metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
LIQUID WASTE COMMITTEE

REGULAR MEETING

October 17, 2019
1:00 p.m.
28th Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia

REVISED AGENDA[1]

1. ADOPTION OF THE AGENDA

1.1 October 17, 2019 Regular Meeting Agenda
That the Liquid Waste Committee adopt the agenda for its regular meeting scheduled for October 17, 2019 as circulated.

2. ADOPTION OF THE MINUTES

2.1 September 19, 2019 Regular Meeting Minutes
That the Liquid Waste Committee adopt the minutes of its regular meeting held September 19, 2019 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

5. REPORTS FROM COMMITTEE OR STAFF

5.1 2020 - 2024 Financial Plan – Liquid Waste Services
Designated Speaker: Peter Navratil, General Manager, Liquid Waste Services
That the Liquid Waste Committee endorse the 2020 - 2024 Financial Plan for Liquid Waste Services as presented in the report dated October 10, 2019, titled "2020 - 2024 Financial Plan – Liquid Waste Services" and forward it to the Greater Vancouver Sewerage and Drainage District Board Budget Workshop on October 23, 2019 for consideration.

5.2 Proposed Amendments to GVS&DD Cost Apportionment Bylaw No. 283, 2014 – Village of Anmore
Designated Speakers: Peter Navratil, General Manager, Liquid Waste Services, and Dean Rear, Acting GM Financial Services/CFO, Finance and Administration

[1] *Note: Recommendation is shown under each item, where applicable.*

That the GVS&DD Board give first, second and third reading to Greater Vancouver Sewerage and Drainage District's Cost Apportionment Amending Bylaw No. 332, 2019.

5.3 Liquid Waste Services Capital Program Expenditure Update as at August 31, 2019
Designated Speaker: Bryan Shoji, Director, Project Delivery, Liquid Waste Services
That the Liquid Waste Committee receive for information the report dated October 10, 2019, titled "Liquid Waste Services Capital Program Expenditure Update as at August 31, 2019".

5.4 Iona Island Wastewater Treatment Plant Project – Community Engagement Process
Designated Speaker: Tom Sadleir, Program Manager, Community Engagement, Liquid Waste Services
That the GVS&DD Board authorize staff to complete the community engagement process, as presented in the report dated October 1, 2019, titled "Iona Island Wastewater Treatment Plant Project – Community Engagement Process".

5.5 Iona Island Secondary Wastewater Treatment Plant Project Definition Update
Designated Speaker: Fred Nenninger, Director, Policy, Planning and Analysis, Liquid Waste Services
That the Liquid Waste Committee receive for information the report dated September 26, 2019 titled "Iona Island Secondary Wastewater Treatment Plant Project Definition Update".

5.6 GVS&DD's Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019 – Fraser Sewerage Area – 7969 Highway 91 Connector, Delta
Designated Speaker: Brent Burton, Division Manager, Policy, Planning and Analysis, Liquid Waste Services
That the GVS&DD Board:
a) give first, second and third reading to the GVS&DD's *Sewerage and Drainage Areas Boundaries Amending Bylaw 329, 2019; and*
b) pass, and finally adopt *Sewerage and Drainage Areas Boundaries Amending Bylaw 329, 2019*.

5.7 Manager's Report
Designated Speaker: Peter Navratil, General Manager, Liquid Waste Services
That the Liquid Waste Committee receive for information the Manager's Report dated September 30, 2019.

6. INFORMATION ITEMS

6.1 Incoming Correspondence from the Minister of Environment and Climate Change Strategy re: Extension of Comprehensive Review Cycle - GVS&DD Integrated Liquid Waste and Resource Management Plan dated September 11, 2019

7. OTHER BUSINESS

8. BUSINESS ARISING FROM DELEGATIONS

9. RESOLUTION TO CLOSE MEETING

Note: The Committee must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

10. ADJOURNMENT/CONCLUSION

That the Liquid Waste Committee adjourn/conclude its regular meeting of October 17, 2019.

Membership:

Stewart, Richard (C) - Coquitlam
Little, Mike (VC) - North Vancouver District
Calendino, Pietro - Burnaby
Dominato, Lisa - Vancouver
Elford, Doug - City of Surrey
Ferguson, Steve - Langley Township
Loo, Alexa - Richmond
Svendsen, Ryan - Maple Ridge
Trentadue, Mary - New Westminster
Vagramov, Rob - Port Moody
van den Broek, Val - Langley City
Walker, Darryl - White Rock

METRO VANCOUVER REGIONAL DISTRICT
LIQUID WASTE COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Liquid Waste Committee held at 1:03 p.m. on Thursday, September 19, 2019 in the 28th Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Mayor Richard Stewart, Coquitlam (arrived at 1:14 p.m.)
Vice Chair, Mayor Mike Little, North Vancouver District
Councillor Lisa Dominato, Vancouver (arrived at 1:07 p.m.)
Councillor Doug Elford, Surrey
Councillor Alexa Loo, Richmond
Councillor Ryan Svendsen, Maple Ridge
Councillor Mary Trentadue, New Westminster
Mayor Rob Vagramov, Port Moody
Mayor Val van den Broek, Langley City
Mayor Darryl Walker, White Rock

MEMBERS ABSENT:
Councillor Pietro Calendino, Burnaby
Councillor Steve Ferguson, Langley Township

STAFF PRESENT:
Peter Navratil, General Manager, Liquid Waste Services
Carol Mason, Chief Administrative Officer
Genevieve Lanz, Legislative Services Coordinator, Board and Information Services

In the absence of the Chair, Vice Chair Little chaired the meeting.

1. ADOPTION OF THE AGENDA

1.1 September 19, 2019 Regular Meeting Agenda

It was MOVED and SECONDED
That the Liquid Waste Committee:
a) amend the agenda for its regular meeting scheduled for September 19, 2019 by:
   i) withdrawing Item 5.1 Iona Island Secondary Wastewater Treatment Plant Project Quarterly Update;
   ii) adding Information Item 6.2 titled "Input Opportunity – Integrated Liquid Waste and Resource Management Plan Progress Report"; and
b) adopt the agenda as amended.

CARRIED

2. ADOPTION OF THE MINUTES

2.1 July 11, 2019 Regular Meeting Minutes

It was MOVED and SECONDED
That the Liquid Waste Committee adopt the minutes of its regular meeting held July 11, 2019 as circulated.

CARRIED

3. DELEGATIONS

No items presented.

4. INVITED PRESENTATIONS

No items presented.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Iona Island Secondary Wastewater Treatment Plant Project Quarterly Update

Pursuant to Item 1 Adoption of the Agenda, this item was withdrawn.

5.2 2019 Update on Liquid Waste Sustainability Innovation Fund Projects

Report dated July 23, 2019 from Fred Nenninger, Director, Policy, Planning and Analysis, Liquid Waste Services, providing members with information on the Liquid Waste Sustainable Innovation Fund projects.

1:07 p.m. Councillor Dominato arrived at the meeting.
1:14 p.m. Chair Stewart arrived at the meeting.

Members were provided with a presentation on the 2019 Liquid Waste Sustainability Fund projects, highlighting the Smart Sewers wireless in-situ sensors, high efficiency aeration demonstration, anaerobic digesters, Intelligent Water Systems, and hydrothermal processing biofuel demonstration at the Annacis Island Wastewater Treatment Plant.

Presentation material titled "2019 Update on Sustainability Innovation Fund Projects" is retained with the September 19, 2019 Liquid Waste Committee agenda.

It was MOVED and SECONDED
That the Liquid Waste Committee receive for information the report dated July 23, 2019, titled "2019 Update on Liquid Waste Sustainability Innovation Fund Projects".

CARRIED

5.3 2018 Environmental Management and Quality Control Annual Report

Report dated August 22, 2019 from Andjela Knezevic-Stevanovic, Director, Environmental Management and Quality Control, Liquid Waste Services, providing members with a summary of the 2018 GVS&DD Environmental Management and Quality Control Annual Report.

Members were provided with a presentation on the 2018 GVS&DD Environmental Management and Quality Control Annual Report, highlighting Metro Vancouver wastewater treatment plant technical performance test results, monitoring of regional water bodies, and compliance with applicable federal and provincial requirements.

In response to questions, members were informed of the status of the E. coli microbial tracking project and daily water testing for regional health authorities.

Presentation material titled "2018 GVS&DD Environmental Management & Quality Control - Annual Report" is retained with the September 19, 2019 Liquid Waste Committee agenda.

It was MOVED and SECONDED

That the Liquid Waste Committee receive for information the report dated August 22, 2019 titled "2018 GVS&DD Environmental Management and Quality Control Annual Report".

CARRIED

5.4 Biosolids Management Strategic Direction

Report dated September 13, 2019 from Lillian Zaremba, Program Manager, Utility Residuals Management, Liquid Waste Services, seeking GVS&DD Board direction to proceed with a recommended procurement model for implementation of a regional biosolids drying facility.

It was MOVED and SECONDED

That the GVS&DD Board:

a) endorse biosolids drying as a biosolids management option; and
b) direct staff to report back to the Board with the recommended procurement model for implementation of a regional biosolids drying facility.

CARRIED

5.5 Award of Contract Resulting from Request for Proposal No. 19-112: Utility Residuals Management Hauling Services

Report dated August 22, 2019 from Roy Moulder, Director, Purchasing and Risk Management, Financial Services, and Houston Marsh, Acting Operations Supervisor, Utility Residuals Management, Liquid Waste Services, advising the GVS&DD Board of the results of Request for Proposal (RFP) No. 19-112: Utility Residuals Management Hauling Services, and recommending award of the

contract to Arrow Transportation Systems Inc. in the amount of up to $77,845,000 (exclusive of taxes) over a five-year term.
Members requested staff provide information on Iona Island Regional Park road degradation.

Request of Staff
Staff were requested to report back with information on the degradation of park road in Iona Island Regional Park, including anticipated road maintenance, and impact to park users and hauler access.

It was MOVED and SECONDED
That the GVS&DD Board:
a) approve the award of a contract for an amount of up to $77,845,000 (exclusive of taxes) to Arrow Transportation Systems Inc., resulting from Request for Proposal No. 19-112: Utility Residuals Management Hauling Services; and
b) authorize the Commissioner and the Corporate Officer to execute the contract.

CARRIED
Councillor Dominato absent at the vote.

5.6 Award of a Contract Resulting from Tender No. 19 - 243: Northwest Langley Wastewater Treatment Plant Phase 2 Ground Improvement and Preload
Report dated August 28, 2019 from Roy Moulder, Director, Purchasing and Risk Management, Financial Services, and Paul Wilting, Program Manager, Northwest Langley Wastewater Treatment Projects, Liquid Waste Services, advising the GVS&DD Board of the results of Tender No. 19-243: Northwest Langley Wastewater Treatment Plant Phase 2 Ground improvement and Preload, and recommending award of the contract to Pomerleau Inc. in the amount of $26,511,384 (exclusive of taxes).

It was MOVED and SECONDED
That the GVS&DD Board:
a) approve the award of a contract in the amount of $26,511,384 (exclusive of taxes) to Pomerleau Inc. resulting from Tender No. 19 - 243: Northwest Langley Wastewater Treatment Plant Phase 2 Ground Improvement and Preload; and
b) authorize the Commissioner and the Corporate Officer to execute the contract.

