Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Electoral Areas Committee

Wednesday, November 4, 2020 | **11:35 AM** | **6th Floor Boardroom, 625 Fisgard St., Victoria, BC V8W 1R7**

Special Meeting

M. Hicks (Chair), D. Howe (Vice Chair), G. Holman, C. Plant (Board Chair, ex-officio)

The Capital Regional District strives to be a place where inclusion is paramount and all people are treated with dignity. We pledge to make our meetings a place where all feel welcome and respected.

1. Territorial Acknowledgement

2. Approval of Agenda

3. Presentations/Delegations

4. Special Meeting Matters

4.1. 20-699 Community Resiliency Investment Program: 2021 FireSmart Community Funding & Supports Program Grant

Recommendation: The Electoral Areas Committee recommends to the Capital Regional District (CRD) Board:
That the Capital Regional District Board support an application to the Union of British Columbia Municipalities Community Resiliency Investment Program for Juan de Fuca, Salt Spring Island, and Southern Gulf Islands to develop Community Wildfire Resiliency Plans and direct staff to provide overall grant management.

Attachments: Staff Report: Community Resiliency Invest't Prog: 2021 FireSmart Grant

Appendix A: Community Rsiliency Investment Program Application Form

4.2. 20-502 Port Renfrew - Snuggery Cove Water Local Service Committee Membership Amendment

Recommendation: The Electoral Areas Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4364, Port Renfrew Utility Services Committee Bylaw No. 1, 2005, Amendment No. 3, 2020 be read a first, second, and third time; and
2. That Bylaw No. 4364 be adopted.

Attachments: Staff Report: Port Renfrew - Snug Cove Water Local Serv Comm Mem Amend

Appendix A: Bylaw No. 4364, Port Renfrew Utility Serv Comm, Amend No. 3

Appendix B: Port Renfrew Utility Services Unofficial Consolidation

4.3. 20-702 Highland Fernwood Water Conservation Plan

Recommendation: That the Highland Fernwood Water Service Commission recommend to the Electoral Areas Committee recommends to the Capital Regional District Board:
That the Capital Regional District Board endorse the Water Conservation Plan.

Attachments: Staff Report: Highland Fernwood Water Conservation Plan

Appendix: Highland Fernwood Water Conservation Plan

4.4. 20-703 Request to Increase Budget to Develop Detailed Engineering Design and Cost Estimates for the Maliview Wastewater Treatment Plant Upgrading

Recommendation: That the Highland Water and Sewer (Maliview) Service Commission recommends that the Electoral Areas Committee recommends to the Capital Regional District Board:
That the Capital Regional District Board amend the Highland Water and Sewer (Maliview) service Five Year Financial Plan to include a project for Maliview Wastewater Treatment Plant Upgrade Design in year 2020 with the total budget of $257,620 funded by the combination of capital reserve fund ($22,000) and Community Work Fund ($235,620).

Attachments: Staff Report: Develop Detail Designs Maliview Wastewater Treatment Plant

Appendix 1: Design Report Maliview Wastewater Treatment Plant

Appendix 2: Northern and Rural Infrastructure Program New Announcement

4.5. 20-704 Maliview Wastewater Treatment Plant Upgrade Loan Authorization and Amend Service Establishment-Process and Next Steps

Recommendation: The Highland Water and Sewer Local Service Area recommends the Electoral Areas Committee recommends to the Capital Regional District Board:
1. That Bylaw 4370, "Maliview Sewer System Loan Authorization Bylaw No. 1, 2020" be introduced and read a first, second, and third time.
2. That Bylaw 4373, "Maliview Estates Sewerage Local Service Establishment Bylaw No. 1, 1991, Amendment Bylaw No. 1, 2020" be introduced and read a first, second, and third time.
3. Present the project and funding option to the ratepayers in the first quarter of 2021; and bring forward a report to the Commission on the results of the public engagement, and ratepayer's preferred electoral assent process.

Attachments: Staff Report: Maliview Loan Authorization Report

Appendix A: Referendum Process

Appendix B: Alternative Approval Process

Appendix C: Bylaw No. 4370

Appendix D: Bylaw No. 4373

4.6. 20-707 Previous Minutes of Other CRD Committees and Commissions for Information

Recommendation: That the following minutes be received for information:
a) Galiano Island Parks and Recreation Commission minutes of September 3, 2020
b) Magic Lake Estates Water and Sewer Committee minutes of September 8, 2020
c) Mayne Island Parks and Recreation Commission minutes of September 10, 2020

Attachments: Minutes: Galiano Island Parks & Rec Commission - September 3/20

Minutes: MLE Water and Sewer Committee - September 8/20

Minutes: Mayne Island Parks & Rec Commission - September 10/20

5. Notice(s) of Motion

6. New Business

7. Adjournment

The next meeting is December 9, 2020.

To ensure quorum, please advise Tamara Pillipow (tpillipow@crd.bc.ca) if you or your alternate cannot attend.

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REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, NOVEMBER 04, 2020

SUBJECT **Community Resiliency Investment Program: 2021 FireSmart Community Funding & Supports Program Grant**

ISSUE SUMMARY

The Capital Regional District (CRD) is responsible for providing emergency management support in the Electoral Areas (EAs). This includes mitigation, planning, training and supporting first responders during emergencies. The CRD is applying to the Union of British Columbia Municipalities (UBCM) for funding to create Community Wildfire Resiliency Plans for each of the EAs. UBCM requires that all grant applications be accompanied by a motion of support from the local government.

BACKGROUND

UBCM provides funding for many community based projects including emergency programs, particularly projects that support community resiliency and emergency preparedness. A 2020/2021 grant opportunity is available to create Community Wildfire Resiliency Plans, in order to better understand spatial wildfire risk distribution and prioritize wildfire risk mitigation and preparedness projects. The plans will include EA-specific assessment and recommendations for all seven FireSmart disciplines: education, vegetation management, legislation and planning, development considerations, interagency cooperation, cross-training, and emergency planning.

EA fire departments and the BC Wildfire Services have jurisdiction to lead wildfire response operations, while emergency programs assist with mitigation, preparedness, evacuation procedures, and public education. Most EA communities have a Community Wildfire Preparedness Plan, but these were completed between 10 and 16 years ago and do not reflect recent developments or best practices in plan preparation.

The FireSmart grant funds will benefit all three CRD EA Emergency Programs: Juan de Fuca, Salt Spring Island, and Southern Gulf Islands. Grant funds will permit the development of plans, including the costs of consultants and a presentation of results to stakeholders. The total funds requested through the grant application are $135,039.

As part of the application process, UBCM requires a motion of support from the local government to receive and manage grant funding.

ALTERNATIVES

Alternative 1
The Electoral Areas Committee recommends to the Capital Regional District (CRD) Board:
That the CRD Board support an application to the Union of British Columbia Municipalities Community Resiliency Investment Program for Juan de Fuca, Salt Spring Island, and Southern Gulf Islands for Community Wildfire Resiliency Plan development and direct staff to provide overall grant management.

Alternative 2
That staff be directed to not submit the Union of British Columbia Municipalities Grant to the Community Resiliency Investment Program for Juan de Fuca, Salt Spring Island, and Southern Gulf Islands for Community Wildfire Resiliency Plan development.

IMPLICATIONS

Operational Implications
Under the *Emergency Program Act*, the CRD provides emergency management services to residents of Electoral Areas. Community Wildfire Resiliency Plans help local governments and fire departments prioritize preparedness and mitigation projects, and grants provide opportunity for supplemental funding to increase community resilience and support EAs residents who may be impacted by future disasters.

CONCLUSION

The CRD is responsible for supporting emergency management programs in the EAs. The UBCM's FireSmart Community Funding and Supports Program grant is an opportunity to increase public safety in the EAs. Staff recommend funding the Community Wildfire Resiliency Plan updates for all three EA emergency programs through the grant. If supported by the Board, UBCM will consider the CRD's grant application.

RECOMMENDATION

The Electoral Areas Committee recommends to the Capital Regional District (CRD) Board:
That the CRD Board support an application to the Union of British Columbia Municipalities Community Resiliency Investment Program for Juan de Fuca, Salt Spring Island, and Southern Gulf Islands to develop Community Wildfire Resiliency Plans and direct staff to provide overall grant management.

Submitted by:	Jonathan Reimer, MSc, Manager Electoral Area Fire and Emergency Programs
Concurrence:	Shawn Carby, CD, BHSc, MAL, Senior Manager, Protective Services
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A – Community Resiliency Investment Program: 2021 FireSmart Community Funding & Supports Application Form

Community Resiliency Investment Program

2021 FireSmart Community Funding & Supports

Application Form

Please complete and return the application form and all required attachments by October 9, 2020.

All questions are required to be answered by typing directly in this form. If you have any questions, contact cri-swpi@ubcm.ca or (250) 356-2947.

SECTION 1: Applicant Information	**CRI-** *(administrative use only)*
Name of Local Government or First Nation: Capital Regional District	Complete Mailing Address: 625 Fisgard St, Victoria, BC V8W 1R7
Contact Person*: Jonathan Reimer	Position: Manager, Fire and Emergency Programs
Phone: 2503603137	E-mail: jreimer@crd.bc.ca

** Contact person must be an authorized representative of the applicant (i.e. staff member or elected official).*

SECTION 2: Type of Application – Please identify the type of application you are submitting and provide the required information. Refer to Section 3 in the Program & Application Guide for eligibility.

1. **Type of Application** (select one only)**:**

   ☐ Single applicant (as identified in Section 1 of the application form)

   ☐ Regional Project for Multiple Eligible Applicants. Please list all of the partnering eligible applicants included in this application:

   ☒ Regional Projects for Regional District Applications Including Multiple Electoral Areas. Please list all electoral areas included in this application and submit a separate Worksheet 1 for each: 3 Electoral Areas: Salt Spring Island, Southern Gulf Islands, and Juan de Fuca

2. **Rationale for Regional Projects** (only)**.** Please provide a rationale for submitting a regional project application and describe how this approach will support cost-efficiencies in the total funding request.

SECTION 3: Project Summary

3. **Name of the Project:**

   CRD Community Wildfire Resiliency Plan Update

4. Project Summary. Please provide a summary of your project in 150 words or less.

A Community Wildfire Resiliency Plan is proposed to be developed for each of the 3 CRD Electoral Areas. In communities that have a previous CWPP, the plans were produced between 2005 - 2010 are are in need of an update and improved consistency.

5. Fire Centre (use check boxes). Indicate which Fire Centre the proposed activities are located in (check all that apply).

☐ Cariboo Fire Centre	☐ Northwest Fire Centre
☒ Coastal Fire Centre	☐ Prince George Fire Centre
☐ Kamloops Fire Centre	☐ Southeast Fire Centre

6. Project Cost & Funding Request:

Total project cost:$135039.00

Total funding request for FireSmart activities (as indicated on Worksheet(s) 1): $135039.00

Total funding request for fuel management activities (as indicated on Worksheet 2): $

Total project funding request: 135039.00

Have you applied for or received funding for this project from other sources? If yes, please provide details below.

No

7. Progress to Date. If you were approved for funding under the 2019 and/or 2020 CRI FireSmart Community Funding & Supports programs, please describe the activities that have been completed to date and/or what activities your community has not yet completed but will be undertaking to increase resiliency.

2019 project: Wildfire cross-training in Salt Spring Island, public education activities in Juan de Fuca, Pender Island, and Saturna Island

2020 project: Exploring the creation of a regional FireSmart committee, Galiano Island public education and capacity building

Further, if any activities that were funded under the 2019 and/or 2020 CRI FireSmart Community Funding & Supports programs were impacted or delayed by COVID-19 or public health requirements, please describe: the 2019 project was ammended to provide improved course woody debris disposal options on Pender and Saturna Island, due to COVID-related fire bans.

SECTION 4: Requirements for Funding (refer to Section 4 of Program & Application Guide)

8. Engagement Prior to Submitting an Application. In order to qualify for funding, applicants must demonstrate their level of engagement with a BCWS Wildfire Prevention Officer, FNESS Fuel Management Liaison/Specialist, and, if applicable, the FLNRORD district, region, or relevant Land Manager to ensure project alignment with Land Manager priorities.

Please indicate the name(s) and title(s) of the person(s) you engaged with and describe the extent of that engagement.

Extensive phone-based consulting with Tony Botica, BCWS Wildfire Prevention Officer with the Coastal Fire Centre. Most recent phone call was October 1st 10:00am.

9. Acceptable Plan. In order to qualify for funding, applicants must have a current and acceptable plan that includes assessment and identification of FireSmart and/or fuel management priorities (i.e. Community Wildfire Protection Plan, Community Wildfire Resiliency Plan, or Crown Land WRR Tactical or Fuel Management Plan, etc.).

Please outline how your community meets this requirement. Note: applicants that do not have a current and acceptable plan may apply to develop or update a plan.

The CRD has several CWPPs spanning several communities in the Electoral Areas, however most are 10-16 years or older and require updating. These older plans are not attached to this application, but are available on request.

Attach completed plans, assessments, and/or excerpts from higher-level plans with the application form.

SECTION 5: Wildfire Risk & Rationale

10. A. WUI Wildfire Risk Class. What is the WUI Risk Class (1 – 5) for the general area of interest of your community or proposed activities, including the WUI polygon name, from the risk class map? Refer to Appendix 1 of the Program & Application Guide.

Port Renfrew RC:5

Ganges RC:5

B. If local assessments provide additional evidence of higher wildfire risk than the WUI Risk Class, provide specific evidence of wildfire risk (reference to appropriate section of a CWPP/CWRP or other plan, etc.).

N/A

Additional evidence for higher wildfire risk (e.g. CWPP/CWRP extract, copies of assessments, etc.) is required to be submitted with the application form.

C. For the purpose of FireSmart Community Funding & Supports grants, identify the risk category that you are applying under:

☐ Lower risk of wildfire (may apply for a base grant of up to $50,000)

☒ Higher risk of wildfire (may apply for a base grant of up to $150,000)

11. Other Rationale. What other rationale or evidence is there for undertaking the proposed project? This may include local hazards identified in the Emergency Plan; threat levels identified in Hazard Risk & Vulnerability Analysis and/or other risk assessments; demonstrated history of repeated and/or significant interface wildfires and evacuations; or other rationale.

N/A

Evidence of other rationale (e.g. Local Authority Emergency Plan extract, copies of assessments, etc.) is required to be submitted with the application form.

SECTION 6: Detailed Project Information

12. Proposed Activities. Please refer to Section 6 of the Program & Application Guide for eligibility, and complete Worksheet 1: Proposed Activities & Cost-Estimate. Worksheet 1 is

required to be completed for all applications and all projects must include an Education component.

13. Increasing Resiliency. Please indicate how the proposed project will increase community resiliency by undertaking community-based FireSmart planning and activities that reduce the community's risk from wildfire.

Current CWRPs will help coordinate the activities of the diverse stakeholders across our Electoral Areas and prioritize our joint preparedness, mitigation, and response efforts so that we increase the resiliency of our communities

14. Partnerships & Collaboration. Please identify any other authorities you will collaborate with on the proposed project (e.g. community or resident organizations, First Nation or Indigenous organizations, or other local governments) and outline how you intend to work together.

The CRD will collaborate with BC Wildfire Service, local of improvement district-based fire departments (including Salt Spring, Mayne, Pier, and Sidney Islands), local land use planning authorities such as the Islands Trust, Local Government Emergency Programs, FireSmartBC, and First Nations partners, including Pacheedaht FN. These partners will be consulted during the CWRP process.

15. Additional Information. Please share any other information you think may help support your submission**.**

SECTION 7: Application Check List

Required Submissions	Related Attachments
☒ Application Form	☒ Completed plans, and/or assessments, or excerpts from higher-level plans, as required in Q. 9 ☐ Other rationale, as required in Q. 10 and 11
☒ Completed Worksheet 1: Proposed Activities & Cost Estimate	☐ Completed FireSmart Assessments for structures proposed for FireSmart Projects for Critical Infrastructure, as required in Q. 7
☐ For fuel management activities only: Completed Worksheet 2: Proposed Fuel Management Activities	☐ Overview map of the community, previously completed treatments, proposed treatments for this application, and planned future treatments ☐ PDF map and Google Earth compatible KML file, at appropriate scale, outlining the area of interest, proposed treatment units, land status and tenure overlaps ☐ If available, current wildfire threat assessment plots and/or fuel loading data and rationale for the proposed treatment unit(s) ☐ For fuel management treatment only, a copy of the completed (signed and sealed) prescription and project spatial layer

☐ For prescribed fire only, a copy of the completed burn plan (in addition to the prescription) and project spatial layer ☐ For fuel management treatment on Provincial Crown land only, an email from the Land Manager indicating information sharing with First Nations has been completed
☐ Council, Board or Band Council resolution, indicating support for the current proposed activities and willingness to provide overall grant management
☐ For regional projects only: Council, Board or Band Council resolution, from each partnering community that clearly states approval for the applicant to apply for, receive and manage the grant funding on their behalf
Submit the completed Application Form and all required related attachments as e-mail attachments to cri-swpi@ubcm.ca and note "**2021 CRI**" in the subject line. Submit your application as either a Word or PDF file(s). If you submit by e-mail, hardcopies and/or additional copies of the application are not required.

SECTION 8: Signature – Applications are required to be signed by an authorized representative of the applicant. Please note all application materials will be shared with the Province of BC and the BC FireSmart Committee.	
I certify that: (1) to the best of my knowledge, all information is accurate and (2) the area covered by the approved project is within the applicant's jurisdiction (or appropriate approvals are in place).	
Name: Jonathan Reimer	Title: Manager, Fire and Emergency Programs
Signature*: *An electronic or original signature is required.*	Date: October 6, 2020

** Signatory must be an authorized representative of the applicant (i.e. staff member or elected official).*

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REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, NOVEMBER 04, 2020

SUBJECT **Port Renfrew – Snuggery Cove Water Local Service Committee Membership Amendment**

ISSUE SUMMARY

To amend the membership of the Port Renfrew Utility Services Committee to remove the two representatives from the Snuggery Cove Water System and amend its governance.

BACKGROUND

In 2002, the Capital Regional District created the Snuggery Cove Water Local Service under the Juan de Fuca Snuggery Cove Water System Service Establishment Bylaw No. 1, 2002 (BL 3004). On behalf of the ratepayers, CRD was required to borrow approximately $325,000 to pay for a portion of the water system upgrades with the remaining portion being paid for by grant funding, per Juan de Fuca Snuggery Cove Water System Loan Authorization Bylaw No. 1, 2002 (Bylaw No. 2996).

In 2016, the water provision portion of the service was added to the Port Renfrew Water Supply Local Service Establishment By-law No. 1, 1989 (Bylaw No. 1747), creating one water service area for Port Renfrew.

The remaining debt for the upgrades has now been paid and as such, there is no need for individuals to sit on the Port Renfrew Utility Services Committee for the sole purpose of administering the Snuggery Cove debt service.

At the same time, the voting membership of the Committee is unclear and non-standard. Members may currently only vote on issues relating to the local service in which they reside, unlike many other CRD Commissions.

ALTERNATIVES

Alternative 1
The Electoral Area Services Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4364, Port Renfrew Utility Services Committee Bylaw No. 1, 2005, Amendment No. 3, 2020 be introduced, read a first, second, and third time; and
2. That Bylaw No. 4364 be adopted.

Alternative 2
That this report be referred back to staff for additional information.

IMPLICATIONS

Governance Implications

At this time, removal of the two Snuggery Cove debt servicing representatives from the Committee

will result in a committee made up of the electoral area director; three appointed individuals, representing Port Renfrew's water, street lighting, solid waste, and sewer areas; and, while an agreement is in place and in good standing for solid waste, a representative of Pacheedaht First Nation.

Current and proposed membership is set out in the below tables:

Current Membership		
Number	*Areas*	*May Vote On*
EA Director	JdF	All issues
Three (3)	Port Renfrew Water, Sewer, Lighting, Solid Waste	Water, Sewer, Lighting, Solid Waste
Two (2)	Snuggery Cove Debt Service	Debt service only
One (1)	Pacheedaht First Nation	Solid waste service only

Proposed Membership*		
Number	*Areas*	*May Vote On*
EA Director	JdF	All issues
Three (3)	Port Renfrew Water, Sewer, Lighting, Solid Waste	Water, Sewer, Lighting, Solid Waste
One (1)	Pacheedaht First Nation	Solid waste service only

**Proposed membership is the same as membership prior to creation of the Snuggery Cove Debt Service.*

A change to the voting membership and qualifications of appointees is also proposed, from a system where local service representatives can only vote on matters relating to where they reside, to one where local service representatives can vote on any matter before the Committee, with the requirement that at least one local service representative comes from each of the Water local service and the Sewer local service area, the larger service areas that do not necessarily overlap, unlike the Street Lighting and Solid Waste services which share boundaries with the Water and Sewer local service areas.

Financial Implications

Allowing the Chief Financial Officer to set the date the Committee's budget will be due will allow both the Committee and the CRD Finance Staff to anticipate and work together to obtain a budget on an appropriate timeline, rather than rush to assemble all committee and commission budgets.

Service Delivery Implications

This will have no impact on service delivery, as the properties within the Snuggery Cove service area were added to the existing Port Renfrew water supply local service area in 2016.

Alignment with Existing Plans & Strategies

This is in-line with the proposed progress of this local service at the time of its 2002 creation.

CONCLUSION

Debt incurred to build and extend the Port Renfrew Water Service to the Snuggery Cove area has now been paid in full. CRD should take the first steps towards winding-up the Snuggery Cove debt servicing service, and amend the Committee membership accordingly.

RECOMMENDATION

That the Electoral Area Services Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4364, Port Renfrew Utility Services Committee Bylaw No. 1, 2005, Amendment No. 3, 2020 be introduced, read a first, second, and third time; and
2. That Bylaw No. 4364 be adopted.

Submitted by:	Ted Robbins, B. Sc., C. Tech, General Manager, Integrated Water Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Bylaw No. 4364, Port Renfrew Utility Services Committee Bylaw No. 1, 2005, Amendment No. 3, 2020

Appendix B: Unofficial Consolidation of Bylaw No. 3281, Port Renfrew Utility Services Committee Bylaw No. 1; Bylaw No. 3397, Port Renfrew Utility Services Committee Bylaw No. 1, 2005, Amendment Bylaw No. 1, 2006; and Bylaw No. 3745, Port Renfrew Utility Services Committee Bylaw No. 1, Amendment Bylaw No. 2, 2010

SNC/

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4364

****

A BYLAW TO AMEND THE MEMBERSHIP OF THE PORT RENFREW UTILITY SERVICES COMMITTEE (JUAN DE FUCA ELECTORAL AREA) (BYLAW NO. 3281)

****

WHEREAS:

A. Under Bylaw No. 3281, Port Renfrew Utility Services Committee Bylaw No. 1, 2005, the Regional Board established a committee to administer local services in the Port Renfrew Area, including the Snuggery Cove Water Local Service established by Port Renfrew Snuggery Cove Water Local Service Establishment Bylaw No. 1, 2003 (Bylaw No. 3004);

B. The Snuggery Cove Water Local Service has paid the debt incurred under the Juan de Fuca Snuggery Cove Water System Loan Authorization Bylaw No. 1, 2002 (Bylaw No. 2996);

C. In 2016, the area servicing the Snuggery Cove Water Local Service was absorbed into the Port Renfrew Water Distribution Service, established under Port Renfrew Water Supply Local Service Establishment By-law No.1, 1989 (Bylaw No. 1747), leaving the only function of the Snuggery Cove service as debt repayment;

D. The Board wishes to amend Bylaw No. 3281, Port Renfrew Utility Services Committee Bylaw No. 1, 2005, to remove Snuggery Cove debt servicing representatives from the Committee;

NOW THEREFORE, the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. Bylaw No. 3281, "Port Renfrew Utility Services Committee Bylaw No. 1, 2005" is hereby amended as follows:

   (a) By replacing section 1 in its entirety with:

   1. A Committee to be known as the "Port Renfrew Utility Services Committee" is hereby established and shall consist of up to five (5) members as follows:
   (a) The Director representing the Juan de Fuca Electoral Area;
   (b) Three (3) individuals who shall represent the Port Renfrew Water Local Service Area, Port Renfrew Sewer, and Port Renfrew Street Lighting Local Service Areas (the "Local Service Representatives" and "Local Service Areas", respectively); and
   (c) One (1) representative of the Pacheedaht First Nation when a service agreement for solid waste services is in place and there have been no violations to the terms and conditions of the agreement.

   (b) By replacing section 2(b) and 2(c) with:

   (b) Local Service Representatives may vote on all matters;
   (c) The Pacheedaht First Nation may vote on solid waste matters when the conditions under 1(c) have been met.

   (c) In section 3(c), by replacing "2(b)" with "3(b)", to correct a typographical error;

   (d) By inserting as section 3.1, the following:

Qualifications for Appointment

3.1 To be eligible for appointment, all Local Service Representatives must reside, be an elector, or own real property in one or more of the Local Service Areas. At least one must reside, be an elector, or own real property in the Port Renfrew Sewer Local Service Area. At least one must reside, be an elector, or own real property in the Port Renfrew Water Supply Local Service area.

(e) In section 11, by removing the list item 11(d), "the provision of Water Services under Bylaw No 3004" and revising the list accordingly;

(f) In section 12, by revising the reference to "Notwithstanding the provisions of section 12" to "Notwithstanding the provisions of section 11" to correct a typographical error; and

(g) In section 12 (a), revising the reference to "… an annual budget for each of the services provided in sections 12(a) and 12(b) and 12(c)…" with "… an annual budget for each of the services provided in sections 11(a), 11(b), 11(c), and 11(d)…" and leaving the remainder of that section unchanged, to correct a typographical error and an omission.

2. This bylaw may be cited for all purposes as "Port Renfrew Utility Services Committee Bylaw No. 1, 2005, Amendment Bylaw No. 3, 2020".

READ A FIRST TIME THIS th day of 20__

READ A SECOND TIME THIS th day of 20__

READ A THIRD TIME THIS th day of 20__

ADOPTED THIS th day of 20__

CHAIR

CORPORATE OFFICER

CAPITAL REGIONAL DISTRICT
BYLAW NO. 3281

* *

A BYLAW FOR THE ESTABLISHMENT OF THE PORT RENFREW UTILITY SERVICES COMMITTEE (JUAN DE FUCA ELECTORAL AREA)

* *

WHEREAS under Section 795 of the *Local Government Act* the Chair of a Regional District Board (hereinafter referred to as the "Board") may establish standing committees for matters the chair considers would be better dealt with by committee and to appoint persons to those committees;

AND WHEREAS Under sections of 176(1)(e) and 192(1) of *the Local Government Act*, the Board may, by bylaw adopted by at least two-thirds of the votes cast, delegate its powers, duties and functions, including those specifically established by an enactment, to its officers and employees, its committees or its members, or to other bodies established by the Board;

AND WHEREAS the Board wishes to establish a committee under this bylaw and to delegate to that committee all of the administrative powers of the Board with respect to the provision of the services as authorized in the following bylaws:

(a) Bylaw 1744 "Port Renfrew Sewer Local Service Establishment Bylaw No. 1, 1989", as amended;

(b) Bylaw 1746 "Port Renfrew Street Lighting Local Service Establishment Bylaw No. 1, 1989";

(c) Bylaw 1747 ""Port Renfrew Water Local Service Establishment Bylaw No. 1, 1989; and

(d) Bylaw 3004 "Port Renfrew Snuggery Cove Water Local Service Establishment Bylaw No. 1, 2003.

NOW THEREFORE, the Board of the Capital Regional District in open meeting assembled enacts as follows:

<u>Membership</u>

1. A Committee to be known as the "Port Renfrew Utility Services Committee" is hereby established and shall consist of seven (7) members as follows:

   (a) The Director representing the Juan de Fuca Electoral Area;

   (b) Three (3) individuals who shall represent the Port Renfrew Water Local Service Area: Port Renfrew Sewer and the Port Renfrew Street Lighting Local Service Areas;

   (c) Two (2) individuals who shall represent the Port Renfrew Snuggery Cove

Water Local Service Area; and

(d) One (1) representative of the Pacheedaht First Nation when a service agreement for solid waste services is in place and there have been no violations to the terms and conditions of the agreement.

2. Committee members may vote as follows:

(a) The Electoral Area Director may vote on all matters;

(b) Representatives appointed according to 1(b) and 1(c) may only vote on matters relating to the local Service Areas within which the member is either a resident, elector or owner of real property;

(c) All members may vote on solid waste services provided the conditions under 1 (d) have been met.

(Bylaw 3745)

Appointment

3. (a) The Committee shall, at its regularly scheduled meeting in September, submit to the Electoral Area Director, its nominations for the members of the committee for the following term, and at the same meeting, shall invite residents or electors in the Local Service Area to submit additional nominations, on forms provided at the meeting, to the Electoral Area Director on or before 14 days from the date of the meeting. At the same meeting the committee shall schedule the Annual General Meeting which shall be held no sooner than 15 days from the date of the meeting but in all cases shall be before the last day of October;

(b) The Committee shall invite to the Annual General Meeting residents or electors in the Local Service Areas by written notice at least two weeks prior to the date of the Meeting. Nominations received by the Electoral Area Director shall be posted with the notice of AGM. The committee shall poll the residents or electors present at the Annual General Meeting to fill the positions of committee members to be appointed effective the following January 1, from nominations put forward either by the committee or through the Electoral Area Director;

(Bylaw 3397)

(c) The names of the persons nominated or the results of the poll under subsection 2(b) shall be forwarded forthwith after the Annual General Meeting to the Board Secretary, and in any event, before the first Wednesday in December of that year;

(d) The Board shall immediately upon enactment of this Bylaw appoint persons to act as members of the committee as provided above.

Terms of Office

4. The terms of office of those members of the Committee, other than the Director representing the Juan de Fuca Electoral Area, shall be for a two-year period, except that of the initial appointees, which shall be as follows:

(a) Three of the appointees shall hold office from the date of appointment until the 31st day of December 2006;

(b) Two of the appointees shall hold office from the date of appointment until the 31st day of December 2007.

(Bylaw 3397)

5. In the event of the death, resignation, or disqualification of a member of the Commission, the Board shall appoint a successor for the remainder of the term.

Procedure

6. The Committee shall endeavor to hold at least one meeting quarterly and in January of each year shall establish a schedule of quarterly meetings which shall be posted on the community notice board situated at the Transfer Station, the Post Office and on the CRD Website.

7. In voting on the Committee all members shall have one vote each.

8. The Committee shall in January of each year, by secret ballot, elect a Chair.

9. A quorum of the committee is a majority of the members.

10. The rules of procedure for the Committee shall not be inconsistent with those of the Regional District

Duties

11. The Board hereby delegates to the Committee all of the administrative powers of the Board, with respect to:

(a) the provision of Sewer Services under Bylaw No. 1743;

(b) the provision of Street Lighting Services under Bylaw No. 1746;

(c) the provision of Water under Bylaw No. 1747;

(d) the provision of Water Services under Bylaw No. 3004;

(e) the provision of Solid Waste Services under Bylaw No. 1745.

(Bylaw 3745)

Without limiting the generality of the above, the committee shall establish policies governing the provision and operation of the services including the recommendation of levels of user charges to be established by bylaw of the Board.

12. Notwithstanding the provisions of section 11 of this bylaw, the Board retains the right of approval of operation rules, procedures and policies and the levels of user charges to be established by bylaw of the Board.

Budget

(a) Upon its establishment, and in November of each year, the committee shall prepare an annual budget for each of the services provided in 11(a) and 11(b) and 11(c) above which shall include estimates for the administrative, development, maintenance, operational and other expenses, including debt charges, and shall submit such expenditure estimates together with estimates for expected revenue, for the approval of the Regional Board and for inclusion in the Regional Board's Five Year Financial Plan;

(b) No expenditures, other than those provided for in the approved financial plans of the committee as included in the approved financial plan of the Board, shall be incurred by the committee.

Facilities and Equipment

13. Any facilities or equipment acquired by the committee shall be acquired in the name of the Regional District, shall be the property of the Regional District and shall not be disposed of without the approval of the Regional District.

