract could be afforded within the Village's operating budget. For these reasons, it makes good sense for the Village to apply for grant funding and, if successful, proceed with lake water quality monitoring.

5.0 OPTIONS

[Recommendation is indicated in **bold**. Implications are in *italics*.]

1. **The Village may apply for grant funding to enable lake water quality monitoring, and if its application is successful then the Village would hire a contractor to perform the work.** *Staff will notify the LWMP Monitoring Committee of Council's decision, apply for grant funding, notify Council and the LWMP Monitoring Committee if the grant application is successful, and then perform lake water quality monitoring in accordance with the LWMP.*

2. Council provides direction to staff for further review and report.

6.0 FINANCIAL CONSIDERATIONS

Municipalities can apply for grants that support projects related to the development of sustainable community infrastructure through the Province of BC's Infrastructure Planning Grant Program. The program is open for applications year-round and the next processing deadline is December 11, 2024. Grants of up to $10,000 are available to help local governments develop or improve long-term comprehensive plans including, and not limited to:

- Asset management plans
- Integrated stormwater management plans
- Water master plans
- Liquid waste management plans

Grants can be used for a range of activities related to assessing the technical, environmental and/or economic feasibility of local government infrastructure projects.

More specifically, the Grant Program will contribute 100% of the first $5,000 in approved eligible project costs. Eligible costs that exceed $5,000 are funded at 50% up to a maximum total grant amount of $10,000. Staff have received an estimate from a qualified contractor for lake water quality monitoring in the amount of $10,000. In addition to this cost, the Village would incur administrative expenses of up to $5,000 which can be afforded within the Village's operating budget. The total project budget is estimated at $15,000.

7.0 LEGISLATION, POLICY, BYLAW CONSIDERATIONS

Legislation

The Ministry of Environment and Climate Change Strategy has approved the Village's LWMP pursuant to the Environmental Management Act section 24(5).

Policy

The Village's Procurement and Asset Disposal policy shall be adhered to when awarding contracts.

8.0 STRATEGIC PRIORITIES

Council has recently considered its Strategic Priorities through 2025 and indicated that design for the expansion of the wastewater treatment plant is a high priority. Gathering data from lake water quality monitoring may influence the plant's design, and could bolster an application for major grant funding if Council chooses to proceed with expansion.

9.0 OTHER CONSIDERATIONS

Nothing to report.

RESPECTFULLY SUBMITTED

Robert Baker, Chief Administrative Officer

Comments on LWMP Review provided by A. Malik

Monitoring and sampling of the receiving environment

- "current sampling study began in Sept 2020 and will be completed with more samples in April 2021. Findings: efficient processing of effluent/no health risks. Mandate to repeat study every five years unless issues arise."
- VOK Effluent Discharge Receiving Environmental Monitoring Report received at Regular Council Meeting 2021-July-13th states:
  "Provided that effluent quality/quantity remains similar, and the Kootenay Lake fertilisation program continues to add large quantities of nitrogen and phosphorus, the existing discharge will not cause water quality parameters outside of the initial dilution zone to fail to meet water quality guidelines, nor will it lead to an "undesirable degree of increased biological activity because of the phosphorus addition".

Monitoring and documentation of septic system performance
Public education and monitoring work to be completed, to support continued use of hundreds of private septic systems throughout the Village

- Records of private septic systems from Interior Health will be useful towards accomplishing this goal if there are the resources to analyse and plot the data on a village map
- Provided a funding source is available, monitoring work to be done in 2025
- No progress on public education

Parcel tax on all sewered areas for future sewage treatment upgrades
Parcel tax on all sewered areas for reserve funding
Common reserve funding structure across all sewered areas

- Parcel tax based on the length of actual parcel frontage (Section 7.4.1 LWMP) **i**mplemented

Implementation of a capital charge as a contribution to sewage treatment reserves by future services and future redeveloped properties for wastewater treatment capacity

- Capital Charge implemented. See Fees & Charges Bylaw Schedule I

User fees on all sewered areas for annual operating costs
Common user fee structure across all sewered areas
Restructure of the sewer user fees

- User fees restructured and implemented. See Fees & Charges Bylaw Schedule I

User fees would be applied to all properties (folios) within sewage collection areas
LWMP Page 46 Section 7.6.2

- The campground is the only property that has "special consideration" regarding its annual operating fee/User fee. The campground is not included in the Fee schedule and its annual contribution hinges on campground profitability.
- 2024 season, there were two (2) residences, two (2) washroom buildings and seven (7) sanitary service sites. At the same time there has been a dramatic increase in baseball activity and use of the public washrooms.
- Why is there no Fee Category for the Campground on Schedule I, Fees and Charges Bylaw?

Payments in lieu of taxes are to be made for 'tax exempt' properties within all sewered areas
It is my understanding that:

1. Municipal Properties are now included on the Sewer Roll and an equivalent to the parcel tax is remitted from General Taxation
2. Properties granted a Permissive Tax Exemption pay Local Service or Parcel Taxes with respect to both the water and sewer utility
3. Sewer Parcel tax for the Post Office and RCMP building are funded by Federal grants in lieu of taxes
4. Sewer Parcel tax for the School and Hospital is funded by a contribution from the Village's general taxation

Restructure of the sewage regulation bylaw, and enhance the source control for higher strength industrial discharges as well as commercial kitchens

- Although a User Fee for the Brewery (Excess Wastewater Strength) has been implemented there has been no progress on Source Control
- Reference: Kaslo - Sanitary Sewer System Expansion Phase 2 Project Brief
- Reference: Source Control Extract with highlights
- This LWMP recommendation should become top priority for Staff, Council and LWMC
- It is my understanding that the Village crew have inspected grease traps in commercial kitchens. Be mindful that "the hot water from a high-temperature dishwasher can prevent grease traps from separating fats, oils, and grease (FOG) effectively. This can cause FOG to bypass the trap and go straight to the sewer." Also where high-temp dishwashers are installed to bypass the grease trap FOG goes to the sewer.

LWMP (page 44) states: "In addition, the charge amounts should be indexed to inflation."
LWMP (page 45) states: "User fees typically increase in line with inflation"

- Annual User Fees and Capital Charge are being increased each year

LWMP (pages 46-47) states: "existing properties which are not within SSA-1 but are immediately adjacent to existing sewer mains (e.g. some properties between JV Humphries School and the hospital, as well as properties on the 300 block of 'A' Avenue) are made part of the existing collection area"

- Village of Kaslo BYLAW 1289, 2023 SCHEDULE 'A' Sewer Service Area indicates that these properties have been made part of the collection area
- Has the Sewer Roll been amended to include these properties?

Village of Kaslo BYLAW 1289, 2023 SCHEDULE 'A' Sewer Service Area

- 'Schedule A' to Bylaw 1289 contains an error.
- Bylaw 1075 in 2008 amended Sewer Specified Area #1 to include the Moyie Info Centre. Four (4) x twenty-five (25) foot lots were assigned to this property. 'Schedule A' to Bylaw 1255 was correct; however, when it was amended in 2023 an error occurred. 'Schedule A' to Bylaw 1289 assigns only two (2) x twenty-five (25) foot lots.
- Photos attached clearly indicate that the sewer pipes and connection fittings are west of the Anchor/Plaque and well west of the Info Centre building.
- Has 'Schedule A' to Bylaw 1289 been corrected to reflect 4 x 25 foot lots?
- Has the Sewer Roll assigned Taxable Frontage of 100 feet to this property's folio?

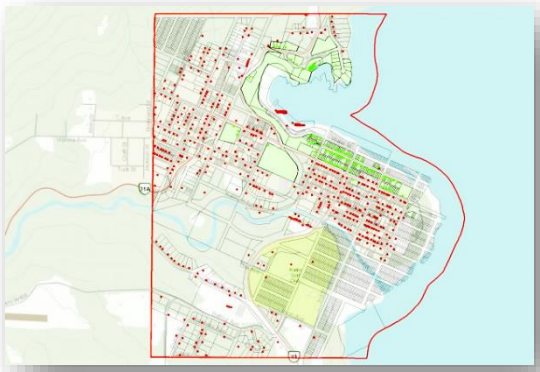
9.0 LWMP Summary of Outcomes

The Village of Kaslo started this LWMP process in 2012. Community input has been incorporated into the Stage 1, 2, and 3 reports. The general outcomes of the LWMP are summarized as follows:

1. The Liquid Waste Management Plan considers options for providing community sewers and increasing the capacity of the wastewater treatment system to accommodate more of Kaslo into the municipal collection system.
2. Sewer expansion is envisioned to prioritize the Lower Kaslo area, with sewering projects occurring incrementally with time. Sewering projects would be triggered by factors including:
   - Long term community goals per the Integrated Community Sustainability Plan and the Official Community Plan.
   - Project cost and resulting cost per property.
   - Monitoring and documentation of septic system performance.
   - Public initiatives.
3. Without grants, capital construction costs of the Village-owned infrastructure (not including service pipes on private property) are anticipated to be around $15,500 per property for sewering plus approximately $5,500 per property for future treatment upgrades. To maintain a reasonable cost to the community, the Village will aspire to limit borrowing to 33% of projects over $250,000, and $1.5M on an ongoing basis.
4. Funding sources for the LWMP implementation are proposed to include:
   - Parcel tax including a community-wide contribution for sewage education and monitoring
   - Parcel tax on individual sewered areas for each sewage collection expansion
   - Parcel tax on all sewered areas for future sewage treatment upgrades
   - Parcel tax on all sewered areas for reserve funding
   - Implementation of a capital charge as a contribution to sewage treatment reserves by future services and future redeveloped properties for wastewater treatment capacity
   - User fees on all sewered areas for annual operating costs
5. Funding structure for sewer expansions are proposed to include:
   - Common reserve funding structure across all sewered areas
   - Common user fee structure across all sewered areas
6. Additional administrative and governance changes associated with LWMP implementation include:
   - Payments in lieu of taxes are to be made for ‘tax exempt’ properties within all sewered areas
   - Restructure of the sewer user fees
   - Restructure of the sewage regulation bylaw, and enhance the source control for higher strength industrial discharges as well as commercial kitchens

Sanitary Sewer System Expansion Phase 2 – Project Brief

Village of Kaslo



October 2020

Project No. 983-093

TRUE

ENGINEERING ■ PLANNING ■ URBAN DESIGN ■ LAND SURVEYING

2-860 Eldorado St | Trail BC | V1R 3V4 | www.true.bc.ca | tel 250.368.8707 | fax

Distribution List

# of Hard Copies	PDF Required	Association / Company Name
0	Yes	Village of Kaslo

Revision Log

Revision #	Revised by	Date	Issue / Revision Description
1	NL	2020 Oct 22	Final Report

Report Submission

Report Prepared By:	*Report Prepared By:*	*Report Reviewed By:*
Rob Wall, P. Eng. *Project Engineer (Part A)*	*Nathan Lee, P. Eng.* *Project Engineer (Part B)*	*Scott Wallace, P. Eng.* *Project Review*

R:\Clients\900-999\983\983-093\05 Reports\983-093 - Kaslo - Sanitary Sewer System Expansion Phase 2 Project Brief - 2020 10 22.docx

ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA

OQM CERTIFIED

Table of Contents

1.0 Purpose 1
2.0 Background 2
3.0 Proposed Phase 2 Expansion 4
3.1 Wastewater Treatment Plant Upgrades 4
3.2 Sewer Collection System Extension 8
4.0 Project Risks and Schedule 11
5.0 Project Cost Estimate 13

APPENDICES

Appendix A – Figures

Appendix B – Cost Estimate

List of Tables

Table 2-1. Wastewater Flow Summary 2

List of Figures

Figure 2-1. Kaslo Daily Flow 3
Figure 3-1. Enderby Salsnes Filter 5
Figure 3-2. Process Flow Diagram 7

List of Acronyms

LWMP	Liquid Waste Management Plan
MDF	Maximum Daily Flow
OCP	Official Community Plan
TRUE	TRUE Consulting
Village	Village of Kaslo
WWTP	Wastewater Treatment Plant

Units of Measure

L/s	litres per second
m	metre
m^3/d	cubic metres per day
mm	millimetre

Referenced Reports

1 Village of Kaslo – Liquid Waste Management Plan Stage 1. TRUE Consulting, November 2013.

2 Village of Kaslo – Liquid Waste Management Plan Stage 2. TRUE Consulting, February 2017.

3 Village of Kaslo – Liquid Waste Management Plan Stage 3. TRUE Consulting, September 2018.

4 Letter re: Archaeological Overview Assessment (AOA) of the Village of Kaslo Liquid Waste Management Plan (Stage 2), Wastewater Treatment Plant options, Kaslo, BC. Ursus Heritage Consulting, July 2016.