CARRIED

5.7 Award of a Contract Resulting from Tender No. 19-110: Annacis Island Wastewater Treatment Plant Stage 5 Expansion - Phase 2 Contract A507 - Digester Heat Exchanger Expansion
Report dated August 29, 2019 from Roy Moulder, Director, Purchasing and Risk Management, Financial Services, and Jeff Chan, Division Manager, Project

Delivery, Liquid Waste Services, advising the GVS&DD Board of the results of Tender No. 19-110: Annacis Island Wastewater Treatment Plant Stage 5 Expansion – Phase 2 Contract A507 – Digester Heat Exchanger Expansion, and recommending award of the contract to Bennett Mechanical Installations (2001) Ltd. in the amount of $9,337,000 (exclusive of taxes).

Members were informed of a typographical error in the report, and directed staff to correct the report prior to being forwarded to the Board for consideration.

It was MOVED and SECONDED
That the GVS&DD Board:

a) approve the award of a contract in the amount of $9,337,000 (exclusive of taxes) to Bennett Mechanical Installations (2001) Ltd., resulting from Tender No. 19-110: Annacis Island Wastewater Treatment Plant Stage 5 Expansion - Phase 2 Contract A507 - Digester Heat Exchanger Expansion; and
b) authorize the Commissioner and the Corporate Officer to execute the contract.

CARRIED

5.8 2019 Regional "Wipe It, Green Bin It" Campaign - Update

Report dated August 29, 2019 from Larina Lopez, Division Manager, Corporate Communications, External Relations, updating members on the upcoming regional "Wipe It, Green Bin It" campaign to reduce the household disposal of fats, oils and grease into the sewer system.

It was MOVED and SECONDED
That the Liquid Waste Committee receive for information the report dated August 29, 2019, titled "2019 Regional "Wipe It, Green Bin It" Campaign Update".

CARRIED

5.9 Manager's Report

Report dated September 11, 2019 from Peter Navratil, General Manager, Liquid Waste Services, provided members with an update on the 2019 Liquid Waste Committee Work Plan, Village of Anmore regional sewerage services growth charge, and Statistics Canada pilot study of wastewater for cannabis and selected drug use in Canada.

It was MOVED and SECONDED
That the Liquid Waste Committee receive for information the Manager's Report dated September 11, 2019.

CARRIED

6. INFORMATION ITEMS

It was MOVED and SECONDED

That the Liquid Waste Committee receive for information the following Information Items:

6.1 Incoming Letter from the Mayor of the District of Mission re: Fraser River Sanitary Sewer Crossing Project

6.2 Input Opportunity – Integrated Liquid Waste and Resource Management Plan Progress Report

CARRIED

7. OTHER BUSINESS

No items presented.

8. BUSINESS ARISING FROM DELEGATIONS

No items presented.

9. RESOLUTION TO CLOSE MEETING

No items presented.

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED

That the Liquid Waste Committee conclude its regular meeting of September 19, 2019.

CARRIED

(Time: 2:11 p.m.)

_____ _____

Genevieve Lanz, Legislative Services Coordinator

Mike Little, Vice Chair

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Liquid Waste Committee

From: Peter Navratil, General Manager, Liquid Waste Services

Date: October 10, 2019 Meeting Date: October 17, 2019

Subject: **2020 - 2024 Financial Plan – Liquid Waste Services**

RECOMMENDATION

That the Liquid Waste Committee endorse the 2020 - 2024 Financial Plan for Liquid Waste Services as presented in the report dated October 10, 2019, titled "2020 - 2024 Financial Plan – Liquid Waste Services" and forward it to the Greater Vancouver Sewerage and Drainage District Board Budget Workshop on October 23, 2019 for consideration.

PURPOSE

To present the 2020-2024 Financial Plan for Liquid Waste Services for consideration by the Committee.

BACKGROUND

Metro Vancouver's annual budget process includes the development of detailed annual budgets and the updating of five year financial plans for each of the four Metro Vancouver legal entities (Metro Vancouver Regional District, Metro Vancouver Housing Corporation, Greater Vancouver Water District and Greater Vancouver Sewerage and Drainage District) and related functions.

This report focuses on Liquid Waste Services and presents the 2020 annual budget and the updated five year plan for the years 2020 to 2024 for committee consideration.

LIQUID WASTE SERVICES PROGRAM

The Liquid Waste Services function is comprised of 17 member municipalities and one electoral area within Metro Vancouver, serving a population of approximately 2.5 million residents. The wastewater collection and treatment system consists of over 530 kilometers of trunk sewers, 33 pump stations and 5 treatment plants that convey and treat an average of 1.2 billion litres of wastewater per day. The urban drainage function is comprised of the Still Creek/Brunette, Port Moody/Coquitlam and University Drainage Areas.

Liquid Waste Services initiatives planned over the next five years are guided by direction provided in the *2019-2022 Board Strategic Plan*, and the *2010 Integrated Liquid Waste and Resource Management Plan*, specifically:

Board Strategic Plan:

- Enhance the management of the liquid waste system with a commitment to innovative approaches to protect the health of the public and the environment.
- Ensure the long-term resilience of the regional sewerage and drainage system to withstand natural hazards, climate change and other significant disruptions.
- Develop and implement financial plans and policies that reflect a commitment to sound

financial management and long-term planning, in consideration of current and future ratepayers.
- Strengthen awareness and engagement with the public, members, other orders of government, and key stakeholders on a range of initiatives that will ensure that the regional liquid waste system protects public health and the environment, now and into the future.

Integrated Liquid Waste and Resource Management Plan:
- Protect public health and the environment.
- Use liquid waste as a resource.
- Effective, affordable and collaborative management.

2020 BUDGET AND 2020 - 2024 FINANCIAL PLAN
The five year financial plans for this cycle have been updated to address five central themes identified by the Metro Vancouver Board in its Strategic Plan to guide the development of plans and budgets. The five themes are as follows:

- Regional Growth
- Environmental Sustainability
- Financial Sustainability
- System Stewardship
- Regulatory and Legislative Environment

Attached are the 2020 - 2024 Liquid Waste Services Financial Plan Operating Budget Summary (Attachment 1) and the 2020 - 2024 Liquid Waste Services Capital Budget Summary (Attachment 2).

Each Metro Vancouver function has an Annual Work Plan that includes strategic directions, performance indicators and key actions to guide the work for the coming year. Each function also has a "What's Happening" summary that highlights the program highlights for the next five years. The 2020 Annual Work Plans for the Liquid Waste Services budget presented in this report are included in Attachment 3 and the "What's Happening" highlights for Liquid Waste Services for the years 2020 – 2024 are included in Attachment 4.

Operating Budget Highlights
The Liquid Waste Services operating budget is separated into operating programs and funding required to support the expanding capital program (debt service and contribution to capital). It is proposed to increase by $17.4 million in 2020 for a total budget of $328.3 million (Attachment 1). This increase can essentially be attributed to increasing operating costs, debt service and contribution to capital. A significant portion of the increase can be attributed to increased contributions to capital of $8.2 million to support infrastructure investments required to meet service requirements and growth demands and increased debt service costs of $2.9 million due to accelerating capital program.

The 2020 operating budget includes the following key actions:

- Complete the Project Definition Report for the Iona Island Wastewater Treatment Plant Secondary and advanced treatment options upgrade, including development of the indicative design for the new plant.

- Initiate review of the *Integrated Liquid Waste and Resource Management Plan* for 2021 update.
- Continue to decommission the Iona Island Wastewater Treatment Plant biosolids stockpile. Acceleration of the grit dump decommissioning, increased disposal volumes due to weed seed contamination and delays in the decommissioning of the sludge lagoons are driving cost increases for 2020.
- Continue development of Asset Management program in alignment with the Board *Asset Management for Liquid Waste Policy*, including O&M asset condition assessment plans, facility level risk assessments and asset management plans. This work will include developing strategies and implementing pilot work on technologies for full pipe condition inspections/assessments.
- Update the Biosolids Management Plan Framework, identifying an action plan to manage future increases in biosolids generation resulting from growth and the treatment plant upgrades.
- Complete Maintenance Service Enhancement Initiatives to review maintenance practices, efficiency, transparency/accuracy of data and level of customer service with the intent to optimize resources, procedures and practices.
- Continue Source Control regulatory initiatives including a review of the Food Sector Grease Interceptor Bylaw and the Sewer Use Bylaw (with respect to the trucked liquid waste sector) Identification and pursuit of unauthorized discharges will reduce system maintenance and treatment costs and reduce risks to workers, biosolids quality and the environment.

Highlights of contracts and consulting projects anticipated to be undertaken in 2020 to respond to work plan requirements within the operating budget include the following:

Planning

- Sewer modelling/analytics consulting services directed at updating system models ($850,000);
- Still Creek – Brunette Drainage Area Flood mapping project and Port Moody – Coquitlam Drainage Area drainage modelling/assessment work ($100,000);
- Combined sewer separation planning for the elimination of Combined Sewer Overflows (CSO) ($260,000);

Research

- Capture of wastewater contaminants of concern and beneficial use of residuals funded from the Sustainability Innovation Fund ($150,000);
- Multiphase Composite Coating for Concrete Sewers funded from the Sustainability Innovation Fund ($155,000);
- Pump Station Optimization funded from the Sustainability Innovation Fund ($110,000);

Environmental Monitoring

- Iona Island WWTP and Strait of Georgia monitoring ($800,000);
- Burrard Inlet and Lions Gate WWTP monitoring programs ($802,000);
- Fraser River WWTPs and the Fraser River monitoring programs ($415,000);
- Effluent toxicity monitoring ($344,000);
- Wastewater and biosolids characterization for contaminants of emerging concern ($324,000);
- Combined Sewer Overflow (CSO) characterization and risk assessments ($303,000);
- Development of Environmental Management System (EMS) ($130,000);

- Key Manhole Monitoring and Canadian Council of Ministers of the Environment (CCME) Strategy compliance monitoring for emerging contaminants ($266,000); and
- Data management and National Pollutant Release Inventory (NPRI) reporting for contaminants of emerging concern ($109,000).

In 2020, Liquid Waste Services is proposing to add 7 new full-time staff positions. These include 2 Project Engineers dedicated to required engineering support at North Shore and Northwest Langley wastewater treatment plants, 1 Clerk Stenographer III providing required administrative support for large infrastructure projects such as the North Shore wastewater plant upgrade, 1 Project Engineer dedicated to complete key tasks supporting Liquid Waste Service's Asset Management Program, 1 Engineering Technician I to provide technical resources supporting numerous asset management and condition asset programs, 1 Project Engineer providing mechanical engineering technical support for select Utilities assets as well as technical maintenance related start-up and commissioning services for new assets and 1 Senior Project Engineer in Wastewater Engineering providing operational engineering technical support for all phases of wastewater capital projects underway including project definition, detailed design, construction and start-up and commissioning.

As well, 1 Trades Foreman supporting ongoing maintenance work at Seymour Capilano Filtration Plant for Water Services is proposed to be added to the shared services provided by Liquid Waste Services Operations and Maintenance.

Over the next five years, the Liquid Waste Services budget is expected to increase an average of $41.5 million or 10.8% per year. Of this overall increase, funding related to the expanding capital program (debt servicing and contribution to the capital) is increasing $36.2 million on average over the next five years. The operating programs are increasing, on average, by $5.3 million per year, roughly at the rate of inflation.

Environmental Regulation and Enforcement
Working with the commercial and industrial sectors, staff continue with initiatives which regulate and enforce the usage of the liquid waste collection and treatment system. In 2020, the budget for Liquid Waste Environmental Regulation and Enforcement program is increasing by $142,034 to $2.05 million due primarily to labour inflation and a change in allocation of administrative resources required for the program.