Citation

14. This bylaw may be cited as "Port Renfrew Utility Services Committee Bylaw No. 1, 2005".

READ A FIRST TIME THIS	14th	day of	September	2005
READ A SECOND TIME THIS	14th	day of	September	2005
READ A THIRD TIME THIS	14th	day of	September	2005
ADOPTED THIS	14th	day of	September	2005

Original signed by Karen Watson
CHAIRPERSON

Original signed by Carmen Thiel
SECRETARY

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REPORT TO HIGHLAND FERNWOOD WATER SERVICE COMMISSION
MEETING OF THURSDAY, OCTOBER 22, 2020

SUBJECT **Highland Fernwood Water Conservation Plan**

ISSUE

To seek the approval of a Water Conservation Plan for the Highland Fernwood Service which is a requirement of the Rural and Northern Communities Infrastructure grant that the Highland Water and Sewer (Maliview) Service is applying for its waste water treatment plant upgrade.

BACKGROUND

The Maliview Waste Water Treatment Plant (WWTP) has been experiencing challenges in consistently meeting regulatory requirements. On September 19, 2019, the CRD received a written warning letter from the Enforcement Branch of EC that the Maliview WWTP contravenes subsection 36(3) of the Fisheries Act. On January 30, 2020, the CRD a written warning letter from the Ministry of Environment (MOE), Province of British Columbia which determined that the Maliview WWTP is non-compliant with Municipal Wastewater Regulation requirements. The regulators require that the CRD implement necessary changes or modifications to correct the non-compliance. MOE warns that if CRD fails to take necessary actions to restore compliance, they may escalate enforcement actions.

The CRD provided its responses to both regulators on October 22, 2019 and February 25, 2020 respectively and outlined its corrective action plans to enhance the facility and bring the facility back to regulatory compliance. The letter summarized near term actions and provided medium and long term action plans to the MOE. The final phase of the corrective action plan will be to complete the upgrading construction of the Maliview WWTP with a target completion date of the end of year 2022. Currently the near term measures have been implemented and the CRD has retained an engineering consultant and completed an engineering assessment and a comprehensive analysis to investigate current problems with the plant and screen various treatment technologies that could be suitable for the upgrading of the Maliview WWTF. Based on current conceptual design, it is estimated that the total construction costs associated with the upgrade is approximately $1.65 million (class C cost estimates with up to $\pm$25%-40%). Total costs including construction, engineering and project management and contingency (40%) is estimated to be approximately $2.2 million.

Given the limited financial capacity of the service, the CRD has explored alternative funding strategies such as grants from senior levels of government. The CRD has submitted on October 22, 2020 an Investing in Canada Infrastructure Program (ICIP) grant under the Rural and Northern Communities Program Funding stream to the Province of British Columbia and the Government of Canada. The ICIP program targets capital infrastructure projects in communities with a population of 25,000 or less. The Maliview wastewater treatment plan upgrade qualifies under one of the federal outcomes for green infrastructure – environmental quality for increased capacity to treat and or manage wastewater for public use and benefit. The wastewater project must result in wastewater effluent that meets the Wastewater Systems Effluent Regulations, or provincial regulations where there is a federal equivalency agreement in place.

One of the requirements of the ICIP grant program is that a current Board endorsed a Water Conservation plan for any Drinking Water and Wastewater projects. In order to meet the grant application requirements, the Board endorsement for the Water Conservation plan must be submitted no later than a month after the application deadline, on **November 22, 2020.** To meet this requirement, the CRD has developed a draft Water Conservation Plan for the year of 2020-2030 for the Highland Fernwood Water Service (attached in Appendix 1).

The draft Water Conservation plan was prepared in accordance with the Water Conservation Plan Guide for BC (2013) which reviewed the Highland Fernwood water system profile, water production and use data, and forecasted demand for future years. The plan proposed the following conservation targets by 2030.

- Reduce annual average water demand per full time, permanent resident by 10%,
- Reduce annual average water loss in the system by 20%.

A planned adaptive strategy for water conservation is proposed for Highland and Fernwood, enabling conservation measures to be tailored to meet the changing needs of the community over time. The following current and future conservation measures are proposed as elements of a water conservation plan for Highland and Fernwood Water Services:

- Universal metering – this is an ongoing measure and will continue.
- Reporting usage on water bills – this is an ongoing measure and will continue.
- Consumption based water billing – this is an ongoing measure and will continue.
- Community Awareness and Education – this is an ongoing measure and will continue.

The scope of these measures will be reviewed annually and expanded as needed during annual and five year planning and budgeting process.

- Distribution Loss Reduction
  - Implement a Strategic Asset Management Plan to prioritize asset replacement based on water losses and other criteria (current and every five years);
  - Monitor overall non-revenue water at least annually, and compare against published benchmarks;
  - Develop a water main repair/replacement strategy for the Highland Fernwood water services in 2021;
  - Complete a water main repair/replacement detailed design in 2021;
  - Construct the initial phase of water main repair/replacement in 2022-2023 (estimated construction cost of $1,500,000, subject to Commission approval and borrowing referendum); and
  - Repair/replace the Upper water storage reservoir for the service which is currently experiencing leakage issues by 2023.

The costs of a distribution loss reduction program have been incorporated into 2021-2025 five year capital plans for the Highland Fernwood water service. It is anticipated that losses will be significantly reduced to meet conservation program targets once the reduction measures are implemented.

- Water Conservation Plan Renewal

  A review of the Water Conservation Plan will be conducted every five years to update forecasts and targets, consider new information, and adjust program activities as required to meet targets.

ALTERNATIVES

Alternative 1
That the Highland Fernwood Water Service Commission recommend to the Electoral Areas Committee that the Capital Regional District Board endorse the Water Conservation Plan for Highland Fernwood Water Service.

Alternative 2
That the Highland Fernwood Water Service Commission recommend that this report be referred back to staff for additional information.

IMPLICATIONS

Environmental & Climate Implications

Reducing water use per capita will benefit the community and the environment by:

- reducing the costs and carbon emissions of operating the process treatment plant including transporting residuals for disposal;
- reducing the costs and carbon emissions of expanding the infrastructure to accommodate growth (e.g. manufacturing, transporting and installing larger water mains);
- maintaining more water storage in reserve for emergencies such as wildfires or extreme drought, which may increase due to climate change; and
- maintaining higher reservoir levels, thereby improving source water quality in summer and minimizing a possible expansion of storage by other users

Financial Implications

Many of the conversation measures including water meters, usage reporting, and consumption based billing, and Community Awareness and Education are already in place and included in the service's annual operating budgets. No significant financial implications are anticipated at this time due to implementation of these measures. The scope of these water conservation measures will be reviewed annually and expanded as needed during annual and five year planning and budgeting process.

The costs of a distribution loss reduction program have been incorporated into 2021-2025 five year capital plans for the Highland Fernwood water service. It is anticipated that losses will be significantly reduced and result in savings of revenue water once the reduction measures are implemented.

The estimated costs are included in the 2021 to 2025 capital/operating plans, as follows:

- Monitor overall non-revenue water at least annually, and compare against published benchmarks (included in operating plans);
- Develop a water main repair/replacement strategy and a water main repair/replacement detailed design for the Highland Fernwood water services in 2021 (estimated $15,000 from Capital Reserve Fund and $85,000 from grant);
- Construct the initial phase of water main repair/replacement in 2022-2023 (estimated construction cost of $1,500,000, subject to Commission approval and borrowing referendum); and
- Repair/replace the Upper water storage reservoir for the service which is currently experiencing leakage issues by 2023 (estimated total cost of $390,000, subject to Commission approval and borrowing referendum).

The above major capital projects were identified during the asset management planning process in 2019-2020 and have already been included in the 2021-2025 five year capital programs. The water conservation benefit will be a positive outcome that will come with the completion of these capital projects which are proposed to address issues associated with existing aging/failing infrastructure and poor asset conditions in the Highland Fernwood water service area.

Service Delivery Implications

No significant impacts to the operations and delivery of drinking water to the service area are expected as a result of the implementation of this water conservation plan.

CONCLUSION

The Highland Water and Sewer (Maliview) Service is applying to the Rural and Northern Communities Infrastructure funding program to fund its waste water treatment plant upgrade. The program requires applicants to have a Board endorsed Water Conservation Plan submitted no later than a month after the application deadline, on November 22, 2020.

The Water Conservation Plan as proposed aims to achieve 20% water loss reduction and 10% water use reduction in ten year by 2030 by continuing current water metering, usage reporting, consumption based billing, and Community Awareness and Education programs and carrying out a number of capital projects to replace existing aging water distribution and storage infrastructure.

RECOMMENDATION

That the Highland Fernwood Water Service Commission recommend to the Electoral Areas Committee that the Capital Regional District Board endorse the Water Conservation Plan.

Submitted by	Allen Xu, MSc., P.Eng, Manager of Engineering, Salt Spring Island Electoral Area
Concurrence by	Karla Campbell, BBA, Senior Manager, Salt Spring Island Electoral Area

AX: ts

Attachments: Appendix 1 Highland Fernwood Water Conservation Plan Draft

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CRD Salt Spring Island Electoral Area

Highland and Fernwood Water Service (Maliview Wastewater) Water Conservation Plan DRAFT

October 14, 2020

1. Introduction

The Maliview Sewer Service is in a semi-rural residential community located on Salt Spring Island. It is a sewage conveyance and treatment system that is owned and operated by the Capital Regional District (CRD) and services the Maliview Sewer Service Area, shown Figure 1.

Figure 1 Maliview Wastewater Service Area Map

The Maliview Wastewater service is located geographically within the Highland and Fernwood Water Service area (Figure 2). Both the water and wastewater services are administered by the Highland and Fernwood water local Services Commission.

2. Water Supply System Profile

The Highland Fernwood water service area is comprised of 333 parcels of land with 320 of those parcels connected to the service.

The service obtains its drinking water from St. Mary Lake, which lies within an uncontrolled multi-use watershed. The Capital Regional District (CRD) holds five licenses to divert a total of up to 230,000 m^3 per year and store up to 30,800 m^3. St. Mary Lake is subject to seasonal water quality changes and is affected by periodic algae blooms.

The Highland/Fernwood water system is primarily comprised of:

- a water treatment plant (WTP) that draws water from St. Mary Lake and treats it at a location on Maycock Road, adjacent to the lake. The water is treated using a rapid mix system, flocculation, dissolved air floatation (DAF) and filters, ultraviolet disinfection, then chlorination

prior to being pumped, via the distribution system to two different reservoirs. The WTP design flow rate is 11.3 l/sec (150 Igpm);

- one raw water pump station on Maycock Road, adjacent to the lake. (flow rate of two pumps running is 4.6 l/sec (60 Igpm);
- approximately 12,000 m of water distribution pipe;
- 4 water reservoirs – one 180 m^3 (40,000 Ig) on the Highland system, one 91 m^3 (20,000 Ig) on the Highland system, one 45 m^3 (10,000 Ig) on the Fernwood system and, one 91 m^3 (20,000 Ig) on the Fernwood system;
- 2 water system booster pumps – on the Highland system only, 1 at each reservoir;
- fire hydrants, standpipes, and gate valves;
- water service connections complete with water meters;
- 2 pressure reducing valve stations - one on North End Road and one on Maliview Drive.

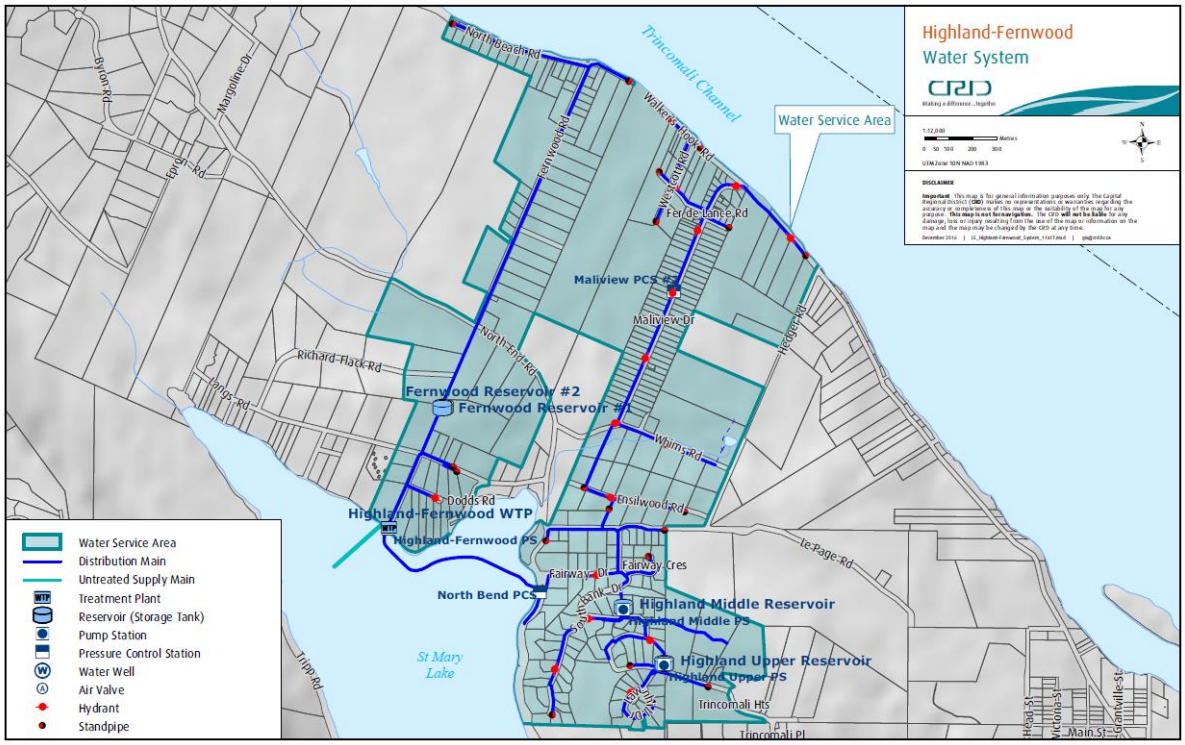

Figure 2 Highland Fernwood Water Service Area Map

Current system supply and use data are shown in Table 1, 2, and 3:

Table 1 Water Supply Capacity for Highland and Fernwood Service

Total Population Currently Served	750 Persons
Maximum Future Population	780 Persons
Maximum Annual Water Supply Capacity of System	350,000 Cubic Meters[1]

1. Based on water treatment plant capacity of 11.1 l/l. Licensed volume is 230,000 m^3 per year.

The water source for the Highland Fernwood Water Service is St. Mary Lake with an actual live storage of 16,593,000 cubic meters (Ministry of Environment) and an annual inflow estimated between 3 - 4 million cubic meters. The historical water supply available from St. Mary Lake is

significantly more than the licensed capacity. The volume of treated water available to the Highland Fernwood service is limited to the abstraction amount afforded it through license. The maximum design output of the water treatment plant is 11.1 1/s, or 350,000 cubic meters per year, which exceeds current annual production of water from this plant.

The water production and use data for the Highland Fernwood Service in 2015 to 2019 is provide in Table 2.

Table 2 Water Production and Use Data for the Highland and Fernwood Water Service

Year	Annual Production (m^3)	Annual Residential Water Use (m^3)[1]	Annual Water Loss (m^3)[2]	Average Residential Use per Day (m^3)	Average Residential Use per Capita (m^3)[3]	Average Residential Use per Capita per Day (liters)
2015	77,621	51,376	26,245	141	69	188
2016	85,727	50,965	34,762	140	68	186
2017	86,026	51,943	34,083	142	69	190
2018	85,659	51,059	34,600	140	68	187
2019	73,670	48,804	24,866	134	65	178

1. Water use data based on billing information. The Highland/Fernwood Water System is fully metered, and water meters are read quarterly.
2. The difference between water produced and water demand (total metered consumption) is called non-revenue water and includes distribution leaks, meter error, and unmetered uses such as fire hydrant usage, distribution system maintenance, and process water for the treatment plant. Water loss is estimated to be approximately over 30% of produced water which is considered high.
3. Calculation is based on 750 residents in the service area.

The following figure compares Highland Fernwood water use to other municipalities in BC, average BC and Canada in general.

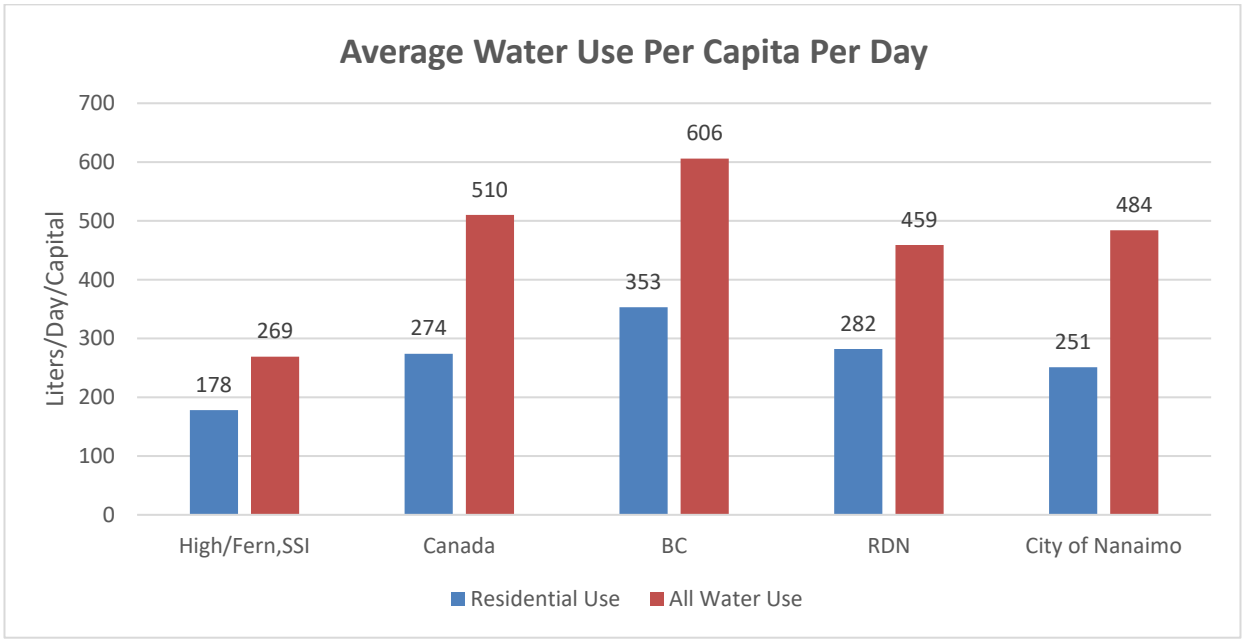

Figure 3 Average Water Use per Capital per Day

It is seen that average water use per capital per day for the Highland Fernwood service is significantly lower than BC and Canada average values, by 35% and 50%, respectively.

3. Demand Forecasting

Population and Potential Growth

The Highland - Fernwood Service Area, includes 333 taxable folios, of which 320 are currently connected to the water system. Most connections serve single-family equivalent (SFE) dwellings although 21 connections are reported to serve two dwellings each making 341 dwellings in total. As there is reportedly little seasonal variation in occupancy, for the purpose of this analysis, the population is assumed to average 750 residents (based on an average household size of 2.2 for Salt Spring Island, 2006 census).

There is limited potential for population growth within the Highland-Fernwood area as there are only 13 undeveloped folios remaining, and based on the relatively small lot sizes and lack of available sewer, subdivision is extremely unlikely. Therefore, it is estimated that the area has achieved close to its maximum number of households. If all properties were to be developed, the maximum area built-out population would be approximately 780 persons. Secondary dwellings are allowed on residential parcels on Salt Spring Island; however, the Islands Trust (which has jurisdiction for land use) restricts the approval of secondary dwellings where drinking water supply capacity or wastewater facilities are constrained.

Expansion of the service area is subject to the approval of the Capital Regional District Board (normally following a recommendation by the local service commission). There are several dwellings in the immediate proximity to the existing water area which are currently served by either individual private wells or extract from St. Mary Lake. It is possible that some of those adjacent owners may seek inclusion in the water service area in the future which would be contingent upon available capacity within the system and agreeing to fund the cost to extend the existing distribution piping system and pay all applicable inclusion charges levied against a new property. There has been limited increase (<5) in the number of folios in the combined system for the past eight years.

There is potential for an increase in average household size, although there are no apparent drivers for such an increase in order to predict a significant change. For the purpose of this study, it is assumed that the maximum population of the service area is equal to the build-out population of 780.

Climate Change Adaptation and Mitigation

Precipitation trends are expected to change in coming decades. For the CRO region, by the 2050s, annual precipitation is likely to increase. For the purpose of this analysis, it is assumed that the worst case annual lake recharge would be 3% less than the driest year on historical record.

If water demand per capita, including non-revenue water, remains relatively static, the negligible forecast population growth would maintain the total average annual water demand at about 85,000 cubic metres. The current water source is expected to be capable of meeting this demand in the driest forecast year (accounting for climate change), with a maximum seasonal reservoir over-all drawdown of 10-15% of capacity. On this basis, the current water source is expected to be adequate

to serve the needs of the community for at least the next 50 years without demand reduction measures.

The Highland Fernwood water system has a relatively moderate carbon footprint as treated water must still be pumped to storage reservoirs to serve the community. Although it has been determined that there is sufficient raw water available to provide the community for at least the next 50 years, reducing water use per capita will benefit the community and the environment by:

- reducing the costs and carbon emissions of operating the process treatment plant including transporting residuals for disposal
- reducing the costs and carbon emissions of expanding the infrastructure to accommodate growth (e.g. manufacturing, transporting and installing larger water mains)
- maintaining more water storage in reserve for emergencies such as wildfires or extreme drought, which may increase due to climate change
- maintaining higher reservoir levels, thereby improving source water quality in summer and minimizing a possible expansion of storage by other users

4. Conservation Goals and Targets

The following water conservation targets are proposed by 2030:

- Reduce annual average water demand per full time, permanent resident by 10%,
- Reduce annual average water loss in the system by 20%.

These targets are achievable by gradual adoption of current, cost-effective technologies including high efficiency toilets and front loading washing machines. Rainwater harvesting for non-potable uses and leak reduction may also be implemented cost-effectively as existing infrastructure is replaced and annual costs of water service increase over the next 10-20 years. In order to achieve the conservation targets, the value of water efficient technologies and practices must be effectively communicated to the community.

There is approximately 12.9 km of water distribution pipe with the Highland Fernwood Water service with the vast majority being asbestos cement pipe installed in 1970s. The distribution also includes fire hydrants, standpipes, gate valves; and water service connections complete with water meters. The current water distribution system is approximately 50 years old and close or passed its service life. The service has experienced increasing number of localized water distribution pipe failures in recent years. Replacing these aged and failing water distribution system in the next five to ten years would effectively reduce water losses in the system.

5. Current and Future Water Conservation Measures

A planned adaptive strategy for water conservation is proposed for Highland and Fernwood, enabling conservation measures to be tailored to meet the changing needs of the community over time. This approach has proven successful for the CRD Greater Victoria water system. The following conservation measures are proposed as elements of a water conservation plan for Highland and Fernwood Water Services:

a) **Universal metering (current)** - Each customer connection to the water system is fitted with

a water meter. The meters have been read quarterly. The ongoing annual cost to read and maintain the meters and to replace them is included in the Operational plans.

b) **Reporting usage on water bills (current)** - Information about water use has been displayed on water bills since January 2011, raising customer awareness about their water use. Further information is presented at annual general meetings and in community newsletters, enabling customers to compare their own usage with the range and average in their community and others. The cost of reporting water usage on the water bills is currently budgeted.

c) **Consumption based water billing (current)** - Inclining block rate structures are commonly used for CRD water services, typically recovering 10-25% of the total cost of service (the remainder is recovered through fixed user charges and parcel taxes).

Such a structure maintains stable revenue for fixed costs, provides a sufficient quantity of water at an affordable cost for essential customer needs, and provides a strong price signal to reduce excessive usage in any of the four billing cycles. Implementation of this structure in other CRD Salt Spring Island water services has proven to be effective in reducing an overall demand.

d) **Community Awareness and Education (current and future; expand as needed to meet target)** - Information about water use and conservation is provided in community newsletters and at typically well attended annual general meetings (AGM). A more formal conservation awareness program may be implemented by linking information presented by mail and at the AGM with a community homepage on the CRD website that includes:

- water use statistics, and comparison with other areas and benchmarks/targets
- best practice guides (e.g. fixture and appliance standards, rainwater harvesting, leak prevention)
- links to CRD regional water conservation resources
- links to other organizations that provide water conservation resources tailored to the Gulf Islands (e.g. Mayne Island Integrated Water Systems Society, Salt Spring Island Water Council).

The cost of a modest community awareness program including the AGM, newsletters and website content, is currently budgeted. The scope of this measure will be reviewed annually and expanded as needed during annual and five year planning and budgeting process.

e) **Distribution Loss Reduction (current and future; expand as needed to meet target)**

The CRD has monitored quarterly production volumes and the corresponding customer water usage as an indicator of leakage losses. CRD operators are able to monitor the difference between the volume of water treated and the volume measured through customer meters (non-revenue water).

The following measures is planned to be implemented over the next ten years to meet demand reduction targets and manage distribution losses in accordance with industry best practices:

- Develop/update a Strategic Asset Management Plan to prioritize asset replacement based on water losses and other criteria (current and every five years)

- Monitor overall non-revenue water at least annually, and compare against published benchmarks
- Add or modify distribution valves to increase zone isolation and measurement to efficiently isolate and repair leaks
- Develop a water main repair/replacement strategy for the Highland Fernwood water services;
- Complete a detailed water main repair/replacement design in 2021;
- Construct the initial phase of water main repair/replacement in 2022-2023 (estimated construction cost of $1,500,000, subject to Commission approval and borrowing referendum).
- Repair/replace the Upper water storage reservoir for the service which is currently experiencing leakage issues by 2022.

The cost of a distribution loss reduction program have been incorporated into 2021-2025 five year capital plans. It is anticipated that losses will be significantly reduced and maintained to meet conservation program targets once the reduction measures are implemented.

f) **Water Conservation Plan Renewal (future in 2026, and every five years thereafter)** A review of the Water Conservation Plan will be conducted every five years to update forecasts and targets, consider new information, and adjust program activities as required to meet targets.

The cost to review and update this conservation plan is anticipated to be roughly $1,000 every five years, which could be accommodated within the current annual budget for the service.

6. Implementation Strategy

This Water Conservation Plan will be implemented by CRD staff, under the authority of the Highland Fernwood Water Service Commission and the CRD Board.

The following implementation schedule is proposed:

a) **Universal metering** – this is an ongoing measure and will continue.

b) **Reporting usage on water bills**– this is an ongoing measure and will continue.

c) **Consumption based water billing (current)** – this is an ongoing measure and will continue.

d) **Community Awareness and Education** – this is an ongoing measure and will continue.

The scope of this measure will be reviewed annually and expanded as needed during annual and five year planning and budgeting process.

e) Distribution Loss Reduction

- Develop/update a Strategic Asset Management Plan to prioritize asset replacement based on water losses and other criteria (current and every five years)
- Monitor overall non-revenue water at least annually, and compare against published benchmarks
- Develop a water main repair/replacement strategy for the Highland Fernwood water

services in 2021;

- Complete a water main repair/replacement detailed design in 2021;
- Construct the initial phase of water main repair/replacement in 2022-2023 (estimated construction cost of $1,500,000, subject to Commission approval and borrowing referendum).
- Repair/replace the Upper water storage reservoir for the service which is currently experiencing leakage issues by 2023.

The costs of a distribution loss reduction program have been incorporated into 2021-2025 five year capital plans for the Highland Fernwood water service. It is anticipated that losses will be significantly reduced and maintained to meet conservation program targets once the reduction measures are implemented.

g) **Water Conservation Plan Renewal**

A review of the Water Conservation Plan will be conducted every five years to update forecasts and targets, consider new information, and adjust program activities as required to meet targets.

The cost to review and update this conservation plan is anticipated to be roughly $1,000 every five years, which could be accommodated within the current annual budget for the service.

References:

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- Fernwood Water System Asset Management Plan, McElhanney 2020
- Highland Fernwood Water Service Water Conservation Plan Draft, Capital Regional District Internal Document 2012
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- Lamb, Peter. Salt Spring Island Potable Water Supply and Demand Analysis. Salt Spring Island Water Council 2010
- Hamilton, Roy. Hydrology of St. Mary Lake. Prepared for North Salt Spring Waterworks District 1998
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REPORT TO HIGHLAND WATER AND SEWER (MALIVIEW) SERVICES COMMISSION MEETING OF THURSDAY OCTOBER 22, 2020

SUBJECT **Request to Increase Budget to Develop Detailed Engineering Design and Cost Estimates for the Maliview Wastewater Treatment Plant Upgrading**

ISSUE

To seek the Commission's approval to increase the project budget (CE 582.4501) and proceed with detailed design and cost estimation for the upgrading of the Maliview Wastewater Treatment Plant (WWTP).

BACKGROUND

The Maliview Wastewater Treatment Plant (WWTP) is a 60 m^3/day Rotating Biological Contactor (RBC) secondary treatment plant that discharges treated effluent into the marine receiving environment of Trincomali Channel. Authorization to discharge falls under the provincial British Columbia Municipal Wastewater Regulation. The Maliview WWTP is exempted from the requirements of the federal Wastewater Systems Effluent Regulation due to small plant discharge. However the Federal government has jurisdiction under Section 36(3) of the *Fisheries Act* which prohibits deposition of deleterious substance in water frequented by fish.

The Maliview WWTP has been experiencing challenges in consistently meeting regulatory requirements. Environment Canada (EC) inspected the Maliview WWTP on August 22, 2019 and collected effluent samples for toxicity testing. The samples failed both LT50 and LC50 Rainbow Trout lethality analyses as well as contained approximately 1.5 times greater ammonia concentration than the acutely lethal concentration to rainbow trout.

On September 19, 2019, the CRD received a written warning letter from the Enforcement Branch of EC that the Maliview WWTP contravenes subsection 36(3) of the *Fisheries Act*. EC requires the CRD and its responsible officers to take all necessary corrective actions to ensure compliance and exercise due diligence in the future. EC also warned the CRD that it will consider taking further actions if corrective actions are not taken. In accordance with EC's Compliance and Enforcement Policy for Habitat and Pollution Provisions of Fisheries Act, the range of further actions include financial penalties, orders, injunctions or prosecutions.

On January 30, 2020, the CRD received a written warning letter from the Ministry of Environment (MOE), Province of British Columbia. MOE 2019 inspection determined that Maliview WWTP is non-compliant with Municipal Wastewater Regulation requirements. MOE requests that the CRD implement necessary changes or modifications to correct the non-compliance. MOE warns that if CRD fails to take necessary actions to restore compliance, they may escalate enforcement actions.

As required by the EC Warning, CRD provided a written response on October 22, 2019 and outlined its corrective action plans to enhance the facility and bring the facility back into regulatory compliance:

- Phase 1: Implementing operational improvements, e.g. , increase frequency of hauling of sludge and removal of fats, oils and grease, by December 31, 2019;

- Phase 2: Retaining an engineering consultant to review existing documentation and plant data, conduct engineering analysis and recommend plant upgrading options, as well as perform a preliminary design and cost estimate;

  Phase 2 will also include a public outreach campaign to educate the users about negative impacts of disposing of fats, oils and grease into the sewer system and Wastewater treatment process. The final report and design work was to be completed by June 30, 2020; and,

- Phase 3: the final phase of the corrective action plan will be to complete the upgrading construction of the Maliview WWTP. The CRD has noted that due to limited financial capacity of the service, the CRD will need to explore debt borrowing (subject to electoral approval) and alternative funding strategies such as grants from senior levels of government. The target completion date for the upgrading is the end of year 2022.

The CRD provided a letter response back to MOE on February 25, 2020. The letter summarized near term actions and provided medium and long term action plans to the MOE. The actions and timelines are the same as CRD's commitment to the EC.

Currently the phase 1 tasks have been implemented and the CRD has completed a conceptual/preliminary design and cost estimate for upgrading options per the phase 2 commitments. To complete this Design Project, CRD retained an engineering consultant and completed an engineering assessment and a comprehensive analysis to investigate current problems with the plant and screen various treatment technologies that could be suitable for the upgrading of the Maliview WWTP (project CE 582.4501).