1.0 Purpose

The Village of Kaslo (Village) owns and operates a municipal sewage system that serves approximately 35% of the properties in the Village. The remainder of the properties treat and dispose wastewater with private on-site sewerage systems. Partly as a result of small lot sizes and soil conditions, many of these on-site systems have been deemed to represent a risk to public health and the environment. In addition, as described in the Official Community Plan, the lack of a public sewage collection system is a hindrance to growth management in certain areas of the Village.

In January 2020, the Province approved Stage 3 of the Village's Liquid Waste Management Plan (LWMP), which includes consideration for sewer system expansion and upgrades to the existing wastewater treatment plant (WWTP). This project brief provides information describing how the Village intends to accomplish the long-term objectives of the LWMP via sewer system expansion.

2.0 Background

The Village's LWMP identified Lower Kaslo as a priority area for sewer expansion. It was recommended that the existing wastewater treatment plant be maintained and upgraded as needed.

A first phase of sewer expansion was completed last year (2019) to extend sewer service to approximately 60 previously unsewered parcels in the Lower Kaslo area. This Phase 1 expansion was completed without any capacity upgrades to the WWTP.

The Village of Kaslo is a popular tourist destination with high seasonal peak flows. Increases to the seasonal maximum daily flows have been observed over the past two years. A craft brewery, producing high strength wastewater has also commenced operation since flows were reviewed for the LWMP. These factors have likely contributed to developing treatment process concerns raised by the Village's long-time operator. A list of Short-Term upgrades were proposed in the Stage 3 LWMP to occur prior to collection flows totalling approximately 350 m^3/d of domestic strength wastewater. The combination of increases to seasonal peak flow and increases to wastewater strength mean these upgrades are needed earlier than previously expected.

Maximum daily flow from the original sewer collection area (SSA #1), constructed in 1996, was reported in the Village's Stage 1 LWMP as 181 m^3/d. In addition, future flows from the remainder of that original service area were estimated to be 96 m^3/d. With the addition of the Phase 1 expansion last year (estimated to contribute a maximum daily flow of approximately 90 m^3/d at build out), total flow (allocated plant capacity) is estimated at around 367 m^3/d. Table 2-1 summarizes these flows in Column A. Considering these flows are just above the 350 m^3/d mark, as well as the unknown effect on capacity resulting from high-strength brewery waste, the Short-Term upgrades are recommended to occur concurrent with any future sewer expansions.

TABLE 2-1. WASTEWATER FLOW SUMMARY

	Column A	**Column B**
	MDF[1] *from Liquid Waste Management Plan* [m^3/d]	**MDF[1]** *observed during 2019 event* [m^3/d]
Observed MDF[1] from SSA #1[2]	181	276
Estimated Future Flow from Remainder of SSA #1[2]	96	96
Estimated MDF[1] from Phase 1 Expansion (at build out)	90	90
Total:	***367***	***462***

Note 1: Maximum Daily Flow (MDF)

Note 2: Specified Sewer Area No. 1 (SSA #1) is the area serviced by the original sewer system construction in 1996. It includes approximately 117 'folios' of which approximately 80 are currently connected to the sewage collection system. The total estimated future flow from the remainder of SSA #1 was estimated in the Stage 1 LWMP as 96 m^3/d.

The Short Term upgrades recommended in the LWMP are expected to increase WWTP capacity by at least 20% due to a reduction of influent BOD by primary filters. Variable speed control of the sewage pumps will also improve the performance of the clarification and filtration stages. This would increase the WWTP capacity from the current 340 m^3/d to approximately 410 m^3/d of domestic strength wastewater.

While the maximum daily flow reported in the Stage 1 LWMP was 181 m^3/d, more recent data includes isolated spikes in daily flow up to 276 m^3/d as shown on Figure 2-1. The highest spikes appear to occur over busy tourist event weekends. To accommodate these higher flows that exceed the previous design flows by almost 100 m^3/d, addition of balancing storage is proposed.

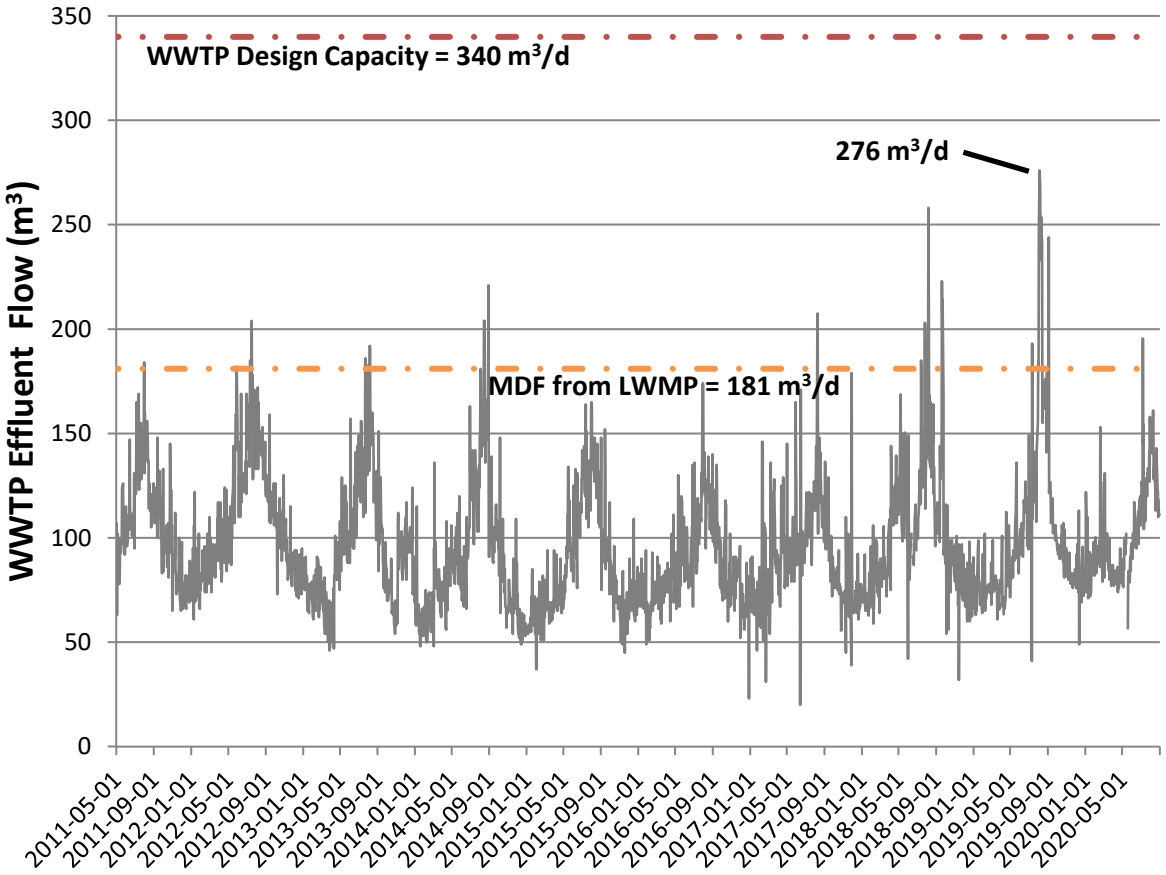


FIGURE 2-1. KASLO DAILY FLOW

Balancing storage to completely smooth out peak tourist weekend flows would be very large. In consideration of the size of project that would be required to achieve this, it is instead recommended that balancing storage be constructed to smooth out daily flows and the load on

the WWTP. A ~170 m^3 tank (1/3 of the future 500 m^3 MDF provided in the Village's LWMP) would be sufficient to store peak flow contributed during the 16 daytime hours. This flow would then be treated overnight when flows are typically much lower. The associated increase in effective capacity has not been modeled by TRUE, but it is estimated that up to a one third increase is possible, although a more modest improvement is the likelier outcome. A 10% increase in effective capacity would provide over 30 m^3/d of additional treatment capacity which, when combined with the 70 m^3/d gained from the Short-Term upgrades, would increase the total effective WWTP design capacity by 100 m^3/d of domestic strength wastewater.

Along with the WWTP improvements described above, a Phase 2 expansion of sewer service in the Lower Kaslo area is proposed. The Phase 2 expansion area would provide opportunity for sewer service to approximately 55 additional 'folios' and has been sized to contribute an estimated MDF of 100 m^3/d at build out, which is equal to the anticipated increase in effective treatment plant capacity.

3.0 Proposed Phase 2 Expansion

The proposed Phase 2 expansion includes upgrades to the existing WWTP plus extension of the sewer collection system.

3.1 Wastewater Treatment Plant Upgrades

Upgrades to the existing wastewater treatment plant are proposed to include the Short-Term upgrades recommended in the LWMP plus some balancing storage to mitigate the effect of brewery waste and recently observed increases to seasonal maximum daily flows. It is fully expected that the Long-Term upgrades discussed in the LWMP will also be eventually required.

Proposed Initial Treatment Upgrades

The proposed upgrades to the existing treatment system comprise:

- Construction of an above ground building housing one primary filter and the sludge dewatering belt press;
- Uprated wastewater pumps with variable frequency drives; and,
- 170m^3 filtered influent storage tank for flow equalization.

The purpose of these initial upgrades is to increase the resiliency and capacity of the plant to cope with increased peak flows and higher wastewater concentrations. As mentioned, flows and loads have increased as a result of many factors, including:

- Opening of a local craft brewery in January 2018;

- Rising attendance at the Kaslo Jazz Fest, with significant increases in August of 2018 and 2019; and,
- Expansion of the sewer collection system along the lane between A Avenue and B Avenue (Phase 1 Sanitary Sewer System Expansion) in 2019.

The new brewery has a particularly adverse impact on the treatment process as product is made in batches and brewery waste is typically 20 to 100+ times the strength of domestic wastewater. This means that highly concentrated waste flows arrive at the plant in short bursts, which overwhelms the ability of the plant to treat the material. It is understood that the brewery waste does not include spent grain and hops, which are separated out for use as animal feed. Spent grain and hops are defined as prohibited waste under Schedule D of Village of Kaslo Bylaw 1121 due to their high strength and tendency to cause sewer blockages. The remainder of the brewery waste is classified as restricted waste and is accepted by specific permission of the Village.