Communications Program
The 2020 Liquid Waste Services Communications Program of $450,000 is primarily framed around the Regional Grease Campaign ($170,000), the Regional Unflushables Campaign ($190,000) along with some public outreach, research and informational Regional Education Campaigns ($90,000.)

Capital Budget Highlights
The Liquid Waste Services capital budget for 2020 is $883.4 million (Attachment 2). The capital program is funded by long-term debt, contributions from the operating budget, and some external (interagency and senior level government grant) contributions.

Highlights of capital projects planned or ongoing for 2020 include the following:

- Remove all preload from North Shore Wastewater Treatment Plant site, complete 90% of excavation and commence foundation pouring;
- Substantially complete construction of 5 primary sedimentation tanks, 2 solids contact tanks and 6 secondary clarifiers for the Annacis Island WWTP Stage 5 expansion;
- Complete construction of 2 vertical launch/receiving shafts and commence tunneling of chlorine contact tank effluent section for the Annacis Island WWTP Outfall project;
- Substantially complete the Sapperton Pump Station;
- Complete the Northwest Langley Wastewater Treatment Plant Phase 2 ground improvements;
- Start construction of the open cut and tunneled sections of the Burnaby Lake North Interceptor – Winston section;
- Achieve total completion of the two South Surrey Interceptor Odour Control Facilities (King George and Highway 10);
- Start construction of the last section of the twinning of the South Surrey Interceptor; and
- Complete the Hastings Sanitary Trunk Sewer, North Road Trunk Sewer (Phase 1), Albert Street Sanitary Trunk Sewer (Phase 1) and Highbury Interceptor Air Management Facility.

The capital expenditure budget for 2020 - 2024 totals $3.42 billion, an average of $685 million per year. The largest 5 projects ($175 million and greater) make up 60% of the capital spending over the next 5 years. These five projects also represent the majority of the expenditures planned for the following 10 years (61%). In addition, there are a further 130 projects on the plan.

Capital program increases over the next five years are largely driven by system expansion to meet the needs of a growing population, upgrades to improve wastewater discharge quality and meet regulations along with maintenance of aging infrastructure. The following capital projects are the largest projects included in the five year plan:

- North Shore Wastewater Treatment Plant Secondary - $882M;
- Annacis Stage 5 Expansion - $686M;
- Annacis Outfall System - $378M;
- Northwest Langley Wastewater Plant Stage 1 - $889M; and
- Iona Secondary Treatment Indicative Design and Ground Improvements - $335M from 2020 to 2024.

Reserve Funds

The application of reserve funding in Liquid Waste Services is primarily made through the Biosolids Inventory Reserve, the Sustainability Innovation Fund, Drainage Area General Reserve and the Laboratory Equipment Reserve. In 2020, the financial plan includes a $4.75 million net application from the Biosolids Inventory Reserve for removal of the stockpile at the Iona Island Wastewater Treatment Plant, a $150,000 application for planned equipment purchases for the chemical laboratory and $115,000 for Drainage Area initiatives. In addition, a total of $555,000 is planned to be used from the Liquid Waste Sustainability Innovation Fund for five Board approved sustainability initiatives (plus another $420,000 of funding in 2021-2022 to complete two of these sustainability initiatives.)

In addition to the operating budget reserve applications noted above, approximately $8.435 million

will be applied from the Liquid Waste Sustainability Innovation Fund Reserve over the period 2020-2024 to offset the funding requirements for a Hydrothermal Processing pilot project at the Annacis Island Wastewater Treatment Plant along with a project to increase the efficiency of biogas production.

The 2020 - 2024 Projected Reserves for Liquid Waste Services is included in Attachment 5.

WORK PLAN PERFORMANCE INDICATORS

High level performance indicators have been developed across the organization to evaluate trends, determine key actions for the coming year, and to assist in long-term planning. The 2020 Work Plans for Liquid Waste Services are presented in this report. Within the Liquid Waste Services Work Plans, 32 performance indicators have been developed and are being tracked. These include:

- Operating cost per million litres collected and treated;
- Compliance with treatment plant Operational Certificates;
- Annual combined sewage overflow (CSO) volume;
- Annual number of wet-weather related sanitary sewer overflows (SSO);
- Percentage of assets meeting Basic Service;
- Percent of biosolids beneficially used;
- Energy use in the collection and treatment of liquid waste per million litres processed;
- Percentage of digester gas used at the Wastewater Treatment Plants; and
- Percentage of recreational water quality results that do not meet the applicable criteria.

The trend in these performance measures suggests shows that Liquid Waste Services continues to perform well in compliance with treatment plant discharge regulations. Wet weather sanitary sewer overflows will continue to increase in the near term, partially as a result of late delivery of several infrastructure expansions needed to keep pace with growth.

CONSISTENCY WITH THE 2019-2023 FINANCIAL PLAN

The updated five year financial plan has been developed to be consistent with the 2019 – 2023 financial plan. As presented in Attachment 1, the overall Liquid Waste 2020 impact on the average regional household is slightly lower than the prior year projections for three of the four sewer areas with an average regional household cost of $264 (2019 projection: $271). For the Vancouver Sewerage Area, the household impact has increased slightly from $307 to a projected $310 primarily due to net increases to the biosolids management program.

The key driver for the overall decrease is reduced debt service costs due to the direct application of some development cost charge funding to growth projects as 'pay as you go' capital funding, capital spending patterns, and favourable adjustments to borrowing assumptions. These savings have been partially offset by increased contributions to capital from levies further benefitting projected debt service levels in future.

For the years 2021, 2022, and 2023 the household impact varies slightly by Area as described below:

- **Vancouver Sewerage Area.** The 2021 - 2023 household impact is projected to increase by an average of $29 compared to the previous five year projection. The primary driver for this

change is associated with the increased costs for the removal of the biosolids stockpile from the Iona WWTP, which is partially offset by lower debt service costs due to delayed capital spending and favourable adjustments to borrowing assumptions and more 'pay as you go' growth capital contributions from development cost charge reserves.

- **North Shore Sewerage Area.** The 2021 - 2023 household impact is projected to decrease by an average of $109 compared to the previous five year projection. The primary driver for this change is associated with less debt service due to delayed capital spending and favourable adjustments to borrowing assumptions and more 'pay as you go' growth capital contributions from development cost charge reserves**.**
- **Lulu Island West Sewerage Area.** The 2021 - 2023 household impact is projected to decrease by an average of $19 compared to the previous five year projection. The primary driver for this change is associated with less debt service due to delayed capital spending and favourable adjustments to borrowing assumptions and more 'pay as you go' growth capital contributions from development cost charge reserves**,** which is offset by slightly higher operational costs.
- **Fraser Sewerage Area.** The 2021 - 2023 household impact is in line with the previous five year financial plan projections. The primary drivers for this are slightly higher operational costs plus more capital contributions from levies, which is then offset by less debt service costs due to delayed capital spending and favourable adjustments to borrowing assumptions and more 'pay as you go' growth capital contributions from development cost charge reserves.

APPROVAL PROCESS

The proposed 2020-2024 Financial Plan and Annual Work Plans for Liquid Waste Services are presented for consideration and endorsement before being forwarded to the Board for consideration.

The next steps of the process are:

- The 2020 **–** 2024 Financial Plan and Annual Work Plan will be presented for consideration at the Board Budget Workshop on October 23, 2019.

- The Board will consider adoption of the 2020 Budget and endorsement of the 2020-2024 Financial Plan on November 1, 2019.

ALTERNATIVES

1. That the Liquid Waste Committee endorse the 2020 - 2024 Financial Plan for Liquid Waste Services as presented in the report dated October 10, 2019, titled "2020 - 2024 Financial Plan – Liquid Waste Services" and forward it to the Board Budget Workshop on October 23, 2019 for consideration.

2. That the Liquid Waste Committee make recommendations and endorse an amended 2020 - 2024 Financial Plan for Liquid Waste Services and forward the amended Financial Plan to the Board Budget Workshop on October 23, 2019 for consideration.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves the 2020 Budget and endorses the Five Year Financial Plan for Liquid Waste Services, as presented under Alternative 1, in 2020 the revenue from the annual levy for the system will increase by $18.4 million (7.2%) to $274.2 million which will generate the majority of the $328.3 million in total revenue required to offset total expenditures. The increase in the levy represents a $14 increase in the cost to the average regional household to $264 (2019 forecast for 2020 was $271.)

Over the term of the five year financial plan, the annual levy is projected to increase by an average of $32.1 million per year to provide the required revenue to offset projected expenditures. It is anticipated that the cost to the average regional household over the next five years will rise from $250 in 2019 to $372 in 2024 representing an average annual increase of $24.

Under Alternative 2, the Committee may wish to consider recommending amendments to the 2020 Budget and Five Year Financial Plan for Liquid Waste Services for consideration at the Board Budget Workshop. Any changes to the plan may have an impact on the Liquid Waste Services Financial Plan.

SUMMARY / CONCLUSION

The 2020 Budget and Five Year Financial Plan for Liquid Waste Services has been prepared to respond to direction provided in the *Board Strategic Plan* and to support the *Integrated Liquid Waste and Resource Management Plan*. It is presented to Committee and Board members to provide overview information on activities and financial impacts for the years 2020 to 2024 for Liquid Waste Services.

The presentation of the 2020 budget and five year financial plan for Liquid Waste Services provides the opportunity for Metro Vancouver to share with its member jurisdictions the proposed capital projects and operating programs, and the financial impact of these projects, over the next five years. The financial plan illustrates how Metro Vancouver proposes to pay for Liquid Waste investments that will be required to maintain our assets and to respond to our region's growing population. It is intended to be used as a guiding document for member jurisdictions in the development of their five year financial plans and includes projections on household impact to demonstrate how the plan will remain affordable for Metro Vancouver residents while keeping pace with our critical infrastructure requirements.

Staff recommend endorsing the 2020 - 2024 Budget and Five Year Financial Plan and Annual Work Plans for Liquid Waste Services as presented under Alternative 1.