Seven potential technologies were evaluated and compared considering technology suitability, physical space constraints, capital and operational and maintenance costs, and regulatory requirements. Two technologies, Moving Bed Biofilm Reactor (MBBR) and Conventional Activated Sludge (CAS) were shortlisted and further evaluated in the conceptual design process. These two technologies were further evaluated and scored on technology, economic and environmental criteria. MBBR was eventually recommended to be the technology to proceed with a conceptual design, primarily due to the fact that the biofilm is more resilient to broad load and temperature ranges which is a typical issue experienced in the Maliview wastewater service. It was concluded in the study that the MBBR process will be better suited for the service to meet effluent requirements during peak flow and loading events.

Based on the conceptual design, it is estimated that the total construction costs associated with the upgrade is approximately $1.65 million (Class C cost estimate with up to +/- 40% contingency). Design details including general drawings and specifications for civil, structural, process and instrumentation, process and mechanical, electrical drawings were not included in the scope of work for the preliminary design and need to be developed for future construction. Additionally, there have not been site survey or geotechnical investigations completed at this stage, which will be required to inform the design of site grading, foundation and tanks. An estimation of additional costs associated with detailed design as well as costs associated with preparing the grant application are summarized in Table 1.

Table 1 Estimated Costs for Detailed Design, Geotechnical Investigation and Site Survey for Maliview WWTP Upgrade (Alternative 1)

Item	**Estimated Fees**
Detailed design and cost estimation (Issue for Tender specification and drawings and Class B cost estimation within 25%)	$143,000
Geotechnical Investigation	$18,000
Site Survey	$3,700
Project Management and Quality Assurance	$16,500
Grant Application	$3,000
Archeological Impact Study and Monitoring Allowance[1]	$50,000
Contingency (10%) [2]	$23,420
Total Estimate Cost[3]	$257,620

1 A preliminary search indicates the site is in a high archaeological potential area. An archaeologist will need to be engaged to further review the site and obtain regulatory permit (if required).
2. Contingency will be applied if needed, any unused contingency will be returned to the Capital Reserve Fund or Community Works Fund.
3. Approximately 12% based on the assumption that total construction cost is $2,200,000.

Current construction cost estimation is high level and based on conceptual/preliminary design information and consultant's experience with similar sized Wastewater plant projects elsewhere. If a detailed design is going to be developed, it is recommended that a geotechnical investigation and site survey be carried out to understand the site surface and subsurface conditions to mitigate uncertainties in construction and costs. It is also recommended that the current Class C cost estimated from preliminary design be further broken down, analyzed and updated with current market data and pricing for Salt Spring Island.

Table 2 provides the estimated costs for an alternative where the full Issue-for-Tender detailed design will not be developed at this time, but some additional analysis and updating of cost estimation, as well as geotechnical investigation and site survey will be completed. The primary purpose of the alternative approach is to reduce uncertainties associated with future design and construction and a reasonable accurate cost estimation can be developed for the grant application.

Table 2 Estimated Costs for Detailed Cost Estimation, Geotechnical Investigation and Site Survey for Maliview WWTP Upgrade (Alternative 2)

Item	**Estimated Fees**
Additional Design & Analysis, Detailed Cost Estimation Public Engagement/Consultation	$40,000
Geotechnical Investigation	$18,000
Site Survey	$3,700
Project Management and Quality Assurance	$6,500
Grant Application	$3,000
Archeological Impact Study and Monitoring Allowance	$50,000
Contingency (10%)	$12,120
Total Estimate Cost	$133,320

Advantages/disadvantages and financial/regulatory/environmental implications for both alternatives are further analyzed and presented in subsequent sections of this report.

ALTERNATIVES

Alternative 1

That the Highland Water and Sewer (Maliview) Service Commission recommends to the Electoral Areas Committee that the Capital Regional District Board amend the Highland Water and Sewer (Maliview) service Five Year Financial Plan to include a project for Maliview WWTP Upgrade Design in year 2020 with the total budget of $257,620 funded by the combination of capital reserve fund ($22,000) and Community Work Fund ($235,620).

Alternative 2

That the Highland Water and Sewer (Maliview) Service Commission recommends that the Capital Regional District Board amend the Highland Water and Sewer (Maliview) service Five Year Financial Plan to include a project for Maliview WWTP Upgrade Design in year 2020 with the total budget of $133,320 funded by the combination of capital reserve fund ($12,000) and Community Work Fund ($121,320).

Alternative 3

That the Highland Water and Sewer (Maliview) Service Commission recommends the request be referred back to staff.

IMPLICATIONS

INTERGOVERNMENTAL/ REGULATORY IMPLICATIONS

As stated in the federal government's warning letter, EC will take further actions against the CRD and the service if corrective actions are not taken or due diligence is not exercised by the CRD in a timely manner. The range of further actions may include financial penalties, orders, injunctions or prosecution.

As stated in the Warning Letter from the Ministry of Environment (MOE), MOE *requests that the* CRD immediately implement the necessary changes or modifications to correct the noncompliance. MOE states in the warning letter that "Contravention of the requirements set out in the Municipal Wastewater Regulation is an offence under the Environmental Management Act (EMA). Section 120(13) of EMA states as follows:

120 (13) A person who contravenes a requirement of a regulation that specifies the quantity or characteristics of waste that may be introduced into the environment commits an offence and is liable on conviction to a fine not exceeding $1,000, 000 or imprisonment for not more than 6 months, or both."

ECONOMIC IMPLICATIONS

Fines and Penalties
Under section 40(2) of the *Fisheries Act*, the federal regulator can assess a fine of no less than $25,000 and not more than $2,000,000 for a first offence. Or a fine of not less than $50,000 and not more than $4,000,000, for a second or subsequent offence.

MOE of BC can impose an Administrative Monetary Penalty of up to $75,000 or up to $1,000,000 under formal charges, in accordance with its Compliance and Enforcement Policy and Procedure.

If penalties are assessed against the Maliview WWTP, the cost will be borne by the service users in the community, which can have severe and adverse impacts to the operation and capital improvements of the service for many years in the future.

Grant Program

The CRD has noted in its response to the federal government that due to limited financial capacity of the service, the CRD will need to explore alternative funding strategies such as grants from senior levels of government. It should be noted that, funding criteria of senior levels of government often require the project to be “shovel ready” which means the projects are properly designed, cost estimated and ready to be constructed within a certain timeframe prescribed by the program. It is therefore critical to carry out the engineering investigation and designs as early as possible so that the project meets funding criteria should funding opportunities become available in the future.

CRD staff have been closely monitoring funding program announcements and news - on June 25, 2020, the Canadian and British Columbian governments announced up to $58.7 million towards the second intake of the Rural and Northern Communities (RNC) Program to support cost-sharing of infrastructure projects in communities across the province. This intake is designed to target projects starting in 2021. For local governments with less than 25,000 population, the program provides up to 90% of required funding towards eligible infrastructure programs.

CRD staff have recommended to submit an application for the Maliview upgrading project prior to the deadline of October 22, 2020. According to the Grant Administrator/Approval Officer, engineering and construction costs are both eligible costs under the program. However it is expected by the Grant Administrator that the design be advanced to a stage where there is a reasonable level of certainty associated with the construction details and associated costs (less than 20%). As well it is important to know that any ineligible costs and cost overruns are the responsibility of the grant recipient, besides the 10% share of the total costs that is the responsibilities of the recipient.

Based on conceptual design and preliminary design analysis without geotechnical investigation and detailed engineering analysis, it is estimated that the entire project will likely cost $2,000,000 to $2, 200,000 including engineering, project management, construction, and contingency. If CRD can successfully secure a grant under the RNC Program, the costs to the service would be approximately $200,000 to $250,000 (10% of total costs plus contingency plus ineligible costs). The financial burden to the service will be greatly reduced if the grant funding application is successful.

Project Fund, Capital Reserve Fund and Community Works Fund

The inflow and infiltration inspection project (CE.451.7501) was completed in 2018. The outfall land portion replacement project (CE.451.7502) was completed in early 2019 and the sewer inflow and infiltration repairs project (CE.451.7503) was completed in early 2019. Based on financial analysis, a total of approximately $87,713 Community Works Fund (CWF) is left within the three project funds and will be returned.

Table 3: Summary of completed projects and funding sources with CWF remaining.

Project Number/Name	Total Budget	CWF Eligible Costs
CE.451.7501 Maliview Sewer Inflow and Infiltration Inspection	$15,000	$13,190
CE.451.7502 Maliview Sewer Replacement	$135,000	$45,198
CE.451.7503 Maliview Inflow and Infiltration Repairs	$80,875	$63,899
Total Budget	$230,875	$122,287
Total CWF Fund Received for All Three Projects		$210,000
Remaining CWF Fund (to be returned)		$87,713

In 2020 capital projects plan, there was a project for access improvements ($15,000) and another project for backup power design ($10,000). These two projects can likely be more cost-effectively executed in the upcoming major upgrading project and therefore the allocated total fund of $25,000 from Capital Reserve Fund (CRF) will not be required. The original CRF balance at the end of 2020 is estimated to be $4,933 and it will be approximately $29,933 due to the cancellation of the access improvement and backup power design projects.

Existing project CE.582.4501 has an approved budget of $57,900 ($9,120 spent on project management and technical review, $48,294 spent on optional analysis and conceptual design, $486 remaining) and the related scope has now been completed. It is estimated that in order to continue detailed design and fund Alternative 1, a total of $22,000 is needed from the CRF and a total of $182,200 is required from the CWF. There is a net amount of $94,487 additional CWF to be applied for, considering the return of $87,713 to CWF from remaining project fund of CE.451.7501, CE.451. 7502 and CE.451.7503.

It is estimated that to fund Alternative 2, a total of $12,000 is needed from the CRF (for CWF ineligible costs) and a total of $66,320 is required from the CWF (a net amount of $13,880 will be returned to the CWF). The costs and funding sources are summarized in Table 4.

Table 4: Summary of alternative costs and funding sources.

Alternative	Total Budget Increase Required	Budget to be Funded by CRF	Budget to be Funded by CWF	Remaining Funds in Completed Capital Projects (to be Returned to CWF)	Net Additional CWF to be Applied for
Alternative 1	$257,620	$22,000	$235,620	$87,713	$147,907
Alternative 2	$133,320	$12,000	$121,320	$87,713	$33,607

ENVIRONMENTAL IMPLICATIONS

Discharging effluent that does not meet treatment requirements into the marine environment is considered, under *Fisheries Act*, as depositing deleterious substances that affects fish in the receiving marine environment. One of the CRD's priorities is protecting health and the environment and therefore taking timely corrective action is required to rectify this environmental risk.

CONCLUSION

The Maliview WWTP has been experiencing challenges in consistently meeting regulatory requirements. The CRD has received warning letters from both the federal and provincial regulators who require the CRD to take all necessary corrective actions to ensure compliance and exercise due diligence. The CRD has developed an action plan in response to the Regulators which committed to complete the upgrading construction of the Maliview WWTP by the end of 2022, subject to funding. To date, phase 2 actions are completed which evaluated multiple upgrading options and recommended upgrading using MBBR technology. The phase 2 study also developed a preliminary design for the MBBR option and a Class C cost estimate.

On June 25, 2020, the Canadian and British Columbian governments announced up to $58.7 million towards the second intake of the RNC Program to support cost-sharing of infrastructure projects in communities across the province. This intake is designed to target projects starting in 2021.

Proceeding with detailed design and cost estimate will put the service in a ready position to apply for senior level government grants and reduces unknowns and uncertainties in the construction phase and mitigate future cost overruns. Currently the Federal and Provincial governments' RNC Program can provide up to 90% of construction costs which will greatly reduce the service's financial burden and accelerate the construction of treatment plant upgrading and return to compliance.

Approval of the increase in the design project budget will permit the project team to advance the design stage in parallel with the RNC Grant application which may be viewed favorably by the granting agencies.

RECOMMENDATION

That the Highland Water and Sewer (Maliview) Service Commission recommends that the Electoral Areas Committee recommends that the Capital Regional District Board amend the Highland Water and Sewer (Maliview) service Five Year Financial Plan to include a project for Maliview WWTP Upgrade Design in year 2020 with the total budget of $257,620 funded by the combination of capital reserve fund ($22,000) and Community Work Fund ($235,620).

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Concurrence	Robert Lapham, MCIP, RPP, Chief Administrative Officer

AX/ts

Attachments:

Appendix 1 Preliminary Design Memo

Appendix 2 Northern and Rural Infrastructure Program New Announcement

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

PRELIMINARY DESIGN REPORT

Capital Regional District
Salt Spring Island

Maliview Wastewater Treatment Plant

OCTOBER 2020

A Carbon Neutral Company

BEST MANAGED COMPANIES Platinum member

ASSOCIATED ENGINEERING

QUALITY MANAGEMENT SIGN-OFF

Signature .....

Date 2020-10-07

#27-QMSO-2020-091

EXECUTIVE SUMMARY

The Maliview Wastewater Treatment Facility is a secondary treatment facility providing treatment for approximately 100 residences on Salt Spring Island. In its current configuration, the treatment facility screens incoming wastewater utilizing 2-mm screen. Screened flows up to 60 m^3/d of are treated utilizing a Rotating Biological Contactor (RBC) prior to clarification and discharge to the marine outfall. Screened flows greater than 60 m^3/d are split from the main treatment process and discharged directly to the outfall and into Trincomali Channel.

Currently, discharges from the Maliview Treatment Facility occasionally exceed permitted BOD_5, TSS, and toxicity. As such, upgrades to the facility are required to improve effluent quality prior to discharge. The preliminary design of the facility upgrades includes the following:

- Increased secondary treatment capacity to 100 m^3/d.
- Moving Bed Biofilm Reactor (MBBR) treatment system in a two-stage reactor configuration.
  - First MBBR reactor: BOD_5 oxidation.
  - Second MBBR reactor: Ammonia oxidation.
- Mixing tank for chemical flocculation and biomass settling and pH adjustment.
- Secondary Clarifier (retrofitted RBC) for suspended solids removal and sludge storage

These process improvements will require additional modifications to the treatment facility, including:

- Conversion of the storage room for chemical storage (sodium hydroxide and aluminum sulphate).
- Duty/standby blowers located within the storage building.
- Miscellaneous structural pads.
- Step up transformer for 600 V.
- Electrical, instrumentation, and controls upgrades.
- New conveyance piping.
- Emergency eye wash and shower.
- Tempered water system.
- Building HVAC upgrades.
- Standby generator

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1 INTRODUCTION

The Capital Regional District (CRD) retained Associated Engineering (AE) to assist them with the Maliview Wastewater Treatment Plant Upgrade project. The findings of the work to date indicate that additional treatment is required to meet receiving environment quality objectives.

The proposed upgrades include the design of a new MBBR train to be integrated into the existing treatment train on the current Maliview Wastewater Treatment Plant (WWTP) site.

1.1 Purpose

The purpose of the Design Basis Memorandum (DBM) is to:

- Summarize the findings and observations of the field work undertaken.
- Document the elements required for the detailed design stage of the project, including extent of existing system being repurposed and upgraded, as well new project elements complete with cost estimates, and a proposed project implementation plan.
- Serve as a technical detailed design guidance document for the next phase of the project.
- Provide an updated cost estimate for CRD's budgeting.

1.2 Previous Studies and Documents

The following previous studies, documents and data were provided by the CRD and reviewed by AE:

- Drawings of the Maliview WWTF: One drawing of the RBC unit and two as-built drawings of the WWTF.
- Maliview Environmental Impact Study, 2006.
- Plant Permit (PE 242) and Registration (RE-00242) and associated letters from the CRD and Ministry of the Environment (MOE), August 2006.
- P.J. Hannah Biodisc Operation and Maintenance Manual.
- Facility classification and operator's certification.
- Plant monitoring, daily operation/inspection report forms, sampling schedule and procedure.
- Self-assessment report form.
- Maliview Sewage System - Asset Condition Evaluation and Engineering Study, Final Report by Stantec, November 2011.
- Maliview WWTF Operating Plan by the CRD, November 2013.
- Gulf Islands and Port Renfrew Wastewater and Marine Environment Program - 2016 Annual Report by the CRD, May 2017.
- Maliview – Surface water sampling sites.
- Response to written warning letter (File: 8530-2019-07-23-11959) issued for the Maliview WWTF by the CRD, October 2019.
- 2016 – 2019 Influent and effluent data (flow, biological oxygen demand – BOD5, total suspended solids – TSS, ammonia, fecal coliforms, and pH).
- 2019 Ganges WWTF rain gauge data.
- 2019 water consumption data.

- Additional sampling conducted in February 2020 (Maliview WWTF) and March and April 2020 (outfall – receiving water summary).
- Alkalinity Sampling Data.
- Dimensions of existing storage building onsite.
- Maliview Wastewater Treatment Facility Technology Screening report, May 2020.

1.3 Scope of Services

The scope of the DBM report includes the following:

- Design Criteria Confirmation/Establishment.
- High-level multi-discipline assessment and review of existing systems and upgrade requirements for the purpose of defining detailed design scope, including structural, building mechanical, process mechanical, electrical, and instrumentation and control.
- Utility Requirements.
- Existing System Reuse Items Summary.
- New System Tie-in Requirements.
- New System Operation Philosophy.
- Construction Tie-ins and Sequencing.
- Updated Cost Estimates and Schedule.
- Review Alkalinity Sampling Program Results and Implications to Upgrade.
- Design Drawing Preparation.

2 BACKGROUND INFORMATION

2.1 Existing Installation

The Maliview WWTF consists of a raw influent receiving box, a wet well, a Rotoscreen with 2-mm openings, a modified settling chamber that serves as an equalization tank, a splitter box, and a rotating biological contactor (RBC) unit comprising of a screened effluent settling chamber, two RBCs and a final clarifier. The RBC unit has capacity to treat 60 m^3/d. Flows in excess of 60 m^3/d (and up to 250 m^3/d) by-pass the biological treatment system and are combined with the RBC unit effluent before discharge to the Trincomali Channel of the Georgia Strait through an outfall pipe. A simplified process flow diagram (PFD) is presented in Figure 2-1.

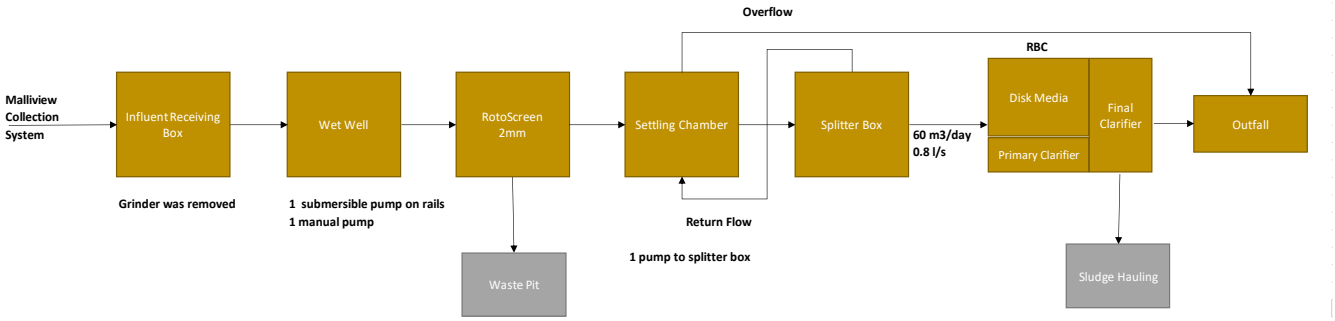


Figure 2-1
Simplified PFD of Existing Installation

2.2 Regulatory Targets

All municipal wastewater discharges to surface water in BC must comply with the provincial Municipal Wastewater Regulation[1] (MWR) (B.C. Reg. 87/2012) under the Environmental Management Act (S.B.C. 2003, c. 53), and those that are designed to collect an average daily influent volume of 100 m^3 or higher must comply with the federal Wastewater Systems Effluent Regulations (WSER) (SOR/2012-139) under the federal Fisheries Act (R.S.C. 1985, c. F-14).

The WWTF permit (Registration RE-00242) was amended in 2007 to allow for flows in excess of 60 m^3/d, but less than 250 m^3/d, to be screened only. The effluent limits are as follows:

- RBC unit effluent (treating up to 60 m^3/d) – 5-day carbonaceous biochemical oxygen demand (cBOD) and total suspended solids (TSS) levels of 45 mg/L.
- Combined effluent (flows over 60 m^3/d) – $cBOD_5$ and TSS levels of 130 mg/L.

[1] This applies unless the discharge is authorized under an existing permit, issued by the Ministry of Environment. Historically, municipal wastewater discharges were authorized under site-specific permits. New municipal discharges, or those that are undergoing significant upgrades or changes, are being moved to the Registration process, where they are required to meet all applicable aspects of the regulations.

Effluent Quality Parameter	Fisheries Act	MWR Table 11 Criteria and Section 95	
$cBOD_5$	N/A	< 2x ADWF[1]	≤ 45 mg/L
	N/A	>= 2x ADWF (interim)	≤ 130 mg/L
TSS	N/A	< 2x ADWF	≤ 45 mg/L
	N/A	>= 2x ADWF (interim)	≤ 130 mg/L
pH	N/A	< 2x ADWF	6 – 9 pH units
Total Phosphorus (total P)	N/A	< 2x ADWF	N/A
Ortho-Phosphate (ortho-P)	N/A	< 2x ADWF	N/A
Ammonia-N	< 33 mg/L(2)	Calculated values[3] of 0.69 mg/L in the vicinity of the outfall based on receiving environment characteristics and chronic aquatic life guideline (discussed below)	
Fecal Coliforms	N/A	Back-calculated based on receiving environment characteristics and provincial water quality guidelines (discussed below)	

Notes:
[1] ADWF = Average Dry Weather Flow, as defined by the MWR.
[2] Ammonia-N concentration in the combined effluent (treated + by-passed) that corresponds to the unionized ammonia limit of 1.25 mg/L at pH of 8 and temperature of 20°C.
[3] This corresponds to a pH of 8, temperature of 25°C, and salinity of 10 ppt (g/kg) and represents the chronic (long-term) guideline. The acute (short-term) maximum guideline, under the same factors, is 4.6 mg/L.
N/A = not applicable (no standard exists).
$cBOD_5$ = 5-day carbonaceous biochemical oxygen demand.

2.3 Population

There were 100 single family equivalent (SFE) recorded for the Maliview catchment area in the last quarter of 2019. Assuming an average occupancy of 2.8 persons per unit as per the CRD planning documents, it is estimated the current population served by the Maliview WWTF is approximately 280 persons. The Maliview area has the potential to accommodate 115 SFE or a total population of 322 persons (at 2.8 person per unit) according to the information provided by the CRD.

2.4 Wastewater Generation

From analysis of the influent monitoring data, the estimated BOD_5 and TSS generation rate per person were estimated to be 68 and 56 g/person-day, respectively for 2019. The NH_3-N load per person was estimated to be 6.3 g/person-day for 2019. These numbers are lower than typical, but within the range of published values[2] of 50 – 120, 60 – 150, and 5 – 12 g/person-day for BOD5, TSS, and NH_3-N respectively.

The per capita loadings under dry weather flow conditions (May to September) were calculated based on the average BOD5, TSS and NH_3-N obtained for May to September (2017 to 2019) and average dry weather flows also obtained for May to September (2017 to 2019). The per capita loadings obtained are 55 g BOD5/cap/d, 50 g TSS/cap/d.

[2] Metcalf & Eddy (2003). Wastewater Engineering: Treatment and Reuse. McGraw Hill, NY.

However, as these estimated generation rates are on the “low” end of the typical ranges, higher generation rates should be utilized to minimize the risk of inaccurate data skewing the estimation for generation rates. As such typical values of 76g of BOD_5 and TSS/cap/d and 7.6 g NH_3-N/cap/d are assumed for design.

3 DESIGN CRITERIA

3.1 Design Parameters

Table 3-1 summarizes the raw wastewater flows and characteristics utilized for the preliminary design of the secondary treatment system.

Table 3-1
Design Summary

Parameter	Units	Value
Average Annual Flow	m^3/d	70
Average Dry Weather Flow	m^3/d	40
Average Wet Weather Flow	m^3/d	95
Maximum Daily Flow	m^3/d	100
BOD_5 Loading	kg/d	25
TSS Loading	kg/d	25
NH_3-N (average)	kg/d	2.4
NH_3-N (peak)	kg/d	3.6
Alkalinity (average)	kg/d	16.1

The design TSS and BOD_5 loading of 25 kg/d corresponds to a per capita generation rate of 76 g/cap/d, which is within the typical range for North America (50 to 120 g/cap/d). The generation rate also corresponds to a typical municipal collection system with no large industrial contributions and 25% of contributors utilizing garburators (Metcalf & Eddy, 2013). Overall, the generation rates are higher than the measured generation rate of 68 and 56 g/cap/d for BOD_5 and TSS (based on analysis of monitoring data) and represents a conservative estimation for TSS and BOD_5 loading to the facility (Associated Engineering, 2020).

Average ammonia (as NH_3-N) loading of 2.5 kg/d corresponds to a per capita generation rate of 7.7 g/cap/d, which is within the typical range of North America (5 to 12 g/cap/d). The generation rate also corresponds to a typical municipal collection system with no large industrial contributions and 25% of contributors utilizing garburators (Metcalf & Eddy, 2013). Overall, the design generation rate is higher than the measured generation rate of 6.3 g/cap/d and represents a conservative estimation for ammonia loading to the facility. In addition, the peak ammonia loading of 3.2 kg/d corresponds to a per capita generation rate of 11.2 g/cap/d, which on the high end of the typical range of North America and represents a conservative value.

Recent measurements of influent ammonia during dry weather showed ammonia concentrations at approximately 70 mg/L. This corresponds to an ammonia loading of 2.8 kg/d under average dry weather flow and within the design parameters for the MBBR system.

Source water for Maliview Estates originates from a surface water source (St. Mary Lake) where natural alkalinity is expected to be negligible. As such, all alkalinity in the wastewater is expected to be a result of residential contributions. Assuming a typical per capita generation rate of 50 g/cap/d (as $CaCO_3$), the typical alkalinity loading

rate to the treatment facility is 16.1 kg/d. Assuming an average annual flowrate of 70 m^3/d, the average alkalinity concentration is approximately 230 mg/L. This was confirmed by the grab sample measurements taken during the month of June 2020 by the CRD.

4 UPGRADE CONCEPT

4.1 Major Wastewater Treatment Components

To achieve the revised treatment objectives, the addition of new secondary treatment train will be required. This will include the following components:

- New lifting pump (wet well to screen).
- New lifting pump (settling and equalization tank to MBBR).
- Moving bed biofilm reactor (MBBR) treatment system for BOD_5 and ammonia removal.
- Coagulation tank.
- Reconfigured Rotating Biological Contactor (RBC) to secondary clarifier.
- Process aeration blowers.
- Chemical dosing equipment (alum and caustic).
- Upgraded electrical, instrumentation, and controls.

4.1.1 Process Flow Diagram

As shown in Figure 4-1, the new process train (red coloured items) will be integrated into the existing treatment system.

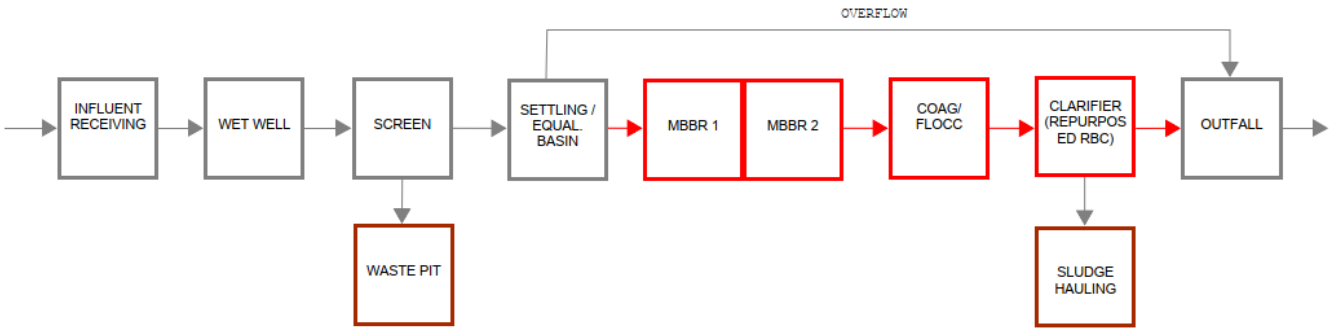


Figure 4-1
Preliminary Process Flow Diagram

4.2 General Arrangements

The Maliview WWTP project site is located on Salt Spring Island on the intersection of Walks Hook Road and Maliview Drive.

Refer to Drawing C-101 for the site plan and general process arrangement.

5 WASTEWATER TREATMENT PLANT DESIGN

The detailed design package will need to include the following discipline components:

- General drawings and specifications.
- Civil drawings and specifications.
- Structural drawings and specifications.
- Process and Instrumentation diagrams.
- Process Mechanical drawings and specifications.
- HVAC drawings and specifications.
- Electrical drawings and specifications.
- Instrumentation and Controls drawings and specifications.

5.1 Civil

5.1.1 Tie-ins

New conveyance piping will be required to convey untreated and treated wastewater for the new process tankage. The piping will be comprised of a mixture of 100 mm nominal to 150 mm nominal PVC SDR35 piping. Piping is to be joined with as gasketed bell and spigot with thrust blocks for restraint. Above ground piping is to be solvent welded or flanged as necessary.

Refer to Drawing C-101 for overview of proposed tie-in locations for the new conveyance piping to the existing facility.

5.1.2 Site Grading and Preparation

The proposed concept utilizes above grade tankage and piping in a small portion of the treatment plant site footprint. Overall, the general disturbance should be minor and require minimal grading. A topographic survey should be completed prior to the commencement of detailed design to confirm any site grading requirements.

In addition, a subsurface utility survey should be conducted to confirm the location of existing utilities.

5.2 Structural

Structural components on site will consist of miscellaneous concrete pads for support of process and other equipment.

The new above grade tankage will be supported utilizing cast-in-place concrete slabs, 2,500 x 2,500 (LxW) in size, to support the above grade treatment tankage. Each slab will vary in height (in increments of 150 mm) to ensure the tankage remains within the necessary hydraulic profile.

Concrete slabs will be provided for components such as emergency showers, blowers, transformers, and piping supports.

5.3 Geotechnical

At this preliminary stage, no geotechnical investigations have been conducted. Further geotechnical investigations will be required prior to the completion of detailed design.

5.4 Process & Process Mechanical

The main process mechanical components of the revised treatment system are to include:

- New Lift Pumps.
- New Conveyance Piping.
- New Moving Bed Biofilm Reactors (MBBR) 1 and 2.
- New Coagulation Tank.
- New Process Air Blowers.
- New Chemical Dosing Systems.
- Retrofit of Existing Rotating Biological Contactor (RBC) to Secondary Clarifier.

As show on Drawing C-101, a new lift pump will be provided to pump flows from the equalization tank to the new MBBR reactors. For flows that exceed 100 m^3/d, the static overflow on the equalization tank will split the excess flows directly to the outfall through the existing overflow.

5.4.1 Screening System

The existing screening system consists of an enclosed wedgewire screen with a 2 mm gap. The screening system is raised above the wet well, where a pump lifts raw wastewater to the screen. Screenings are subsequently discharged into a sump adjacent to the wet well. The screen is supported by welded stainless steel square tubing and anchored to the concrete base via threaded concrete anchors.

To facilitate a one cubic yard capacity plastic “tilt truck” for containment of screenings, the screen would need to be raised by an additional 1,400 mm. This could be accomplished by extending the existing stainless steel support structure. To ensure rigidity, additional cross bracing may be required. The downside of this approach is that the screenings discharged are not dewatered. As such, the screenings contain a significant amount of water that increases its volume (reducing runtime of the “tilt truck” bin) and the odour potential of the screenings. It is recommended that a washer-compactor be installed underneath the screen in order to minimize the water and putrescible content of the screenings to reduce odour potential. Bins should also be covered to minimize odours.

Note that retrofit of the existing screening system will require temporary wastewater diversion and temporary screening.

5.4.2 Secondary Treatment System

The new MBBR secondary treatment system will consist of the following equipment outlined in Table 5-1. The MBBR tankage will be filled with plastic media that will facilitate the growth of microbes that will consume the organic matter and oxidize ammonia in the wastewater. MBBR Tank No. 1 will function as the first stage in which BOD_5 is consumed while MBBR Tank No. 2 will function as the second stage in which ammonia is oxidized to nitrate. The two stages are required as BOD_5 concentrations are required to be reduced to a concentration (< 25 mg/L) in Stage 1, allowing ammonia oxidizing bacteria to outcompete heterotrophic bacteria in Stage 2.