The proposed initial treatment plant upgrades will address increased wastewater strength with increased pre-treatment using a grinder and Salsnes filter. This is the same design as is used at the Enderby WWTP (shown in Figure 3-1) and the Lillooet WWTP. It is expected that the filter will remove 20% of BOD and 50% of suspended solids. The solids are removed as a 'sausage' of dewatered material that can be disposed of to landfill. This is expected to reduce the quantity of grit and solids collected in the existing primary tank and lead to increased total recovery of solids prior to the rotating biological contactor.

FIGURE 3-1. ENDERBY SALSNES FILTER

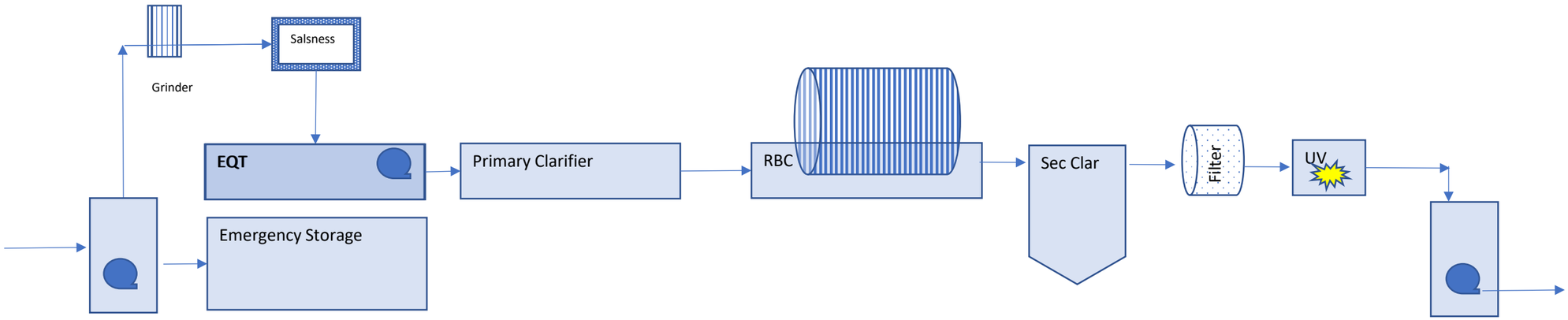
The flow balancing upgrades have a dual function of reducing the instantaneous flow through the treatment process, which will improve performance, as well as spreading out peak loads from high concentration wastes.

The layout of the proposed system is presented in drawings included in **Appendix A**. The general format of the proposed process and approximate unit capacity is indicated on Figure 3-2.

Future Treatment Upgrade

As flows increase further, a Long-Term upgrade of the wastewater treatment plant will be required. This upgrade will continue to match current effluent quality performance at the projected ultimate future flow totalling approximately 500 m^3/d of domestic strength wastewater. This capacity upgrade would involve duplication of several components including the biological contactor, clarifier, and effluent filtration units.

The duplication will increase plant capacity and improve the overall reliability and maintainability of the process. Process duplication is a requirement of the Municipal Wastewater Regulation. At present the plant has a spare shaft for the rotating biological contactor in case the existing shaft breaks unexpectedly, as well as 24 hours of emergency wastewater storage. Once the treatment process is duplicated, these features will not be needed.



EQUIPMENT	INFLUENT PUMPS	EMERGENCY STORAGE	GRINDER	INFLUENT FILTER	EQUALIZATION TANK	EQUALIZATION PUMP	PRIMARY TANK	RBC BIOREACTOR	SECONDARY CLARIFIER	EFFLUENT FILTER	UV DISINFECTION	EFFLUENT PUMPS	BELT PRESS
NUMBER	2	1	1	1	1	2	1	1	1	1	1	2	1
MAKE & MODEL				Salsnes	-	-	-						
DESIGN CAPACITY	23 L/s	24 hour storage		15 L/s		5 - 23 L/s	340 m^3/d	700 m^3/d for 30 mg/L BOD (equalized flow)	4.3 L/s average, 8.5 L/s peak	11 L/s (assumed)	22 L/s	23 L/s	
SIZE		323 m^3			170 m^3	-	107 m^3	-	3.7m x 4.3m				
DRIVE	VFD	-	DD	12 kVA DD	-	2.5 kW DD	-	3.7 kW VFD		DD		VFD	
NEW/EXISTING	New	Existing	New	New	New	New	Existing	Existing	Existing	Existing	Existing	New	Existing

FIGURE 3-2: PROCESS FLOW DIAGRAM

3.2 Sewer Collection System Extension

The proposed Phase 2 collection system extension will provide opportunity for service to approximately 55 'folios' in the priority Lower Kaslo area. The conceptual layout lies adjacent to the existing sewered areas and focuses on some of the remaining unsewered commercial/institutional properties in the Village's central business district (Kaslo Motel and St. Andrew's United Church).

The proposed layout is shown in more detail on drawings *983-093 Figure 1* and *Figure 2*, included in **Appendix A.** Several layout iterations were considered for the Lower Kaslo area. The selected layout is depicted on the photos below, and was selected for the following reasons:

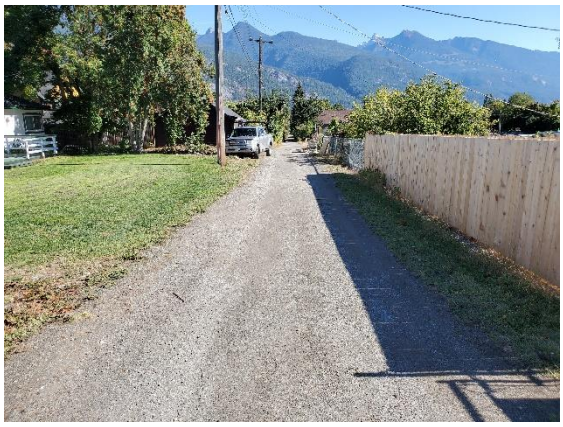
- Sewermain is shown in the lane between B Avenue and C Avenue, as well as along D Avenue because these alignments provide a sewermain along 'every other' right-of-way. This allows all parcels within the proposed expansion boundary to have a sewermain adjacent to at least one property line.
- Most of the watermains, as well as buried fibre optic lines, are located on the main roads in this area of Kaslo. Sewering the lane between B and C Avenues will avoid conflicts with these infrastructure systems. Although watermain does exist along the north side of D Avenue, the right-of-way is sufficiently wide to accommodate a sewermain along the south side of the road.
- Surface restoration costs and therefore overall project costs will be minimized because the lane between B and C Avenues is a gravelled surface (as opposed to paved).
- The lane and D Avenue slope downhill to the east (toward the lake and wastewater treatment plant), which is conducive to a gravity sewer system.
- The priority for subsequent service extensions is yet to be determined. The selection of this layout allows extension of a 'trunk' sewer main toward Upper Kaslo which provides flexibility as future priorities are established.

3rd Street (facing north)

3rd Street at B Avenue (facing south)

D Avenue (facing west)

D Avenue (facing east)



Lane (facing east)

Lane at highway crossing (facing west)

With reference to the sewer expansion depicted on *Figure 1* and *Figure 2*, the project is proposed to include the following general scope of work:

- Construction of 930m of 200, 250 and 300mm diameter DR35 PVC sewermain;
- Installation of approximately 15 sewer manholes;
- Construction of 55 sewer services;
- Two highway crossings;
- 8,400m^2 of surface restorations including road gravels, pavements, curbs and sidewalks (at pipe crossings), and roadside boulevard grasses.

Preliminary sewer design has been completed, using LiDAR and ortho-image data along with some limited ground survey. Manhole depths, pipe grades, and pipe capacities have been approximated. Final sewer alignments and profiles will be adjusted, if necessary, at the detailed design stage based on additional ground survey data.

4.0 Project Risks and Schedule

If the wastewater treatment plant is expanded on the east (Kootenay Lake) side as proposed on *Figure 3* in **Appendix A**, then an environmental assessment should be completed. Initial discussions with an environmental consultant familiar with the site suggest the environmental values are low because of the previously disturbed nature of the site; however, the natural boundary of the lake may reach within the proposed project area and this could potentially result in a requirement for a Waster Sustainability Act Section 11 permit application. An allowance of $5,000 for confirmation of the natural boundary and $10,000 for an environmental assessment and Section 11 application is suggested.

An Archaeological Overview Assessment (AOA) was completed by Ursus Heritage Consulting during preparation of the Village's LWMP. At that time, the site around the WWTP:

> *…would have been assessed with high potential for the presence of archaeological sites based primarily on the proximity to the former Kaslo River channel and the shores of Kootenay Lake and its setting on a relatively level alluvial fan. However, as proposed the construction will be confined to the previously developed plant area and take place within the imported fill used in the original building construction. Therefore, based on the extensive disturbance and presence of imported fill within the proposed construction area, Alternatives 1a and 1b are assessed with low potential for the presence of archaeological sites.* [4]

The recently updated WWTP expansion concept includes the addition of a balancing tank not previously considered. The need for an Archaeological Impact Assessment (AIA) will depend on the project details and whether the construction footprint extends beyond the previously disturbed areas. Based on discussion with the author of the AOA, an allowance of $15,000 is suggested to accommodate further archaeological work, if necessary.

Combined, an allowance for environmental and archaeological work of $30,000 is suggested, in addition to construction and engineering project costs itemized in Section 5.0. This is approximately 2% of the construction cost estimate for Part A – Wastewater Treatment Plant Upgrades.

Based on the Phase 1 sewer system expansion in 2019, TRUE is aware that groundwater is likely not a concern in the project area during a spring/summer construction window. However, cobbles were pervasive in the native soil. An allowance has been made in the cost estimate for removal of approximately 1m^3 of oversized rock from the native backfill per lineal metre of sewer trench.

The project includes two highway crossings, which are assumed to be completed by open cut (as was the case with the Phase 1 sewer system expansion in 2019). The contingency allowance is considered appropriate in the event that the Ministry of Transportation and Infrastructure requires casings to be driven or augered under the highway. Expected cost for installation of casings

would be approximately $25,000 per each of the two crossings. These additional costs would be mitigated by a reduction in traffic control and road restoration needs.

Depending on the resources available to the contractor, we expect that the project will require a 6 month (+/-) construction period. Based on timing of funding approval, and with intentions of obtaining competitively bid construction costs, a project schedule is suggested as follows:

- Preliminary design = Fall 2021 (depending on timing of funding approval)
- Detailed design = Winter/Spring 2022
- Construction procurement and contract award (long lead equipment ordered) = Summer 2022
- Construction period = April to October 2023
- Project Completion = November 2023

5.0 Project Cost Estimate

TRUE has prepared a detailed project cost estimate based on the following:

- Conceptual design drawings (**Appendix A**) and corresponding quantities measured both in AutoCAD, and onsite during a field review of the proposed sewering route.
- Site inspection of existing surface conditions, including identification of restoration works along the sewering route.
- Project experiences and knowledge of construction costs gained in both the Village of Kaslo and surrounding communities during the past ten years.