Attachments:

1. 2020 - 2024 Liquid Waste Services Financial Plan
2. 2020 - 2024 Liquid Waste Services Capital Budget Summary
3. 2020 Liquid Waste Services Work Plans
4. 2020 - 2024 "What's Happening" in Liquid Waste Services
5. 2020 - 2024 Projected Reserves – Liquid Waste Services
6. Organizational Chart – Liquid Waste Services

32950488

ATTACHMENT 1

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
LIQUID WASTE
2020 BUDGET REVIEW
2020-2024 FINANCIAL PLAN

	2017 ACTUAL	2018 ACTUAL	2019 BUDGET	2020 BUDGET	% CHANGE	2021 FORECAST	% CHANGE	2022 FORECAST	% CHANGE	2023 FORECAST	% CHANGE	2024 FORECAST	% CHANGE
REVENUES													
Liquid Waste Services Levy	$ 213,889,658	$ 232,134,617	$ 255,810,755	$ 274,237,112	7.2%	$ 306,762,144	11.9%	$ 347,617,635	13.3%	$ 386,541,738	11.2%	$ 416,276,434	7.7%
User Fees	2,500,967	2,514,802	2,403,269	2,540,468		2,594,278		2,644,064		2,699,844		2,751,642	
Transfer from DCC Reserves	5,201,933	10,759,807	31,665,173	34,172,083		44,631,226		59,373,050		71,596,693		86,697,664	
Liquid Waste Industrial Charges	9,838,338	11,265,803	11,022,967	11,201,217		11,425,241		11,653,747		11,886,822		12,124,559	
Other External Revenues	1,064,312	851,780	540,000	540,000		540,000		540,000		540,000		540,000	
Transfer from Sustainability Innovation Fund Reserve	187,863	922,274	1,946,403	555,000		265,000		155,000		-		-	
Transfer from Reserves	35,871	4,866,023	7,480,961	5,016,934		5,054,789		3,314,831		2,545,452		25,000	
TOTAL REVENUES	**$ 232,718,942**	**$ 263,315,105**	**$ 310,869,528**	**$ 328,262,814**	**5.6%**	**$ 371,272,678**	**13.1%**	**$ 425,298,327**	**14.6%**	**$ 475,810,549**	**11.9%**	**$ 518,415,299**	**9.0%**
EXPENDITURES													
Operating Programs:													
Policy Planning and Analysis													
Contribution to Sustainability Innovation Fund Reserve	$ 1,127,000	$ 1,127,000	$ 1,127,000	$ 1,127,000		$ 1,127,000		$ 1,127,000		$ 1,127,000		$ 1,127,000	
Utility Analysis and Infrastructure	1,327,637	2,000,202	2,092,283	2,612,298		2,762,691		2,644,159		2,754,962		2,896,591	
Utility Policy and Planning	1,426,255	1,519,723	1,844,851	2,657,094		2,708,552		2,214,320		2,208,045		2,234,223	
	3,880,892	4,646,925	5,064,134	6,396,392	26.3%	6,598,243	3.2%	5,985,479	(9.3%)	6,090,007	1.7%	6,257,814	2.8%
Management Systems and Utility Services													
Annacis Research Centre	442,392	451,813	513,674	511,467		467,287		477,292		451,376		467,745	
Department Technical Training	1,071,804	283,128	566,644	568,206		571,039		570,891		572,273		573,683	
Dispatch	122,953	119,443	127,983	136,616		139,436		142,304		145,240		148,242	
Energy Management	219,498	242,851	246,744	285,653		293,253		300,968		308,850		316,899	
Engineers in Training	354,357	302,605	588,263	565,166		576,571		588,145		599,973		612,051	
Engineering Standards	101,491	101,863	116,919	124,890		127,457		130,068		132,734		135,468	
Liquid Waste Residuals	16,514,470	20,507,812	28,392,006	29,178,967		32,402,152		33,886,754		38,112,141		23,474,745	
Management Systems Utility Services	1,025,275	1,140,858	2,025,917	2,182,654		2,396,132		2,575,567		2,616,536		2,657,508	
Records Management	98,036	97,094	108,318	115,703		118,082		120,501		122,972		125,538	
Utility Voice Radio	161,480	142,064	159,409	160,747		163,437		165,439		167,539		171,898	
Wastewater Research and Innovation	1,376,492	2,303,469	2,853,862	1,828,063		1,419,775		1,444,232		1,464,560		1,493,758	
	21,488,248	25,692,999	35,699,739	35,658,132	(0.1%)	38,674,621	8.5%	40,402,161	4.5%	44,694,194	10.6%	30,177,535	(32.5%)
Environmental Management and Quality Control													
Environmental Management and Quality Control	10,227,747	10,729,259	11,529,370	12,098,012		12,852,598		13,180,648		13,424,296		13,335,760	
Source Compliance Monitoring	363,894	361,752	420,620	413,611		408,603		416,750		425,073		433,569	
Contribution to Reserve	93,819	95,788	97,800	99,854		101,951		104,092		106,243		106,952	
	10,685,460	11,186,799	12,047,790	12,611,477	4.7%	13,363,152	6.0%	13,701,490	2.5%	13,955,612	1.9%	13,876,281	(0.6%)
Project Delivery													
Minor Capital Projects	4,259,572	4,134,171	8,380,514	8,542,930		8,827,286		9,282,844		9,681,186		9,921,719	
Public Involvement	1,131,284	1,167,153	1,207,174	1,450,933		1,475,142		1,259,751		1,284,879		1,310,552	
	5,390,856	5,301,324	9,587,688	9,993,863	4.2%	10,302,428	3.1%	10,542,595	2.3%	10,966,065	4.0%	11,232,271	2.4%
Operations and Maintenance													
Lake City Operations	983,882	1,002,294	965,125	999,648		1,020,475		1,040,760		1,064,105		1,100,508	
Maintenance	28,661,340	30,035,225	29,390,556	30,246,927		31,362,364		33,324,974		34,234,935		35,990,072	
SCADA Control Systems	848,848	901,318	984,573	1,055,781		1,078,815		1,096,944		1,115,995		1,156,364	
Urban Drainage	846,077	1,131,120	1,048,272	1,109,596		1,105,853		1,103,942		1,128,837		1,152,760	
Wastewater Collection	12,712,575	13,674,866	15,242,385	15,626,816		16,071,414		16,239,363		16,492,428		17,073,562	
Wastewater Treatment	35,783,299	39,160,033	40,229,560	40,585,187		45,271,017		46,635,475		47,845,594		51,348,245	
	79,836,021	85,904,855	87,860,471	89,623,955	2.0%	95,909,938	7.0%	99,441,458	3.7%	101,881,894	2.5%	107,821,511	5.8%
Administration and Department Support	1,891,856	1,972,600	2,126,503	2,299,047	8.1%	2,335,896	1.6%	2,383,146	2.0%	2,381,070	(0.1%)	2,442,060	2.6%
Communication and Outreach	409,201	395,740	400,000	450,000	12.5%	450,000	0.0%	450,000	0.0%	450,000	0.0%	450,000	0.0%
Environmental Regulation and Enforcement	1,543,920	1,424,267	1,899,700	2,041,734	7.5%	2,083,088	2.0%	2,125,127	2.0%	2,168,112	2.0%	2,212,033	2.0%
Allocation of Centralized Support Costs	19,993,419	22,516,896	23,188,428	25,166,351	8.5%	25,893,131	2.9%	27,402,386	5.8%	28,490,917	4.0%	29,909,762	5.0%
Total Operating Programs	145,119,873	159,042,406	177,874,453	184,240,951	3.6%	195,610,497	6.2%	202,433,842	3.5%	211,077,871	4.3%	204,379,267	(3.2%)
Debt Service	14,175,516	23,804,577	54,340,894	57,211,522	5.3%	81,594,045	42.6%	117,858,990	44.4%	149,458,974	26.8%	185,304,641	24.0%
Contribution to Capital	64,788,365	74,702,292	78,654,181	86,810,341	10.4%	94,068,136	8.4%	105,005,495	11.6%	115,273,704	9.8%	128,731,391	11.7%
TOTAL EXPENDITURES	**$ 224,083,754**	**$ 257,549,275**	**$ 310,869,528**	**$ 328,262,814**	**5.6%**	**$ 371,272,678**	**13.1%**	**$ 425,298,327**	**14.6%**	**$ 475,810,549**	**11.9%**	**$ 518,415,299**	**9.0%**
Household Impact ($)			$ 250	$ 264	5.6%	$ 290	9.8%	$ 322	11.3%	$ 352	9.2%	$ 372	5.8%

Liquid Waste Committee

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
LIQUID WASTE REGULATION
2020-2024 FINANCIAL PLAN

	2017 ACTUAL	2018 ACTUAL	2019 BUDGET	2020 BUDGET	% CHANGE	2021 FORECAST	% CHANGE	2022 FORECAST	% CHANGE	2023 FORECAST	% CHANGE	2024 FORECAST	% CHANGE
REVENUES													
Liquid Waste Revenues	$ 1,543,920	$ 1,537,321	$ 1,899,700	$ 2,041,734	7.5%	$ 2,083,088	2.0%	$ 2,125,127	2.0%	$ 2,168,112	2.0%	$ 2,212,033	2.0%
TOTAL REVENUES	**$ 1,543,920**	**$ 1,537,321**	**$ 1,899,700**	**$ 2,041,734**	**7.5%**	**$ 2,083,088**	**2.0%**	**$ 2,125,127**	**2.0%**	**$ 2,168,112**	**2.0%**	**$ 2,212,033**	**2.0%**
EXPENDITURES													
Operating Programs:													
Environmental Regulation and Enforcement	$ 1,413,674	$ 1,411,274	$ 1,765,868	$ 1,798,609		$ 1,835,012		$ 1,872,015		$ 1,909,849		$ 1,948,509	2.0%
Administration and Department Support	130,246	126,047	133,832	243,125		248,076		253,112		258,263		263,524	2.0%
TOTAL EXPENDITURES	**$ 1,543,920**	**$ 1,537,321**	**$ 1,899,700**	**$ 2,041,734**	**7.5%**	**$ 2,083,088**	**2.0%**	**$ 2,125,127**	**2.0%**	**$ 2,168,112**	**2.0%**	**$ 2,212,033**	**2.0%**

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
LIQUID WASTE
2020 BUDGET REVIEW
2020-2024 FINANCIAL PLAN
VANCOUVER SEWERAGE AREA