The potential for addition of an anoxic cell ahead of the aerobic MBBR reactors is possible. The advantage of this would be the potential for alkalinity recovery, which would result in approximately 70% reduction in caustic usage. However, the implementation of an anoxic cell would require additional tankage (~5 m^3), nitrified mixed liquor

recirculation pumps, sludge recycling pumps, associated piping, and media sieves. This would significantly increase the overall equipment, cost, equipment footprint, and operational complexity of the system.

Table 5-1
Preliminary Secondary Treatment Design Criteria

Design Element	Value
Number of Tanks	3 (T-101, T-102, T-103)
Design Flow	Max Day Flow: 100 m^3/d Average Dry Weather Flow: 40 m^3/d
Process Load	BOD_5: 25 kg/d TSS: 25 kg/d NH_3-N: 2.4 kg/d (average), 6 kg/d (peak)
MBBR Tank No. 1 (T-101)	
Dimensions (dia x H), m	2.4 x 3.6
Sidewater Depth, m	3.0
Volume, m^3	13.6
Media Type	Bioportz™ 900
Media Filling Fraction	44%
Dissolved Oxygen Setpoint, mg/L	2.0
MBBR Tank No. 2 (T-102)	
Dimensions (dia x H), m	2.1 x 3.6
Sidewater Depth, m	3.0
Volume, m^3	10.4
Media Type	Bioportz™ 900
Media Filling Fraction	48%
Dissolved Oxygen Setpoint, mg/L	6.0
Mixing Tank (T-103)	
Dimensions (dia x H), m	2.4 x 3.6
Sidewater Depth, m	3.0
Volume, m^3	13.6
Hydraulic Retention Time (HRT), hr	3.2 hr (MDF), 8.16 (ADWF)
Mixer Power, hp	9
Velocity Gradient (G), s^{-1}	700

In each tank a coarse aeration diffuser system will be installed to provide dissolved oxygen for the bacterial communities and mixing energy to keep the MBBR media suspended. Flow from each tank will be through horizontal sieves that will allow mixed liquor to pass through the sieves while retaining the plastic media. An allowance of 150 mm headloss through each sieve has been provided in the hydraulic profile.

Effluent produced by the MBBR treatment system is anticipated to be less than 15 mg/L BOD_5 and TSS and less than 2 mg/L NH_3-N for flows under 100 m^3/d.

A mixing tank downstream of the MBBR tanks will be provided in order to promote coagulation of the sloughed biomass prior to discharge to the secondary clarifier. Mixing will be achieved with a top entry fixed speed mixer. Impeller on the mixer is to be a pitched blade impeller.

Maintenance required in the tankage will be mainly for cleaning of the course bubble diffusers. However, as the diffusers have coarse openings, clogging of the aeration ports is very unlikely. If cleaning of the diffusers is required, removal of the MBBR media, likely using a vacuum truck, followed by washdown of the diffusers in-situ or removal will be required. As such, confined space access into the tankage is not anticipated to be a frequent activity, and therefore, permanent access provisions are not required. In the rare event that access into the tanks is required, temporary scaffolding and stairs can be erected to provide access.

The tankage is provided as High-Density Polyethylene (HDPE) tanks. The tanks will be anchored to a concrete slab using suitable hold down straps. HDPE tankage was selected as they are low cost, off-the-shelf items. However, as HDPE is flexible, they cannot be buried beneath grade. For below grade tankage, concrete or coated steel tankage would be required, significantly increasing costs.

Aeration is to be provided via two positive displacement blowers in a duty/standby configuration. Each blower will feature an integrated local control panel and an integrated variable frequency drive for speed control. The integral variable frequency drive is only provided for local speed adjustment of blower speed. Therefore, no feedback control of blower speed will be provided. This is because the air requirements of the MBBRs are anticipated to be dictated by mixing energy (i.e. air required to ensure reactors remained mixed) instead of dissolved oxygen.

Further details of the blower requirements are shown in Table 5-2.

Table 5-2
Preliminary Blower Design Criteria

Design Element	Value
Number of Blowers (Positive Displacement)	2 (duty, standby)
Dimensions (LxWxH), mm	800 x 800 x 1,000
Power, hp	7.5 (each)
Airflow, scfm	60 (T-101) and 39 (T-102)
Discharge Pressure, psig	6.8

5.4.3 Secondary Clarifier (Repurposed RBC)

The existing RBC is to be repurposed into a secondary clarifier in order to settle particulate matter from the MBBR effluent stream. Removal of the existing RBC media, rotating mechanism, and walkway will be required. To minimize odours, the existing RBC covers will be maintained. If maintaining the existing cover system is not preferred, the clarifiers can be left uncovered if the sludge if removed on a frequent basis to minimize odours.

After removal of the RBC components, the existing final clarifier section will be configured as the sedimentation zone of the secondary clarifier. The area of this final clarifier is approximately 4.7 m^2, which will result in a surface overflow rate of 0.88 m/h at a peak flow of 100 m^3/d. This will be sufficient to provide the required sedimentation. The existing primary clarifier section will be converted into a storage cell for final polishing.

As no automatic wastage mechanism is provided, a vacuum truck will be required to remove sludge on a periodic basis.

An alternative clarification system was evaluated that consisted of a Dissolved Air Flotation (DAF) clarification system. The DAF relies on finely diffused air bubbles to separate particulate matter from the liquid stream. However, this approach was not deemed feasible due to the large footprint required (for chemical-less DAF clarification), high operational costs (power and maintenance), and increased operational complexity.

5.4.4 Chemical System

As a result of shear forces and excess biological growth, biofilms will slough off the MBBR media. This results in biological flocs that are typically small and hard to settle. Aluminum sulphate (alum) is provided to enhance coagulation of sloughed biofilms and enhanced sedimentation in the secondary clarifier.

Estimates for aluminum sulphate demand is based off the following assumptions:

- A “typical” alum dose of 10 mg/L (as Al^{3+}).
- Demand under peak hydraulic flowrate of 100 m^3/d (highest alum demand, conservative assumption).

Assuming the typical alum dosage of 10 mg/L (as Al^{3+}) and an aluminum sulphate solution concentration of 30 w/w% (as $Al_2(SO_4)_3$), the expected volume of alum required per day is 16.2 L/d. The appropriate alum dosage to achieve coagulation will need to be confirmed utilizing jar tests performed on actual treated effluent. As the application is a greenfield application, there is little opportunity to accomplish this prior to installation. As such, this dosage will need to be “fined-tuned” during commissioning. However, the alum dosage utilized for the preliminary design represents a conservative dosage.

Sodium hydroxide is to be dosed to add additional alkalinity that is consumed through nitrification and alum addition.

Estimations for sodium hydroxide demand is based on the following assumptions:

- Demand under average and peak ammonia loadings.
- Demand under peak hydraulic flowrate of 100 m^3/d (highest alkalinity demand to maintain “residual”, conservative assumption).
- No ammonia uptake for biological synthesis (~30% greater ammonia load for nitrification, conservative assumption).

- Maintenance of residual alkalinity of 50 mg/L (as $CaCO_3$) to maintain sufficient alkalinity buffer.
- Maintenance of sufficient alkalinity residual for alum consumption.

To fully nitrifying ammonia to nitrate, 7.14 mg/L (as $CaCO_3$) of alkalinity is consumed per mg/L of ammonia (as NH_3-N). Under an average ammonia loading scenario, this will result in an alkalinity consumption of 171 mg/L (as $CaCO_3$). Under the peak flow scenario, the expected alkalinity in the influent is 161 mg/L (as $CaCO_3$). Combined with the requirement to maintain a minimum of approximately 100 mg/L ($CaCO_3$) of alkalinity to maintain sufficient alkalinity for alum coagulation and a 50 mg/L residual to prevent a pH crash, this results in an overall alkalinity deficiency of 116 mg/L (as $CaCO_3$) and 173 mg/L (as $CaCO_3$) under an average and peak ammonia loading, respectively. Assuming the use of 25 w/w% sodium hydroxide solution, the sodium hydroxide consumption is approximately 29.5 L/d and 44 L/d under average and peak ammonia loading. All alkalinity and ammonia will vary in the influent, fine tuning of the dosing parameters and control system will be required in order to optimize sodium hydroxide addition and alkalinity residual.

Utilizing the expected consumption rates for the chemicals, the expect duration of several chemical storage options is provided in Table 5-3. It is recommended to utilize drums as the primary storage method, as it provides sufficient storage volume while requiring the least equipment for transportation (i.e. barrel dolly). HDPE chemical containment pads will be utilized to store the barrels, each pad can contain four barrels at a time. If more volume is desired to be stored on site, the barrels can be stored on additional containment pads inside the building on the treatment plant property.

Table 5-3
Treatment Chemical Demand

Chemical	Drum (159 L)	IBC Tote (1,040 L)
Sodium Hydroxide (25 w/w% NaOH)	5.4 days (Average Loading) 3.6 days (Peak Loading)	35 days (Average Loading) 24 days (Peak Loading)
Aluminum Sulphate (9.9 w/w% Al_2O_3)	9.8 days	64 days

The chemicals are to be stored inside the existing building to prevent freezing and to maintain chemical activity. Alum (30 w/w%) has a freezing point of -15°C; however, it should be kept above 15°C to maintain its chemical activity. Sodium hydroxide (25 w/w%) has a freezing point of -18°C. Due to the low freezing point of both chemicals, the dosing lines will not be heat traced or insulated. However, due to the chemicals hazard potential, the dosing lines will be contained within a PVC carrier pipe.

The chemical dosing is to be accomplished using duty/standby peristaltic pumps for both chemicals. Peristaltic pumps are chosen due to their high reliability and high turndown ratio. The dosing pumps will be provided as a “skid” package with required valving and calibration columns pre-installed in a containment pad. Suction on the peristaltic pump will be provided via polyethylene tubing with foot valve that is placed within a drum. A level sensor will be placed on the drum to provide alarm status of chemical levels.

Note that the chemicals to be utilized are classified as hazardous and will required transport via hazardous goods ferries or barge.

5.5 Building Mechanical (HVAC and Plumbing) Systems

To accommodate the inclusion of chemical storage and new process air blowers in the existing building, the following components building mechanical components will need to be provided:

- New tempered water system.
- New louver and ducting for process air makeup.
- New louver and fan for building cooling and ventilation.
- New building space heater(s) for building heating.

As no natural gas supply is available at the Maliview WWTP, all heating is to be accomplished utilizing electric heaters.

5.5.1 Heating and Ventilation Systems

The modification to the existing building heating and ventilation systems will be designed to conform to the latest approved standards and codes as follows:

- British Columbia Building Code
- British Columbia Fire Code
- ASHRAE Heating and Ventilation Standards
- ACGH Industrial Ventilation
- SMACNA Duct Construction Standard

As the storage building is not designed for continuous human occupancy, the provision of a space heater will only be required to prevent freezing. This will be accomplished by a thermostat-controlled ceiling mounted electric unit heater situated within the building.

Makeup air for the process air blowers will be required for process air and cooling. To eliminate the need for heating of the makeup air stream, a louver with direct ducted intake connection to the blowers is to be provided. Cooling for the additional process mechanical equipment in the building is to be provided with a separate louver and inline fan. All louvers, ducts, and fans are to be of aluminum construction.

5.5.2 Emergency Fixtures

In accordance with the WorkSafeBC Occupational Health and Safety Regulation, emergency washing facility must be provided within work areas where a worker's eyes or skin may be exposed to harmful or corrosive chemicals. The Globally Harmonized System (GHS) Hazard Classifications for the chemicals to be utilized in the treatment process are listed in Table 5-4.

Table 5-4
GHS Classification of Treatment Chemicals

Chemical	GHS Eye Effects Classification	GHS Corrosion Classification
Sodium Hydroxide (NaOH) 25 w/w%	1 (Irreversible Effect)	1 (Corrosive)
Aluminum Sulphate ($Al_2(SO_4)_3$) 30 w/w%	1 (Irreversible Effect)	None Stated

Under the WorkSafeBC Chemical Risk Assessment, Sodium Hydroxide is classified as High Risk for both eyes and skin, while aluminum sulphate is classified as High Risk for eyes only. As a result of the High Risk classifications, the following emergency safety equipment must be provided within five seconds walking distance, but no further then six meters.

- Tempered (16 to 38°C) continuous flow eyewash with a minimum duration of 15 minutes.
- Tempered (16 to 38°C) continuous flow emergency shower with a minimum flow of 15 minutes.

The emergency shower will be required to meet the regulatory requirements of the WorkSafeBC Occupational Health and Safety Regulation.

As a tempered emergency shower and eyewash is currently present in the storage building, it is not anticipated that installation of an additional emergency shower and eyewash station will be required.

5.6 Electrical

The additional process mechanical components will utilize the existing BC Hydro service feed. Supply voltage for the Maliview treatment plant site is a 200 A, 208 V, 3-Ph service. Following a brief review of the new loads and the existing operating capacity of the facility, it is not anticipated that a utility upgrade will be necessary.

A step-up transformer will be required to supply power to 600 V blower units, which will be pad mounted externally to the storage building.

New and relocated electrical conduit to consist of 50 mm nominal CVPC. All conduit to be buried below grade.

5.6.1 Load List

Table 5-5
Preliminary Load List

Tag Number	Equipment Description	Load (hp)	Voltage
P-101	Lift Pump	2	208V/3Ph/60Hz
P-102	Lift Pump	1	120V/1Ph/60Hz
P-201	Alum Dosing Pump 1 (Duty)	0.25	120V/1Ph/60Hz
P-202	Alum Dosing Pump 2 (Standby)	0.25	120V/1Ph/60Hz
P-301	Sodium Hydroxide Dosing Pump 1 (Duty)	0.25	120V/1Ph/60Hz
P-302	Sodium Hydroxide Dosing Pump 2 (Standby)	0.25	120V/1Ph/60Hz

Tag Number	Equipment Description	Load (hp)	Voltage
MXR-103	Coagulation Tank Mixer	10	208V/3Ph/60Hz
BL-111	Process Aeration Blower 1 (Duty)	7.5	600V/3Ph/60Hz
BL-112	Process Aeration Blower 2 (Standby)	7.5	600V/3Ph/60Hz
UH-1	Electric Unit Heater	1.5 kW	208/3Ph/60Hz
WH-1	Water Heater	1.5 kW	208/3Ph/60Hz
FAN-1	Ventilation Fan	0.2 kW	208/3Ph/60Hz

5.7 Backup Power

Currently no backup power is provided as the Maliview WWTP. Our preference would be to look at the addition of a mobile generator with a manual transfer switch, however under current EPA legislation, any standby mobile generator is required to be Tier 4 emission certified, which results in an additional 100% cost addition to the procurement of a mobile generator.

With the cost differential quite high, our recommendation would be to review the addition of a stationary generator with automatic transfer switch, this will ensure that the generator will operate when required due to the limited outgoing communication.

5.8 Instrumentation and Controls

The majority of process equipment will be operated on local controls without process instrumentation or controls. For the MBBRs, the process tankage is mixing limited. As such, the blowers will be run at a fixed speed, as set on the blower local control panel. A handheld Dissolved Oxygen and pH meter will be provided for spot checks of the process tankage.

Sodium hydroxide dosing will be accomplish utilizing a pH feedback control system. In the mixing tank, an online pH probe (4-20 mA) will provide pH readings to a new PLC control panel. The peristaltic dosing pumps speed will be adjusted to maintain the pH setpoint in the mixing tank (6.8 to 7.2).

Alum dosing will be accomplished through peristaltic set to operate at a fixed speed. As wastewater flows vary due to diurnal variations, alum dosages will vary due to varying influent flow. However, as coagulation for enhanced settling is the primary goal, the potential for overdosing is not overly concerning. During detailed design, flow-paced dosing of alum will be investigated as a method to minimize overdosing and reduce the amount of alum required.

Currently there are no communications systems provided at the Maliview treatment facility. As such, integration of alarms is not possible given the current arrangement. Integration of a SCADA communications system will require a cellular alarm dialer or ethernet hardline with VPN. Alarms could then be communicated to the overall SCADA system utilizing SCADApack. In addition, a new HMI will be required at the Ganges facility.

Alarms to be integrated into the overall SCADA integration to include:

- Chemical low level alarm.
- Treatment plant bypass alarm.
- Blower fault alarms.

5.9 Odour Control

As the additional components are not anticipated to be odorous, additional foul air connections to the existing biofilter will not be provided. However, it is recommended that the biofilter bed be renewed and the existing irrigation system be evaluated as part of the future works to the facility.

6 PROJECT IMPLEMENTATION

6.1 Construction Considerations

Construction activities that could impact the overall project include delivery of the equipment package such as the MBBR treatment package (blowers, media, diffusers, tankage). We recommend the CRD proceed with the procurement of the equipment package at the onset of the detailed design to ensure the design is based on the selected package. Once the supply contract has been established, design and construction will be coordinated with deliveries to ensure minimal disruption to the construction process.

The proposed contract phases for the WTP upgrades are:

- Contract 1 – MBBR Equipment Supply
- Contract 2 – Wastewater Treatment Plant Construction

6.1.1 Commissioning and Tie-in

After installation of the secondary treatment system, the MBBR needs a period of approximately four weeks in order to develop a viable biological community. In order to accomplish this, and maintain the treatment capacity of the facility, a new submersible pump will be installed in the equalization tank. The current pump will be maintained to divert flow to the existing treatment system.

After the MBBRs have achieved steady state, the RBC can be taken offline and converted to a secondary clarifier. During the transition, the Mixing tank (T-103) can be utilized as a temporary secondary clarifier (with mixer turned off). Assuming a tank diameter of 2,400 mm and an influent flowrate of 100 m^3/d, the hydraulic surface loading to the tank will be approximately 0.92 m/h, which is sufficient to provide clarification on a temporary basis. The resulting effluent will need to be temporarily discharged directly to the outfall while the RBC is converted to a secondary clarifier. This can be accomplished with temporary hoses.

After the RBC is converted to a clarifier, the discharge from the secondary treatment system can be routed to the repurposed secondary clarifier. As the mixer in the mixing tank is turned on, the accumulate sludge will be discharged to the secondary clarifier.

6.2 Implementation Schedule

AE has developed a schedule outlining key components of the project including:

- Detailed Design
  - Contract 1: Equipment supply contracts
  - Other components detailed design
- Tendering period
- Construction Kickoff
- Key Construction Time Frame
  - Civil
  - Structural
  - Installation of MBBR
  - Process Mechanical
  - Retrofit of RBC

  - Building Mechanical
  - Electrical/ Instrumentation
  - Final Grading
- Start-up and commissioning
- Training
- Substantial Performance
- Completion

7 COST ESTIMATE

7.1 Capital Costs

Total estimated Class C capital cost for the project is shown in Table 7-1, which includes a 40% allowance contingency and 20% for Engineering. The 40% allowance contingency is attributed to risks and uncertainties related to regulatory permitting, geotechnical conditions, archaeological risks, cost escalations, and other unknown factors.

Table 7-1
Preliminary Capital Cost Summary

#	Item	Cost ($)
1	General	235,000
2	Civil	39,000
3	Structural	16,000
4	Major Equipment Supply	226,000
5	Process Mechanical	312,000
6	Building Mechanical	42,000
7	Electrical	62,000
8	Instrumentation and Controls	31,000
9	Temporary Works	18,000
	Subtotal	**828,000**
	Contingency (40%)	**393,000**
	Engineering (20%)	**275,000**
	Total Project Cost Estimate	**1,649,000**

7.2 Operations Cost Estimate

An estimate of the operational costs for the facility are provided in Table 7-2.

Operational costs were calculated on an annual average basis, assuming an average dry weather flow of 40 m^3/d between May and September, and a maximum flow rate of 100 m^3/d for the remaining months of the year.

- Power costs are based on a total install power of 29kW an average cost of $9 cents per kWh.
- Chemical costs to aid on settling for the MBBR option were calculated based on an alum dose of 10 mg/L (as Al^{3+}) at peak flow, which would be the conservative scenario.
- Sludge production estimates were provided by Nexom.
- Thickening of sludge up to 3% and transportation cost of $145 per m^3 of sludge hauled per data provided by the CRD.
- Standby power inspection was estimated in $800 per year and includes changes of fluid and filters.
- Staff labour is expected to be similar for the two options and was estimated to be one hour per day for five days per week at a $100 per hour rate.

- Annual maintenance costs for all new equipment were estimated to be 1% of the equipment cost.

Table 7-2
Preliminary Operational Cost Estimate

#	Item	Annual Cost ($)
1	Chemicals	32,000
2	Maintenance Materials	9,000
3	Electricity	17,000
4	Sludge Hauling	58,000
5	Standby Power Inspection	1,000
6	Labour	26,000
	Total Operational Cost Estimate	**143,000**

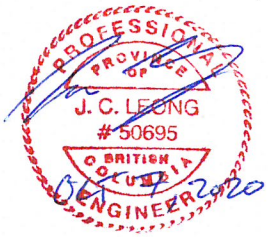
CLOSURE

This report was prepared for the Capital Regional District Salt Spring Island to provide a preliminary design for the proposed upgrades to the Maliview Wastewater Treatment Facility to allow the Capital Regional District to proceed with the detailed design of the upgraded facility.

The services provided by Associated Engineering (B.C.) Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,
Associated Engineering (B.C.) Ltd.

Prepared by:



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APPENDIX A - SUPPLIER INFORMATION

MALIVIEW WWTP
SALT SPRING ISLAND, BC

Design, Supply and Installation
BioPortz Wastewater Treatment System

February 13, 2020

technologies for cleaner water

5 Burks Way · Winnipeg MB · R2J 3R8
888·426·8180 • www.nexom.com

Project Overview

A BioPortz™ Wastewater Treatment System is proposed for the Maliview WWTP, BC. The process would consist of the following:

- Retain the existing 2 mm raw sewage screen
- Implement BioPortz MBBR system comprising two aerobic reactors for BOD removal and nitrification
- Implement secondary solids separation (by others)

Treatment Design Criteria

	Units	Raw Sewage[1)]	Effluent[2)]
Average Dry Weather Flow	m^3/d	40	
Maximum Flow	m^3/d	100	
Temperature	°C	8-20	
BOD max	kg/d	28	
	mg/l		15
TSS max	kg/d	28	
TKN max	kg/d	3.7	
	mg/l	60	
Total Ammonia	mg/l		<2

1) Influent wastewater not characterized – typical domestic sewage characteristics were assumed.
2) After secondary solids separation

Equipment Process Design Parameters

A summary of the BioPortz MBBR design parameters is presented in the following table:

Parameter	Unit	BOD	Ammonia
Media volume	m^3	6	5
Tank nominal volume	m^3	13.6	10.4
Tank diameter	m	2.4	2.1
Water depth	m	3	3
Media filling fraction	%	44	48
Effluent media retention screens		1 (4”)	1 (4”)
Drain		1 (2”)	1 (2”)

A summary of the BioPortz MBBR aeration parameters is displayed in the following table:

Parameter	Units	BOD	Ammonia
Alpha		0.60	0.70
Beta		0.97	0.97
Elevation	m	20	20
Water depth	m	3	3
Dissolved oxygen	mg/l	2	6.0
AOR Max	kg/d	22	10
Max airflow	scfm	60	39
Normal operating pressure	psi	5.6	5.6
Maximum required pressure	psi	6.8	6.8

A summary of BioPortz IFAS blower parameters is displayed in the following table:

Parameter	Units	Blowers
Quantity	qty	2
Duty / Standby	qty	1 / 1
Nameplate HP	HP	7.5

Scope of Work

GENERAL

- Nexom process design, process CAD drawings, and specifications
- Operation and maintenance manuals and project record drawings
- Shipping to site
- Installation and start-up / commissioning of equipment supplied by Nexom

BIOPORTZ™ MBBR SYSTEM

- One (1) lot of equipment to furnish two (2) BioPortz MBBR tanks
- BioPortz™ 900 media to furnish BOD and Ammonia MBBR tanks
- Two (2) Media retention screens for the effluent (4”)
- Two (2) Media retention screens for the tank drains (2”)
- Prefabricated aeration grid including HDPE diffusers, HDPE laterals, HDPE floor-mounted header, and HDPE header drop-pipes
- Two (2) 7.5 HP Aerzen positive displacement blowers (i.e., one duty and one standby) with control panel
- One (1) DO and pH handheld filed meter with sensors
- Two (2) tank level switches

CAPITAL COST FOR THE SCOPE OF WORK AS DETAILED ABOVE:

$ 166,000 CAD

All prices are subject to final design review. Taxes extra. Prices valid for 30 days.

EXCLUSIONS

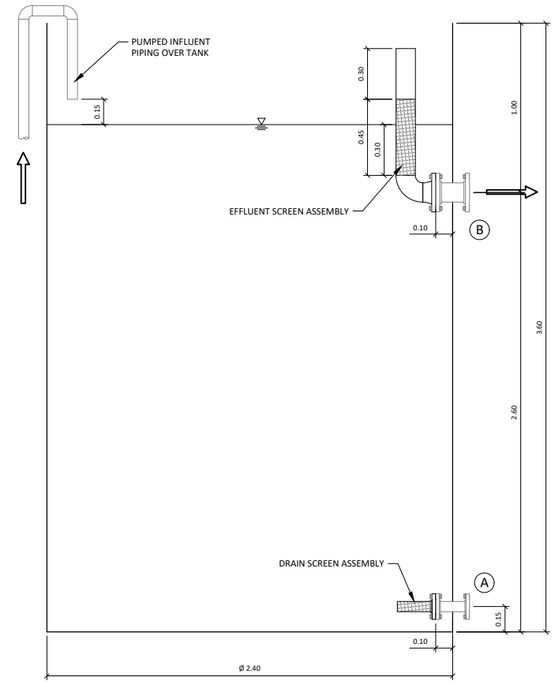
- Any process equipment not listed within the Scope of Supply
- New building works
- Material offloading and storage
- Civil, mechanical, or electrical works including tanks and power hookup
- Modifications to existing infrastructure
- Influent, interconnecting, and / or effluent process piping / pumping
- Air supply and distribution piping from blowers to edge of process tanks
- Master control center and / or SCADA

Questions or comments

Any questions or comments can be directed to:

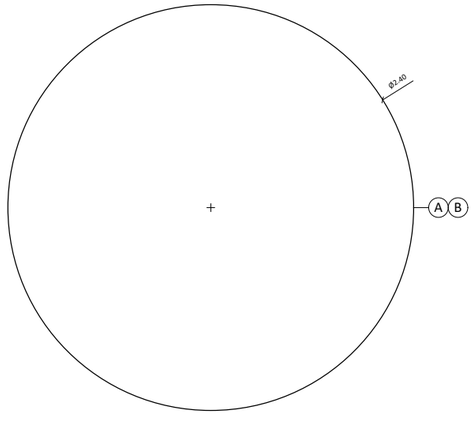
Nexom

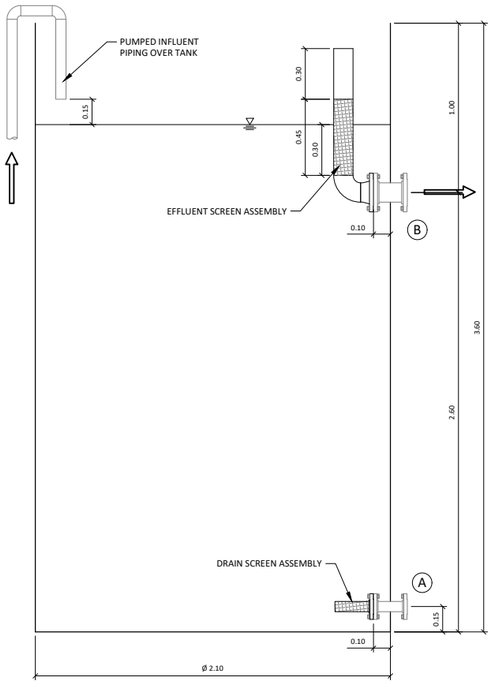
5 Burks Way
Winnipeg MB R2J 3R8
888-426-8180
www.nexom.com



INFLUENT TANK - 2.4m Ø

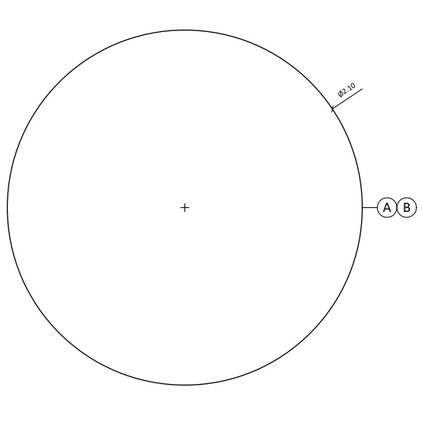
SCALE: N.T.S.

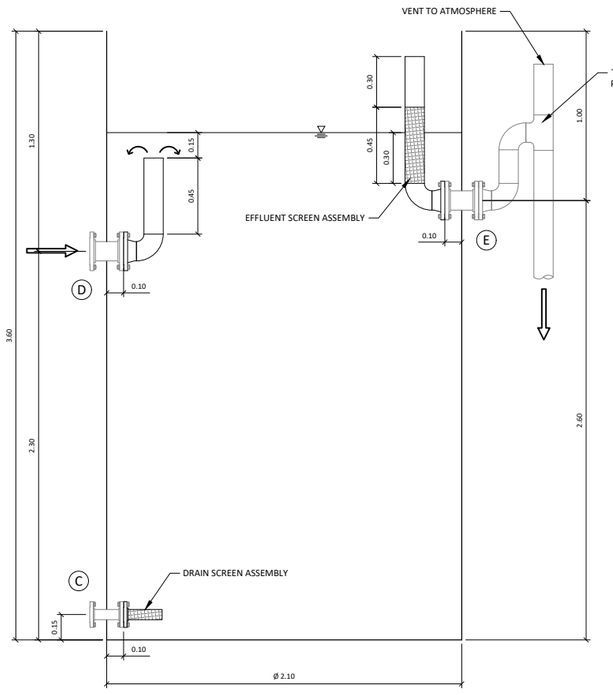




INFLUENT TANK - 2.1m Ø

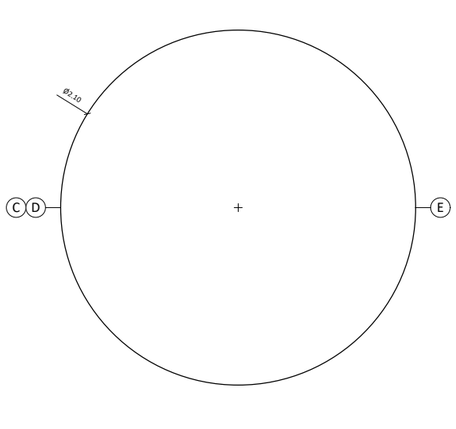
SCALE: N.T.S.