The project cost estimate is split into two parts: the first part includes proposed upgrades to the wastewater treatment plant, and the second part includes the proposed extension to the sewer collection system. Overall, the project cost estimate is considered Class 'C', as described in EGBC's *Budget Guidelines for Consulting Engineering Services (2009):*

> ***"Class C** estimate (±25-40%): An estimate prepared with limited site information and based on probable conditions affecting the project. It represents the summation of all identifiable project elemental costs and is used for program planning, to establish a more specific definition of client needs and to obtain preliminary project approval."*

However, the second part (Part B) of the estimate that covers the proposed extension to the sewer collection system has been developed to a Class 'B' level of confidence, based on similar work and recent tender prices obtained in 2019 during the Phase 1 sewer system expansion. A Class 'B' estimate is described in APEGBC's *Budget Guidelines for Consulting Engineering Services (2009):*

> ***"Class B** estimate (±15-25%): An estimate prepared after site investigations and studies have been completed and the major systems defined. It is based on a project brief and preliminary design. It is used for obtaining effective project approval and for budgetary control."*

The cost estimate is included in **Appendix B** and is summarized below. It should be noted that the format of Part B on the detailed estimate includes more individual line items than TRUE would typically develop for a Class 'B' estimate. This is because it has been aligned to make use of Phase 1 tender prices received in 2019. (The median 4 out of 9 tendered unit prices from Phase 1 were averaged and then inflated by 2% per year for three years. These were then used as a starting point for estimated Phase 2 unit prices, subject to adjustment for various factors.) The Part B detailed cost estimate is still considered a Class 'B' estimate and should not be construed to be a Class 'A' pre-tender estimate.

Part A: Wastewater Treatment Plant Upgrades (Class 'C')

- General	= $65,000
- Process Mechanical	= $636,700
- Civil and Buildings	= $521,600
- Electrical	= $310,500
Subtotal Construction	= $1,533,800
Engineering (15% of Construction)	= $230,070
Contingency (30%)	= $529,161
Total Part A Cost Estimate (not including GST)	**= $2,293,031**

Part B: Sewer Collection System Extension (Class 'B')

- General Requirements (mob/de-mob, survey layout, traffic control)	= $95,000
- Concrete (restoration of curbs and sidewalks)	= $40,375
- Electrical (temporary fibre servicing on 3rd Street)	= $12,460
- Earthwork (removals, oversized rock allowance, reinstatements)	= $261,970
- Roads and Site Improvements (road gravel, asphalt, line painting, topsoil and seed)	= $565,670
- Utilities (sewermain, manholes, service connections)	= $977,965
Subtotal Construction	= $1,953,440
Engineering (15% of Construction)	= $293,016
Contingency (20%)	= $449,291
Total Part B Cost Estimate (not including GST)	**= $2,695,747**

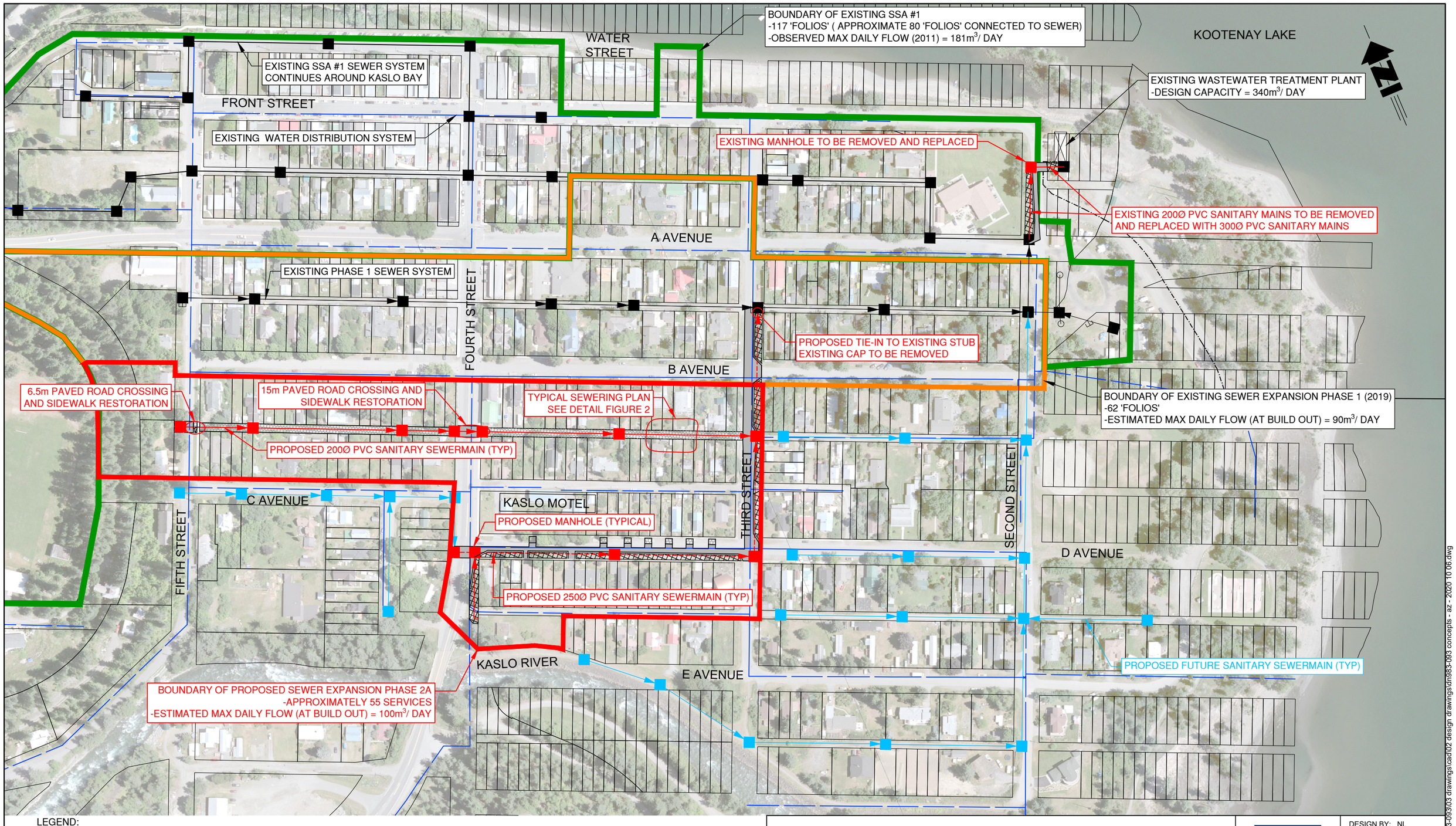
The combined overall Phase 2 Sewer System Expansion cost estimate is as follows:

Part A + B: Phase 2 Sewer System Expansion (Class 'C')

- Wastewater Treatment Plant Upgrades	= $1,533,800
- Sewer Collection System Extension	= $1,953,440
Subtotal Construction	= $3,487,240
Engineering (15% of Construction)	= $523,086
Contingency (~24%)	= $978,452
Total Project Cost Estimate (not including GST)	**= $4,988,778**

APPENDIX A

Figures



LEGEND:

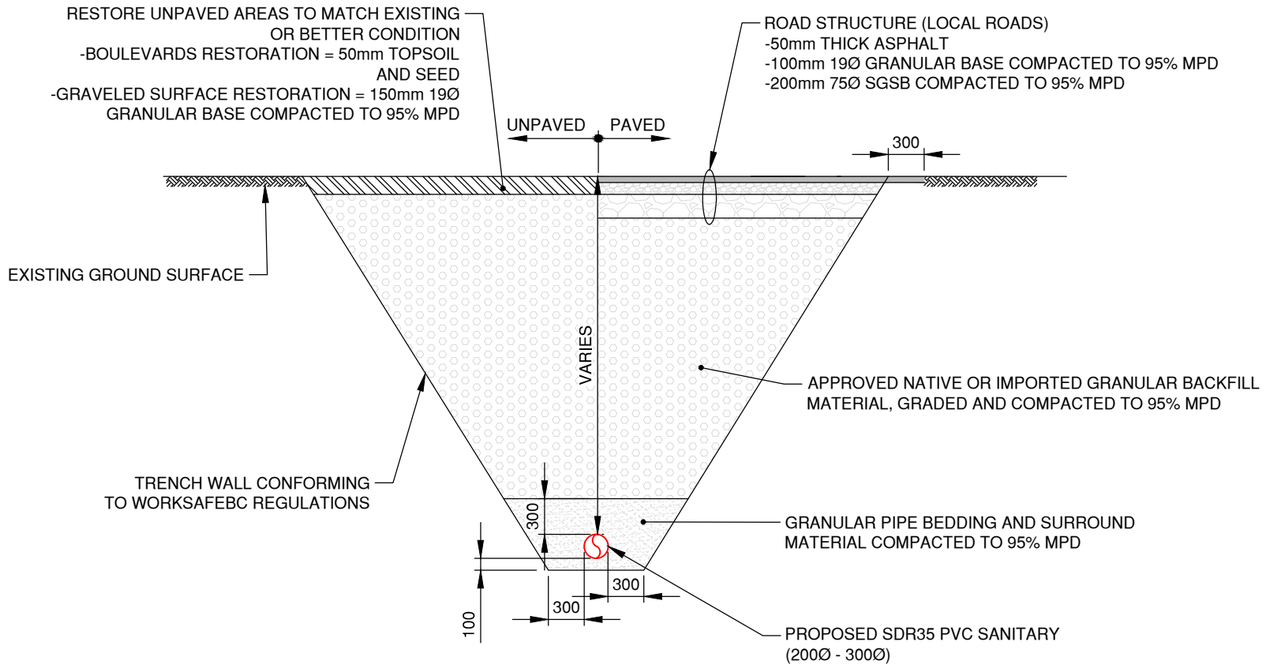
- PAVED SURFACE RESTORATION
- GRAVELED SURFACE RESTORATION
- BOULEVARD RESTORATION

VILLAGE OF KASLO
PHASE 2 SEWER SYSTEM EXPANSION
CONCEPT PLAN

TRUE CONSULTING

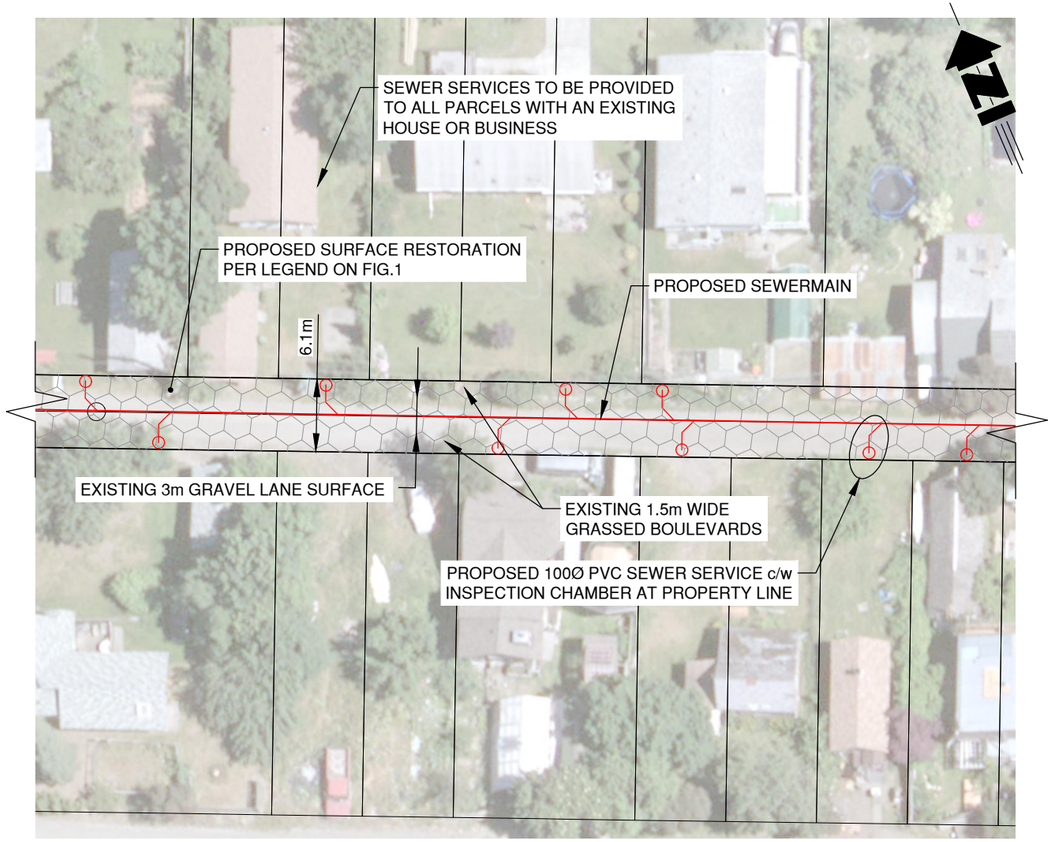
DESIGN BY: NL
SCALE: 1:2500
DWG NO.: 983-093
REV:
FIG. 1
DRAWN BY: AZ
DATE: OCT 2020