	2017 ACTUAL	2018 ACTUAL	2019 BUDGET	2020 BUDGET	% CHANGE	2021 FORECAST	% CHANGE	2022 FORECAST	% CHANGE	2023 FORECAST	% CHANGE	2024 FORECAST	% CHANGE
REVENUES													
Liquid Waste Services Levy	$ 65,382,851	$ 69,185,335	$ 79,609,908	$ 85,463,155	7.4%	$ 92,578,059	8.3%	$ 99,794,688	7.8%	$ 106,525,478	6.7%	$ 111,396,738	4.6%
User Fees	609,571	489,422	579,307	582,962		595,574		606,409		619,450		630,723	
Transfer from DCC Reserves	-	1,918,794	3,096,988	4,292,957		5,354,504		6,163,919		6,935,706		8,159,481	
Liquid Waste Industrial Charges	2,693,709	3,280,140	2,849,111	2,919,742		2,978,137		3,037,700		3,098,454		3,160,423	
Other External Revenues	140,656	123,040	82,120	81,940		81,940		81,940		81,940		81,940	
Transfer from Sustainability Innovation Fund Reserve	74,957	378,409	786,347	220,890		105,470		61,690		-		-	
Transfer from Reserves	-	893,337	5,251,461	4,810,136		5,029,789		3,289,831		2,520,452		-	
TOTAL REVENUES	**$ 68,901,744**	**$ 76,268,477**	**$ 92,255,242**	**$ 98,371,782**	**6.6%**	**$ 106,723,473**	**8.5%**	**$ 113,036,177**	**5.9%**	**$ 119,781,480**	**6.0%**	**$ 123,429,305**	**3.0%**
EXPENDITURES													
Operating Programs:													
Policy Planning and Analysis													
Contribution to Sustainability Innovation Fund Reserve	$ 449,673	$ 462,408	$ 455,308	$ 448,546		$ 448,546		$ 448,546		$ 448,546		$ 448,546	
Utility Analysis and Infrastructure	502,935	807,110	779,150	984,124		1,073,514		1,026,018		1,069,789		1,125,823	
Utility Policy and Planning	568,974	592,481	718,868	1,029,326		1,049,680		852,846		850,218		860,503	
	1,521,582	1,861,999	1,953,326	2,461,996	26.0%	2,571,740	4.5%	2,327,410	(9.5%)	2,368,553	1.8%	2,434,872	2.8%
Management Systems and Utility Services													
Annacis Research Centre	174,972	137,125	207,524	203,564		185,980		189,962		179,648		186,163	
Department Technical Training	366,682	85,149	174,436	168,041		168,879		168,836		169,244		169,661	
Dispatch	42,064	49,001	39,398	40,402		41,236		42,084		42,952		43,840	
Energy Management	75,094	73,695	75,955	84,480		86,728		89,009		91,340		93,721	
Engineers in Training	121,231	124,135	237,658	224,913		229,452		234,058		238,765		243,572	
Engineering Standards	34,722	41,295	35,992	36,934		37,693		38,465		39,254		40,063	
Liquid Waste Residuals	7,547,247	8,522,205	13,663,231	16,124,206		19,160,842		20,046,770		21,877,418		8,625,934	
Management Systems Utility Services	308,136	346,268	635,071	664,625		728,055		781,416		793,848		806,274	
Records Management	33,539	39,362	33,344	34,217		34,921		35,636		36,367		37,126	
Utility Voice Radio	55,245	43,846	57,236	57,716		58,682		59,401		60,155		61,720	
Wastewater Research and Innovation	549,220	945,114	1,152,960	727,569		565,070		574,804		582,895		594,516	
	9,308,152	10,407,195	16,312,805	18,366,667	12.6%	21,297,538	16.0%	22,260,441	4.5%	24,111,886	8.3%	10,902,590	(54.8%)
Environmental Management and Quality Control													
Environmental Management and Quality Control	3,028,950	4,222,352	4,476,506	4,694,233		5,005,002		5,127,560		5,220,009		5,183,130	
Source Compliance Monitoring	145,194	148,427	169,930	164,617		162,624		165,867		169,179		172,560	
Contribution to Reserve	28,014	39,302	39,922	38,745		39,559		40,389		41,224		41,499	
	3,202,158	4,410,081	4,686,358	4,897,595	4.5%	5,207,185	6.3%	5,333,816	2.4%	5,430,412	1.8%	5,397,189	(0.6%)
Project Delivery													
Minor Capital Projects	1,425,458	1,587,901	3,531,455	2,960,643		3,065,227		3,246,985		3,400,943		3,484,384	
Public Involvement	451,383	476,387	371,604	429,099		436,258		372,559		379,990		387,582	
	1,876,841	2,064,287	3,903,059	3,389,742	(13.2%)	3,501,485	3.3%	3,619,544	3.4%	3,780,933	4.5%	3,871,966	2.4%
Operations and Maintenance													
Lake City Operations	336,602	411,113	389,910	397,861		406,149		414,222		423,513		438,002	
Maintenance	8,205,426	8,219,172	7,638,781	8,033,121		8,311,911		8,553,784		8,747,491		9,238,136	
SCADA Control Systems	247,318	267,720	294,561	303,023		309,635		314,838		320,305		331,892	
Wastewater Collection	3,074,563	2,875,249	3,963,328	4,056,455		3,943,161		3,983,513		3,936,605		4,372,980	
Wastewater Treatment	9,117,885	10,090,153	10,178,730	10,639,750		12,097,170		13,046,131		13,343,911		13,912,861	
	20,981,794	21,863,407	22,465,310	23,430,210	4.3%	25,068,026	7.0%	26,312,488	5.0%	26,771,825	1.7%	28,293,871	5.7%
Administration and Department Support	568,578	598,684	654,601	679,920	3.9%	690,818	1.6%	704,792	2.0%	704,179	(0.1%)	722,213	2.6%
Communication and Outreach	163,271	162,372	161,600	179,100	10.8%	179,100	0.0%	179,100	0.0%	179,100	0.0%	179,100	0.0%
Environmental Regulation and Enforcement	316,842	584,377	353,914	380,375	7.5%	388,079	2.0%	395,911	2.0%	403,919	2.0%	412,102	2.0%
Allocation of Centralized Support Costs	6,008,825	6,832,977	7,166,850	7,471,881	4.3%	7,785,865	4.2%	7,857,141	0.9%	7,541,981	(4.0%)	7,518,110	(0.3%)
Total Operating Programs	43,948,043	48,785,378	57,657,823	61,257,486	6.2%	66,689,836	8.9%	68,990,643	3.5%	71,292,788	3.3%	59,732,013	(16.2%)
Debt Service	2,505,248	3,955,337	5,864,427	7,131,201	21.6%	10,002,927	40.3%	13,359,288	33.6%	17,752,908	32.9%	24,864,935	40.1%
Contribution to Capital	21,430,406	21,687,228	28,732,992	29,983,095	4.4%	30,030,710	0.2%	30,686,246	2.2%	30,735,784	0.2%	38,832,357	26.3%
TOTAL EXPENDITURES	**$ 67,883,697**	**$ 74,427,942**	**$ 92,255,242**	**$ 98,371,782**	**6.6%**	**$ 106,723,473**	**8.5%**	**$ 113,036,177**	**5.9%**	**$ 119,781,480**	**6.0%**	**$ 123,429,305**	**3.0%**

Liquid Waste Committee

Household Impact ($)			$ 293	$ 310	5.6%	$ 331	7.0%	$ 353	6.5%	$ 371	5.2%	$ 384	3.6%

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
LIQUID WASTE
2020 BUDGET REVIEW
2020-2024 FINANCIAL PLAN
NORTH SHORE SEWERAGE AREA

	2017 ACTUAL	2018 ACTUAL	2019 BUDGET	2020 BUDGET	% CHANGE	2021 FORECAST	% CHANGE	2022 FORECAST	% CHANGE	2023 FORECAST	% CHANGE	2024 FORECAST	% CHANGE
REVENUES													
Liquid Waste Services Levy	$ 20,407,056	$ 20,782,250	$ 23,045,180	$ 26,051,249	13.0%	$ 29,236,996	12.2%	$ 34,559,724	18.2%	$ 39,078,775	13.1%	$ 44,589,848	14.1%
User Fees	81,849	69,853	71,525	74,232		75,943		77,349		79,114		80,577	
Transfer from DCC Reserves	70,828	732,912	1,409,438	1,549,664		1,622,266		2,136,243		2,253,475		2,657,667	
Liquid Waste Industrial Charges	695,989	687,580	759,135	765,271		780,576		796,188		812,112		828,354	
Other External Revenues	1,818	10,571	2,016	1,989		1,989		1,989		1,989		1,989	
Transfer from Sustainability Innovation Fund Reserve	13,319	64,282	130,798	36,797		17,570		10,277		-		-	
Transfer from Reserves	-	-	462,500	11,210		-		-		-		-	
TOTAL REVENUES	**$ 21,270,859**	**$ 22,347,448**	**$ 25,880,592**	**$ 28,490,412**	**10.1%**	**$ 31,735,340**	**11.4%**	**$ 37,581,770**	**18.4%**	**$ 42,225,465**	**12.4%**	**$ 48,158,435**	**14.1%**
EXPENDITURES													
Operating Programs:													
Policy Planning and Analysis													
Contribution to Sustainability Innovation Fund Reserve	$ 79,904	$ 78,552	$ 75,734	$ 74,720		$ 74,720		$ 74,720		$ 74,720		$ 74,720	
Utility Analysis and Infrastructure	89,369	137,051	129,601	163,938		178,829		170,917		178,209		187,543	
Utility Policy and Planning	96,834	105,859	119,574	171,468		174,859		142,070		141,632		143,345	
	266,107	321,461	324,909	410,126	26.2%	428,408	4.5%	387,707	(9.5%)	394,561	1.8%	405,608	2.8%
Management Systems and Utility Services													
Annacis Research Centre	31,092	41,025	34,519	33,910		30,981		31,644		29,926		31,011	
Department Technical Training	89,323	25,853	50,522	46,354		46,585		46,573		46,686		46,801	
Dispatch	10,247	8,314	11,409	11,145		11,375		11,609		11,849		12,093	
Energy Management	18,293	22,040	21,999	23,301		23,921		24,550		25,193		25,850	
Engineers in Training	29,532	21,115	39,531	37,486		38,242		39,010		39,794		40,595	
Engineering Standards	8,458	7,026	10,423	10,188		10,398		10,611		10,828		11,051	
Liquid Waste Residuals	391,668	423,361	676,565	799,980		860,671		899,906		2,229,388		2,082,303	
Management Systems Utility Services	93,310	103,612	204,437	206,691		224,548		239,626		243,442		247,244	
Records Management	8,170	6,697	9,656	9,439		9,633		9,830		10,032		10,241	
Utility Voice Radio	13,458	18,240	15,173	15,301		15,557		15,747		15,947		16,362	
Wastewater Research and Innovation	97,593	160,552	191,779	121,201		94,131		95,753		97,100		99,036	
	791,144	837,835	1,266,013	1,314,996	3.9%	1,366,042	3.9%	1,424,859	4.3%	2,760,185	93.7%	2,622,587	(5.0%)
Environmental Management and Quality Control													
Environmental Management and Quality Control	1,925,768	831,795	870,020	904,095		956,076		983,072		1,001,757		997,436	
Source Compliance Monitoring	25,800	25,214	28,266	27,422		27,090		27,631		28,182		28,746	
Contribution to Reserve	15,898	6,670	6,729	7,462		7,619		7,779		7,940		7,993	
	1,967,466	863,680	905,015	938,979	3.8%	990,785	5.5%	1,018,482	2.8%	1,037,879	1.9%	1,034,175	(0.4%)
Project Delivery													
Minor Capital Projects	156,791	201,964	244,254	532,271		548,942		577,145		601,755		616,645	
Public Involvement	80,208	81,844	107,620	118,353		120,327		102,758		104,808		106,902	
	236,999	283,808	351,874	650,624	84.9%	669,269	2.9%	679,903	1.6%	706,563	3.9%	723,547	2.4%
Operations and Maintenance													
Lake City Operations	81,996	69,956	64,857	66,276		67,658		69,002		70,551		72,964	
Maintenance	3,124,272	3,383,920	3,190,153	3,233,529		3,383,566		4,233,583		4,351,024		4,498,409	
SCADA Control Systems	95,141	102,402	114,795	151,738		155,047		157,653		160,392		166,193	
Wastewater Collection	1,610,653	1,868,748	2,489,925	2,558,692		2,544,381		2,651,985		2,898,390		2,833,524	
Wastewater Treatment	4,827,872	4,789,757	5,788,201	5,887,287		6,489,394		6,781,781		6,734,854		9,003,860	
	9,739,934	10,214,783	11,647,931	11,897,522	2.1%	12,640,046	6.2%	13,894,004	9.9%	14,215,211	2.3%	16,574,950	16.6%
Administration and Department Support	172,178	179,112	189,577	187,533	(1.1%)	190,539	1.6%	194,393	2.0%	194,223	(0.1%)	199,199	2.6%
Communication and Outreach	29,012	27,583	26,880	29,835	11.0%	29,835	0.0%	29,835	0.0%	29,835	0.0%	29,835	0.0%
Environmental Regulation and Enforcement	99,795	99,271	112,652	121,075	7.5%	123,527	2.0%	126,020	2.0%	128,569	2.0%	131,174	2.0%
Allocation of Centralized Support Costs	1,819,600	2,043,408	2,063,132	2,047,764	(0.7%)	2,254,384	10.1%	2,337,575	3.7%	2,521,617	7.9%	2,652,433	5.2%
Total Operating Programs	15,122,235	14,870,941	16,887,983	17,598,454	4.2%	18,692,835	6.2%	20,092,778	7.5%	21,988,643	9.4%	24,373,508	10.8%
Debt Service	1,480,450	2,546,945	3,082,684	3,251,337	5.5%	5,370,574	65.2%	9,717,684	80.9%	12,432,939	27.9%	15,545,101	25.0%
Contribution to Capital	3,953,505	4,379,830	5,909,925	7,640,621	29.3%	7,671,931	0.4%	7,771,308	1.3%	7,803,883	0.4%	8,239,826	5.6%
TOTAL EXPENDITURES	**$ 20,556,190**	**$ 21,797,716**	**$ 25,880,592**	**$ 28,490,412**	**10.1%**	**$ 31,735,340**	**11.4%**	**$ 37,581,770**	**18.4%**	**$ 42,225,465**	**12.4%**	**$ 48,158,435**	**14.1%**
Household Impact ($)			$ 304	$ 340	11.8%	$ 376	10.6%	$ 440	17.1%	$ 493	12.1%	$ 558	13.1%