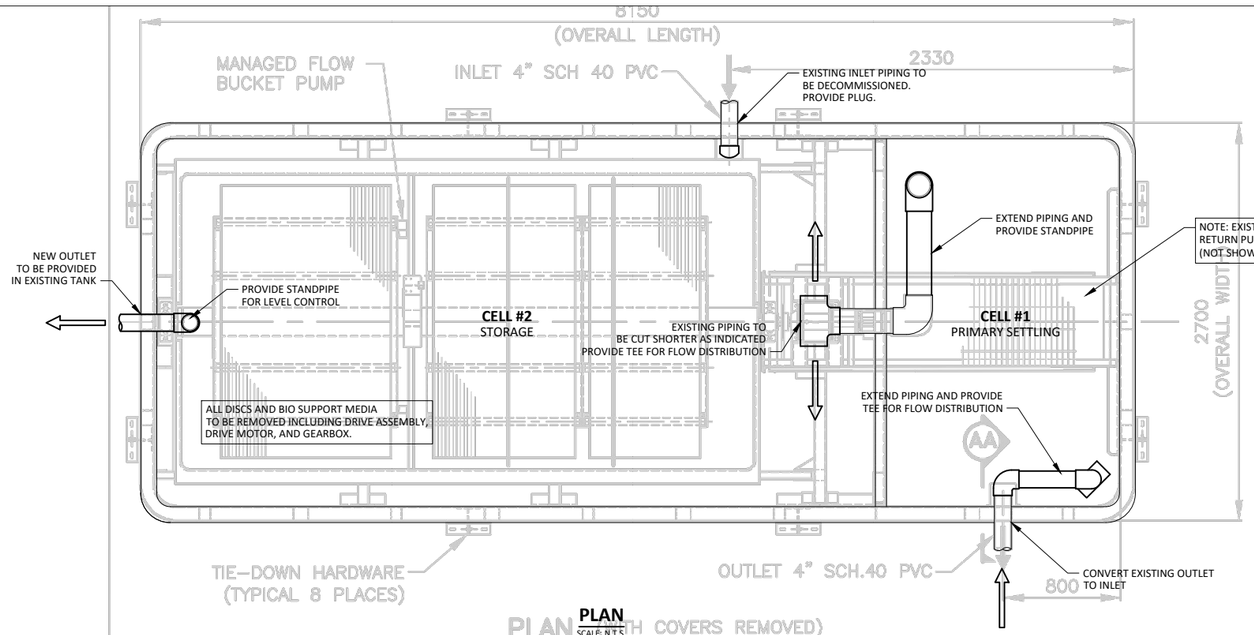




EFFLUENT TANK - 2.1m Ø

SCALE: N.T.S.





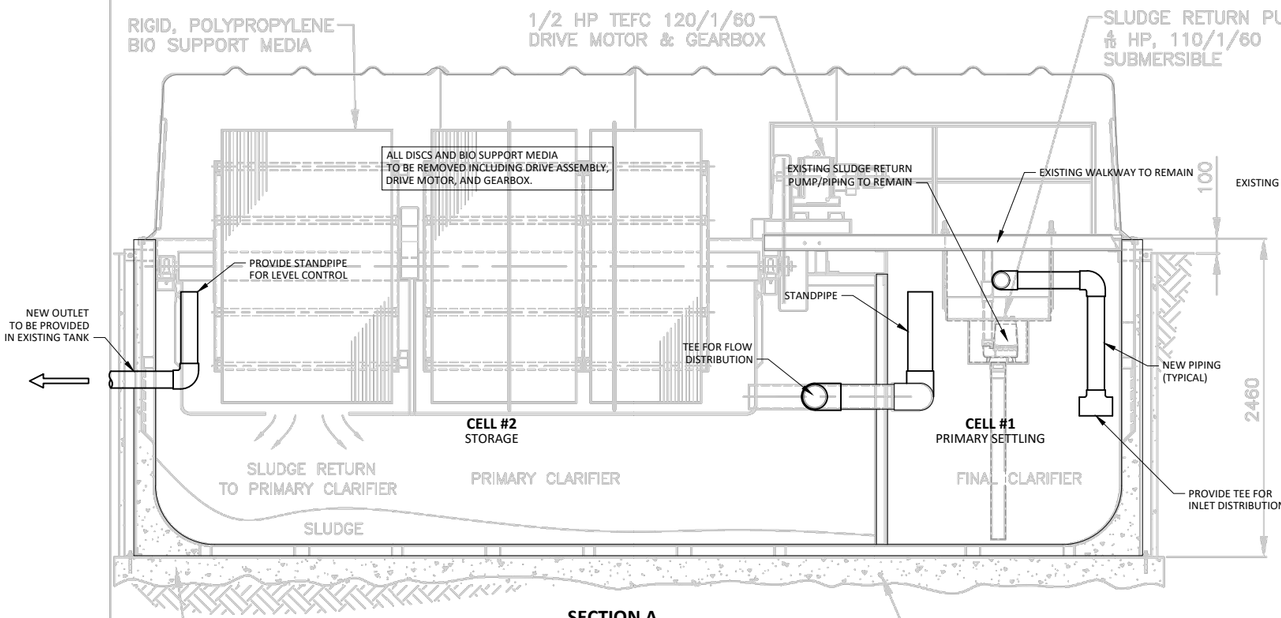
PLAN (WITH COVERS REMOVED)

PLAN
SCALE: N.T.S.

NOTE:

1. TANK AND COVER ARE MANUFACTURED IN FIBERGLASS REINFORCED POLYESTER (FRP), COVER IS FINISHED IN GREEN.
2. ELECTRICAL SUPPLY 110 VOLTS, SINGLE PHASE.
3. FOR INSTALLATION MAINTENANCE AND DESLUDGING DETAILS REFER TO MAINTENANCE HANDBOOK.
4. WITH GROUND WATER AT GRADE LEVEL, THE UPTHRUST ON DE-WATERED UNIT DUE TO FLOATATION IS CALCULATED TO BE 30,500 Kg.
   THIS EQUIPMENT, GIVEN THE CORRECT SITE & OPERATING CONDITIONS, MAY BECOME POSITIVELY BUOYANT. IF THERE IS A POSSIBILITY THAT THE AREA SURROUNDING THIS EQUIPMENT HAS OR MAY HAVE HIGH GROUND WATER LEVELS, EVEN IF ONLY TEMPORARY, TIE-DOWN HARDWARE AND A BASE DESIGNED FOR ANTI-FLOTATION WILL BE REQUIRED.

DESIGN CRITERIA	UNITS	SPECIFICS TO PROJECT
AVERAGE DAILY FLOW	M³/DAY	60
SOURCE: DOMESTIC SEWAGE		
PEAK FLOW	M³/H	7.5
TO BE FLOW BALANCED TO	M³/H	2.5
INFLUENT BOD TOTAL: SUMMER / WINTER	KG/DAY	13.2
INFLUENT BOD SETTLED	KG/DAY	9.24
INFLUENT SUSPENDED SOLIDS	KG/DAY	13.2
EFFLUENT BOD (AVERAGE)	mg/l	45
EFFLUENT SUSPENDED SOLIDS (AVERAGE)	mg/l	45
TEMPERATURE	°C MIN °C MAX	11° 21°
TECHNICAL INFORMATION		
BIO SUPPORTED MEDIA DIAMETER	M	1.85
BIO SUPPORTED MEDIA AREA	M²	1098
DISC LOADING: SUMMER / WINTER	GM/M²	8.4
PRIMARY CLARIFIER		
CAPACITY (INCLUDES SLUDGE)	M³	17.6
BALANCING VOLUME	M³	3.4
SLUDGE STORAGE CAPACITY	M³	8.45
SLUDGE STORAGE TIME	DAY	40
FINAL CLARIFIER		
CAPACITY (INCLUDES SLUDGE)	M³	5.75
SLUDGE STORAGE CAPACITY	DAY	0
SURFACE AREA	M²	4.3
MINIMUM SIZES AS REQUIRED BY AVERAGE DAILY FLOW AT RAW SEWAGE STRENGTHS OF 220 mg/l.	SHIPPING WEIGHT 5 TONNES OPERATING WEIGHT 28 TONNES	

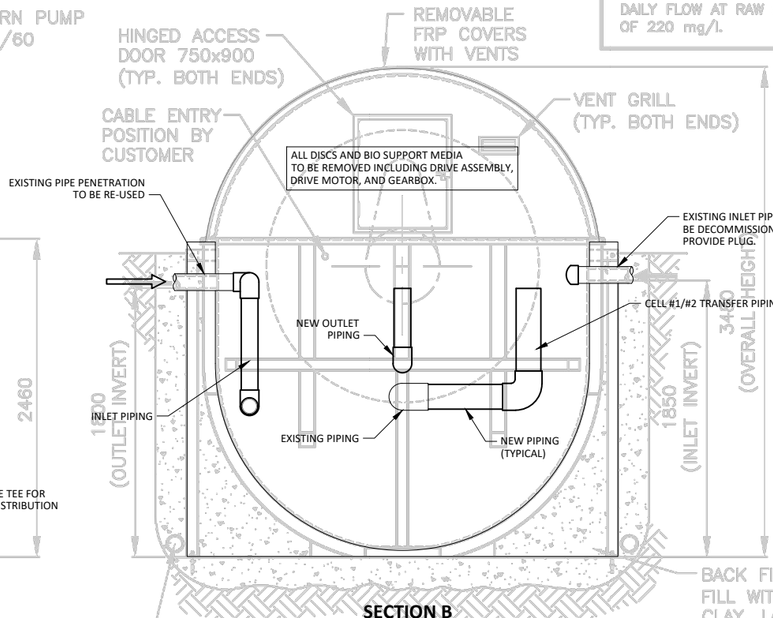


SECTION A
SCALE: N.T.S.

SECTION ON CENTRE LINE

CONCRETE SLAB=8300mm LONG x 2200mm WIDE TO BE DESIGNED, SUPPLIED AND INSTALLED BY OTHERS.
NOTE: MAXIMUM UPLIFT OF PLANT DUE TO FLOATATION = 30,500 Kg.
RECOMMENDED WEIGHT OF CONCRETE SLAB IN WATER = 40,000 Kg.
RECOMMEND RBC BE BOLTED TO SLAB WITH HOLD DOWNS TO PREVENT FLOATATION, IF POSSIBLE FLOATATION IS A CONCERN.

CONCRETE SLAB, DEPTH DEPENDENT ON LOCAL CODES AND SITE CONDITIONS. DESIGN AND SUPPLY BY OTHERS.



SECTION AA

SECTION B
SCALE: N.T.S.

VIEW ON DRIVE END

DRAIN TILE
ALL AROUND
(SUPPLIED
BY OTHERS)

BACK FILL SUPPLIED AND INSTALLED BY OTHERS. BACK FILL WITH CLEAN GRAVEL (3/4" MINUS), FREE FROM CLAY, LARGE ROCKS OR OTHER PROJECTIONS THAT WILL DAMAGE THE FIBREGLASS SHELL.
LEAN MIX, 150 min CONCRETE SURROUND MAY BE USED.
DO NOT COMPACT BACK FILL.
DO NOT FILL WITH SAND.

NOTE:

1. THE COVERS MAY BE SHIPPED LOOSE FOR FIELD FITTING BY OTHERS.

THIS REVISED DRAWING SUPERSEDES ALL PREVIOUS ISSUES

DO NOT SCALE THIS DRAWING

TOUS LES DIMENSIONS EN mm SINON SPÉCIFIER AUTREMONT / ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED

CONSULTANT: DELCAN CORPORATION
PROJECT / PROJET: CAPITAL REGIONAL DISTRICT - MALAHAT SALTSPRING ISLAND
OUR REF. # / NOTRE RÉF #: K17426
YOUR REF. # / VOTRE RÉF #: 5350-20.25

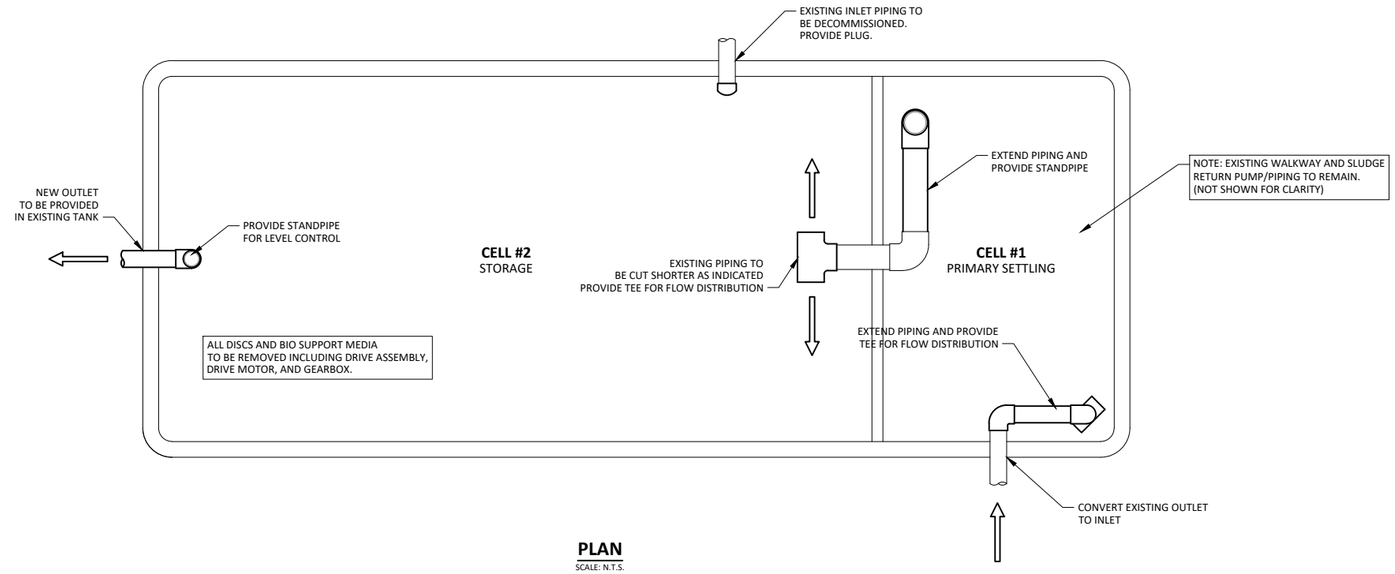
GENERAL ARRANGEMENT
MODEL BFS-BFP-SP

DRAWN / DESSINÉ	M.R.E.
DATE	05/01/13
SCALE / ÉCHELLE	NTS
CHECKED / VÉRIFIÉ	
APPROVED / APPROUVÉ	
PLOT	1:20

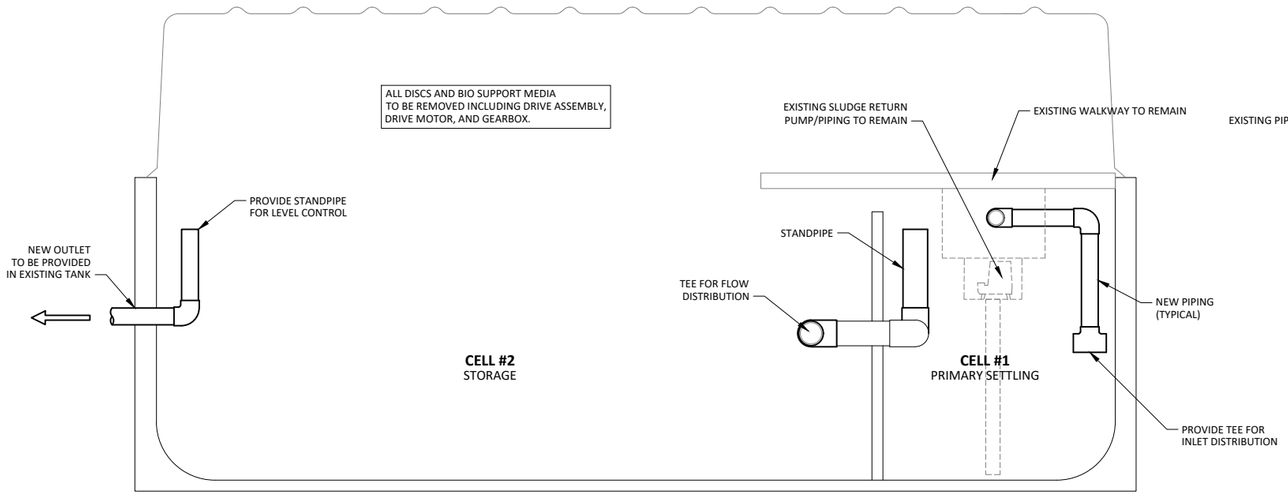
DESCRIPTION	REV.	DATE
OUTLET & INLET MOVED.	2	05/02/17
OVERALL LENGTH WAS 8050	1	05/01/21

PJ HANNAH
EQUIPMENT SALES CORP.
VANCOUVER, TORONTO
Specialists in pollution control since 1973

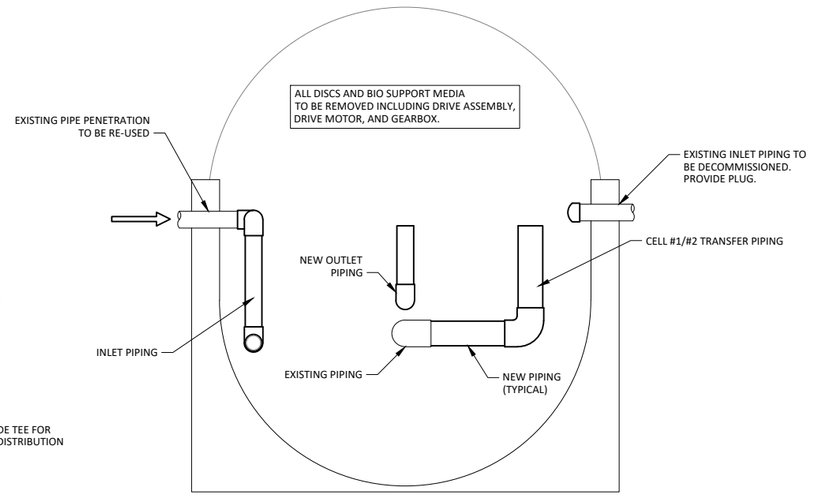
DRAWING NO. / DESSIN: A1-K17426-7800
REV.: 2



PLAN
SCALE: N.T.S.



SECTION A
SCALE: N.T.S.



SECTION B
SCALE: N.T.S.

Nexom technologies for cleaner water
5 Burks Way
Navin, Manitoba
Canada R5T 0C9
888-426-8180
www.nexom.com

PROJECT:	**MALIVIEW, BC** WASTEWATER TREATMENT SYSTEM UPGRADE
TITLE:	PROPOSED MODIFICATIONS GENERAL ARRANGEMENT
DRAWN BY: LE	APPROVED BY: TD
SCALE: AS NOTED	DRAWING NO. **NE01**
SHT. 1 of 1	REV. 0
DATE: 2020/03/27	FILE # CD4730.01

APPENDIX B – PRELIMINARY DESIGN DRAWINGS

CAPITAL REGIONAL DISTRICT

MALIVIEW WWTP
UPGRADES

CONTRACT xxx-xxx

LIST OF DRAWINGS	
DWG. No.	TITLE
2975-00-G-001	COVER SHEET
2975-00-C-101	CIVIL – SITE PLAN
2975-00-P-001	P&ID – SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 1
2975-00-P-002	P&ID – SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 2
2975-00-P-003	P&ID – SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 3
2975-00-P-004	P&ID – SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 4
2975-00-P-006	PROCESS – HYDRAULIC PROFILE
2975-00-P-009	P&ID – MBBR TREATMENT
2975-00-P-010	P&ID – MIXING TANK
2975-00-P-011	P&ID – ALUM DOSING SYSTEM
2975-00-P-012	P&ID – SODIUM HYDROXIDE DOSING SYSTEM
2975-00-P-013	P&ID – PROCESS AIR BLOWERS

AE Project No. 2020-2975-00

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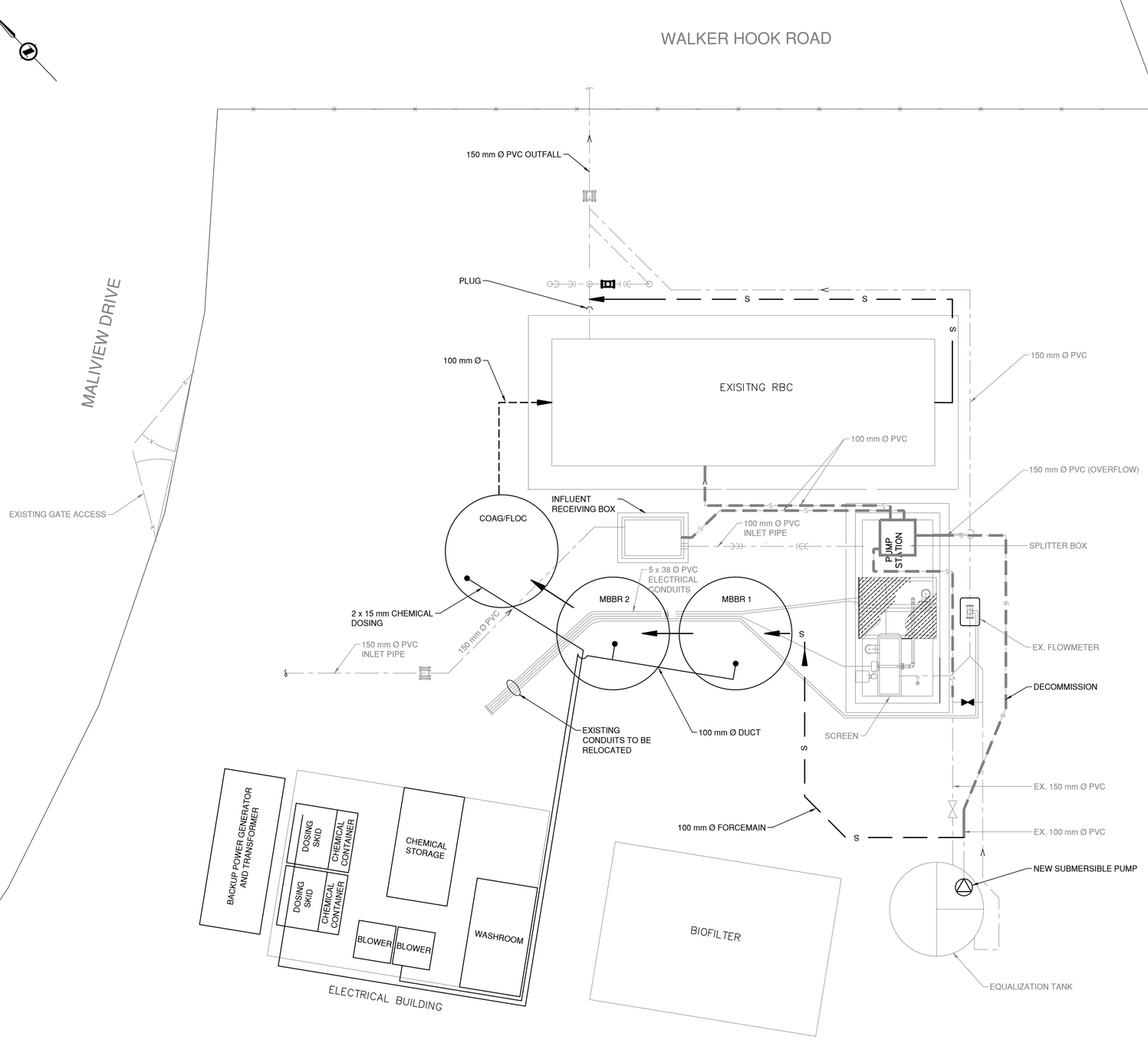
Capital Regional District | Environmental Services
625 Fisgard Street, PO Box 1000
Victoria, BC V8W 2S6



LOCATION PLAN
SCALE 1:1500

NOTE:
1. PRELIMINARY LAYOUT NOT BASED ON SURVEY.

0 0.5 1.5 2.5m
1:50

BY	DATE	No.	REVISION	ENG.	No.	DATE	ISSUE
					A	09/25/20	30% DESIGN SUBMISSION

SEAL

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Capital Regional District	Wastewater Treatment Project	MALIVIEW WWTP	
DESIGNED J.L.	SURVEYED N/A	CIVIL - SITE PLAN	
DRAWN B.W.	DATE 07/06/20		
SCALE HORIZONTAL 1:50	CHECKED P.G.		
SCALE VERTICAL	APPROVED E.A.	CONTRACT NUMBER XXXXX XXXXX	DRAWING NUMBER 2795-00-C-101 / ISSUE A / SHT. No. 1 OF 11

CAD FILE : \\s-vic-fs-01\working\2019-2795-00\civil\2795-00-C-101.dwg
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WASTEWATER COMMODITY ABBREVIATIONS

FA	FOUL AIR
OF	OVERFLOW
PA	PROCESS AIR
PLY	POLYMER
PW	POTABLE WATER
SAM	SAMPLE
SAN	SANITARY SEWER
SAS	SULFURIC ACID SOLUTION
SHS	SODIUM HYDROXIDE SOLUTION
V	VENT

WASTEWATER EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONER
AF	AIR FILTER
AHU	AIR HANDLING UNIT
BL	BLOWER
DIF	DIFFUSER
DR	DRIVE
EF	EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
ESE	EMERGENCY EYEWASH & SHOWER
FAN	FAN
FJ	FLEXIBLE JOINT
FLT	FILTER
HB	HOSE BIB
HST	HOIST
LCP	LOCAL CONTROL PANEL
LG	LEVEL SIGHT GLASS (Calibration Column)
LV	BUILDING AIR LOUVER
M	MOTOR
MCP	MASTER CONTROL PANEL
MXR	MIXER
P	PUMP
PDC	POWER DISTRIBUTION CENTRE
PRV	PRESSURE REDUCING VALVE
RM	ROTAMETER
SCL	SCALE
SCR	SCRUBBER
SLR	SILENCER
SM	STATIC MIXER
SMP	SAMPLER
STR	STRAINER
T	TANK
V	VALVE
VFD	VARIABLE FREQUENCY DRIVE

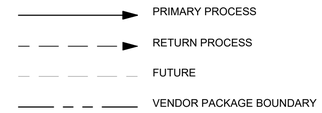
PIPE MATERIAL CODE

CL	COPPER TYPE L
CPVC	CPVC SCHEDULE 80
DI2	GLASS LINED DUCTILE IRON CLASS 53
DWV	PVC SCHEDULE 40 DRAIN WASTE/VENT
DWV2	PVC SCHEDULE 80 DRAIN WASTE/VENT
FRP	FIBREGLASS REINFORCED PLASTIC 38mm VAC (UV RESISTANT)
MS1	MILD STEEL SCHEDULE 40 (CW/ERW/SEAMLESS)
MS2	MILD STEEL SCHEDULE 80 (ERW/SEAMLESS)
MS3	EPOXY LINED MILD STEEL (CW/ERW)
MS6	GALVANIZED STEEL SCHEDULE 40
MS7	GALVANIZED STEEL, G60
MS8	GALVANIZED STEEL, G90 (INSULATED)
PE1	HDPE SDR21 PE4710
PE2	HDPE SDR17 PE4710
PE3	HDPE SDR13.5 PE4710
PE4	HDPE SDR11 PE4710
PE5	HDPE SDR 9 PE4710
PE9	LDPE TUBING
PTFE	POLYTETRAFLUOROETHYLENE TUBING
PVDF	POLYVINYLIDENE FLURORIDE
PVC3	PVC SCHEDULE 80
PVC4	PVC SCHEDULE 40
SS1	304L STAINLESS STEEL SCHEDULE 10S
SS5	316L STAINLESS STEEL 10S
SS6	316L STAINLESS STEEL 40S
SS7	304L STAINLESS STEEL, 10 GA

VALVE ABBREVIATIONS

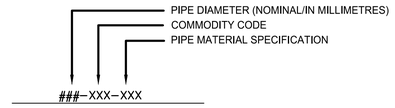
ARV	AIR RELEASE / VACUUM VALVE
BAV	BALL VALVE
BCV	BALL CHECK VALVE
BFD	BUTTERFLY DAMPER
BFP	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
CHV	CHECK VALVE
()CV	CONTROL VALVE () - PRIMARY CONTROLLED VALVE MAY HAVE SEVERAL FUNCTIONS F - FLOWRATE L - LEVEL P - PRESSURE S - SURGE T - TEMPERATURE
FD	FLOW CONTROL DAMPER (OPEN/COSED)
FV	FLOW CONTROL VALVE (OPEN/CLOSED)
FVC	FLOW CONTROL VALVE (MODULATING)
GAV	GATE VALVE
GLV	GLOBE VALVE
KGV	KNIFE GATE VALVE
MV	MUG VALVE
NV	NEEDLE VALVE
PLV	PLUG VALVE
PRV	PRESSURE RELIEF VALVE
PSV	PRESSURE SAFETY VALVE
RV	ROTARY VALVE

PROCESS LINES

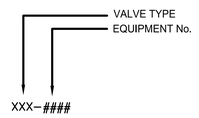


PROCESS, EQUIPMENT AND VALVE IDENTIFICATION

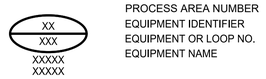
LINE LABEL



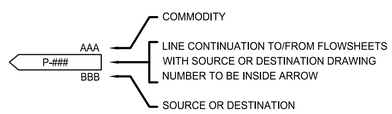
VALVE LABEL



EQUIPMENT TAG



LINE SOURCE OR DESTINATION TAG



BY	DATE	No.	REVISION	ENG.	No.	DATE	ISSUE
					A	09/25/20	30% DESIGN SUBMISSION

SEAL

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Capital Regional District		Wastewater Treatment Project	
DESIGNED	J.L.	SURVEYED	N/A
DRAWN	R.W.	DATE	07/06/20
SCALE HORIZONTAL	NTS	CHECKED	P.G.
SCALE VERTICAL		APPROVED	E.A.

RESIDUALS TREATMENT FACILITY

SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 1

CONTRACT NUMBER	DRAWING NUMBER	ISSUE	SHT. No. OF
XXXX-XXX	2975-00-P-001	A	2 OF 11

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EQUIPMENT


CENTRIFUGAL PUMP


GRINDER PUMP


CHOPPER PUMP

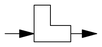

VERTICAL CENTRIFUGAL PUMP


CENTRIFUGAL BLOWER FAN OR COMPRESSOR


GEAR PUMP


ROTARY LOBE BLOWER


SUMP PUMP


METERING PUMP WITH MANUAL STROKE ADJUSTMENT


RECIPROCATING COMPRESSOR


SCROLL COMPRESSOR


ROTARY SCREW COMPRESSOR


FAN

SLIDE GATE


SLEVE

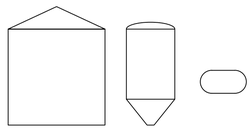

VERTICAL MIXER


MOTOR

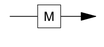

HORIZONTAL MIXER


ELECTRIC HOIST


OPEN TANK


CLOSED TANKS / VESSELS

METERING


MAGNETIC FLOW


ROTA FLOW


THERMAL MASS METER

LINE EQUIPMENT


VENTURI

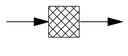

STATIC MIXER


SILENCER


CONE SILENCER

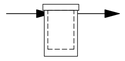

FLAME ARRESTER

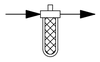

FLAME ARRESTER THERMAL SHUTOFF VALVE


AIR FILTER

DAMPER

Llouver


MECHANICAL SEPARATOR


MANUAL STRAINER


AIR DRYER


STRAINER

TRAP


FILTER

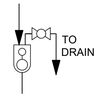

DIAPHRAGM SEAL


CHEMICAL SEAL

CALIBRATION COLUMN


PULSATION DAMPENER

AIR RELEASE VALVE



AIR/ VACUUM VALVE

VENT TO ATMOSPHERE


BACKFLOW PREVENTER

INSULATION HOT, COLD OR PERSONAL PROTECTION

INSULATION TRACE-ELECTRIC

INSULATION STEAM OR GLYCOL


SPRAY NOZZLES


EMERGENCY EYEWASH & SHOWER


HOSE BIB

BY	DATE	No.	REVISION	ENG.

No.	DATE	ISSUE
A	09/25/20	30% DESIGN SUBMISSION

SEAL

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Capital Regional District		Wastewater Treatment Project	
DESIGNED	J.L.	SURVEYED	N/A
DRAWN	R.W.	DATE	07/06/20
SCALE HORIZONTAL	NTS	CHECKED	P.G.
SCALE VERTICAL		APPROVED	E.A.