FILE: n:\clients\900-999\983\983-093\03 drawings\cad\02 design drawings\dm\983-093 concepts - az - 2020 10 06.dwg



TYPICAL TRENCH SECTION

SCALE 1:50



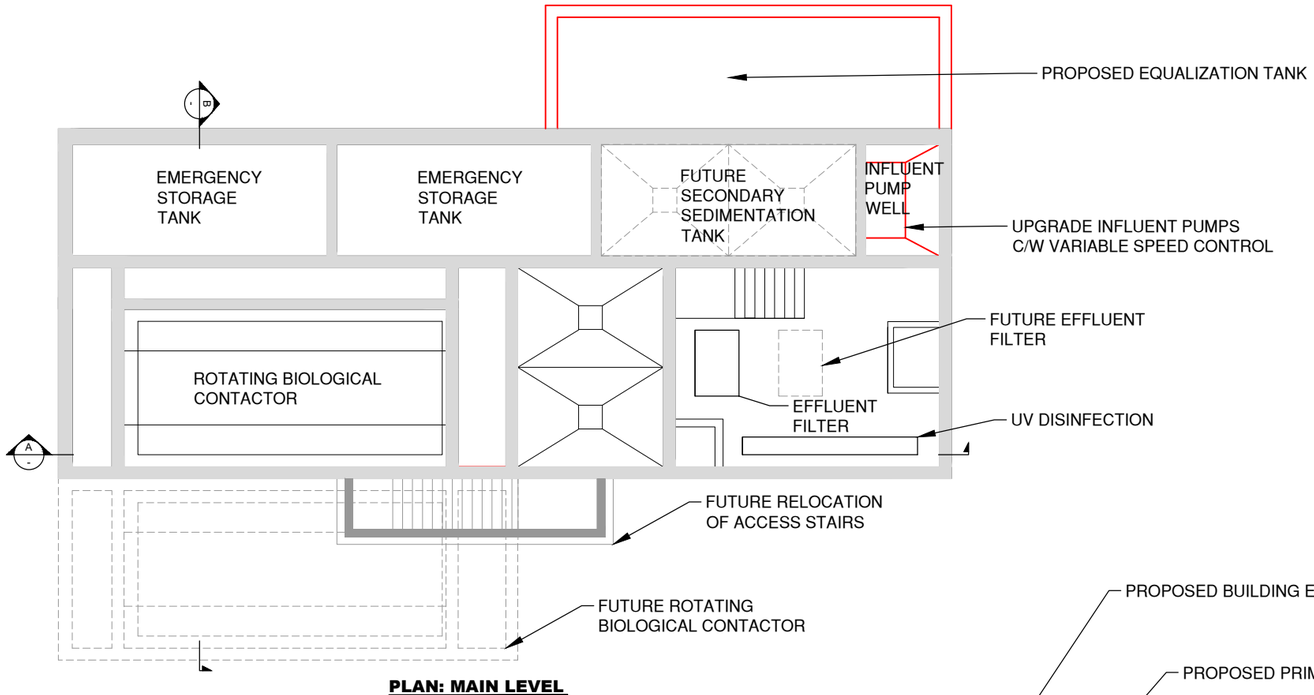
TYPICAL SEWERING PLAN

SCALE 1:500

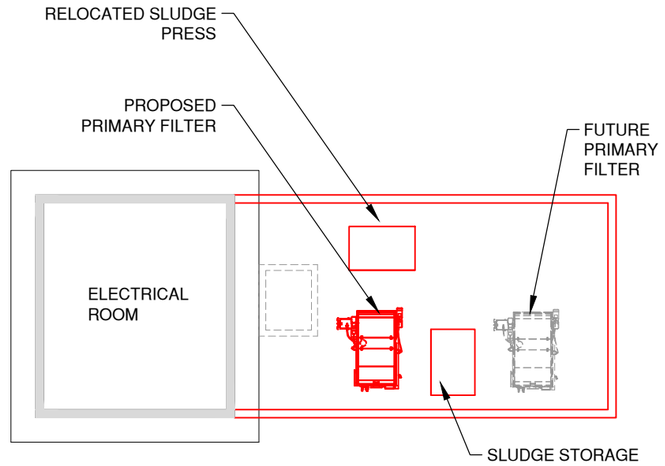
VILLAGE OF KASLO
PHASE 2 SEWER SYSTEM EXPANSION
CONCEPT PLAN

TRUE CONSULTING

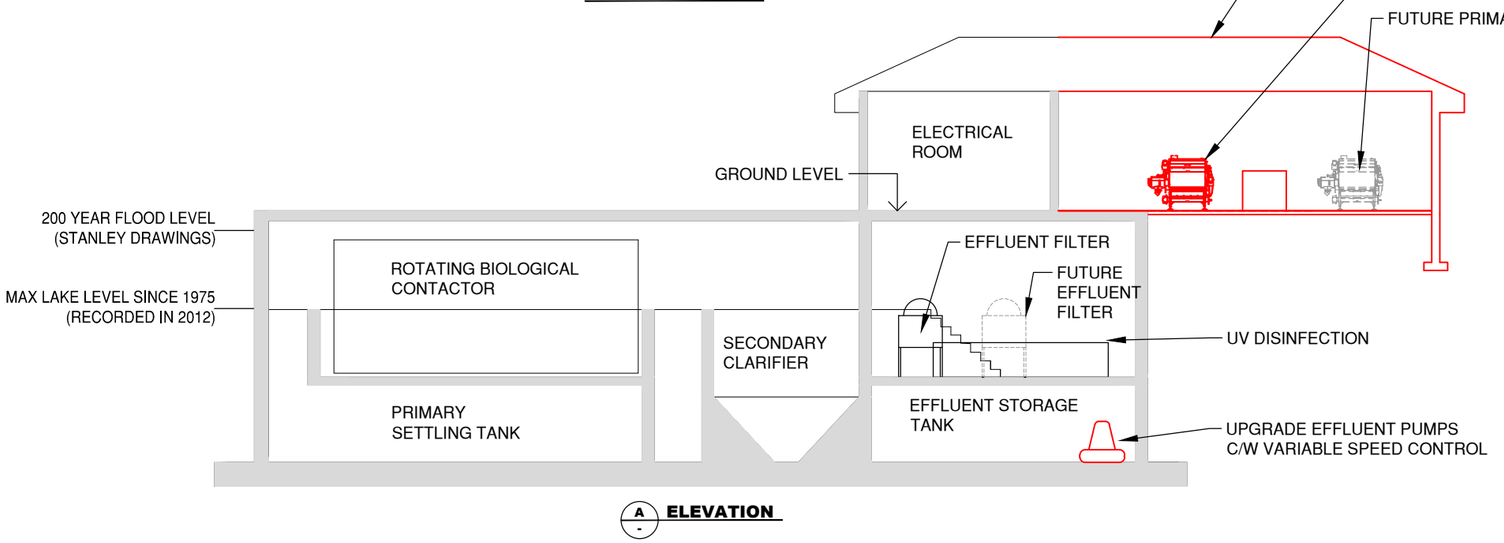
DESIGN BY: NL
SCALE: 1:2500
DWG NO.: FIG. 2
983-093
REV:
DRAWN BY: AZ
DATE: OCT 2020



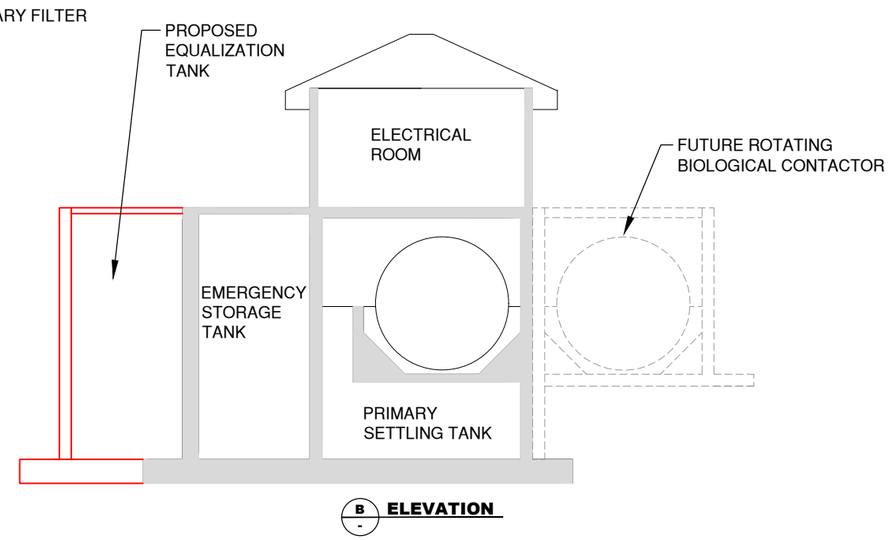
PLAN: MAIN LEVEL



PLAN: GROUND LEVEL



A ELEVATION



B ELEVATION

VILLAGE OF KASLO
PHASE 2 SEWER SYSTEM EXPANSION
WASTEWATER TREATMENT PLANT
DETAILS

TRUE CONSULTING

DESIGN BY: RW
SCALE: 1:150
DWG NO.: FIG. 3
983-093
REV:
DRAWN BY: RW
DATE: OCT 2020

FILE:r:\clients\900-989\983\983-093\03 drawings\cad\02 design drawings\983-093.dwg

APPENDIX B

Cost Estimate

ESTIMATE OF PROBABLE COST - PART A: WASTEWATER TREATMENT PLANT UPGRADES (CLASS 'C')

Owner: Village of Kaslo
Project: Sanitary Sewer System Expansion Phase 2
Reference: 983-093
Date: October 12, 2020