Liquid Waste Committee

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
LIQUID WASTE
2020 BUDGET REVIEW
2020-2024 FINANCIAL PLAN
LULU ISLAND WEST SEWERAGE AREA

	2017 ACTUAL	2018 ACTUAL	2019 BUDGET	2020 BUDGET	% CHANGE	2021 FORECAST	% CHANGE	2022 FORECAST	% CHANGE	2023 FORECAST	% CHANGE	2024 FORECAST	% CHANGE
REVENUES													
Liquid Waste Services Levy	$ 19,561,956	$ 19,739,225	$ 21,446,956	$ 24,688,980	15.1%	$ 28,075,752	13.7%	$ 32,168,092	14.6%	$ 35,776,868	11.2%	$ 38,713,844	8.2%
User Fees	165,376	128,617	138,058	143,359		146,466		149,276		152,494		155,417	
Transfer from DCC Reserves	113,583	1,625	519,742	1,523,267		1,476,943		2,230,907		2,209,234		2,857,410	
Liquid Waste Industrial Charges	843,586	797,429	907,497	854,993		872,093		889,535		907,326		925,473	
Other External Revenues	177,256	38,408	2,160	2,112		2,112		2,112		2,112		2,112	
Transfer from Sustainability Innovation Fund Reserve	13,902	64,744	140,141	39,072		18,656		10,912		-		-	
Transfer from Reserves	-	-	-	10,973		-		-		-		-	
TOTAL REVENUES	**$ 20,875,659**	**$ 20,770,047**	**$ 23,154,554**	**$ 27,262,756**	**17.7%**	**$ 30,592,022**	**12.2%**	**$ 35,450,834**	**15.9%**	**$ 39,048,034**	**10.1%**	**$ 42,654,256**	**9.2%**
EXPENDITURES													
Operating Programs:													
Policy Planning and Analysis													
Contribution to Sustainability Innovation Fund Reserve	$ 83,398	$ 79,115	$ 81,144	$ 79,341		$ 79,341		$ 79,341		$ 79,341		$ 79,341	
Utility Analysis and Infrastructure	93,276	137,986	138,858	174,076		189,888		181,487		189,229		199,140	
Utility Policy and Planning	101,068	106,617	128,115	182,072		185,672		150,855		150,390		152,210	
	277,742	323,718	348,117	435,489	25.1%	454,901	4.5%	411,683	(9.5%)	418,960	1.8%	430,691	2.8%
Management Systems and Utility Services													
Annacis Research Centre	32,451	38,630	36,985	36,007		32,897		33,601		31,777		32,929	
Department Technical Training	91,856	24,207	45,218	42,184		42,394		42,383		42,486		42,590	
Dispatch	10,537	8,389	10,211	10,143		10,352		10,565		10,783		11,006	
Energy Management	18,811	20,753	19,687	21,208		21,772		22,345		22,930		23,527	
Engineers in Training	30,369	21,250	42,355	39,792		40,595		41,410		42,243		43,093	
Engineering Standards	8,698	7,069	9,328	9,272		9,463		9,656		9,854		10,057	
Liquid Waste Residuals	1,351,928	1,462,389	1,585,445	1,602,414		1,690,652		1,768,056		1,883,934		1,751,305	
Management Systems Utility Services	94,150	97,564	168,017	171,941		187,943		201,417		204,622		207,823	
Records Management	8,402	6,738	8,642	8,590		8,767		8,946		9,130		9,320	
Utility Voice Radio	13,839	11,639	13,354	13,466		13,691		13,859		14,035		14,400	
Wastewater Research and Innovation	101,861	161,702	205,478	128,696		99,952		101,674		103,105		105,161	
	1,762,902	1,860,330	2,144,720	2,083,713	(2.8%)	2,158,478	3.6%	2,253,912	4.4%	2,374,899	5.4%	2,251,211	(5.2%)
Environmental Management and Quality Control													
Environmental Management and Quality Control	1,073,438	795,267	871,860	885,036		936,262		961,428		979,712		973,947	
Source Compliance Monitoring	26,928	25,395	30,285	29,118		28,766		29,339		29,925		30,523	
Contribution to Reserve	10,986	6,724	6,924	7,305		7,458		7,615		7,772		7,824	
	1,111,352	827,386	909,069	921,459	1.4%	972,486	5.5%	998,382	2.7%	1,017,409	1.9%	1,012,294	(0.5%)
Project Delivery													
Minor Capital Projects	400,121	331,899	1,096,710	1,388,789		1,449,505		1,502,357		1,551,853		1,591,709	
Public Involvement	80,208	82,292	96,320	107,717		109,515		93,524		95,389		97,295	
	480,329	414,191	1,193,030	1,496,506	25.4%	1,559,020	4.2%	1,595,881	2.4%	1,647,242	3.2%	1,689,004	2.5%
Operations and Maintenance													
Lake City Operations	84,321	70,354	69,489	70,375		71,841		73,270		74,913		77,476	
Maintenance	2,322,498	2,588,075	2,575,095	2,670,287		2,741,291		2,820,876		2,896,348		3,156,841	
SCADA Control Systems	22,498	24,202	25,094	29,342		29,982		30,486		31,016		32,137	
Wastewater Collection	399,800	268,467	762,108	774,700		794,774		743,393		824,214		835,338	
Wastewater Treatment	4,677,277	5,073,798	5,084,096	5,353,598		5,655,436		5,804,544		5,961,852		6,105,374	
	7,506,394	8,024,897	8,515,882	8,898,302	4.5%	9,293,324	4.4%	9,472,569	1.9%	9,788,343	3.3%	10,207,166	4.3%
Administration and Department Support	173,729	168,657	169,674	170,681	0.6%	173,417	1.6%	176,925	2.0%	176,771	(0.1%)	181,299	2.6%
Communication and Outreach	30,281	27,781	28,800	31,680	10.0%	31,680	0.0%	31,680	0.0%	31,680	0.0%	31,680	0.0%
Environmental Regulation and Enforcement	161,744	99,984	182,562	196,211	7.5%	200,185	2.0%	204,225	2.0%	208,356	2.0%	212,576	2.0%
Allocation of Centralized Support Costs	1,835,998	1,924,069	1,850,124	1,868,554	1.0%	2,166,529	15.9%	2,254,434	4.1%	2,375,887	5.4%	2,450,959	3.2%
Total Operating Programs	13,340,471	13,671,013	15,341,978	16,102,595	5.0%	17,010,020	5.6%	17,399,691	2.3%	18,039,547	3.7%	18,466,880	2.4%
Debt Service	164,089	341,719	1,571,032	3,888,777	150.0%	6,280,180	61.5%	10,718,275	70.7%	13,143,952	22.6%	14,281,838	8.7%
Contribution to Capital	4,755,631	5,612,289	6,241,544	7,271,384	16.5%	7,301,822	0.4%	7,332,868	0.4%	7,864,535	7.3%	9,905,538	26.0%
TOTAL EXPENDITURES	**$ 18,260,191**	**$ 19,625,021**	**$ 23,154,554**	**$ 27,262,756**	**17.7%**	**$ 30,592,022**	**12.2%**	**$ 35,450,834**	**15.9%**	**$ 39,048,034**	**10.1%**	**$ 42,654,256**	**9.2%**
Liquid Waste Committee													
Household Impact ($)			$ 214	$ 239	11.8%	$ 269	12.2%	$ 300	11.6%	$ 329	9.8%	$ 347	5.5%

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
LIQUID WASTE
2020 BUDGET REVIEW
2020-2024 FINANCIAL PLAN
FRASER SEWERAGE AREA