RESIDUALS TREATMENT FACILITY

SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 2

CONTRACT NUMBER	DRAWING NUMBER	ISSUE	SHT. No.	OF
XXXX-XXX	2975-00-P-002	A	3	11

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IN LINE VALVES

- GATE
- NEEDLE
- GLOBE
- BALL
- BUTTERFLY
- KNIFE
- CHECK
- PLUG
- PINCH
- FLOAT VALVE
- BALL CHECK
- DOUBLE LEAF CHECK
- WAFER CHECK (SINGLE)
- SPRING LOADED CHECK VALVE
- WAFER CHECK
- ANGLE VALVE
- THREE-WAY
- FOUR-WAY
- VALVE WITH BLEED
- UNCLASSIFIED (Write type of body adjacent to symbol)
- MUD VALVE
- DIAPHRAGM VALVE
- PRESSURE RELIEF VALVE
- VALVE NORMALLY CLOSED (NC)
- VALVE NORMALLY OPEN (NO)
- DRAIN VALVES
- BACKFLOW PREVENTER
- INLINE RUBBER DUCKBILL CHECK

CONTROL VALVE SYMBOLS

- DIAPHRAGM
- DIAPHRAGM SPRING OPPOSED
- DIAPHRAGM CONTROL VALVE
- DIAPHRAGM CONTROL THREE WAY VALVE
- ACTUATED VALVE (OPEN/CLOSED) (XV, M)
- DIAPHRAGM SPRING OPPOSED WITH PILOT (P)
- DIAPHRAGM SPRING OPPOSED WITH PILOT AND POSITIONER (S, P)
- DIAPHRAGM PRESSURE BALANCED
- DIAPHRAGM ACTUATED PRESSURE REDUCING VALVE (FLAG IN DIRECTION OF REDUCED PRESSURE)
- ACTUATED VALVE MODULATING (FCV, M)
- DIAPHRAGM ACTUATED GLOBE BODY RELIEF VALVE
- DIAPHRAGM ACTUATED ANGLE BODY RELIEF VALVE
- DIRECT ACTING SAFETY RELIEF VALVE GLOBE BODY
- DIRECT ACTING PRESSURE REDUCING VALVE (FLAG IN DIRECTION OF REDUCED PRESSURE)
- DIRECT ACTING SAFETY RELIEF VALVE ANGLE BODY
- CYLINDER OPERATED VALVE
- CYLINDER SINGLE ACTING
- CYLINDER DOUBLE ACTING
- CYLINDER WITH PILOT
- MOTORIZED ROTARY VALVE (M)
- SOLENOID (S)
- SOLENOID VALVE (S)
- MOTORIZED VALVE 3-WAY (M)
- SOLENOID VALVE 4-WAY (S)
- FLOAT VALVE

FITTINGS

- BLIND FLANGE
- CAP
- COUPLING
- QUICK CONNECTOR
- FLUSHING/PURGE CONNECTION
- PLUG
- UNION
- CONCENTRIC REDUCER (X)
- ECCENTRIC REDUCER (X)
- DRAIN (DRAIN)
- SEAL WATER (SW)
- EFFLUENT WATER (EW)
- IN-LINE PRESSURE SENSOR
- ORIFACE PLATE
- SIGHT GLASS
- PIPE CROSSING
- SPECTACLE BLIND
- FLEX HOSE
- FLEX COUPLING
- Y-STRAINER
- EXPANSION JOINT (BELLOWS) (EJ, EJ)
- FLEXIBLE CONNECTOR
- DRESSER COUPLING (FLEXIBLE CONNECTION)
- EDUCTOR / JET PUMP
- CLEANOUT

MISCELLANEOUS DEVICES

- CONTROL UNIT (C)
- INTERLOCK (I)
- VENT & FLUSH CONNECTION SEE NOTE 1 (V)
- SAMPLE & FLUSH CONNECTION SEE NOTE 1 (S)
- DRAIN, FLUSH & SAMPLE CONNECTION SEE NOTE 1 (D)
- PURGING AND FLUSHING (P)
- SAMPLER (SS)
- SEAL WATER CONTORL UNIT (W)
- SPECIALTY ITEM FROM SPEC (SP)
- TIE POINT (TP, X.XX)
- UTILITY STATION (NUMBER, IF ANY, DESIGNATES TYPE)
- VACUUM BREAKER (VAB)
- LEVEL SWITCH ELEMENT
- ULTRASONIC LEVEL SENSOR
- PRESSURE INDICATOR TAG (PI)
- ULTRASONIC METER (LE)
- INSTRUMENT IDENTIFICATION TAG (FE, M)
- ALARM

MISCELLANEOUS SYMBOLS

- FLOW DIRECTION ARROWS
- VENT TO ATMOSPHERE
- SPEC CHANGE (SPEC1 / SPEC2)
- WALL
- GRADE
- FLOOR PENETRATION
- WATER LEVEL SYMBOL
- FIELD WELD SYMBOL

NOTE:
1. SEE DRAWING HL-D0-P-501, DETAIL 5, FOR VENT & FLUSH CONNECTION, SAMPLE POINT, AND DRAIN CONNECTION SIZE AND ARRANGEMENT. THE LOCATION OR NUMBER OF SUCH CONNECTIONS MAY BE SUBJECT TO CHANGE DURING CONSTRUCTION FOR OPTIMIZATION OF OPERATOR ACCESS AND TO MINIMIZE BRANCH LENGTH.

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						A	09/25/20	30% DESIGN SUBMISSION

Making a difference...together

Capital Regional District	Wastewater Treatment Project	RESIDUALS TREATMENT FACILITY	
DESIGNED J.L.	SURVEYED N/A	SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 3	
DRAWN R.W.	DATE 07/06/20		
SCALE HORIZONTAL NTS	CHECKED P.G.		
SCALE VERTICAL	APPROVED E.A.	CONTRACT NUMBER XXXX-XXX / DRAWING NUMBER 2975-00-P-003 / ISSUE A / SHT. No. 4 OF 11	

INSTRUMENT SYMBOLS

	CONTROL ROOM PANEL	FIELD MOUNTED	LOCAL PANEL
DISCRETE INSTRUMENTS	SD*		
SHARED DISPLAY SHARED CONTROL eg. SCADA			
COMPUTER FUNCTION eg. FLOW METER			
PROGRAMMABLE LOGIC CONTROL (PLC) (RTU)	XXX	XXX	XXX 3 1 4 5 2 6

*SUBSCRIPT ABBREVIATION SPECIFIES INSTRUMENT FUNCTION OR LOCATION.
eg. IP#1 (INSTRUMENT PANEL #1), SD (SHUTDOWN)

FIELD MOUNTED INSTRUMENTS MAY BE POST OR WALL MOUNTED

STATUS LIGHT SHOW COLOUR INSIDE SYMBOL

I SYSTEM LOGIC

R MANUAL RESET

E EMERGENCY SHUTDOWN LOGIC

P PURGE OR FLUSHING DEVICE

ORIFICE PLATE C/W ORIFICE FLANGES

FI FLOW INDICATOR ROTAMETER TYPE

TURBINE OR PROPELLER TYPE PRIMARY ELEMENT

ANNUBAR OR PITOT TUBE

M MAGNETIC FLOW METER

VORTEX FLOW METER

U ULTRASONIC FLOW METER

C CORIOLIS FLOW METER

V V-CONE DIFFERENTIAL

FIELDBUS INTERFACE INCLUDED IN MCC PACKAGE

INSTRUMENTS AND/OR CONTROLS INCLUDED IN EQUIPMENT PACKAGE

VCP LOCAL CONTROL PANEL INDLUDED IN VENDOR PACKAGE

ACP AREA CONTROL PANEL

DIGITAL INPUT

DIGITAL OUTPUT

ANALOG INPUT

ANALOG OUTPUT

PULSE INPUT

MODULATING DIGITAL OUTPUT

NOTES:
1. FINAL INTERCONNECTION IS SUBJECT TO PRE-PACKAGED PROCESS EQUIPMENT VENDOR. CONTRACTOR TO PROVIDE ALL POWER, CONTROLS AND SIGNALS REQUIRED TO MEET THE REQUIREMENTS.
2. PANEL MOUNTED EQUIPMENT SHOWN FOR FUTURE FIELD DEVICES SHALL BE PROVIDED.

IDENTIFICATION LETTERS

	FIRST-LETTER		SUCCEEDING-LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CIRCUIT			CONTROL	CLOSED
D	DISCONNECT	DIFFERENTIAL			
E	VOLTAGE / EMERGENCY		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	GENERAL / COMMENT		GLASS, VIEWING DEVICE		
H	HAND OPERATED				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	ON / OFF		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY, STATE	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY	STATUS	SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	OPEN/CLOSE	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

INSTRUMENT SUBSCRIPT ABBREVIATIONS

ABBR.	DESCRIPTION
ACK	ACKNOWLEDGE
ACP	AREA CONTROL PANEL
A/S	AIR SUPPLY
BRG	BEARING
CT	CURRENT TRANSFORMER
CL2	CHLORINE
COMB	COMBUSTIBLE
CPU	CENTRAL PROCESSING UNIT
DB	DEVICE BUS
DIFF	DIFFERENTIAL
DISCH	DISCHARGE
DO	DISSOLVED OXYGEN
D/P	DIFFERENTIAL PRESSURE
ESO	EMERGENCY SHUTDOWN
ETM	ELAPSED TIME METER
FC	FAIL CLOSED
FO	FAIL OPEN
H	HIGH
HH	HIGH HIGH
HMI	HUMAN MACHINE INTERFACE
HOA	HAND/OFF/AUTO
HORN	ANNUNCIATOR HORN
HOR	HAND/OFF/REMOTE
H2S	HYDROGEN SULPHIDE
IB	INSTRUMENT BUS
IBD	INBOARD
I/I	CURRENT/CURRENT ISOLATION
I/P	CURRENT TO PNEUMATIC
L	LOW
LL	LOW LOW
LCP	LOCAL CONTROL PANEL
LEL	LOWER EXPLOSIVE LIMIT
LOR	LOCAL/OFF/REMOTE
M/A	MANUAL/AUTO
MB	MEGABLOCK
O2	OXYGEN
OBD	OUTBOARD
O/C	OPEN/CLOSE
O/L	OVERLOAD
O/O	ON/OFF
ORP	OXYGEN REDUCTION POTENTIAL
PAR	PROCESS ALARM RELAY
PC	POWER CONDITIONER
PH	PH
PLC	PROGRAMMABLE LOGIC CONTROL
PS	POWER SUPPLY
RESET	RESET
RIO	REMOTE INPUT/OUTPUT
RM	REDUNDANCY MODULE
SO2	SULPHUR DIOXIDE
SP	SET POINT
SW	SELECTOR SWITCH
S/S	STOP/START
TURB	TURBIDITY
UPS	UNINTERRUPTIBLE POWER SUPPLY
VCP	VENDOR CONTROL PANEL
VFD	VARIABLE FREQUENCY DRIVE
VIB	VIBRATION
WDG	WINDING

HAND SWITCH DESIGNATION

ES - EMERGENCY STOP
HOA - HAND-OFF-AUTO
HORA - HAND-OFF-REMOTE-AUTO
J - JOG
LOR - LOCAL-OFF-REMOTE
LR - LOCAL-REMOTE
OC - OPEN-REMOTE
OO - ON-OFF
OCR - OPEN-CLOSE-REMOTE

ELECTRICAL EQUIPMENT IDENTIFICATION TAG

725-MCC-001

- SEQUENTIAL LOOP IDENTIFIER UNIQUE NUMBER ASSIGNMENT BASED ON FUNCTION
- FUNCTIONAL IDENTIFICATION CODE
- PROCESS AREA NUMBER (AS REQUIRED)

RELAY FUNCTION DESIGNATORS

+	ADD	HS	HIGH SELECT
−	SUBTRACT	LS	LOW SELECT
±	BIAS	A/D	ANALOG TO DIGITAL
%	GAIN OR ATTENUATE	REV	REVERSE
√	EXTRACT SQ ROOT	E/P	POTENTIAL TO PNEUMATIC
÷	DIVIDE	I/P	CURRENT TO PNEUMATIC
×	MULTIPLY	E/I	POTENTIAL TO CURRENT
1:1	BOOST		

INSTRUMENT LINE SYMBOLS

- ELECTRICAL SIGNAL
- PNEUMATIC SIGNAL
- CAPILLARY TUBING
- HYDRAULIC SIGNAL
- CONTROL SYSTEM DATA LINK DEVICENET OR ETHERNET AS NOTED
- DATA LINK OR SYSTEM BUS AND SOFT INTERAL LINK
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED AND NON GUIDED)
- INTERLOCK

INSTRUMENT TAG NUMBERS & INDENTIFICATION

725-FCV-0714A

- FUNCTIONAL IDENTIFICATION CODE (SEE ABOVE)
- ADDITIONAL IDENTIFICATION (SEE ABBREVIATION LIST)
- SEQUENTIAL LOOP IDENTIFIER UNIQUE NUMBER ASSIGNMENT
- PROCESS AREA NUMBER

XX FCV XX / XXXX

BY	DATE	No.	REVISION	ENG.	No.	DATE	ISSUE
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SEAL

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Capital Regional District	Wastewater Treatment Project	RESIDUALS TREATMENT FACILITY - HARTLAND SITE	
DESIGNED J.L.	SURVEYED N/A	SYMBOLS & ABBREVIATIONS-LEGEND-SHEET 4	
DRAWN R.W.	DATE 07/06/20		
SCALE HORIZONTAL NTS	CHECKED P.G.		
SCALE VERTICAL	APPROVED E.A.	CONTRACT NUMBER XXXX-XXX / DRAWING NUMBER 2975-00-P-004 / ISSUE A / SHT. No. 5 OF 11	

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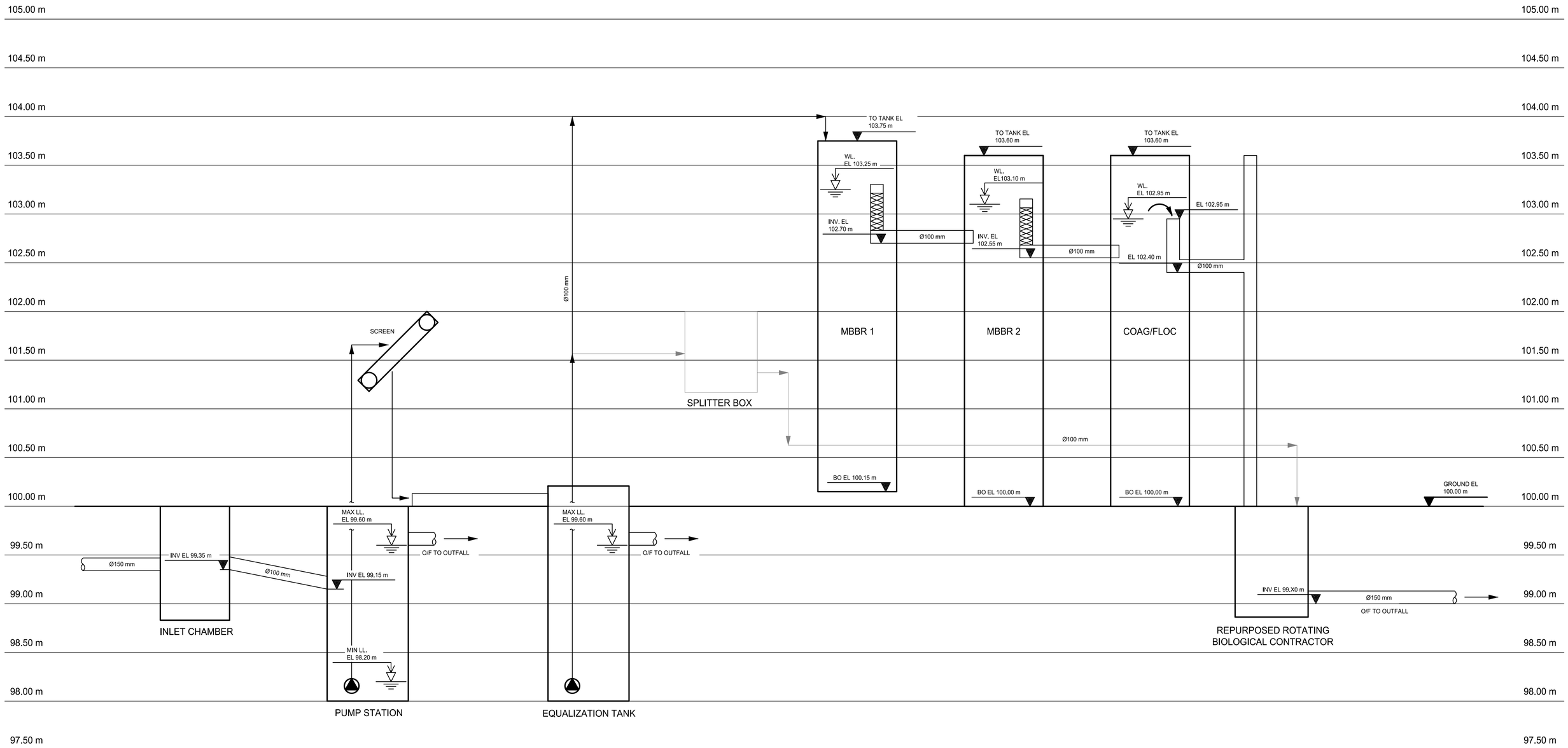

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	-	-	-	-	-	A	09/25/20	30% DESIGN SUBMISSION

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Capital Regional District	Wastewater Treatment Project	RESIDUALS TREATMENT FACILITY	
DESIGNED J.L.	SURVEYED N/A	HYDRAULIC PROFILE	
DRAWN R.W.	DATE 07/06/20		
SCALE HORIZONTAL NTS	CHECKED P.G.		
SCALE VERTICAL	APPROVED E.A.		

CONTRACT NUMBER	DRAWING NUMBER	ISSUE	SHT. No.
XXXX-XXX	2975-00-P-006	A	6 OF 11

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LOCAL PLC
CONTROL PANEL/SCADA

CONTROL
PANEL/MCC

AA | AI | AAHH | AAH | AAL | AALL | AI — TREND

SODIUM HYDROXIDE
P-012
FROM SODIUM HYDROXIDE DOSING SYSTEM

15-SHS-PTFE

PROCESS AIR
P-013
FROM BLOWERS

100-PA-SS1

FD-101

FD-102

WASTEWATER
EQUALIZATION TANK

100-WW-PVC4

AIT 102 PH

AI 102

LSH 102

LSH 101

100-ML-PVC4

100-ML-PVC4

MIXED LIQUOR
P-010
TO MIXING TANK

AI 100
PH
DO
HANDHELD

NC

50x100

NC

50x100

T 101
MBBR TANK No.1

T 102
MBBR TANK No.2

VENDOR PACKAGE

100-DR-PVC4

MIXED LIQUOR
TO HEAD OF TREATMENT PLANT

EQUIPMENT DATA

T-101
MBBR TANK No.1

T-102
MBBR TANK No.2

BY	DATE	No.	REVISION	ENG.	No.	DATE	ISSUE
					A	09/25/20	30% DESIGN SUBMISSION

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Capital Regional District	Wastewater Treatment Project	RESIDUALS TREATMENT FACILITY	
DESIGNED J.L.	SURVEYED N/A	MBBR TREATMENT	
DRAWN R.W.	DATE 07/06/20		
SCALE HORIZONTAL NTS	CHECKED P.G.		
SCALE VERTICAL	APPROVED E.A.	CONTRACT NUMBER XXXX-XXX / DRAWING NUMBER 2975-00-P-009 / ISSUE A / SHT. No. 7 OF 11	

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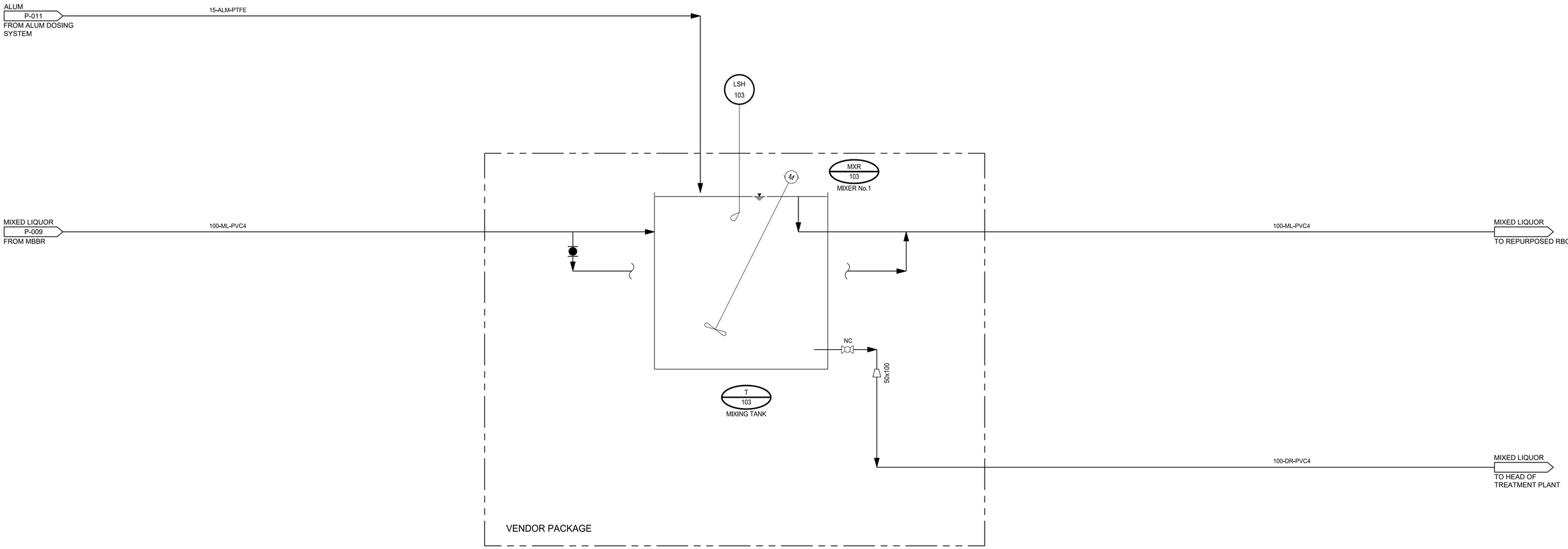
LOCAL PLC
CONTROL PANEL/SCADA

CONTROL
PANEL/MCC



EQUIPMENT DATA

MXR-103

MIXER NO.1
POWER: 1HP
VOLTAGE: 600V/60Hz/3Ph
SPEED:

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						A	09/25/20	30% DESIGN SUBMISSION

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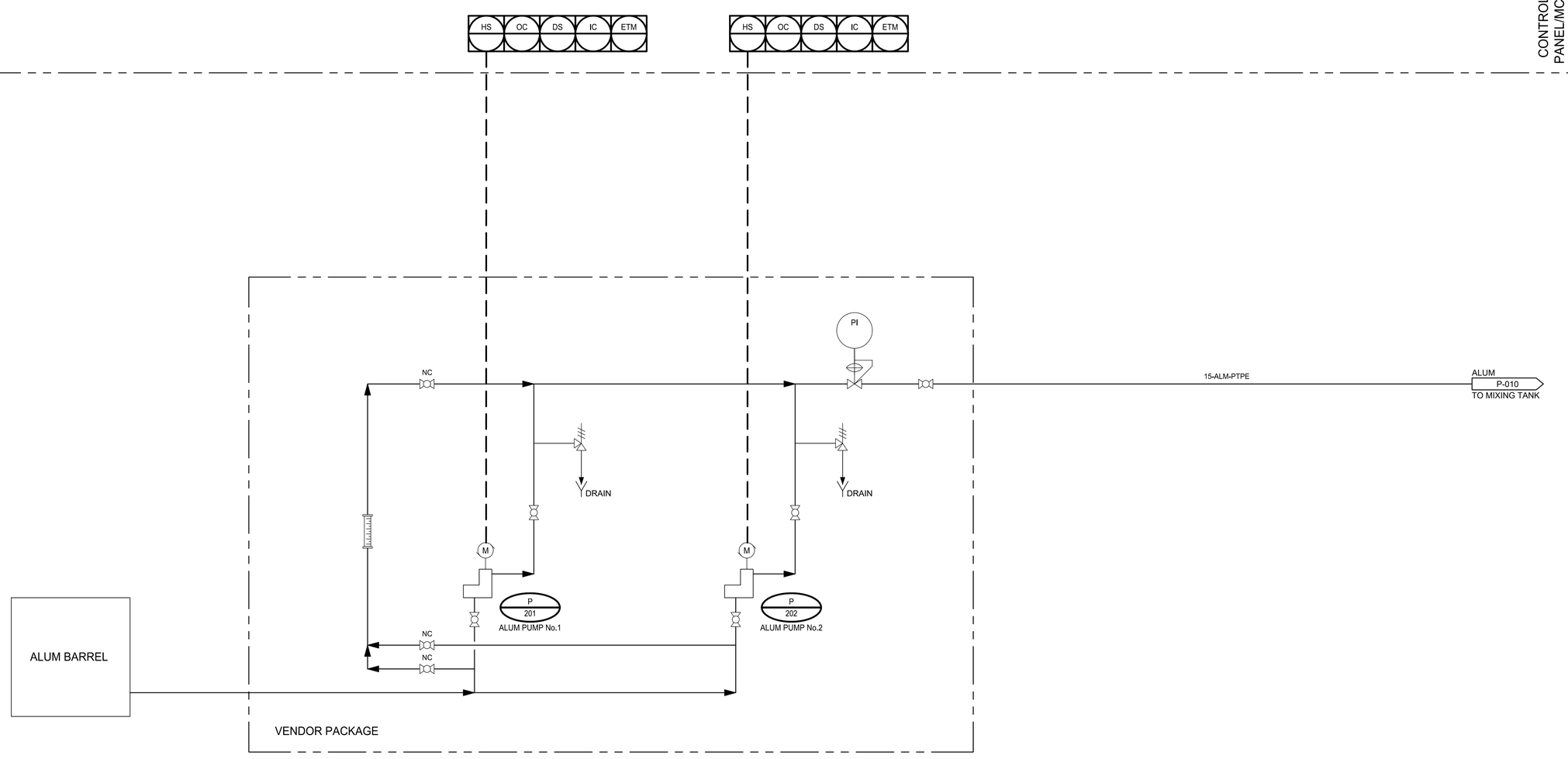
Capital Regional District	Wastewater Treatment Project	RESIDUALS TREATMENT FACILITY	
DESIGNED J.L.	**SURVEYED** N/A	MIXING TANK	
DRAWN R.W.	**DATE** 07/06/20		
SCALE HORIZONTAL NTS	**CHECKED** P.G.		
SCALE VERTICAL	**APPROVED** E.A.	**CONTRACT NUMBER** XXXX-XXX	**DRAWING NUMBER** 2975-00-P-010 **ISSUE** A **SHT. No.** 8 **OF** 11

LOCAL PLC
CONTROL PANEL/SCADA

CONTROL
PANEL/MCC



NOTE:
1. SUCTION TO BE SUBMERGED IN BARREL WITH FOOT VALVE.

EQUIPMENT DATA

P-201

ALUM PUMP NO.1
POWER: 0.5 HP
VOLTAGE: 120V/60Hz/3Ph
DUTY POINT:

P-202

ALUM PUMP NO.2
POWER: 0.5 HP
VOLTAGE: 120V/60Hz/3Ph
DUTY POINT:

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					A	09/25/20	30% DESIGN SUBMISSION

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Capital Regional District	Wastewater Treatment Project	RESIDUALS TREATMENT FACILITY	
DESIGNED J.L.	SURVEYED N/A	ALUM DOSING SYSTEM	
DRAWN R.W.	DATE 07/06/20		
SCALE HORIZONTAL NTS	CHECKED P.G.		
SCALE VERTICAL	APPROVED E.A.	CONTRACT NUMBER XXXX-XXX / DRAWING NUMBER 2975-00-P-011 / ISSUE A / SHT. No. 9 OF 11	

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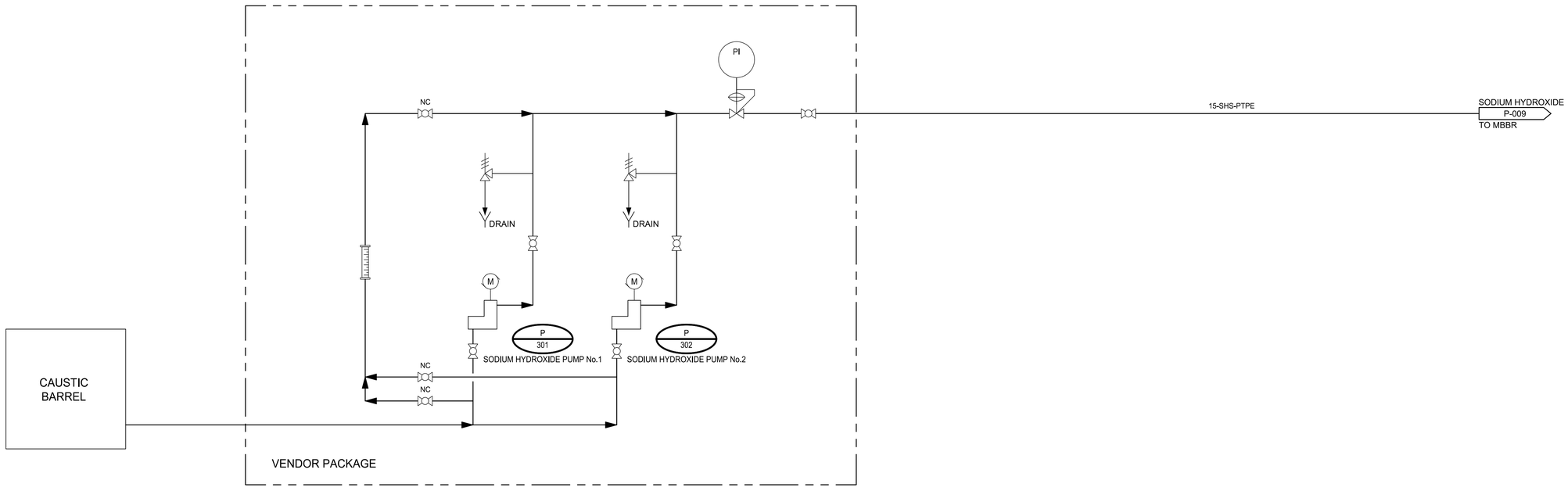
LOCAL PLC
CONTROL PANEL/SCADA

CONTROL
PANEL/MCC



NOTE:
1. SUCTION TO BE SUBMERGED IN BARREL WITH FOOT VALVE.

EQUIPMENT DATA

P-301

SODIUM HYDROXIDE PUMP NO.1
POWER: 0.5 HP
VOLTAGE: 120V/60Hz/3Ph
DUTY POINT:

P-302

SODIUM HYDROXIDE PUMP NO.2
POWER: 0.5 HP
VOLTAGE: 120V/60Hz/3Ph
DUTY POINT:

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No.	DATE	ISSUE
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Capital Regional District		Wastewater Treatment Project	
DESIGNED	J.L.	SURVEYED	N/A
DRAWN	R.W.	DATE	07/06/20
SCALE HORIZONTAL	NTS	CHECKED	P.G.
SCALE VERTICAL		APPROVED	E.A.