			Phase 2 Part A		
Item #	Item Description	Unit	Quantity	Unit Price	Amount
01 - General	**Sub-Total 01**				**65,000**
1.1	Insurance and bonding	Lump Sum	1	15,000	15,000
1.2	Mobilization / De-Mobilization	Lump Sum	1	30,000	30,000
1.3	General contractor commissioning and startup services	Lump Sum	1	20,000	20,000
02 - Process Mechanical	**Sub-Total 02**				**636,700**
2.1	New sewage pumps in main lift station c/w VFD	Each	2	35,000	70,000
2.2	New effluent pumps c/w VFD	Each	2	35,000	70,000
2.3	Grinder unit	Each	1	50,000	50,000
2.4	Salsnes SF2000	Each	1	312,000	312,000
2.5	Spare Filter Cartridge (filter belt, rollers, bearings, wash bar, air knife, etc.)	Each	1	43,300	43,300
2.6	Pipe hot water (4-6 bar), cold water and air to filters	Each	1	3,000	3,000
2.7	Compressed air system for air knife	Each	1	2,000	2,000
2.8	Relocate and set up dewatering in new building	Lump Sum	1	20,000	20,000
2.9	New odour control system	Each	1	30,000	30,000
2.10	EQ pumps including lifting rails	Each	2	18,200	36,400
03 - Civil and Buildings	**Sub-Total 03**				**521,600**
3.1	Building Extension (incl space for future second Salsnes filter)				
3.1.1	Precast Concrete Building - foundation	Square Metre	51	500	25,500
3.1.2	Precast Concrete Building - structure	Square Metre	51	1,600	81,600
3.1.3	Precast Concrete Building - roofing	Square Metre	51	500	25,500
3.1.4	Reroof and paint existing building	Lump Sum	1	20,000	20,000
3.1.5	Precast Concrete Building - appurtenances (doors, hatches, and ladders)	Lump Sum	1	27,000	27,000
3.1.6	Mechanical - piping and fittings	Lump Sum	1	53,000	53,000
3.1.7	Mechanical - Plumbing	Lump Sum	1	17,000	17,000
3.1.8	Mechanical - Louvers, Fans and Dampers	Lump Sum	1	22,000	22,000
3.2	Influent balancing tank	Lump Sum	1	250,000	250,000
04 - Electrical	**Sub-Total 04**				**310,500**
4.1	Power				
4.1.1	Building Electrical (heat, lights, plugs, distribution, etc.)	Lump Sum	1	32,000	32,000
4.1.2	Motor Control Centre (MCC)	Lump Sum	1	115,000	115,000
4.1.3	Other power wiring from existing MCC	Lump Sum	1	10,000	10,000
4.1.4	Conduits in floor slab	Lump Sum	1	7,000	7,000
4.1.5	Allowance for explosive rated motors / ventilation costs	Lump Sum	1	30,000	30,000
4.2	Controls				
4.2.1	PLC, HMI, SCADA	Lump Sum	1	67,500	67,500
4.2.2	Instrumentation	Lump Sum	1	15,000	15,000
4.2.3	Power and communication cabling	Lump Sum	1	34,000	34,000

Construction Cost Subtotal			1,533,800
Engineering (15% of Construction Cost Subtotal)			230,070
Contingency (30%)			529,161
Total Cost Estimate (Part A: Wastewater Treatment Plant Upgrades, not including GST)			2,293,031

Notes:

1. *This estimate of probable costs is considered a Class C estimate (+/-25-40%) as defined in the APEGBC Budget Guidelines for Consulting Engineering Services: "An estimate prepared with limited site information and based on probable conditions affecting the project. It represents the summation of all identifiable project elemental costs and is used for program planning, to establish a more specific definition of client needs and to obtain preliminary project approval."*

ESTIMATE OF PROBABLE COST - PART B: SEWER COLLECTION SYSTEM EXTENSION (CLASS 'B')

Owner: Village of Kaslo
Project: Sanitary Sewer System Expansion Phase 2
Reference: 983-093
Date: October 9, 2020

			Phase 2 Part B		
Item #	Item Description	Unit	Quantity	Unit Price	Amount
Division 01 - General Requirements	**Sub-Total Division 01**				**95,000.00**
01.1	Survey Layout and Project Record Documents	Lump Sum	1	15,000.00	15,000.00
01.2	Mobilization / De-Mobilization	Lump Sum	1	50,000.00	50,000.00
01.3	Traffic Control, Vehicle Access and Parking	Lump Sum	1	30,000.00	30,000.00
Division 03 - Concrete	**Sub-Total Division 03**				**40,375.00**
03.1	Concrete Curb - hand form to match existing	Lineal Metre	41.5	250.00	10,375.00
03.2	Concete Driveway Crossing, 200mm Thickness	Each	4	7,500.00	30,000.00
Division 26 - Electrical	**Sub-Total Division 26**				**12,460.00**
26.1	Shallow Utility Trenching and Backfilling (temporary relocation of fibre optic)	Lineal Metre	178	70.00	12,460.00
Division 31 - Earthwork	**Sub-Total Division 31**				**261,970.00**
31.1	Topsoil Stripping and Disposal	Lump Sum	1	10,000.00	10,000.00
31.2	Removal and Disposal of Unsuitable Native Trench Backfill (OPTIONAL WORK)	Cubic Metre	940	50.00	47,000.00
31.3	Imported 250mm Pit Run Gravel for Trench Backfill (OPTIONAL WORK)	Tonne	470	40.00	18,800.00
31.4	Protect Utility Poles and Overhead Wires	Lump Sum	1	35,000.00	35,000.00
31.5	Protect or Remove and Reinstate Improvements	Lump Sum	1	55,000.00	55,000.00
31.6	Remove Existing Asphalt or Concrete Pavement, Curbs and Gutters, Sidewalks (public roads only - refer to Item 31.6 for privately-owned improvements)	Square Metre	2890	25.00	72,250.00
31.7	Subgrade Preparation Including Proof Rolling	Square Metre	5980	4.00	23,920.00
Division 32 - Roads and Site Improvements	**Sub-Total Division 32**				**565,670.00**
32.1	Granular Sub-Base (MMCD Specification), 150mm thickness	Square Metre	3080	19.00	58,520.00
32.2	Granular Sub-Base (BC MoTI SGSB Specification), 300mm thickness	Square Metre	280	35.00	9,800.00
32.3	Granular Base (MMCD Specification), 100mm thickness	Square Metre	3080	18.00	55,440.00
32.4	Granular Base (MMCD Specification), 150mm thickness	Square Metre	2490	23.00	57,270.00
32.5	Granular Base (BC MoTI 25mm WGB Specification), 300mm thickness	Square Metre	280	40.00	11,200.00
32.6	Shoulder Gravels, 65mm thickness	Square Metre	600	15.00	9,000.00
32.7	Asphalt Pavement (Highway Patch), 100mm thickness	Square Metre	280	145.00	40,600.00
32.8	Asphalt Pavement (Village Roads), 65mm thickness	Square Metre	2480	110.00	272,800.00
32.9	Saw Cut Asphalt or Concrete Pavements	Lineal Metre	480	15.00	7,200.00
32.10	Permanent Painted Pavement Markings	Lump Sum	1	4,000.00	4,000.00
32.11	Imported Topsoil	Cubic Metre	250	120.00	30,000.00
32.12	Hydraulic Seeding	Square Metre	2460	4.00	9,840.00
Division 33 - Utilities	**Sub-Total Division 33**				**977,965.00**
33.1	CCTV Pipeline Inspection (sewer mains, not including services)	Lineal Metre	931	15.00	13,965.00
33.2	Sanitary Sewer PVC DR35, 200mm diameter, 0 - 3.5m Depth to Pipe Invert, Native Backfill	Lineal Metre	462	560.00	258,720.00
33.3	Sanitary Sewer PVC DR35, 200mm diameter, 3.5 - 5m Depth to Pipe Invert, Native Backfill	Lineal Metre	0	700.00	-
33.4	Sanitary Sewer PVC DR35, 250mm diameter, 0 - 3.5m Depth to Pipe Invert, Native Backfill	Lineal Metre	115	580.00	66,700.00
33.5	Sanitary Sewer PVC DR35, 250mm diameter, 3.5 - 5m Depth to Pipe Invert, Native Backfill	Lineal Metre	278	720.00	200,160.00
33.6	Sanitary Sewer PVC DR35, 300mm diameter, 0 - 3.5m Depth to Pipe Invert, Native Backfill	Lineal Metre	52	620.00	32,240.00
33.7	Sanitary Sewer PVC DR35, 300mm diameter, 3.5 - 5m Depth to Pipe Invert, Native Backfill	Lineal Metre	24	760.00	18,240.00
33.8	Sanitary Service Connections, 100mm diameter	Each	55	2,700.00	148,500.00
33.9	Sanitary Tie-In, 250mm diameter into existing manhole	Each	0.5	5,800.00	2,900.00
33.10	Manhole, 1050mm dia., Base, Lid, Frame & Cover	Each	14	6,100.00	85,400.00
33.11	Manhole, 1200mm dia., Base, Lid, Frame & Cover	Each	1	8,500.00	8,500.00
33.12	Manhole, 1050mm dia., Riser Sections	Vertical Metre	30	1,500.00	45,000.00
33.13	Manhole, 1200mm dia., Riser Sections	Vertical Metre	4.4	1,600.00	7,040.00
33.14	Inside Drop Manhole Structure	Each	1	2,600.00	2,600.00
33.15	Sanitary Inspection Chamber	Each	55	1,600.00	88,000.00

Construction Cost Subtotal			1,953,440.00
Engineering (15% of Construction Cost Subtotal)			293,016.00
Contingency (20%)			449,291.20
Total Cost Estimate (Part B: Sewer Collection System Extension, not including GST)			2,695,747.20

Notes:

1. *This estimate of probable costs is considered a Class B estimate (+/-15-25%) as defined in the APEGBC Budget Guidelines for Consulting Engineering Services: "an estimate prepared after site investigations and studies have been completed and the major systems defined. It is based on a project brief and preliminary design. It is used for obtaining effective project approval and for budgetary control."*

4.2 Source Control **Pages 10-11**

A source control bylaw serves to limit the disposal of wastes that are harmful to the sanitary sewer system or the wastewater treatment process. It also serves to limit discharges that would have an unfair impact on system operating costs, and recover those costs as appropriate.

The source control bylaw function is currently served in Kaslo by Village Bylaw 1211 "A Bylaw To Regulate The Provision, Operation And Administration And To Provide For The Imposition And Collection Of Rates For The Use Of The Village Of Kaslo Sewage System". Schedule D of the bylaw "Regulations Governing the Admission of Wastes Into Sewers" describes both prohibited and restricted wastes.

At present the waste discharges per capita are generally in line with expectations and do not indicate that prohibited or restricted wastes are being discharged in detectable quantities by most users. Exceptions to this may include:

- Discharge of grease to the sewer system from restaurant kitchens.
  Bylaw 1211 lists 'water or waste which contains grease' amongst the restricted wastes. In the Stage 1 LWMP report, sections 4.4.2 and 11.2 described operational incidents involving sewer blockages resulting from fats/oils/grease buildup, and difficulties with enforcement of the Bylaw. When properly located and sized, well maintained grease traps can effectively control grease entering the sewer from commercial premises. As described in the Stage 1 LWMP report, creation of an education program is suggested as an additional means to improve the quality of wastewater received by the municipal collection system.

- Discharge of waste to the sewer system from porta-potties.
  Schedule D of Bylaw 1211 describes prohibited sewer wastes including 'any solid viscous substance which, in the opinion of the PWS, is capable of obstructing sewage flow or interfering with the operation of the sewage works or treatment facilities'. Schedule D describes restricted sewer wastes including 'any water or waste containing a toxic or poisonous substance, in sufficient quantity to, in the opinion of the PWS, injure or interfere with any sewage treatment process…'. Porta-potty waste can cause issues at the headworks of the municipal treatment plant. Further, some chemicals used in porta-potties can be detrimental to operation of the biological process at the municipal treatment plant.