	2017 ACTUAL	2018 ACTUAL	2019 BUDGET	2020 BUDGET	% CHANGE	2021 FORECAST	% CHANGE	2022 FORECAST	% CHANGE	2023 FORECAST	% CHANGE	2024 FORECAST	% CHANGE
REVENUES													
Liquid Waste Services Levy	$ 105,989,926	$ 119,681,982	$ 129,540,876	$ 135,919,069	4.9%	$ 154,793,415	13.9%	$ 179,010,442	15.6%	$ 203,018,003	13.4%	$ 219,404,502	8.1%
User Fees	1,644,171	1,826,910	1,614,379	1,739,915		1,776,296		1,811,031		1,848,786		1,884,925	
Transfer from DCC Reserves	5,017,522	8,106,476	26,639,005	26,806,195		36,177,513		48,841,981		60,198,278		73,023,106	
Liquid Waste Industrial Charges	5,605,054	6,500,655	6,507,224	6,661,211		6,794,435		6,930,324		7,068,930		7,210,309	
Other External Revenues	744,582	679,760	453,704	453,959		453,959		453,959		453,959		453,959	
Transfer from Sustainability Innovation Fund Reserve	85,685	414,839	889,117	258,241		123,304		72,121		-		-	
Transfer from Reserves	-	3,892,175	950,000	69,615		-		-		-		-	
TOTAL REVENUES	**$ 119,086,940**	**$ 141,102,797**	**$ 166,594,305**	**$ 171,908,205**	**3.2%**	**$ 200,118,922**	**16.4%**	**$ 237,119,858**	**18.5%**	**$ 272,587,956**	**15.0%**	**$ 301,976,801**	**10.8%**
EXPENDITURES													
Operating Programs:													
Policy Planning and Analysis													
Contribution to Sustainability Innovation Fund Reserve	$ 514,025	$ 506,925	$ 514,814	$ 524,393		$ 524,393		$ 524,393		$ 524,393		$ 524,393	
Utility Analysis and Infrastructure	574,909	884,465	880,981	1,150,536		1,255,041		1,199,512		1,250,686		1,316,194	
Utility Policy and Planning	622,935	698,955	812,818	1,203,380		1,227,175		997,059		993,987		1,006,009	
	1,711,869	2,090,345	2,208,613	2,878,309	30.3%	3,006,609	4.5%	2,720,964	(9.5%)	2,769,066	1.8%	2,846,596	2.8%
Management Systems and Utility Services													
Annacis Research Centre	203,877	229,476	234,646	237,986		217,429		222,085		210,025		217,642	
Department Technical Training	517,967	144,276	290,201	306,843		308,373		308,293		309,039		309,801	
Dispatch	59,419	52,274	65,553	73,776		75,299		76,848		78,433		80,054	
Energy Management	106,076	123,333	126,378	154,253		158,356		162,523		166,780		171,125	
Engineers in Training	171,249	136,105	268,719	262,975		268,282		273,667		279,171		284,791	
Engineering Standards	49,047	45,270	59,886	67,444		68,830		70,240		71,680		73,157	
Liquid Waste Residuals	7,223,627	10,099,857	12,466,765	10,652,367		10,689,987		11,172,022		12,121,401		11,015,203	
Management Systems Utility Services	517,663	579,458	1,003,037	1,126,377		1,240,852		1,336,945		1,358,205		1,379,488	
Records Management	47,378	43,150	55,480	62,482		63,767		65,074		66,408		67,795	
Utility Voice Radio	78,038	68,339	73,646	74,264		75,507		76,432		77,402		79,416	
Wastewater Research and Innovation	627,818	1,036,101	1,303,645	850,597		660,622		672,001		681,460		695,045	
	9,602,159	12,557,639	15,947,956	13,869,364	(13.0%)	13,827,304	(0.3%)	14,436,130	4.4%	15,420,004	6.8%	14,373,517	(6.8%)
Environmental Management and Quality Control													
Environmental Management and Quality Control	4,199,591	4,879,845	5,310,984	5,614,648		5,955,258		6,108,588		6,222,818		6,181,247	
Source Compliance Monitoring	165,972	162,716	192,139	192,454		190,123		193,913		197,787		201,740	
Contribution to Reserve	38,921	43,092	44,225	46,342		47,315		48,309		49,307		49,636	
	4,404,484	5,085,653	5,547,348	5,853,444	5.5%	6,192,696	5.8%	6,350,810	2.6%	6,469,912	1.9%	6,432,623	(0.6%)
Project Delivery													
Minor Capital Projects	1,915,016	1,919,978	2,414,466	3,339,854		3,449,037		3,634,279		3,795,100		3,889,537	
Public Involvement	519,485	526,343	618,290	783,547		796,621		680,303		693,874		707,738	
	2,434,501	2,446,321	3,032,756	4,123,401	36.0%	4,245,658	3.0%	4,314,582	1.6%	4,488,974	4.0%	4,597,275	2.4%
Operations and Maintenance													
Lake City Operations	475,477	450,871	440,869	465,136		474,827		484,266		495,128		512,066	
Maintenance	14,808,338	15,611,839	15,781,764	16,090,428		16,698,311		17,472,886		17,980,187		18,840,055	
SCADA Control Systems	462,887	484,428	526,847	549,682		561,676		571,114		581,032		602,051	
Wastewater Collection	7,623,583	8,477,068	7,946,296	8,154,375		8,721,499		8,791,589		8,745,772		8,942,588	
Wastewater Treatment	17,160,265	19,206,324	19,178,533	18,704,552		21,029,017		21,003,019		21,804,977		22,326,150	
	40,530,550	44,230,530	43,874,309	43,964,173	0.2%	47,485,330	8.0%	48,322,874	1.8%	49,607,096	2.7%	51,222,910	3.3%
Administration and Department Support	955,198	1,001,884	1,089,153	1,241,554	14.0%	1,261,454	1.6%	1,286,969	2.0%	1,285,849	(0.1%)	1,318,786	2.6%
Communication and Outreach	186,637	178,004	182,720	209,385	14.6%	209,385	0.0%	209,385	0.0%	209,385	0.0%	209,385	0.0%
Environmental Regulation and Enforcement	965,539	640,636	1,250,572	1,344,073	7.5%	1,371,297	2.0%	1,398,971	2.0%	1,427,268	2.0%	1,456,181	2.0%
Allocation of Centralized Support Costs	10,094,680	11,435,431	11,868,408	13,569,054	14.3%	13,515,152	(0.4%)	14,800,357	9.5%	15,911,725	7.5%	17,153,091	7.8%
Total Operating Programs	70,885,617	79,666,441	85,001,835	87,052,757	2.4%	91,114,885	4.7%	93,841,042	3.0%	97,589,279	4.0%	99,610,364	2.1%
Debt Service	9,919,135	16,960,577	43,822,751	42,940,207	(2.0%)	59,940,364	39.6%	84,063,743	40.2%	106,129,175	26.2%	130,612,767	23.1%
Contribution to Capital	34,252,929	42,627,051	37,769,719	41,915,241	11.0%	49,063,673	17.1%	59,215,073	20.7%	68,869,502	16.3%	71,753,670	4.2%
TOTAL EXPENDITURES	**$ 115,057,681**	**$ 139,254,069**	**$ 166,594,305**	**$ 171,908,205**	**3.2%**	**$ 200,118,922**	**16.4%**	**$ 237,119,858**	**18.5%**	**$ 272,587,956**	**15.0%**	**$ 301,976,801**	**10.8%**
Household Impact ($)			$ 226	$ 234	3.2%	$ 260	11.1%	$ 294	13.1%	$ 326	10.9%	$ 344	5.7%

Liquid Waste Committee

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
LIQUID WASTE
2020 BUDGET REVIEW
2020-2024 FINANCIAL PLAN
DRAINAGE SEWERAGE AREA

	2017 ACTUAL	2018 ACTUAL	2019 BUDGET	2020 BUDGET	% CHANGE	2021 FORECAST	% CHANGE	2022 FORECAST	% CHANGE	2023 FORECAST	% CHANGE	2024 FORECAST	% CHANGE
REVENUES													
Liquid Waste Services Levy	$ 2,547,869	$ 2,745,825	$ 2,167,834	$ 2,114,659	(2.5%)	$ 2,077,921	(1.7%)	$ 2,084,688	0.3%	$ 2,142,614	2.8%	$ 2,171,502	1.3%
Transfer from Reserves	35,871	80,511	817,000	115,000		25,000		25,000		25,000		25,000	
TOTAL REVENUES	**$ 2,583,740**	**$ 2,826,336**	**$ 2,984,834**	**$ 2,229,659**	**(25.3%)**	**$ 2,102,921**	**(5.7%)**	**$ 2,109,688**	**0.3%**	**$ 2,167,614**	**2.7%**	**$ 2,196,502**	**1.3%**
EXPENDITURES													
Operating Programs:													
Policy Planning and Analysis													
Utility Analysis and Infrastructure	$ 67,148	$ 33,591	$ 163,693	$ 139,624		$ 65,419		$ 66,225		$ 67,049		$ 67,891	
Utility Policy and Planning	36,444	15,811	65,476	70,848		71,166		71,490		71,818		72,156	
	103,592	49,402	229,169	210,472	(8.2%)	136,585	(35.1%)	137,715	0.8%	138,867	0.8%	140,047	0.8%
Management Systems and Utility Services													
Annacis Research Centre	-	5,557	-	-		-		-		-		-	
Department Technical Training	5,976	3,643	6,267	4,784		4,808		4,806		4,818		4,830	
Dispatch	686	1,464	1,412	1,150		1,174		1,198		1,223		1,249	
Energy Management	1,224	3,029	2,725	2,411		2,476		2,541		2,607		2,676	
Engineers in Training	1,976	-	-	-		-		-		-		-	
Engineering Standards	566	1,203	1,290	1,052		1,073		1,096		1,118		1,140	
Management Systems Utility Services	12,016	13,957	15,355	13,020		14,734		16,163		16,419		16,679	
Records Management	547	1,147	1,196	975		994		1,015		1,035		1,056	
Utility Voice Radio	900	-	-	-		-		-		-		-	
	23,891	30,000	28,245	23,392	(17.2%)	25,259	8.0%	26,819	6.2%	27,220	1.5%	27,630	1.5%
Project Delivery													
Minor Capital Projects	362,186	92,430	1,093,629	321,373		314,575		322,078		331,535		339,444	
Public Involvement	-	287	13,340	12,217		12,421		10,607		10,818		11,035	
	362,186	92,718	1,106,969	333,590	(69.9%)	326,996	(2.0%)	332,685	1.7%	342,353	2.9%	350,479	2.4%
Operations and Maintenance													
Lake City Operations	5,486	-	-	-		-		-		-		-	
Maintenance	200,806	232,219	204,763	219,562		227,285		243,845		259,885		256,631	
SCADA Control Systems	21,004	22,565	23,276	21,996		22,475		22,853		23,250		24,091	
Urban Drainage	846,077	1,131,120	1,048,272	1,109,596		1,105,853		1,103,942		1,128,837		1,152,760	
Wastewater Collection	3,976	185,334	80,728	82,594		67,599		68,883		87,447		89,132	
	1,077,349	1,571,239	1,357,039	1,433,748	5.7%	1,423,212	(0.7%)	1,439,523	1.1%	1,499,419	4.2%	1,522,614	1.5%
Administration and Department Support	22,173	24,263	23,498	19,359	(17.6%)	19,668	1.6%	20,067	2.0%	20,048	(0.1%)	20,563	2.6%
Allocation of Centralized Support Costs	234,316	281,011	239,914	209,098	(12.8%)	171,201	(18.1%)	152,879	(10.7%)	139,707	(8.6%)	135,169	(3.2%)
Total Operating Programs	1,823,507	2,048,633	2,984,834	2,229,659	(25.3%)	2,102,921	(5.7%)	2,109,688	0.3%	2,167,614	2.7%	2,196,502	1.3%
Contribution to Capital	395,894	395,894	-	-	0.0%	-	0.0%	-	0.0%	-	0.0%	-	0.0%
TOTAL EXPENDITURES	**$ 2,219,401**	**$ 2,444,527**	**$ 2,984,834**	**$ 2,229,659**	**(25.3%)**	**$ 2,102,921**	**(5.7%)**	**$ 2,109,688**	**0.3%**	**$ 2,167,614**	**2.7%**	**$ 2,196,502**	**1.3%**

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

ATTACHMENT 2

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
CAPITAL EXPENDITURES							
SD Infrastructure Growth Capital							
AIWWTP Site Construction Layout							
AIWWTP Site Construction Layout	$ 150,000	$ 150,000	$ -	$ -	$ -	$ 300,000	$ 600,000
AIWWTP Stage 5 Expansion & Outfall System							
Annacis Outfall System	89,000,000	47,200,000	28,000,000	55,000,000	56,050,000	275,250,000	378,000,000
Annacis Stage 5 Expansion Phase 1 T1 & T2	16,000,000	3,000,000	-	-	-	19,000,000	243,500,000
Annacis Stage 5 Expansion Phase 2	4,650,000	2,200,000	150,000	-	-	7,000,000	22,000,000
Annacis Stage 5 Expansion Phase 2a	21,000,000	16,000,000	-	-	-	37,000,000	180,000,000
Annacis Stage 5 Expansion Phase 2b	22,000,000	31,000,000	36,000,000	40,250,000	15,750,000	145,000,000	150,000,000
Annacis Stage 5 Expansion Phase 2c	-	-	1,000,000	35,000,000	40,000,000	76,000,000	90,000,000
Albert Street Trunk Sewer							
Albert Street Trunk Sewer	150,000	1,550,000	1,500,000	100,000	-	3,300,000	5,550,000
Burnaby Lake North Interceptor							
Burnaby Lake North Interceptor Cariboo Section	1,050,000	1,800,000	500,000	15,000,000	10,500,000	28,850,000	41,000,000
Burnaby Lake North Interceptor Winston Section	21,150,000	50,000,000	26,600,000	10,000,000	-	107,750,000	116,950,000
Burnaby South Slope Interceptor							
Burnaby South Slope Interceptor West Branch Extension	-	250,000	750,000	650,000	3,500,000	5,150,000	13,200,000
Cloverdale Pump Station Capacity Upgrade							
Cloverdale Pump Station Capacity Upgrade	450,000	1,500,000	1,200,000	8,000,000	8,000,000	19,150,000	36,400,000
Cloverdale Trunk Sewer Capacity Upgrade							
Cloverdale Trunk Sewer Capacity Upgrade	-	-	300,000	1,050,000	1,200,000	2,550,000	29,000,000
Glenbrook Combined Trunk Kingsway Sanitary Section							
Glenbrook Combined Trunk Kingsway Sanitary Section	100,000	200,000	2,000,000	2,000,000	-	4,300,000	4,500,000
Hastings Sanitary Trunk Sewer							
Hastings Sanitary Trunk Sewer	3,000,000	-	-	-	-	3,000,000	15,031,000
Hastings Sanitary Trunk Sewer No. 2	6,100,000	550,000	-	-	-	6,650,000	20,000,000
Hastings-Cassiar Intake Connection							
Hastings-Cassiar Intake Connection	2,100,000	100,000	-	-	-	2,200,000	2,350,000
LIWWTP Digester No 3							
Lulu Island WWTP Digester No 3	300,000	50,000	-	-	100,000	450,000	53,300,000