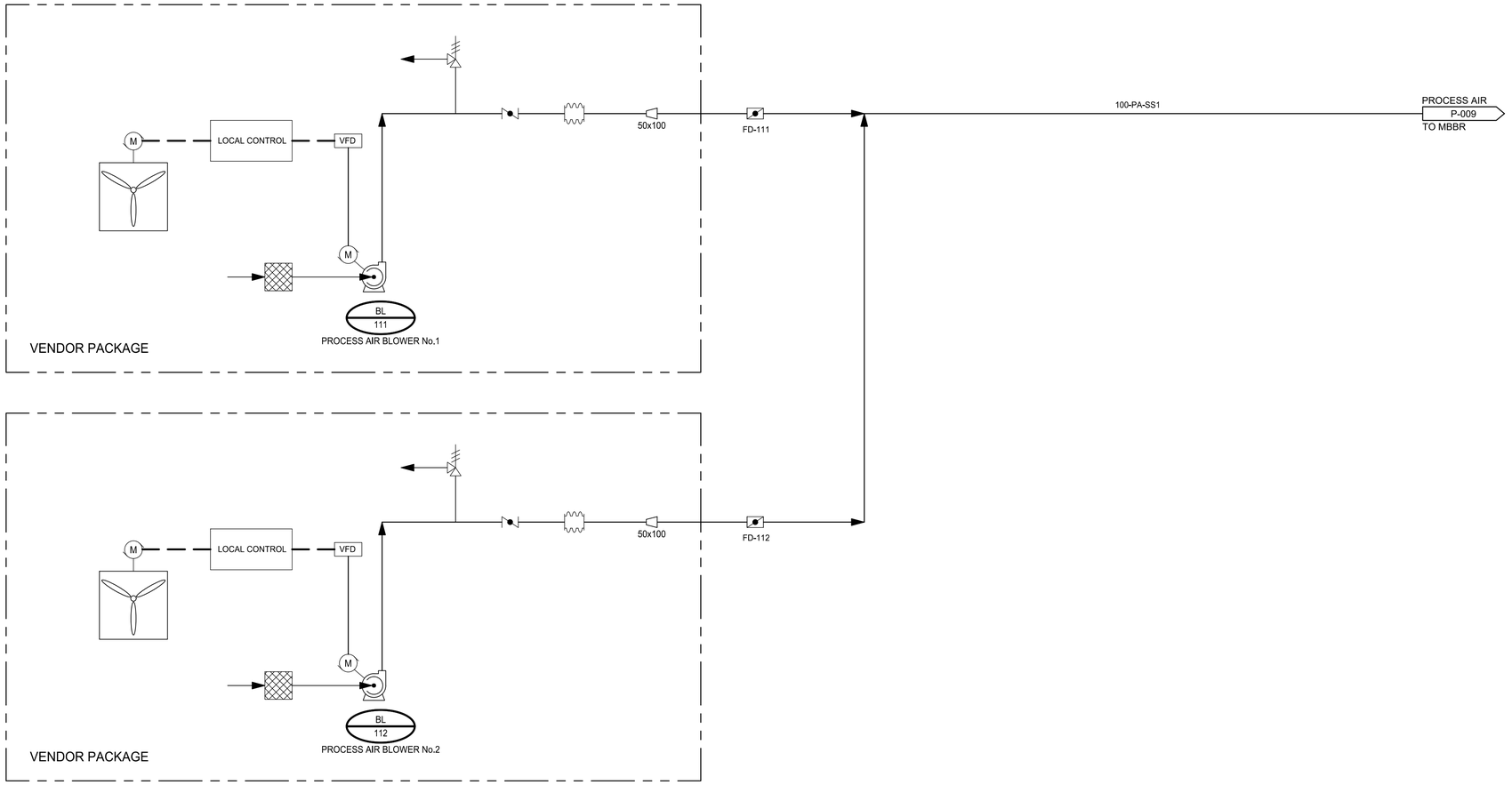
RESIDUALS TREATMENT FACILITY

SODIUM HYDROXIDE DOSING SYSTEM

CONTRACT NUMBER	DRAWING NUMBER	ISSUE	SHT. No.	OF
XXXX-XXX	2975-00-P-012	A	10	11

LOCAL PLC
CONTROL PANEL/SCADA

CONTROL
PANEL/MCC



EQUIPMENT DATA

BL-111

PROCESS AIR BLOWER NO.1
POWER: 7.5 HP
VOLTAGE: 600V/60Hz/3Ph
DUTY POINT:

BL-112

PROCESS AIR BLOWER NO.2
POWER: 7.5 HP
VOLTAGE: 600V/60Hz/3Ph
DUTY POINT:

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No.	DATE	ISSUE
A	09/25/20	30% DESIGN SUBMISSION

Making a difference...together

Capital Regional District		Wastewater Treatment Project	
DESIGNED	J.L.	SURVEYED	N/A
DRAWN	R.W.	DATE	07/06/20
SCALE HORIZONTAL	NTS	CHECKED	P.G.
SCALE VERTICAL		APPROVED	E.A.

RESIDUALS TREATMENT FACILITY

PROCESS AIR BLOWERS

CONTRACT NUMBER	DRAWING NUMBER	ISSUE	SHT. No.	OF
XXXX-XXX	2975-00-P-013	A	11	11

APPENDIX C - COST ESTIMATE

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: Capital Regional District
Subject: Maliview Preliminary Cost Estimate

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: JLeong
Checked by:
Type of Estimate: Pre-Design

Cost Estimate Summary

1	GENERAL		$	235,000
2	CIVIL SITE WORKS		$	39,000
3	STRUCTURAL AND ARCHITECTURAL		$	16,000
4	MAJOR EQUIPMENT SUPPLY		$	226,000
5	PROCESS MECHANICAL		$	312,000
6	BUILDING MECHANICAL		$	42,000
7	ELECTRICAL		$	62,000
8	INSTRUMENTATION AND CONTROLS		$	31,000
9	TEMPORARY WORKS		$	18,000
	Subtotal		$	981,000
	Allowance Contingency	40%	$	393,000
	Subtotal		$	1,374,000
	Engineering	20%	$	275,000
	TOTAL PROJECT COST ESTIMATE		**$**	**1,649,000**

NOTES:

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

General

Item	Description	Qty.	Units	Unit Price	Extension
1	Contractor Overhead	1	LS	157,250	158,000
2	Permits and Bonds	1	LS	40,885	41,000
3		0	ea	1	-
4		0	ea	1	-
5		0	ea	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 199,000**
					$ -

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Civil Siteworks

Item	Description	Qty.	Units	Unit Price	Extension
1	Site Grading Allowance	1	LS	25,000	25,000
2	Decommission of Existing PVC Piping	33.5	lm	85	3,000
3	Decomission of Existing Splitter Box	1	LS	1,500	2,000
4	Stripping and Subgrade Preparation	25	sq.m	85	3,000
5		0	LS	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 33,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Structural & Architectural

Item	Description	Qty.	Units	Unit Price	Extension
1	Structural Slab	16.25	cu.m	800	13,000
2		0	ea	1	-
3		0	ea	1	-
4		0	ea	1	-
5		0	ea	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 13,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Major Equipment Supply

Item	Description	Qty.	Units	Unit Price	Extension
1	MBBR Process Package	1	LS	190,900	191,000
2		0	ea	1	-
3		0	ea	1	-
4		0	ea	1	-
5		0	ea	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 191,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Process Mechanical

Item	Description	Qty.	Units	Unit Price	Extension
1	T-103 Mixing Tank, 2400 x 3400 (dia x H)	1	ea	5,130	6,000
2	MXR-103, Mixer with Support Stand	1	ea	12,075	13,000
3	100 mm PVC SDR35 Conveyance Piping	28.7	lm	400	12,000
4	100 mm PVC SDR35 Drain Piping	10	lm	400	4,000
5	Submersible Pump	1	ea	8,000	8,000
6	Chemical Dosing Skid	2	ea	15,000	30,000
7	Chemical Containment Pad	2	ea	1,000	2,000
8	15 mm Polyethlyene Chemical Dosing	35	ea	100	4,000
9	100 mm Process Air Duct	21.8	ea	200	5,000
10	100 mm Damper	2	ea	1,500	3,000
11	Miscellanous Piping Supports	1	LS	5,000	5,000
12	Splitter Box	1	LS	5,000	5,000
13	Emergency Shower and Eyewash	1	ea	8,500	9,000
14	RBC Retrofit	1	LS	75,000	75,000
15	Screen Modification	1	LS	25,000	25,000
16	Screening Washer Compactor	1	LS	57,500	58,000
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 264,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Building Mechanical

Item	Description	Qty.	Units	Unit Price	Extension
1	Louvre	3	ea	10,000	30,000
2	Unit Heater	1	ea	5,000	5,000
3		0	ea		-
4		0	ea	1	-
5		0	ea	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 35,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: DD
Checked by:
Type of Estimate: Pre-Design

Electrical

Item	Description	Qty.	Units	Unit Price	Extension
1	600V Step Up Transformer	1	ea	3,000	3,000
2	600V Distribution Panel	1	ea	4,000	4,000
3	208V Distribution Panel	1	ea	4,000	4,000
4	Conduit and Cabelling	180	lm	80	15,000
5	Generator	1	ea	18,700	19,000
6	Automatic Transfer Switch	1	ea	3,425	4,000
7	Main Breaker	1	ea	1,000	1,000
8	Generator pad	1	ea	2,000	2,000
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 52,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Instrumentation & Controls

Item	Description	Qty.	Units	Unit Price	Extension
1	Control Panel excl. Programming	1	ea	9,000	9,000
2	pH Probe / Transmitter	1	ea	4,500	5,000
3	SCADA Upgrade	1	LS	12,000	12,000
4		0	ea	1	-
5		0	ea	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 26,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Raw Water Well

Item	Description	Qty.	Units	Unit Price	Extension
1	Temporary Works for Commissioning	1	LS	15,000	15,000
2		0	ea	1	-
3		0	ea	1	-
4		0	ea	1	-
5		0	ea	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 15,000**

Associated Engineering | GLOBAL PERSPECTIVE LOCAL FOCUS.

Cost Estimate

Client: **Capital Regional District**
Subject: **Maliview Preliminary Cost Estimate**

Date: Oct 7, 2020
Project Number: 2019-2795
Prepared By: <insert>
Checked by:
Type of Estimate: Pre-Design

Allowances

Item	Description	Qty.	Units	Unit Price	Extension
1		1	LS	1	1,000
2		0	ea	1	-
3		0	ea	1	-
4		0	ea	1	-
5		0	ea	1	-
6		0	ea	1	-
7		0	ea	1	-
8		0	ea	1	-
9		0	ea	1	-
10		0	ea	1	-
11		0	ea	1	-
12		0	ea	1	-
13		0	ea	1	-
14		0	ea	1	-
15		0	ea	1	-
16		0	ea	1	-
17		0	ea	1	-
18		0	ea	1	-
19		0	ea	1	-
20		0	ea	1	-
	Subtotal				**$ 1,000**
	Northern Allowance	0%			$ -
	Subtotal				$ 1,000
	Contingency	10%			$ 1,000
	Subtotal				$ 2,000
	Engineering	15%			$ 1,000
	Total				**$ 3,000**

British Columbia News

Province opens applications for infrastructure funding to build stronger communities

https://news.gov.bc.ca/22503
Thursday, June 25, 2020 8:00 AM

Victoria - The Province is now accepting applications from local governments, community groups and First Nations for nearly $160 million in infrastructure grants to help strengthen communities throughout British Columbia.

The funding targets projects ranging from recreation and cultural centres to drinking water and wastewater facilities.

In partnership with the Government of Canada, the funds are being made available as part of the second intake of the Community, Culture and Recreation (CCR) infrastructure stream and the Rural and Northern Communities (RNC) infrastructure stream, both part of the Investing in Canada Infrastructure Plan.

“Investment in infrastructure is an investment in people. We saw with the first intake in 2018 that there was huge demand for upgrading arenas, building new community centres and improving natural disaster resiliency,” said Selina Robinson, B.C.’s Minister of Municipal Affairs and Housing. “Projects like these will strengthen communities by bringing people together, celebrating our province’s diversity and improving services to support economic growth.”

The provincial and federal governments are investing up to $58.7 million under the RNC program and up to $100.6 million under the CCR program.

“Investing in community centres, recreation and cultural facilities means children and youth will have a safe place to play and learn, seniors have a place to meet and our clubs and groups can have a home. These facilities build strong, dynamic communities where people want to put down roots and do business,” said Catherine McKenna, federal Minister of Infrastructure and Communities. “Together with the Province, we are supporting projects that will create jobs and bring residents new facilities and programs that will make a real difference in people’s lives for years to come.”

The CCR program provides access to funding for projects that will provide upgrades or build new recreation facilities, recreational trails, local community centres and arts and cultural spaces. The program also supports health and educational facilities that uphold the Truth and Reconciliation Commission's Calls to Action. The total federal-provincial contribution for the first intake of CCR was nearly $134 million. The first six successful applicants were announced last fall and the rest will be announced soon.

“Investment in infrastructure such as trail and cycling networks, arts and cultural installations and improving accessibility is so valuable to the tourism sector,” said Lisa Beare, B.C.’s Minister of Tourism, Arts and Culture. “This funding will help drive visitation, create jobs and increase revenues, benefiting the people in the tourism industry, which is especially important as we work towards recovering from the impact of COVID-19.”

The RNC program responds to the unique needs of British Columbia’s small, rural and remote communities that have populations under 25,000. As with the first round of applications under this fund, provincial and federal funding has been set at a higher level to ensure that communities under 5,000 people will have all eligible project costs covered, while those in communities up to 25,000 people will only have to cover 10%.

Project criteria support a wide range of infrastructure needs and priorities, including broadband connectivity,

efficient and reliable energy, Indigenous health and educational facilities, local public transit and reliable road, air or marine infrastructure, as well as improved resilience to natural disasters and environmental quality. The total federal-provincial contribution for the first intake of RNC is more than $94 million and successful applicants will be announced soon.

Local governments and Indigenous communities, as well as for-profit (RNC only) and not-for-profit organizations, are encouraged to submit applications for these programs, through the Investing in Canada Infrastructure Program on the B.C. government website: www.gov.bc.ca/Investing-in-Canada-Infrastructure-Program

Approvals for the second intake are expected to be made public in 2021.

Quick Facts:

- Through the Investing in Canada Infrastructure Plan, the Government of Canada is investing more than $180 billion over 12 years in public transit projects, green infrastructure, social infrastructure, trade and transportation routes, and Canada's rural and northern communities.
- $25.3 billion of this funding supports social infrastructure in Canadian communities.
- For each project in the Community, Culture and Recreation infrastructure stream, projects may receive the following funding toward eligible costs:
    - Up to 33.33% provincial funding and up to 40% federal funding for local government projects;
    - Up to 15% provincial funding and up to 75% federal funding for Indigenous off-reserve projects(i);
    - Up to 75% federal funding for Indigenous on-reserve projects*; and
    - Up to 25% provincial funding and up to 40% federal funding for not-for-profit projects.

    (i) Indigenous ultimate recipients may access additional funding for a project up to a maximum of 100% of eligible expenditures from all federal sources.
- For each project in the Rural and Northern Communities infrastructure stream, projects may receive the following funding toward eligible costs:
    - Up to 40% provincial funding and up to 60% federal funding for local government projects depending on population:
        - Small communities under 5,000 people may receive up to a combined total of 100% funding.
        - Communities with populations between 5,001 and 25,000 may receive up to a combined total of 90% funding.
    - Up to 25% provincial funding and up to 75% federal funding for Indigenous off-reserve projects(i);
    - Up to 75% federal funding for Indigenous on-reserve projects*;
    - Up to 25% provincial funding and up to 50% federal funding for not-for-profit projects, and
    - Up to 15% provincial funding and up to 25% federal funding related to for-profit projects.

    (i) Indigenous ultimate recipients may access additional funding for a project up to a maximum of 100% of eligible expenditures from all federal sources.

Learn More:

Canada's COVID-19 Economic Response Plan: https://www.canada.ca/en/department-finance/economic-response-plan.html

Government of Canada takes action on COVID-19: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/canadas-reponse/government-canada-takes-action-covid-19.html

BC's Restart Plan: https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/covid-19-provincial-support/bc-restart-plan

Investing in Canada Plan Project Map: http://www.infrastructure.gc.ca/map

Federal infrastructure investments in British Columbia: https://www.infrastructure.gc.ca/investments-2002-investissements/bc-eng.html

Government of British Columbia's infrastructure program: www.gov.bc.ca/Investing-in-Canada-Infrastructure-Program

Media Contacts

Ministry of Municipal Affairs and Housing
Media Relations
778 584-1255

Making a difference...together

REPORT TO HIGHLAND WATER AND SEWER (MALIVIEW) SERVICES COMMISSION MEETING OF THURSDAY OCTOBER 22, 2020

SUBJECT **Maliview Wastewater Treatment Plant Upgrade Loan Authorization and Amend Service Establishment - Process and Next Steps**

ISSUE SUMMARY

To seek approval to proceed with a loan authorization, community consultation, and referendum process to advance the Maliview wastewater treatment plant upgrade and supporting documentation for the Investing in Canada Infrastructure Program grant application (ICIP).

BACKGROUND

The CRD is submitting an ICIP grant under the Rural and Northern Communities Program Funding stream. The ICIP program targets capital infrastructure projects in communities with a population of 25,000 or less. The Maliview wastewater treatment plan upgrade qualifies under one of the federal outcomes for green infrastructure – environmental quality for increased capacity to treat and or manage wastewater for public use and benefit. The wastewater project must result in wastewater effluent that meets the *Wastewater Systems Effluent Regulations*, or provincial regulations where there is a federal equivalency agreement in place. Projects must be completed in five years following approval (March 31, 2026). The ICIP deadline for submission is **October 22, 2020**.

The funding provided towards infrastructure projects is a three way cost share between federal and provincial partners the local government. Applicants must be prepared to finance project construction and their cost-share of the project, as well as cover any cost over-runs. The funding split is as follows:

Table 1: Program Funding Splits

Ultimate Recipient	*Federal*	*Provincial*	*Total Senior Gov't Contribution (up to)*	*Ultimate Recipient Contribution (up to)*
Local government with a population between 5,000 - 25,000	50%	40%	90%	10%

One of the requirements of the ICIP is a resolution/bylaw identifying the source of the proponent's share of the project costs including sufficient funds for cost overruns. The resolution should show the support for the project from the CRD Board. The resolution is to be submitted as part of the application package, or within **one month** after the submission deadline due to timing of CRD Board meetings.

The CRD must also submit evidence that their full share of funding has been or will be secured. This evidence may be in the form of staff reports and/or resolutions of board/council directing the use of reserve funds, and for local governments who are recovering their share of funding through borrowing, a loan authorization bylaw that has **received third reading**, and/or a date that borrowing has been approved through a formal public approval process and a copy of the related bylaw.

The Maliview wastewater treatment upgrade conceptual designs provided a total construction cost approximately $1.65 million (class C cost estimates with up to ±25%-40%). Once the project budget (CE 582.4501) is approved, staff will proceed with detailed designs, geotechnical/underground investigation, and communicating with the regulator, a Class A cost estimate of ±10%-15% will be provided from final drawings and specifications for a tender ready project.

To fund the local government's share of the ICIP is as follows:

Maliview WWTP Upgrading Project Cost Estimate	
WWTP Upgrading Construction (Labour and Materials)[1]	$1,650,000
Engineering, Quality Assurance and Project Management (12%)	$49,500
Contingency (40%) [2]	$509,850
Total Estimated Cost	**$2,209,350**

1. Cost Estimation is based on conceptual/preliminary design as of September 2020 (Class C, ±25 - 40%)
2. 40% contingency is allowed due to uncertainties and risks associated with underground conditions and regulatory approval as well as preliminary analysis and design from conceptual/preliminary design project.
3. If the contingency funds are not needed for the upgrading of WWTP, remaining funds will be used towards the repair/replacement of the collection system pipes (up to $200,000, for prioritized areas/sections).

Recipients of grant funding will be responsible for ineligible costs, managing project risks, including cost increases, as the ICIP is not designed to deal with cost overruns. Any project cost increases will be the responsibility of the Ultimate Recipient.

Where applicants plan to use or have applied for funds from other federal or provincial programs, the source of these funds must be disclosed. Applicants who have confirmed or identified potential sources of other senior government funding for their project should note that the ICIP program is subject to federal stacking rules. Federal funding towards the project is limited to the Government of Canada contribution in Table 1, from all federal sources. Community Works Funds count towards the federal contribution for these purposes and will not be able to be utilized for the Ultimate Recipient's funding contribution to the project.

The next steps required to move the wastewater upgrade work forward is to decide on which loan authorization option to proceed with to support the ICIP grant, the method of electoral assent for borrowing, and next steps for community engagement.

ALTERNATIVES

Alternative 1

The Highland Water and Sewer Local Service Area recommends the Electoral Areas Committee recommends to the Capital Regional District Board:

1. That Bylaw 4370, "Maliview Sewer System Loan Authorization Bylaw No. 1, 2020" be introduced and read a first, second, and third time.

2. That Bylaw 4373, "Maliview Estates Sewerage Local Service Establishment Bylaw No. 1, 1991, Amendment Bylaw No. 1, 2020" be introduced and read a first, second, and third time.

3. Present the project and funding option to the ratepayers in the first quarter of 2021; and bring forward a report to the Commission on the results of the public engagement, and ratepayer's preferred electoral assent process.

Alternative 2

The Highland Water and Sewer Local Service Area recommends the Electoral Areas Committee recommend to the Capital Regional District Board:

1. Approve Bylaw 4370 loan authorization for $221,000 and amortization period of 25 years for the Highland Water and Sewer Local Service Commission Maliview wastewater treatment plant upgrade; and

2. That Bylaw 4373, "Maliview Estates Sewerage Local Service Establishment Bylaw No. 1, 1991, Amendment Bylaw No. 1, 2020" be introduced and read a first, second, and third time.

3. Present the project and funding option to the ratepayers in the first quarter of 2021; and bring forward a report to the Commission on the results of the public engagement, and ratepayer's preferred electoral assent process.

Alternative 3

That this report be referred back to staff for additional information.

IMPLICATIONS

Financial Implications

Currently there is no parcel tax within the Maliview sewer service area, the service budget is funded by user charge only from the properties connected to the system. The estimated new debt servicing cost is proposed to be funded by a new parcel tax requisition from all the taxable folios in the service area (94 taxable folios as of September 2020).

Long-term debt for all BC municipalities, including regional districts, must be arranged through the Municipal Finance Authority (MFA). MFA issues debenture debt for an initial term of only ten (10) years, irrespective of the total term of the debt. If the total term to maturity selected exceeds ten (10) years, the principle and interest would be subject to renewal in 5 years increments thereafter the first ten (10) year term. The maximum term MFA offers is 30 years.

For analytic purpose only, the estimated debt servicing cost alternatives under four different amortization term scenarios is simulated and shown below based on the indicative interest rates published on MFA website as of September 23, 2020.

Alternative 1	**Amortizations**			
Loan Authorization **$2,210,000**	**15 year**	**20 year**	**25 year**	**30 year**
Estimated Interest Rate	1.93%	2.24%	2.24%	2.24%
Cost of Borrowing $	381,580	644,932	808,281	974,373
Annual Debt Payment $	172,772	142,747	120,731	106,146
Annual Parcel Tax per taxable folio $	1,838	$1,519	1,284	1,129

Alternative 2	**Amortizations**			
Loan Authorization **$221,000**	**15 year**	**20 year**	**25 year**	**30 year**
Estimated Interest Rate	1.93%	2.24%	2.24%	2.24%
Cost of Borrowing $	38,158	64,493	80.828	97.437
Annual Debt Payment $	17,277	14,275	12,073	10,615
Annual Parcel Tax per taxable folio $	184	152	128	113

The longer amortization term will minimize the annual debt payments, but it results in higher total cost of borrowing and higher future interest risk exposure. A debt term of 15 years mitigates interest rate risk to only one subsequent renewal period. CRD staff consider multiple guidelines on each issue with respect to term maturity, including the interest risk exposure, estimated useful life of the infrastructure and the overall impact of both the annual debt payment costs and total cost of borrowing.

The Maliview wastewater system requires corrective actions to bring the system into compliance with both the federal *Fisheries Act* and provincial *Municipal Wastewater Regulations* requirements. The capital upgrades comply with the CRD's October 22, 2019, corrective action plan to bring the wastewater plant into regulatory compliance.

There are currently insufficient funds in the Capital Reserve ($23,223 as of September 30, 2020) to fund the proposed work; therefore it is recommended to fund the project through a loan authorization bylaw.

Service Establishment

The Maliview system was established as a specified area in 1979 and converted to a local area service in 1991 to operate a collection conveyance, treatment and disposal of sewage. The CRD may levy a tax requisition on the ratepayers in the Maliview service area to fund the annual operating costs and transfers to reserves for the service. The current maximum tax levy is greater of $20,000 or $2.50/$1,000 on actual assessed value of land and improvements to a maximum of $114,344 based on 2020 assessment. The Maliview service does not have sufficient room in the tax levy to meet the debt servicing costs for the proposed $2.1 million loan authorization. The existing service establishment bylaw (1938) requires an amendment to allow an increase to the maximum requisition to cover the costs for debt servicing and future infrastructure improvements. It is proposed that the debt servicing be funded by a single amount Parcel Tax to pay an equal share for the plant upgrade and collection repairs.

Under the *Local Government Act* (LGA) electorate approval is required in order to proceed with an amendment to the service establishment bylaw along with the loan authorization bylaw. A referendum question for both the loan authorization and service establishment amendment will be proposed in an electoral assent process to approve the upgrade. Staff are recommending increasing the maximum requisition to $250,000.

Alternative 1

It is recommended the Commission proceed with Alternative one and seek electoral assent for borrowing the total capital costs and should a grant be awarded it will reduce the overall borrowing requirements for the project.

1. The grant is not guaranteed and will be a very competitive.

2. If the grant is not awarded the capital upgrade is still required.

3. ICIP requires a secured funding plan for the replacement within the application to support the cost of the project. The funding plan is to include sufficient funds to cover all eligible costs, cost overruns beyond budget contingencies, ongoing operational costs associated with the project.

4. ICIP will not consider applications if the project represents a risk to the program funder if there is a potential for the project not to proceed should there be applicant funding difficulties; the project does not have public support; and the applicant does not demonstrate they are able to manage, maintain, and finance the project over the long term.

5. ICIP will not weight scoring of the grant should the ratepayers demonstrate their willingness to fund the entire project costs.

6. The loan authorization bylaw can be held at third reading and amended to a lesser amount upon grant award.

Alternative 2

Alternative two is less expensive, however, the risk is should the grant not be awarded the ratepayers will be required to fund the entire project costs. It may require a second electoral assent process to borrow the total costs.

Funding Approval Options

There are two options for approval of a loan authorization bylaw under the LGA to undertake this project:

1. Alternative Approval Process
2. Referendum Process

Alternative Approval Process (AAP)

Local/regional governments can use the Alternative Approval Process under Section 345 of the LGA to obtain participating area approval of a loan authorization bylaw. It is most commonly used in relation to long-term borrowing bylaws as it is a less expensive option than using a referendum. If more than 10% of the affected electors sign a counter-petition opposing the bylaw, a referendum must be held if the Committee still wishes to adopt it. Proceeding to referendum voting must occur no later than 80 days after the deadline established for submitting elector response forms during the AAP.

Based on the above tentative schedule the AAP would take approximately six (6) months, and would cost approximately $20,000.

Referendum Process

The referendum process is typically used to seek approval by assent of the electors, Section 407 of the LGA, where for a participating area, a majority of the valid votes are counted in favour of the bylaw to fund a project. Typically, a referendum question is developed and then reviewed by the Inspector of Municipalities at the province, requesting the electors to approve the borrowing of a specified amount of funds for the project. If electoral assent is not received local government must wait at least six (6) months before seeking elector assent on another bylaw for the same purpose in a referendum. In special circumstances, the local government may request approval from the Minister to hold another assent voting opportunity sooner.

Based on the above tentative schedule, the referendum would take approximately seven (7) months, and would cost approximately $60,000. Under current COVID conditions referendum cost have escalated as legislative services may be required to hire an auxiliary staff to assist as the CRD does not have sufficient capacity to support Board and Commissions as well as an approval process during COVID. Additional cost for barriers between polling staff and electors seems to be setting a “standard” of masks, face shields, and protective barriers. Also there may be difficulty in finding staff to work elections during a pandemic (perhaps, even a need to increase pay for staff). Due to the pandemic, the CRD anticipates an increase in mail ballots which would have a significant impact on staff time in processing the ballots.

Implications of an Unsuccessful AAP or Referendum

If the above-noted processes are unsuccessful, the CRD Board may face an order from the federal and provincial regulators for the work based the level of risk/liability due to non-compliance when failure occurs and an illegal discharge occurs. Under section 180 of the *Community Charter* the CRD will be authorized to borrow sufficient funds without electoral assent for works required should an environmental protection order be issued. It is highly likely an order will be issued as the CRD has received a warning from both federal and provincial regulators.

Public Engagement

Due to the financial impact of the alternatives on the taxpayers, there is a need for public engagement to inform the stakeholders of the issues, alternatives, impacts and timeline for the process. The exact form and extent of this process will be developed once the Commission decides on the preferred borrowing alternative.

The CRD follows the Public Participation Spectrum developed by the International Association for Public Participation (IAP2) as a model for developing our public engagement strategy. The spectrum outlines varying levels of public participation: inform, consult, involve, collaborate and empower. Even though the taxpayers are empowered by default through an electoral assent process, at this point in the public engagement process, staff advise focusing on informing and consulting with the ratepayers to provide them with information needed to assist them in making an informed decision. During the process, a method of obtaining public feedback will be an important factor in order to determine the community understanding of the project, gauge their

support for borrowing, and their preference for the method to seek electoral assent (AAP or referendum)

The project timeline and electoral assent processes are outlined in Appendix A and B.

CONCLUSION

The Maliview wastewater system was originally constructed in the early 1970s. Since its original construction, there were modifications and upgrades to the system to address performance issues. The existing plant has been experiencing difficulties in consistently meeting the permitted treatment quality requirements. The plant upgrade is needed to address non-compliance violations. The total cost of the project is estimated at $2,210,000 and staff will be submitting an application for up to 90% ICIP grant funding towards the cost of the project that is intended to increase the plant's capacity to treat and/or manage wastewater. Should the CRD be successful in an ICIP grant award it will reduce the overall borrowing requirements for the project.

RECOMMENDATION

The Highland Water and Sewer Local Service Area recommends the Electoral Areas Committee recommends to the Capital Regional District Board:

1. That Bylaw 4370, "Maliview Sewer System Loan Authorization Bylaw No. 1, 2020" be introduced and read a first, second, and third time.

2. That Bylaw 4373, "Maliview Estates Sewerage Local Service Establishment Bylaw No. 1, 1991, Amendment Bylaw No. 1, 2020" be introduced and read a first, second, and third time.

3. Present the project and funding option to the ratepayers in the first quarter of 2021; and bring forward a report to the Commission on the results of the public engagement, and ratepayer's preferred electoral assent process.

Submitted by:	Karla Campbell, BPA, Senior Manager, Salt Spring Electoral Area
Concurrence:	Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Referendum Process
Appendix B: Alternative Approval Process
Appendix C: Draft bylaw 4370 - Loan Authorization Bylaw
Appendix D: Draft bylaw 4373 - Maliview Service Establishment Bylaw Amendment

APPENDIX A

REFERENDUM PROCESS

1.	Maliview to decide on loan option and amortization period	October 22
2.	Submit ICIP grant application	October 22
3.	CRD Board approval of three readings of Loan Authorization Bylaw	November 18
4.	Send Loan Authorization bylaw to Inspector of Municipality	November 19
5.	Prepare Public Engagement Strategy and Educational Materials	December
6.	Open House to Update Ratepayers on the Project and Referendum	January 2021
7.	Commission to Review Results of Public Feedback from Open House and determine Electoral Assent Process	February
8.	CRD Board to establish Referendum question, polls, and Election Officer	March 10
9.	Prepare Mail-out to include with utility bill – Referendum Notice	April 1
10.	Approval of Inspector of Municipalities	mid-April
11.	Advertise official notices 30 days prior to Referendum	May 19
12.	Advance voting	June 9 & 16
13.	Referendum Voting Day	June 19
14.	Board receives Referendum results; if successful, adopts bylaws	July 14
15.	30-day quashing period ends	August 19
16.	Apply for Certificate of Approval	August 20
17.	Prepare construction tender	Sept – October
18.	Secure initial draw on MFA Loan	November

APPENDIX B

ALTERNATIVE APPROVAL PROCESS

1.	Maliview to decide on loan option and amortization period	October 22
2.	Submit ICIP grant application	October 22
3.	CRD Board approval of three readings of Loan Authorization Bylaw	November 18
4.	Send Loan Authorization bylaw to Inspector of Municipality	November 19
5.	Prepare Public Engagement Strategy and Educational Materials	December
6.	Open House to Update Ratepayers on the Project and Referendum	January 2021
7.	Commission to Review Results of Public Feedback from Open House and determine Electoral Assent Process	February
8.	CRD Board to establish deadline for receiving elector response forms; authorizes approval of electors in local area service; and establishes total number of electors and elector response form	March 10
9.	Approval of Inspector of Municipalities	mid-April
10.	Issue Notice of Alternative Approval Process by way of publication in two consecutive editions of the newspaper	March 31 & April 7
11.	Deadline for receiving elector response forms.	May 7
12.	Board receives Certificate of Results and adopts bylaw	June 9
13.	30-day quashing period ends	July 9
14.	Apply for Certificate of Approval	July 12
15.	Prepare construction tender	Aug - Sept
16.	Secure initial draw on MFA Loan	November

CAPITAL REGIONAL DISTRICT

BYLAW NO. 4370

****

A BYLAW TO AUTHORIZE THE BORROWING OF TWO MILLION TWO HUNDRED AND TEN DOLLARS ($2,210,000) FOR THE MALIVIEW SEWER SYSTEM RENEWAL AND UPGRADE

****

WHEREAS:

A. Under Bylaw No. 1938, “Maliview Estates Sewerage Local Service Establishment Bylaw, 1991’’, the Capital Regional District established a local service for the operation of a service for the collection, conveyance, treatment and disposal of sewage;

B. The Maliview wastewater system requires capital renewal and upgrades, which will involve the planning, study, project administration, project communications, and staff time required for design and construction of facilities, design and construction of facilities for the collection, conveyance, treatment and disposal of wastewater, as well as other related works, facilities and equipment purchases;

C. The estimated cost of the works, facilities and equipment, including expenses incidental thereto to be funded from debt servicing, is the sum of Two Million Two Hundred and Ten Thousand Dollars ($2,210,000) which is the amount of debt intended to be authorized by this bylaw, subject to receiving funding from other sources;

D. It is proposed that the financing of the said sewerage system facilities is to be undertaken by the Municipal Finance Authority of British Columbia pursuant to proposed agreements between that Authority and the Capital Regional District;

E. Pursuant to Section 407 of the *Local Government Act*, participating area approval is required and shall be obtained by alternative approval process under Section 345 of the *Local Government Act*; and

F. The approval of the Inspector of Municipalities is required under Section 403 of the *Local Government Act*.

NOW THEREFORE the Board of the Capital Regional District in open meeting assembled enacts as follows:

1. The Board is hereby empowered and authorized to undertake and carry out or cause to be carried out the capital renewal and upgrade of the Maliview sewerage wastewater system, which will involve the planning, study, project administration, project communications, staff time required for design and construction of facilities, design and construction of facilities for the collection, conveyance, treatment and disposal of wastewater, as well as other related works, facilities and equipment purchases:

   (a) to borrow upon the credit of the Capital Regional District a sum not exceeding Two Million Two Hundred and Ten Thousand Dollars ($2,210,000);

(b) to acquire all such real property, easements, rights-of-way, leases, licenses, rights or authorities as may be requisite or desirable for or in connection with the planning, study, design and construction of a system for the collection, conveyance, treatment and disposal of sewage and all related ancillary works, studies and equipment deemed necessary by the Board.