- The operation of micro-breweries in the service area.
  A portion of the existing sewer service area is comprised of the commercial core 'C2' zoning. The Village's Land Use Bylaw permits Light Industrial in the C2 zone. A microbrewery recently opened within the sewer service area, which is consistent with the activities permitted in this zone. However, spent grain and hops are listed in Schedule D of Bylaw 1211 amongst the prohibited sewer wastes along with 'any solid viscous substance which, in the opinion of the PWS, is capable of obstructing sewage flow or interfering with the operation of the sewage works or treatment facilities'. Further, the Bylaw includes guidance for pH, total suspended solids, and biochemical oxygen demand characteristics associated with restricted sewer wastes.

As such, during Stage Three, further investigation has been undertaken into the potential use of Codes of Practice for industry sectors as part of a source control monitoring and enforcement program.

The Capital Regional District Regional Source Control Program have an existing document: "Environmental Regulations & Best Management Practices Fermentation Operations in the Capital Regional District". With the permission of the CRD, the Village proposes to adopt this Best Management Practice.

Metro Vancouver have also recently adopted their Fermentation Operations Bylaw No. 294, 2015 which includes an annual treatment fee based on annual production. There is a strong argument for dischargers of higher strength wastes to pay a fee based on the costs resulting from their discharge.

The Codes of Practice and bylaws described above are included in Appendix H.

4.3.2 Impact of Industrial Discharges **Page 13**

Subsequent to writing the Stage Two report, a micro-brewery commenced operation within the existing sewer service area. The brewing process is undertaken in batches, with the wastewater flows being highly variable in volume and concentration. This means that the load from a brewery could make up a significant part of the total load at the treatment plant. Village staff have observed that the loading rate on the wastewater treatment plant has increased significantly due to this light industrial operation.

Impacts to the wastewater treatment plant capacity are currently difficult to quantify and will vary with the rate and methods of production. As a result, Stage Three has proceeded on the basis of the Stage Two concepts, with the expectation that source control measures would be implemented, if needed, to improve the brewery wastewater to acceptable levels.

The Village has been proactive in providing regulatory information and 'best practices' guidelines to the brewery to curb potential impacts on the treatment plant. Impacts on the treatment plant will continue to be monitored into the future, including sampling of brewery wastewater. Sewer rates can also be adjusted to reflect the operational impacts of discharges from various wastewaters throughout the community.

4.3.3 Impact of 3rd Party Users **Page 13-14**

The existing municipal sewer system provides service primarily to residential, commercial and institutional properties. The Village's wastewater treatment plant was designed with consideration given to typical sewage discharges from those land uses. The Village's Sewer Regulation Bylaw 1121 was also created based on those anticipated sewage discharges.

In addition to the wastewater collected from the services within SSA-1, the Village has also allowed some '3rd party' access to the sewer system. These 3rd party users are described as intermittent wastewater discharges to the sewer system, over which the Village has direct ownership or control – such as discharge of porta-potties from festival weekends or other community events.

The main impacts of 3rd party users that the Village will have consideration for are:

- Operational impacts resulting from this wastewater collection
- Treatment capability to handle this wastewater on a daily basis
- Treatment plant capacity that is 'used' by these contributions

In the case of porta-potties, often these facilities end up as receiving basins for unsuitable wastes and trash. In addition, porta-potties typically contain chemicals that reduce bacterial activity as a means to control odour; those same chemicals can be detrimental to the operation of the municipal treatment plant (which relies on bacterial

growth to treat wastewater). Further, the rate at which these porta-potties are discharged must be monitored, to avoid 'shock loading' the treatment plant.

The Village has been pro-active in working with 3rd party users to manage impacts to the municipal treatment plant. Going forward, the Village should continue to monitor volumes and quality of wastewater received from 3rd party users, determine whether such wastes are suitable to receive (or set appropriate limits), and set rates for receiving this waste to fully cover the operational impacts as well as the use of the treatment plant capacity.

7.6.4 User Fees for Excess Wastewater Strength **Pages 48-49**

While the restrictions associated with prohibited and restricted wastes will still apply, special user fees are proposed for the discharge of pollutants to the sewer system that fall within the levels specified for Restricted Wastes in Village of Kaslo Bylaw 1121, Schedule D. The objective would be to recover the costs associated with damage and blockages in the sewers as well as additional wastewater treatment costs relating to process upsets and additional wastewater sludge disposal costs.

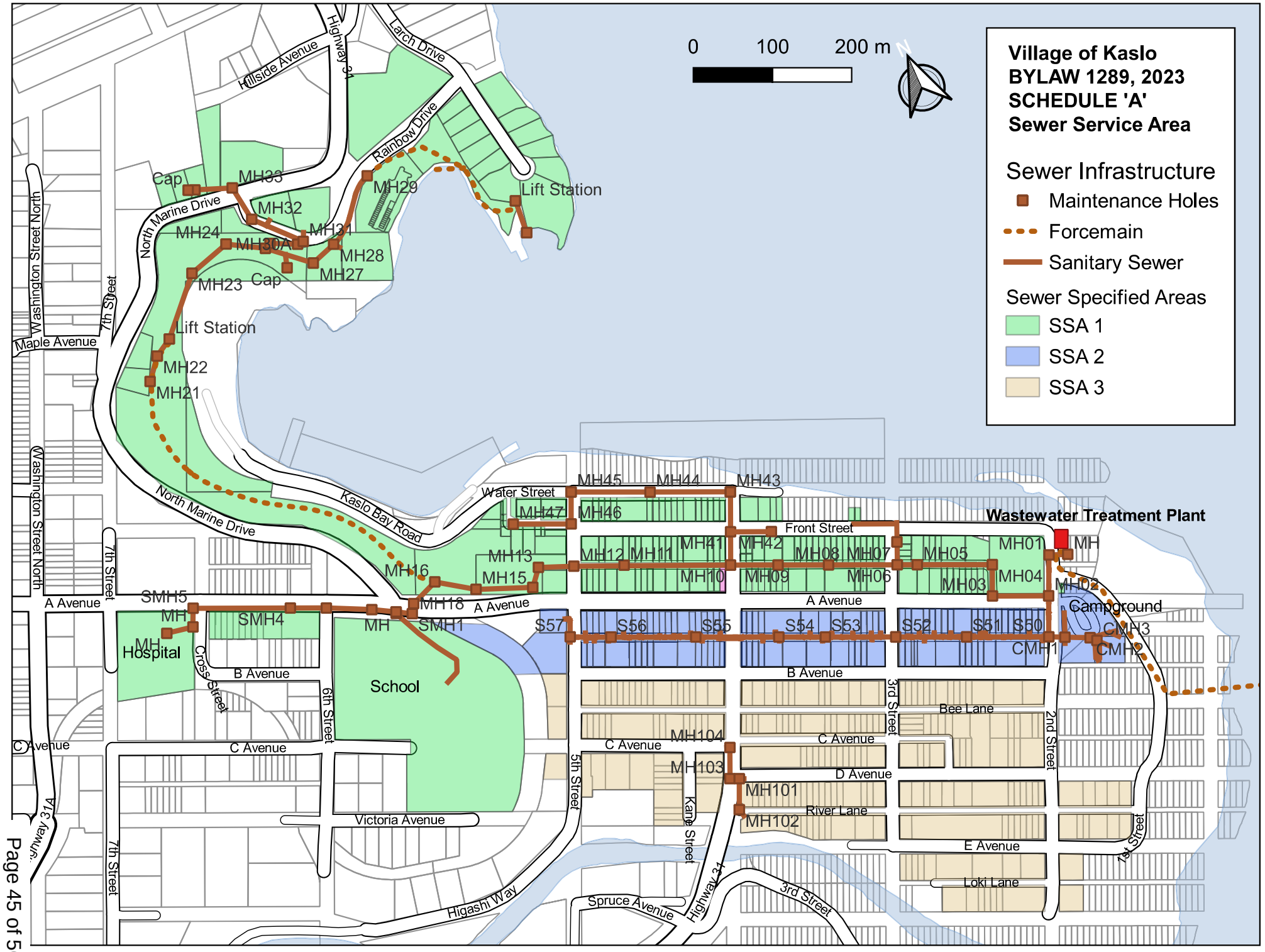
In many jurisdictions, a municipal officer collects random wastewater samples which form a basis for applying waste charges to the discharger. The concentration in excess of typical domestic or commercial wastewater and the measured flows is used to calculate a mass of solids, biochemical oxygen demand and grease for which charges apply. This system has limited practicality in Kaslo.

It is proposed that a bylaw modelled on the Greater Vancouver Sewerage and Drainage District Fermentation Operations Bylaw No. 294 be adopted by the Village. This bylaw sets an annual treatment fee based on annual production volume. It is suggested that the true impact of individual discharges on the costs to the Village need to be assessed in the formulation of these charges and they may be greater than those listed for the GVSDD.

Given that there is presently only one business discharging excess strength wastes, there is also an option to directly bill the business for costs that are identified to result from their wastes.

9.0 Summary of Outcomes **Page 54**

6. Additional administrative and governance changes associated with LWMP implementation include:
   - Restructure of the sewage regulation bylaw, and enhance the source control for higher strength industrial discharges as well as commercial kitchens


Village of Kaslo
BYLAW 1289, 2023
SCHEDULE 'A'
Sewer Service Area
Sewer Infrastructure
Maintenance Holes
Forcemain
Sanitary Sewer
Sewer Specified Areas
SSA 1
SSA 2
SSA 3
0
100
200 m
N
Wastewater Treatment Plant
Campground
Hospital
School
Cap
MH33
MH32
MH31
MH29
Lift Station
MH24
MH30A
MH28
MH27
MH23
Cap
Lift Station
MH22
MH21
MH45
MH44
MH43
MH47
MH46
MH41
MH42
MH12
MH11
MH08
MH07
MH05
MH01
MH13
MH10
MH09
MH06
MH03
MH04
MH02
MH16
MH15
MH18
SMH5
MH
SMH4
SMH1
MH
MH
S57
S56
S55
S54
S53
S52
S51
S50
CMH3
CMH1
CMH2
MH104
MH103
MH101
MH102
Hillside Avenue
Highway 31
Larch Drive
Rainbow Drive
North Marine Drive
Washington Street North
7th Street
Maple Avenue
Kaslo Bay Road
Water Street
Front Street
A Avenue
B Avenue
C Avenue
D Avenue
E Avenue
Cross Street
6th Street
5th Street
3rd Street
2nd Street
1st Street
Bee Lane
River Lane
Loki Lane
Kane Street
Victoria Avenue
Higashi Way
Spruce Avenue
Highway 31A


ACIFIC

torical

lshed

cial support of
gh the Ministry
e Operations
nt

Village of Kaslo


KASLO
CANADIAN PACIFIC
TRESPASSERS

Village of Kaslo

STAFF REPORT

DATE: January 23, 2025 FILE NUMBER:

TO: Liquid Waste Monitoring Committee

FROM: Ian Dunlop, Manager of Strategic Initiatives

SUBJECT: Liquid Waste Management Plan 5-Year Review

1.0 PURPOSE

To outline the process for the Liquid Waste Management Plan 5-Year Review and make recommendations to Council to authorize the staff time and resources for the review.

2.0 RECOMMENDATION

THAT the committee recommend to Council that staff be directed to report back on the Liquid Waste Management Plan 5-Year Review with recommended updates or amendments to the plan within three months; and,

THAT the committee recommend to Council that a qualified consultant be engaged to work with staff to update the plan's cost estimates and identify any relevant changes to technologies, regulations and standards cited in the plan.

3.0 BACKGROUND

The Liquid Waste Management Plan (LWMP) was approved by the Minister of Environment on January 27, 2020. A condition of approval is that the plan be reviewed in 5 years and the ministry informed of the outcome of the review within 6 months of the review being completed. Other conditions of the letter are to implement a receiving environment monitoring program and establish a plan monitoring committee (this committee).

The Ministry of Environment published a guide for preparing LWMPs, which includes a section on the requirements for the plan review and amendment process:

> *6.3 Plan Review and Amendment Process*
>
> *Local governments must review the progress and status of LWMPs every 5 to 10 years, or more frequently during times of significant inflation or when circumstances have changed significantly from when the original plan was developed. The LWMP review will determine whether or not an amendment or update is required.*
>
> *During the review, the cost estimates for capital expenditure and operations and maintenance costs should be updated to ensure costs are current. If a significant time elapses between plan development and implementation, an amendment should be undertaken. The following should be reviewed to ensure the plan is still relevant and current:*
>
> - *Cost estimates;*
> - *Objectives and outcomes;*
> - *Approach and technologies;*

- *Regulations and standards;*
- *Official Community Plan and Regional Growth Strategy; and*
- *Public support for the plan.*

While a full amendment may address all of the above, an update to the plan could be undertaken to revise cost estimates. The public should be made aware of a revision to cost estimates through advertisement, press coverage or other communications. If a full amendment of the plan is undertaken, more extensive public consultation should be part of the process.

Local governments that propose to amend or update an approved LWMP shall notify the director in writing of the reasons for the proposed amendment or update. Local governments should discuss requirements for plan updates and amendments with the director and will be required to undergo a consultation process unless deemed unnecessary.

4.0 DISCUSSION

The final LWMP was issued on September 19, 2018, following an over 6-year process to evaluate the community's existing and future wastewater needs. The plan includes cost estimates for sewer system operations, capital projects, and revenue. At minimum, these costs will need to be updated to include inflationary factors and consider any changes to technologies, regulations and standards that have occurred since the plan was written. These types of updates do not necessarily require amendment of the plan. An amendment might be required if a proposed new approach, objective or outcome materially changes the intent of the plan.

A qualified consultant can be engaged to review the cost estimates, technical and regulatory aspects of the plan. The committee can provide input throughout the process and should consider what level of public engagement is appropriate for the process, which may depend on whether the plan is being updated or amended.

The following table provides a status report on the high-level outcomes envisioned in the LWMP.

Outcome	Status	Comment
1. The Liquid Waste Management Plan considers options for providing community sewers and increasing the capacity of the wastewater treatment system to accommodate more of Kaslo into the municipal collection system.	Done	The LWMP was approved, and the plan's implementation is an ongoing process.
2. Sewer expansion is envisioned to prioritize the Lower Kaslo area, with sewering projects occurring incrementally with time. Sewering projects would be triggered by factors including: • Long term community goals per the Integrated Community Sustainability Plan and the Official Community Plan. • Project cost and resulting cost per property. • Monitoring and documentation of septic system performance. • Public initiatives.	In progress Done Update Needs work	Pursing sewer expansion is a policy enshrined in the 2022 Official Community Plan. The construction of a sewer highway crossing at D Avenue during Kaslo River Bridge replacement is an example of forward-thinking to help reduce the cost of future expansion of the system. Project costs need to be updated. Monitoring and documentation need further investigation through asset

		management and research. Interior Health sewerage records are incomplete. Funding is being sought to implement a nearshore lakewater sampling program to test for seepage from private systems.
3. Without grants, capital construction costs of the Village-owned infrastructure (not including service pipes on private property) are anticipated to be around $15,500 per property for sewering plus approximately $5,500 per property for future treatment upgrades. To maintain a reasonable cost to the community, the Village will aspire to limit borrowing to 33% of projects over $250,000, and $1.5M on an ongoing basis.	In progress	The Village applied for a grant towards funding WWTP improvements and system expansion to most of Lower Kaslo. The grant was denied, but Council reaffirmed their commitment to expansion in their recent strategic plan and to continue pursuing new grant opportunities.
4. Funding sources for the LWMP implementation are proposed to include: • Parcel tax including a community-wide contribution for sewage education and monitoring. • Parcel tax on all sewered areas for future sewage treatment upgrades. • Parcel tax on all sewered areas for reserve funding • Implementation of a capital charge as a contribution to sewage treatment reserves by future services and future redeveloped properties for wastewater treatment capacity • User fees on all sewered areas for annual operating costs.	In progress Not done Not done Done Done Done	Parcel taxation for reserve funding and user fees towards operating costs are implemented for sewered areas. Council has not implemented parcel taxation for education, monitoring and expansion. Updates needed for expansion costs. Implementation of asset management to confirm operating and renewal costs is in progress.
5. Funding structure for sewer expansions are proposed to include: • Common reserve funding structure across all sewered areas • Common user fee structure across all sewered areas	In progress	Updates needed for expansion costs. Implementation of asset management to confirm operating and renewal costs is in progress.
6. Additional administrative and governance changes associated with LWMP implementation include: • Payments in lieu of taxes are to be made for 'tax exempt' properties within all sewered areas • Restructure of the sewer user fees • Restructure of the sewage regulation bylaw, and enhance the source control for higher strength industrial discharges as well as commercial kitchens	In progress Done Done Not Done	Updating the sewer specified area bylaw was completed. Restructure of the sewage regulation bylaw and source control remains outstanding due to strategic priorities and staff capacity. Sewer user fees and categories updated in the Fees & Charges Bylaw.

Timeline for LWMP Review

Committee members were asked to provide feedback for the LWMP review by December 31, 2024. It was thought that a review could be compiled easily but Staff investigated the ministerial requirements for the LWMP review and found out it is more than a simple progress report, as all of the financial aspects of the plan will need to be updated to keep the plan current. At this time, it does not appear that an amendment to the plan is necessary, as the plan still reflects the aspirations of the Village for liquid waste management. But we need to be open to considering amendments through this review process. However, amendment of the plan will require a public consultation process, which will extend the timeline.

Today's meeting is therefore the formal kick-off to the review process, with the committee recommending to Council that the need staff and resources be dedicated to the task. Assuming Council's approval, staff will begin the review, consider the feedback received, and engage a consultant to assist in updating the costs and ensure that the LWMP is compliant with the latest regulations and identify potential new technologies or approaches that could make the plan more effective. Allowing 3 months for this process, the Committee can plan on meeting again in late April or early May to review the update. If the committee endorses the update, the community will be invited to provide feedback and it will be presented to Council. After Council approval, the update can be sent to the Ministry within the 6-month period specified in the approval letter.

If an amendment is needed, the process could take two or three months longer due to the additional consultation efforts and procedural diligence that are required. In that event, the Village will need to inform the Ministry that additional time is needed to meet the condition.

5.0 OPTIONS

As the requirement for a 5-year review is a mandatory condition of the LWMP approval, the only option is to ask Council for resources to proceed with the review. Failure to act on this could jeopardize the Village's wastewater system operating permit and lead to unexpected costs or consequences.

1. **THAT the committee recommend to Council that staff be directed to report back on the Liquid Waste Management Plan 5-Year Review with recommended updates or amendments to the plan within three months; and,**
   THAT the committee recommend to Council that a qualified consultant be engaged to work with staff to update the plan's cost estimates and identify any relevant changes to technologies, regulations and standards cited in the plan. *[Upon Council's approval, staff will work on the LWMP update and engage a consultant as appropriate.]*

6.0 FINANCIAL CONSIDERATIONS

The 5-year review is a cost towards the operation of the sewer system. The consultant work will fall under "Server Engineering Services" account with a recommended amount of $5,000. The cost of staff time is estimated at $2,500, which can be included in the budget for "Sewer Personnel Wages/Salary" account. With Council's approval of the committee's recommendations, these costs will be considered in the 2025 Financial Plan.

7.0 LEGISLATION, POLICY, BYLAW CONSIDERATIONS

<u>Legislation</u>

Section 24(5) of the Environmental Management Act

Policy
Liquid Waste Management Plan

Bylaw
1300 Fees & Charges
1288 Sewer System Capital Parcel Tax
1289 Sewer Service Area
1280 Official Community Plan
1121 Sewer Regulation

8.0 STRATEGIC PRIORITIES

Wastewater Treatment Plant Expansion Design and developing an Asset Management Program are a NOW priority in Council's 2025-2026 Strategic Priorities.

9.0 OTHER CONSIDERATIONS

Nil.

RESPECTFULLY SUBMITTED

Ian Dunlop, Manager of Strategic Initiatives

CAO COMMENTS:

CAO COMMENTS:

APPROVED FOR SUBMISSION TO COUNCIL:

Robert Baker, Chief Administrative Officer Date

BRITISH COLUMBIA

Reference: 334383

JAN 27 2020

Her Worship Mayor Suzan Hewat
and Councillors
Village of Kaslo
PO Box 576
Kaslo BC V0G 1M0

Sent via email: mayor@kaslo.ca

Dear Mayor Hewat and Council:

I am writing in response to the October 15, 2018 submission of the Village of Kaslo (Kaslo) Liquid Waste Management Plan (LWMP).

I am satisfied that the LWMP submitted by Kaslo, along with the public and First Nation consultation, meets the requirements of the Ministry of Environment and Climate Change Strategy (ENV). Pursuant to Section 24(5) of the *Environmental Management Act*, I hereby approve your LWMP subject to the following conditions:

- Kaslo must develop and implement a receiving environment monitoring program (REMP) to assess water quality, sediment and biota for the wastewater discharge associated with Permit 13868. Authorization of the REMP will be established under the requirements of the new Operational Certificate to replace Permit 13868. Specific details of the REMP and reporting will be developed with staff from my ministry and to the satisfaction of the director; and
- Kaslo must establish a plan monitoring committee to oversee and evaluate the implementation of the LWMP. The LWMP must be reviewed five years from the date of this approval. The results of the review must be provided to the director in writing within six months of the review being completed.

These conditions must be completed to the satisfaction of the director.

I commend Kaslo on the completion of your Stormwater Management Plan. The ministry is supportive of initiatives that contribute to reducing non-point source pollution from stormwater infrastructure, for the protection of human health, public safety and the environment.

...2

Ministry of Environment and Climate Change Strategy Office of the Minister
Mailing Address: Parliament Buildings Victoria BC V8V 1X4
Telephone: 250 387-1187
Facsimile: 250 387-1356
Website: www.gov.bc.ca/env

Approval of the LWMP does not authorize entry upon, crossing over or use for any purposes of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority shall rest with the local government. This LWMP is approved pursuant to the provisions of the *Environmental Management Act*, which asserts it is an offence to discharge waste without proper authorization. It is also Kaslo's responsibility to ensure that all activities conducted under this LWMP are carried out with regard to the rights of third parties and comply with other applicable legislation that may be in force.

Thank you again for your submission.

Sincerely,

George Heyman
Minister

cc: Ian Dunlop, Chief Administrative Officer, Village of Kaslo