2. The maximum term for which debentures may be issued to secure the debt intended to be created by this bylaw is 20 years.

3. This Bylaw may be cited as the “Maliview Sewer System Loan Authorization Bylaw No. 1, 2020”.

READ A FIRST TIME THIS	___	day of	_____	202_
READ A SECOND TIME THIS	___	day of	_____	202_
READ A THIRD TIME THIS	___	day of	_____	202_
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	—	day of	_____	202_
RECEIVED THE ASSENT OF THE ELECTORS UNDER SECTION 345 of the *LOCAL GOVERNMENT ACT* THIS	___	day of	_____	202_
ADOPTED THIS	___	day of	_____	202_

_____ _____

CHAIR CORPORATE OFFICER

FILED WITH THE INSPECTOR OF MUNICIPALITIES THIS ____ day of _____ 2020

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4373

****

A BYLAW TO AMEND BYLAW 1938, "MALIVIEW ESTATES SEWERAGE LOCAL SERVICE ESTABLISHMENT BYLAW NO. 1, 1991"

****

WHEREAS:

A. Under Bylaw No. 1938, Maliview Estates Sewerage Local Service Establishment Bylaw No. 1 ,1991, the Regional Board converted a specified area to a local service operated by establishing bylaw for the collection, conveyance, treatment, and disposal of sewage;

B. The Board wishes to amend Bylaw No. 1938 to ensure funds are available for maintenance, operation, upgrades, and to ensure compliance with modernized cost-recovery language;

C. Elector approval is required for these changes and may be given by the Electoral Area Director consenting on behalf pursuant to ss. 347(2) and 349 of the *Local Government Act;*

The Board of the Capital Regional District in open meeting assembled enacts as follows:

1. Bylaw No. 1938, "Maliview Estates Sewerage Local Service Establishment Bylaw No. 1, 1991" is hereby amended as follows:

   (a) By deleting Section 3 in its entirety and replacing it with the following:

      3. The annual costs for the local service, net of grants and other revenues shall be recovered by one or more of the following:
         (a) by the requisition of money under Section 378(1)(a) of the *Local Government Act*;
         (b) by Parcel Tax under Section 378(1)(b) of the *Local Government Act*;
         (c) fees and charges imposed under Section 397 of the *Local Government Act*;
         (d) revenues raised by other means authorized by the *Local Government Act* or another Act; or
         (e) revenues received by agreement, enterprise, gift, grant or otherwise.

   (b) By deleting Section 4 in its entirety and replacing it with the following:

      4. In accordance with Section 339(1) of the *Local Government Act*, the maximum amount that may be requisitioned for the Local Service will be the greater of:
         (a) Two Hundred Fifty Thousand Dollars ($250,000); or
         (b) an amount equal to the amount that could be raised by a property value tax rate of $5.466 per One Thousand Dollars ($1,000) when applied to the net taxable value of land and improvements in the Service Area.

   (c) By deleting Section 5 in its entirety and renumbering the remaining sections accordingly..

2. This Bylaw may be cited as “Maliview Estates Sewerage Local Service Establishment Bylaw No. 1, 1991, Amendment Bylaw No. 1, 2020”.

READ A FIRST TIME THIS day of 2020

READ A SECOND TIME THIS day of 2020

READ A THIRD TIME THIS day of 2020

APPROVED BY THE
INSPECTOR OF MUNICIPALITIES THIS day of 2020

RECEIVED ASSENT OF THE ELECTORS THIS day of 2020

ADOPTED THIS day of 2020

CHAIR CORPORATE OFFICER

FILED WITH THE INSPECTOR OF MUNICIPALITIES THIS day of 2020

Minutes of a Meeting of the Galiano Island Parks & Recreation Commission
Held on September 3, 2020 at the South Hall

Present: Stephen Rybak (Chair), Charlene Dishaw, Jim Henshall, Gerry Longson, Andrew Simon, Barry New, Lorne Byzyna, Michael Carrothers (Maintenance Contractor), Jennifer Margison (Recording Secretary)
Absent: David Goar, Dave Howe (Regional Director)

The meeting was called to order at 8:30 am.

1. Territorial Acknowledgement
Chair Rybak provided a territorial acknowledgement.

2. Approval of Agenda
MOVED by Commissioner Henshall, SECONDED by Commissioner Byzyna, that the agenda be approved.
CARRIED

3. Adoption of the Minutes
Moved by Commissioner Simon and seconded by Commissioner Henshall that the minutes Aug. 6, 2020 be adopted.
CARRIED

4. Chair's Remarks
None.

5. Correspondence
An email was received from Sheila Hawkins adjacent to Seatime and Zayer regarding and requesting a dedication plaque on the bench at Seatime and mentioned growth of blackberries. Stephen will inform her of bench policy - must pay full cost of bench even if putting a plaque on an existing bench.

An email from a neighbour Lisa Lake in the same area who picked up a sharps box on the Active Pass beach. VIHA information bulletin was sent to Ms. Lake and re-circulated to stewards.

Mike Hoebel, Economic Development Commission contacted the Chair by telephone regarding potential funding to upgrade the Sturdies Bay pedestrian trail. Funding (federal gas tax moneys) would come through the Union of BC Municipalities and the CRD. Mike noted clarification of a eligibility is a critical first step. Discussion on improvements to the trail and potential extension to Burrill Road ensured. Chair Rybak will contact Mr. Hobel to follow-up on eligibility and other application criteria. Emma Davis offered to assist as she is aware of the infrastructure-focused program, which has no hard deadline.

6. Presentations/Delegations
None.

7. Administration Reports
7.1 Maintenance Contractor's Report
Michael commented on his monthly report. Blackberries at Seatime trimmed. Commission-purchased pressure washer will work well to raise the cleanliness and appearance level of the

toilets. Michael will check with the CRD on the possibility of opening of 2 toilets at #69 and #50. Talked to a few young people about some sign and other vandalism. Wondering if the Bell Trail bridge needs different signage warning of danger if we are leaving it. Raised the question of removing the bridge as a capital project for next year.

Question about the fading of our shore access signs. Has replaced some and others need replacing. Michael will contact the Sign Guy. Jennifer mentioned that he is about to have knee surgery so may not be available for awhile.

7.2 Shore Access Report
Zuker #17 - Andrew reports some uncertainty about grant money. Should look at what we can do with our own funds and then look at recouping funds. Shea Morgan is in favour of the laurel removal but is concerned about the toxicity of it in terms of work parties. Preference to do the work on his property himself due to dangers of this plant for other people. Safety protocols for volunteer work parties and the disposal of the spurge laurel need to be investigated and built into project plan. Potential $3000 was identified for Zuker work this year. Discussion of moving project funding into the capital program for next year that would give us time to sort this out and allocate funds for removal of laurel next year; likely fall/winter is the best time to remove it.

Mobility Access – Gerry sent the revised estimates to the Commissioners. Recommendation to go with Spectrum which has been passed onto Justine Starke.

Gerry moved and Lorne seconded awarding the contract for the design of mobility improvements at Shaw's Landing #34 to Spectrum Accessability based on their revised contract of $1500. An preliminary budget for the actual work before Oct. 1 will be requested from Spectrum.
CARRIED

7.3 Trails Report
None.

7.4 Parks Report
DL79 - Contract has been signed with Galiano Excavating but they cannot begin the work until the fire risk goes down. Gerry will ask when they can schedule this. Lorne needs to know how much to carry over before Oct. 1.

Michael will begin trail building next week and plans to complete it by the end of the year. Commissioners will walk through the site on Saturday. Charlene noted the gate is rusted open so Michael will attend to closing it. Highways roadside broom clearing improved visibility of DL 79 signage.

7.5 Rental of CRD Park lands for Private Special Events
Discussion of charges for use to cover insurance for any parties. Charlene will look at the period of time the rental charge will apply. Question of use for research. A university might have their party liability insurance and would just need to provide proof of that. Defer adoption to next meeting until insurance is clarified.

7.6 CRD Assets Management

CRD asset management report - "Sustainable Services Delivery Plan" - was received. Little change from draft report regarding Commission assets. Some clarification of system to be used

to identify assets, implementation seems to be up to Commissions. Suggestion that compiling an inventory could be a job for a summer student that could include identifying boundaries (re-spraying survey stakes, photographing sites, listing assets). Question of whether GIPRC should issue an independent contract ourselves to complete this task.

7.7 Student/Youth Employment Initiative
Emma spoke with Andrea Mills about the overall application for funding that still seems to be in process, after which they would reach out for other island partnerships. Emma will find out more about the timeline.

7.8 Dangerous Trees
No response yet from Bear.

7.9 Volunteer Report
None.

7.10 Recreation Report
Require a society bank account on our funding application form. One group did not have a bank account for funding deposits. Will be added to the application form.

Lorne moved and Barry seconded that we acknowledge that Sturdies Babes is now under Coro Galiano, a registered society, and as such is qualified to receive recreation funding and can receive their funding through Coro Galiano who have agreed to take Sturdies Babes under their umbrella.
CARRIED

8. Treasurer's Report – September 2020
Treasurer Byzyna presented the treasurer's report.
Spending is on track for August.

8.1 Status of Accounts

ACTIVITY	SPENT AUG	SPENT YTD	BALANCE
Parks Improvement	$364.65	$3045.19	$3844.91
Parks Maintenance	$5683.77	$47745.50	$17964.50
Meeting Expense Allowance			$2880
Recreation	$1700	$26265	$7605
Recreation Meeting Expense			$330
Imprest Account	$227.50	$300.32	

Capital Reserve			$50342.00
General Capital Fund		$1020.00	$36095.06
Transfer CRF to GCF	$30500.00	$30,500.00	
Transfer to Cap Reserve			$12000
Donations		$300	$300

8.2 Invoices to be Approved

Commissioner Byzyna moved and Commissioner Dishaw seconded approval of the monthly payment $4326 to Contractor Carrothers for monthly maintenance. CARRIED

8.3 Payment of Invoices

Galiano Trading	$326.69
Acme Supplies	$315.86
Apple Pie – pressure washer	$853.10
Post Office	$181.65
McCleaning Supplies	$104.89

8.4 Projected Operating Expenses for 2020

	SPENT AUG	SPENT YTD	BALANCE
Garbage Removal - Nadia		$43	$257
Garbage Removal /19-late		$229	
Park Maintenance Contract	$3510	$33750	$8100
Mileage Allowance – MC	$610	$3155	$845
Park Meeting Expenses			$2880
Cleaning Supplies	$403.35	$733.58	$66.42
Maint. Materials Allowance	$174.94	$2170.10	$829.90
Tools & Equipment		$648.48	$351.52
Parks Improvement Materials	$137.15	$1228.55	$771.45
Parks Improvement Labour	$227.50	$1397.50	$3402.50

Outside Maint. Services Allowance		$1450.00	$550
Pump Toilets			$1600
Apple Pie	$812.48	$812.48	$37.52
Stewards' Lunch			$600
Post Box	$173	$173	$7
CRD Labour/Legal			
Total Projected Spending	$6048.42	$45790.69	$23798.31
Contingency Available			$1120.00
Total Operating Budget			$70480

Review of Planned Operating Spending. Will be a surplus of several thousand $.
Will not be reprinting brochures so moved to contingency.

Two more recreation grants were distributed. There are some remaining grants that that Charlene will follow up on.

Review of Capital Program Budget. Lorne will revise the budget and send to Commissioners. Stephen will ask Commissioners to take on managing specific project at the next meeting.

Commissioner Byzyna moved and Commissioner Henshall seconded approval of the Treasurer's Report.
CARRIED

9. New Business
9.1 Jim reported on the Skatepark sign. It is up but need to be upgraded. Question abut the sign's usefulness.

9.2 Jim reported on his notification about campers. Realized that he had nothing that would identify himself. Suggestion to have a vest with our logo. Stephen will find out if there are any CRD vests we could use with our buttons and will clarify authority regarding beach campers.

10. Other Business
None.

10:55 Moved by Commissioner Simon and seconded by Commissioner Longson going in camera in accordance with Section 90 of the Community Charter as provided for by Section 90 a) of the Community Charter to consider "personal information about an identifiable individual who holds, or is being considered for, a position as an officer, employee or agent of the Board or another position appointed by the Board".
CARRIED

11. Adjournment
Moved by Commissioner Henshall and seconded by Commissioner Simon that the meeting be adjourned at 11.30.
CARRIED

Stephen Rybak, Chair, Galiano Parks and Recreation Commission

Making a difference...together

MINUTES OF A MEETING OF THE MAGIC LAKE ESTATES WATER AND SEWER COMMITTEE held Tuesday, September 8, 2020 in the Goldstream Meeting Room, 479 Island Highway Victoria, BC

PRESENT: **Committee Members:** M. Fossl (Vice-Chair), D. Reed, W. Foster

By WebEx: K. Heslop (Chair), J. Deschenes, M. Kenwell

Staff: I. Jesney, Senior Manager, Infrastructure Engineering; M. Cowley, Manager Wastewater Engineering and Planning; S. Orr (recorder)

REGRETS: D. Howe, Southern Gulf Islands Electoral Area Director

The Vice-Chair called the meeting to order at 9:31 am.

1. APPROVAL OF AGENDA

MOVED by K. Heslop, **SECONDED** by W. Foster,
That the agenda be approved.

CARRIED

2. ADOPTION OF MINUTES OF JULY 14, 2020

MOVED by M. Kenwell, **SECONDED** by K. Heslop,
That the minutes of the meeting held July 14, 2020 be adopted.

3. COMMITTEE BUSINESS

3.1. Water Update

I. Jesney provided the following update:

The situation with pipe replacement has not changed, details are as follows:

- Capital Regional District (CRD) staff and the CRD lawyer continue to work on the Stainless Steel Replacement issue involving Rohl/insurer through Rohl's lawyer.
- Currently the insurer is prepared to pay for the work although a contract has not been executed.
- Even though COVID-19 has brought progress to a standstill to date, the CRD lawyer is pressing forward with Rohl's lawyer.

Staff answered questions from the Committee regarding the cost of the legal proceedings.

3.2. Wastewater Update

M. Cowley provided the following update:

Collection System Upgrades

- Stantec was retained in May 2020 to complete the design, tendering and construction of about 3 km of sewer replacement work.
- Survey work was completed in May and geotechnical work was completed in June.

- Stantec has prepared the base plans and is finalizing the 60% complete design drawings.
- Some right-of-ways will need to be adjusted or acquired along with working space agreements for crossing private properties. Staff will plan to meet with the affected home owners in September to discuss the requirements. The cost of adjusting/acquiring the right-of-ways was not included in the original estimate, but the contingency allowance can be used to fund this work.
- The design will be finalized including all of the details by the fall, and a decision will then need to be made on whether to tender and start construction over the winter or wait until spring.
- The CRD website will be updated with new information as the design work continues.

One-time Lump Sum Payment Process

- A Bylaw has been prepared to enable the one-time lump sum payment for a customer to pay for their share of the $6 million loan versus making debt-servicing payments over 30 years.
- A letter has been sent to all parcel owners to inform them of the process.

Staff answered questions from the Committee about the sewer replacement project.

3.3. Operations Update

I. Jesney provided the following update:

Water Operations Highlights:

- Water service line leak repair – 27142 Schooner Way
- Water system leak emergency response – Schooner Way/Shoal Road
- Buck Lake Intake Screen cleaning by divers.
- Magic Lake Intake Screen cleaning by divers.

Wastewater Operations Highlights:

- Clearing of a blocked sewer at 3709 Port Road.
- Cutlass Pump Station operation troubleshooting

Capital Improvement work:

- No capital work support required this month.

3.4. Grants Discussion

I. Jesney advised there are no new grants to announce. The Investing in Canada Infrastructure Program grant application results are expected to be announced in spring 2021.

4. MLE 20-03 PARCEL TAX BYLAW 4363

I. Jesney introduced the report and stated a parcel tax bylaw is required which offers both a 30 year repayment option and pre-paid option.

Staff answered questions regarding:

- Lump sum payment details
- Interest rates

MOVED by D. Reed, **SECONDED** by W. Foster,
The Magic Lake Estates Water and Sewer Committee recommends the Electoral Areas Committee recommend to the Capital Regional District Board:

1. That Bylaw No. 4363, "Magic Lake Estates Wastewater System Parcel Tax Roll Bylaw No. 1, 2020, A Bylaw to Authorize the Preparation of a Parcel Tax Roll for the Magic Lake Estates Wastewater System Upgrade" be introduced and read a first, second and third time;

2. That Bylaw No. 4363 be adopted.

CARRIED

5. CORRESPONDENCE

There was no correspondence.

6. NEW BUSINESS

Staff answered questions from the Committee regarding the annual nomination process.

7. ADJOURNMENT

MOVED by D. Reed, **SECONDED** by W. Foster,
That the meeting be adjourned at 10:15 am.

CARRIED

Chair

Secretary

Minutes for a meeting of the Mayne Island Parks and Recreation Commission for September 10, 2020 beside the Mayne Island Community Library

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Present:	Debra Bell (Chair)	Peter Askin (Vice Chair)	Veronica Euper
	Kris Sigurdson	Lance Shook	Trisha Glatthaar

Absent: David Howe, Director, CRD, Southern Gulf Islands

Guests: Presentation by Doug and Leslie Peers, Mayne Island Pickleball Club

The meeting was called to order 3:00 pm

1. **Territorial Acknowledgement**
   Commissioner Glatthaar gratefully acknowledged the meeting was held on the traditional land of the Coast Salish people and that their ancient homeland at Miners Bay remains a sacred place where they come to pray and sing.

2. **Approval of Agenda**

   2.1. Additions to Agenda
   2.2. Deletions to Agenda

   MOVED by Commissioner Shook and **SECONDED** by Commissioner Euper,
   That the agenda be approved as circulated.
   CARRIED

3. **Adoption of Minutes of August 13, 2020**

   MOVED by Commissioner Euper and **SECONDED** by Commissioner Sigurdson,
   That the minutes of August 13, 2020 be adopted as circulated.
   CARRIED

4. **Chair's Remarks**
   Commissioner Bell requested that reports be brief if written reports need no further elaboration.

5. **Presentations/Delegations**

   - Doug and Leslie Peers, Mayne Island Pickleball Club, thanked MIPRC for the club's start up grant and reported the club has quickly grown to 90 people.
   - They presented on their challenges to find an appropriate site for a pickleball court and asked MIPRC to consider the proposed volleyball site at Dinner Bay Park.
   - An asphalt surface is required, therefore, fundraising would be necessary.

- The plans for the circuit track route would not be affected.
- The Mayne Island School, the Tennis Association and the Community Centre had been approached and are not able to accommodate the club's space requirements at this time.
- Discussed the cost to build a court based on information from other districts and projections on what would be required to complete construction.
- The Club agreed to send an email for inclusion in an upcoming MIPRC agenda.

The Pickleball Club representatives left the meeting directly after the presentation.

6. Reports

6.1. Administration

6.1.1. Treasurer's Report for August 1 to August 31, 2020

MOVED by Commissioner Bell and **SECONDED** by Commissioner Euper,
That the Treasurer's Report for the period August 1 to August 31, 2020 be approved as presented.
CARRIED

6.1.2. Follow-up Action Report

a) David Cove Boat ramp
- Commissioner Bell communicated with Stephen Henderson, CRD.

b) Association of Mayne Island Boaters - Agreement for maintenance of ramps
- Discussed the reasons for formal agreement as: MIPRC provides the money for materials while AMIB provides the labour; ensuring work is performed within the legal requirements for the location; and that all work on the MIPRC managed asset should have prior approval from MIPRC.
- The development of an agreement will be raised with AMIB and MIPRC will have the agreement reviewed by Stephen Henderson and Justine Starke.
- Volunteer forms will still be required from AMIB members.

c) Bylaw amendment to reduce number of commissioners
- This is underway with Justine Starke.

d) Volunteer appreciation ad in MayneLiner
- Completed.

e) Clean Air signage
- Nothing received at this time.

f) Indemnity/insurance meeting with R. Cameron
- Ross Cameron and Justine Starke will discuss.

g) Facebook photo
- Discussed for next month.

h) Other
- There has been no response from the Community Resource Centre regarding the online form to request volunteers.

6.1.3. Arbutus trees – significance and best practices
- Commissioner Glatthaar provided cautionary advice for cutting arbutus suggesting to allow for regrowth high above deer and that young trees should be fenced.
- Commissioner Glatthaar conveyed the importance of the arbutus through the ancient local flood story, which she acknowledged should be told by a Tsartlip elder.
- Commissioner Glatthaar also advised that arbutus are considered endangered and, with reverence, the Tsartlip people will not cut down nor make firewood from arbutus.

6.2. Committees

6.2.1. Janitorial Committee

a) Rename

MOVED by Commissioner Askin and **SECONDED** by Commissioner Sigurdson,
That Mayne Island Parks and Recreation Commission change the name of the Janitorial Committee to the Sanitation Committee.
CARRIED

b) Plumbing/septic update
- Status of plumbing contract
  - Contract has been signed.
- System improvements
  - Water systems are running, but waiting for a few items.
  - Completed risers and fiberglass lid covers.
  - Layout of septic field is still required.
  - Fire department will be advised of where they can/cannot drive.
  - Work completed in the library basement included: pressure tank replaced; raised the pump and electric off the floor; and rack built to protect chlorine.
  - UV light and chlorination is working.
  - A raw water test will be done this month.
  - Discussed finding an appropriate contractor for water system design.

- Follow up with nearby businesses re septic concerns
  - It was reported that neighbouring business pumps out their septic three times per year.
  - Park's septic problem may have caused or contributed to the water test fail.
- Water consultant update (requested by VIHA)
  Addressed above in item b) at last discussion bullet.

c) Garbage and recycling
- It was agreed that boxes for recycling would be purchased.

6.2.2. Recreational Funding

a) Additional application
Closed meeting (see item #9)

b) Disbursements/policy
- Where a disbursement is for a club or association they need to have an organization bank account.

6.2.3. Parks Master Plan

a) Draft finalization and circulation plan
- Revise the Actions and Priorities section to make general groupings without numbering or prioritization.
- Changes to First Nations acknowledgement suggested.
- Trail map will be provided.
- Circulate after Section 4 and map completed.
- Remove any text related to natural values in the Executive Summary.
- Input from MIFD included brush removal for trails, WHMIS list inside building doors and access for MIFD .
- Commissioner Shook will provide a short section for janitor's information about chemicals on hand and workplace safety protocols.

6.2.4. Commercial/Non-Commercial Activities Committee

a) Terms of use and policy revision
- Defer to next meeting

6.2.5. Memorial Plaques Committee
- Discussed placement options, income and commemorative aspects of memorial plaques in parks.
- Commissioners Askin and Euper will investigate options and seek information from CRD and other Parks Commissions.

6.3. Parks

6.3.1. Miner's Bay

a) Gazebo Repairs and R. Iredale comments
- Commissioner Bell will make contact.

b) Library windows
- Repairs completed.

6.3.2. Dinner Bay

a) Bleacher fencing
- Once material is picked up and poles are in place next week, work can begin on fence build.

b) Playground
- Community Works Fund application
  - $60K application is with CRD and not yet submitted to Union of BC Municipalities.
  - The playground allocation for containment barrier and fill is available and reallocation of other funds is available if necessary.
  - Input on new playground structure should be sought from the Early Childhood Society and the PAC.

c) Men's urinal repair and women's motion detector
- Update: Miners Bay still leaks; one at Dinner Bay is working; and motion detector to be installed.

d) Septic access and location of discharge pipes
- Commissioner Shook will contact VIHA for location of discharge pipes at Dinner Bay.

e) Adachi Pavilion contents
- Commissioner Sigurdson is in contact with Alan Guy.

f) Commissioner Shook raised storage at Dinner Bay
- Other organizations are using buildings for storage
- Suggested notice be given of spring cleaning of janitor's closet and notify users to remove stored items until after cleanup.
- Location of water tank currently stored at Dinner Bay to be reviewed.

6.3.3. Japanese Garden
- It was reported that a landscape architect is a new volunteer with the Japanese Garden.

6.3.4. Village Bay

a) Village Bay Improvement Association and seaweed removal – update
- One invoice submitted to date.
- Wheelbarrows only should go along foreshore as vehicles are not permitted.
- MIPRC will accept the seaweed.

b) Park Guardians
- Mark Allison and Lynn Casey are Park Guardians for Village Bay Park.

c) Review proposal for footbridge on Village Bay Park land
- The importance of the Riparian Regulations was emphasized.
- Consider importance of the bay as an archaeological site.
- There has been no opportunity for community engagement and access was not identified as an issue in the park survey.
- MIPRC would be the applicant for a development permit and any development variance permit. The bridge would be a park asset with long term responsibility to maintain.
- The park and sea boundary as well as property setbacks would likely need to be surveyed. Depending upon results the process could be drawn out.
- The request includes an easement on park property, MIPRC control and patrol of any public nuisance factors, and that MIPRC pay for any park property survey.
- Discussed concerns with increased access during high tide.
- Preferable for proponents to pursue the project and not MIPRC.

d) Vault toilet interior
- Inspection confirmed the interior is mouldy and needs paint.
- Commissioners Askin and Bell will schedule this task within a couple of weeks.

e) Wishing well
- The wishing well build will begin in the near future.

f) Bike Ramp
- Dismantled.

g) Commissioner Glatthaar raised daphne removal
- Ten hours had been spent removing toxic daphne.

6.3.5. Cotton Park

a) Bylaw 180 Referral Response

MOVED by Commissioner Bell and **SECONDED**,
That the Bylaw Referral Form Response of the Mayne Island Parks and Recreation Commission to the Mayne Island Local Trust Area Bylaw 180 as amended be approved as previously circulated to commissioners.

Commissioner Bell is following up on the plaque and there is a stone mason on the island to do the work.

6.3.6. Henderson Park

- Nothing to report.

6.3.7. Trail Network Development

a) Youth Employment program

MOVED by Commissioner Askin and **SECONDED** by Commissioner Bell,
That Mayne Island Parks and Recreation Commission strike a three-person committee to examine more closely the youth employment program to see if it is applicable to the commission.
CARRIED

Committee members: Commissioners Askin, Sigurdson and Euper.

b) Felix Jack – Kim Road trail

- Right of way and status of application to MOTI
  - Engineering report completed and on hold until Regional Parks responds.
- Linking trail through Mary Jeffery update
  - Regional Parks is reviewing the situation.
- Surface material
  - Not addressed.

c) Beach access on Laura Point Road

- Commissioner Askin will follow up.

6.3.8. Pocket Parks

a) Estimate / assessment report on danger trees near structures and fences by arborist

- MIPRC will request that a report be provided by an arborist on pocket parks once we have contracts in place.

7. **Correspondence**

7.1. Email re: cancellation of Lion's Salmon BBQ at Dinner Bay Park
7.2. Email re: cancellation of wedding rehearsal dinner at the Adachi Pavilion
7.3. Emails regarding MIHS meeting and safety plan for September 14, 2020
- Notice was given to limit size to 50

7.4. Email regarding MIPATA AGM date of September 12, 2020 at Miner's Bay Park
7.5. Email regarding planter at Emma and Felix Jack Park and extension of term
7.6. Email attaching report by consultants on service delivery and summary
7.7. Emails from Oceans.org regarding Whale Trail
- The pictures were well received.

7.8. Emails to/from CRD regarding trees cut on MIPRC right of way
- Response relayed was that owners have a right to cut trees on easement that goes through their properties.

7.9. Emails to/from CRD regarding joint management agreement of Mary Jeffery area

8. **New Business**

8.1. Budgeting and five-year capital plan
- Consideration and input from commissioners was requested as this must be submitted to CRD within a few days after next meeting.
- Capital items put forth included: plumbing at Dinner Bay; wall and parking fence at Miners Bay (MoTI involved); Miners Bay Pavilion repairs (not extensive expense anticipated); and new lights for Christmas tree.
- Parks Survey response for more trails unattainable due to lack of park land although there was willingness to assist with fundraising.
- A couple of suggestions for new park land were raised and it is within MIPRC mandate to communicate such information to CRD.
- Commissioners were requested to consider and offer suggestions and projected costs at next meeting.

8.2. Sustainable service delivery report and next steps

MOVED by Commissioner Bell and **SECONDED** by Commissioner Euper,
That Mayne Island Parks and Recreation Commission form a committee to address the sustainable service delivery plan and next steps.
CARRIED

Committee members: Commissioners Bell, Shook and Euper

8.3. Planter at Emma and Felix Jack Park – extension of term

MOVED by Commissioner Bell and **SECONDED** by Commissioner Sigurdson,
That the planter at Emma and Felix Jack Park tended to by John Aitken can remain until June 2021.
CARRIED

9. **Motion to Close the Meeting** (if any)

MOVED by Commissioner Bell and **SECONDED** by Commissioner Shook,
That the Meeting be closed in accordance with the Community Charter Part 4, Division 3, Section 90(1)(b) and that recorder and staff attend the meeting.
CARRIED

10. **Rise and Report**

Mayne Island Parks and Recreation Commission approved the 2020 Recreational Funding allocations and disbursements for a total of $24,320 as follows:

Frankie Gowing providing AG Hall Fitness
Tim Begley providing Mayne Island Fitness
Mayne Islands Lions Club (Christmas ship)
2nd Mayne Island Scout Group
Amanda Gunn on behalf of Mayne Island Softball Club
Mayne Island Conservancy
Mayne Island Firefighters Association (fireworks)
Mayne Island Crib Club
Mayne Island Early Childhood Society
Mayne Island Garden Club
Mayne Island School PAC
Mayne Island Tennis Association
Fred Mussett for Mayne Island Table Tennis
Diane Watson providing NIA on Mayne
Pender Island Otter Swim Club
Silver Maynes
Southern Gulf Islands Arts Council
Kathie Warning for Terry Fox Organization Committee
Donna Williams for Donna Williams Yoga
Doug Peers for Pickle Ball Club
Aaron Reith for Teen/Tween night on Fridays
Laura Shook for Disc Golf
Mayne Island Quilter’s Association

11. **MOVED** by Commissioner Askin and **SECONDED** by Commissioner Sigurdson,
That the meeting of the Mayne Island Parks and Recreation Commission be adjourned.
CARRIED

Meeting Adjourned at 5:45 pm

Approved _____ October 8, 2020 _____

CHAIR **DATE**

Lauren Edwards

_____

RECORDER