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
Marshend Pump Station							
Marshend Pump Station Capacity Upgrade	1,400,000	5,200,000	3,000,000	3,000,000	650,000	13,250,000	13,775,000
North Road Trunk Sewer							
North Road Trunk Sewer	4,600,000	1,500,000	200,000	-	-	6,300,000	11,675,000
North Road Trunk Sewer Phase 2	100,000	100,000	4,050,000	3,400,000	100,000	7,750,000	8,438,000
North Vancouver Interceptor - Lynn Branch Pre-build							
North Vancouver Interceptor - Lynn Branch Pre-build	50,000	-	-	-	-	50,000	3,950,000
Northwest Langley Wastewater Treatment Projects							
Golden Ears Forcemain and River Crossing	2,100,000	31,000,000	38,900,000	6,000,000	-	78,000,000	86,000,000
Golden Ears Pump Station	11,650,000	15,000,000	7,100,000	100,000	200,000	34,050,000	50,200,000
Golden Ears SSO Storage	16,000,000	3,000,000	10,000,000	-	-	29,000,000	51,500,000
NLWWTP Ground Improvements	22,000,000	3,000,000	-	15,000,000	9,000,000	49,000,000	83,000,000
NLWWTP Outfall	1,500,000	6,500,000	4,000,000	3,000,000	50,000,000	65,000,000	159,000,000
NLWWTP Property Purchase	-	12,000,000	-	-	-	12,000,000	12,000,000
NLWWTP Stage 1	12,000,000	27,000,000	53,000,000	150,000,000	196,000,000	438,000,000	889,000,000
NSI 104th Ave Extension							
NSI 104th Ave Extension	150,000	50,000	50,000	50,000	1,600,000	1,900,000	6,800,000
NSI Flow Management							
NSI Flow Management	6,100,000	30,000,000	20,000,000	350,000	350,000	56,800,000	63,200,000
Port Moody Pump Station Capacity Upgrade							
Port Moody Pump Station Capacity Upgrade	1,100,000	750,000	4,500,000	3,800,000	-	10,150,000	10,550,000
Port Moody South Interceptor Capacity Upgrade							
Port Moody South Interceptor Capacity Upgrade	-	150,000	350,000	1,000,000	1,000,000	2,500,000	3,450,000
Rosemary Heights Pressure Sewer Capacity Upgrade							
Rosemary Heights Pressure Sewer Capacity Upgrade	-	150,000	500,000	650,000	4,800,000	6,100,000	10,750,000
Sapperton Pump Station							
Sapperton Pump Station	8,000,000	11,400,000	-	-	-	19,400,000	82,003,000
South Surrey Interceptor Twinning							
South Surrey Interceptor Johnston Section	17,000,000	10,000,000	-	-	-	27,000,000	84,026,000
SSI - King George Section - Odor Control Facility (OCF) and Grit Chamber	3,500,000	500,000	-	-	-	4,000,000	19,500,000
Sperling Pump Station							
Sperling PS Increase Pump Capacity	100,000	-	-	-	-	100,000	3,150,000
	$ 294,550,000	**$ 312,850,000**	**$ 243,650,000**	**$ 353,400,000**	**$ 398,800,000**	**$ 1,603,250,000**	**$ 3,053,348,000**

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
SD Infrastructure Maintenance Capital							
AIWWTP CDACS Replacement Program							
AIWWTP CDACS Replacement Program	$ 1,100,000	$ 1,700,000	$ 1,650,000	$ 1,650,000	$ 1,600,000	$ 7,700,000	$ 14,350,000
AIWWTP Cogen Building Refurbishment							
AIWWTP Cogen Building Refurbishment	1,500,000	-	-	-	-	1,500,000	1,500,000
AIWWTP Fibre Optic Infrastructure							
AIWWTP Fibre Optic Infrastructure	100,000	-	-	-	-	100,000	1,500,000
AIWWTP Influent System Remediation							
AIWWTP Influent System Remediation	500,000	600,000	13,000,000	18,000,000	20,000,000	52,100,000	82,600,000
AIWWTP IPS Pump Building Roof Replacement Phase 2							
AIWWTP IPS Pump Building Roof Replacement Phase 2	-	-	-	-	800,000	800,000	830,000
AIWWTP Outfall Repair							
AIWWTP Outfall Repair	150,000	800,000	750,000	-	-	1,700,000	1,800,000
AIWWTP Replacement of CDAC Equipment							
AIWWTP Replacement of CDAC Equipment in Galleries	750,000	300,000	100,000	-	-	1,150,000	2,895,000
AIWWTP Scheduled 64kV Potential & Current Transformer Replacements							
AIWWTP Scheduled 64kV Potential & Current Transformer Replacements	350,000	100,000	-	-	-	450,000	800,000
AIWWTP Scum Pump Replacement							
AIWWTP Scum Pump Replacement	-	-	-	-	200,000	200,000	1,350,000
AIWWTP Secondary Clarifier Corrosion Repair							
AIWWTP SCL Flow Balancing	100,000	-	1,350,000	-	-	1,450,000	2,450,000
AIWWTP SCL Flow Control	6,000,000	6,000,000	6,000,000	2,700,000	10,000,000	30,700,000	31,500,000
Annacis Secondary Clarifier Corrosion Repair and Leveling Phase 2	1,150,000	1,000,000	1,000,000	750,000	10,400,000	14,300,000	22,000,000
AIWWTP Secondary Effluent Discharge Flowmeter Replacement							
AIWWTP Secondary Effluent Discharge Flowmeter Replacement	200,000	50,000	-	-	-	250,000	400,000
AIWWTP Spare Trickling Filter Pump & Motor Purchase							
AIWWTP Spare Trickling Filter Pump & Motor Purchase	300,000	-	-	-	-	300,000	1,950,000
AIWWTP Station Battery Replacement							
AIWWTP Station Battery Replacement - PHASE 2	300,000	-	-	-	-	300,000	400,000
AIWWTP Trickling Filter Media & Distributor Arms & Ducting Replacement							

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
AIWWTP Trickling Filter Media & Distributor Arms & Ducting Replacement	22,350,000	23,250,000	22,100,000	20,000,000	-	87,700,000	90,700,000
Annacis MCC 80 051, 80 070, 80 071 Replacement							
Annacis MCC 80 051, 80 070, 80 071 Replacement	850,000	150,000	100,000	-	-	1,100,000	2,844,000
Big Bend Forcemain - Gate Replacement							
Big Bend Forcemain - Gate Replacement	-	-	-	-	600,000	600,000	2,680,000
Cambie Trunk Sewer Relocation for Broadway Subway Project							
Cambie Trunk Sewer Relocation for Broadway Subway Project	2,000,000	1,500,000	-	-	-	3,500,000	4,500,000
Combined Sewer Overflow Sampling Station Enhancements							
Combined Sewer Overflow Sampling Station Enhancements	400,000	500,000	400,000	-	-	1,300,000	1,900,000
Cost Allocation Billing Network (Combined 96 F4)							
Cost Allocation Billing Network (Combined 96 F4)	50,000	-	-	-	-	50,000	5,230,000
Crescent Beach FM - Replacement							
Crescent Beach FM - Replacement	6,300,000	6,000,000	-	-	-	12,300,000	25,570,000
English Bay/Balaclava Outfalls Improvement							
English Bay/Balaclava Outfalls Improvement	-	250,000	500,000	150,000	-	900,000	900,000
FSA Flow Metering Program							
FSA Flow Metering Program	800,000	900,000	800,000	300,000	-	2,800,000	3,500,000
Gilbert/Brighouse Trunk Pressure Sewer							
Gilbert/Brighouse Trunk Pressure Sewer Rehab Phase 5	-	-	-	200,000	3,000,000	3,200,000	23,200,000
Gilbert/Brighouse Trunk Pressure Sewer Twinning Phase 2	9,500,000	-	-	-	-	9,500,000	50,501,000
Gilbert/Brighouse Trunk Pressure Sewer Twinning Phase 3	50,000	23,300,000	20,000,000	-	-	43,350,000	44,400,000
Gilbert/Brighouse Trunk Pressure Sewer Twinning Phase 4	10,400,000	25,000,000	5,400,000	-	-	40,800,000	41,400,000
Glen Eagles Forcemain Replacement							
Glen Eagles Forcemains Replacement Phase 2	250,000	2,150,000	2,500,000	2,500,000	-	7,400,000	7,750,000
Glen Eagles Pump Stations							
Glen Eagles Pump Stations Phase 1	1,300,000	6,300,000	3,750,000	5,500,000	5,000,000	21,850,000	22,500,000
Glen Eagles Pump Stations Phase 2	-	-	200,000	1,000,000	1,000,000	2,200,000	5,000,000
Harbour West & East Interceptors Reloc & Protect							
Harbour West & East Interceptors Reloc & Protect	9,750,000	5,300,000	-	-	-	15,050,000	19,500,000
IIWWTP CDAC IPS Control Replacement							
IIWWTP CDAC IPS Control Replacement	950,000	-	-	-	-	950,000	1,750,000

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
IIWWTP CDACS Replacement Program							
IIWWTP CDACS Replacement Program	350,000	300,000	100,000	-	-	750,000	750,000
IIWWTP Influent Gate Refurbishment							
IIWWTP Influent Gate Refurbishment	350,000	350,000	250,000	-	-	950,000	1,350,000
IIWWTP IPS Drive Remediation							
IIWWTP IPS Drive Remediation	500,000	150,000	150,000	-	-	800,000	800,000
IIWWTP MCC/Power Distribution Assess/Replace - Phase 2							
IIWWTP MCC/Power Distribution Assess/Replace - Phase 2	200,000	-	-	-	-	200,000	1,000,000
IIWWTP PA-Sed Tank & Gallery Wall Refurbishment							
IIWWTP PA-Sed Tank & Gallery Wall Refurbishment	500,000	300,000	-	-	-	800,000	1,375,000
IIWWTP Replacement of CoGen Control System							
IIWWTP Replacement of CoGen Control System	800,000	300,000	-	-	-	1,100,000	2,470,000
IIWWTP Siphon Chamber Refurbishment							
IIWWTP Siphon Chamber Refurbishment	850,000	850,000	450,000	-	-	2,150,000	2,200,000
IIWWTP Solids Handling Refurbishment							
IIWWTP Digester 4 Roof Replacement & Mixing Replacement	4,750,000	1,000,000	2,500,000	2,700,000	-	10,950,000	24,800,000
IIWWTP Grit System Refurbishment	50,000	500,000	-	-	-	550,000	8,100,000
IIWWTP Solids Handling Refurbishment	300,000	-	-	-	-	300,000	30,500,000
Iona Island Control & Instrumentation Replacement 2011							
Iona Island Control & Instrumentation Replacement 2011	450,000	-	-	-	-	450,000	2,750,000
LIWWTP CCT Isolation Gates							
LIWWTP CCT Isolation Gates	350,000	550,000	600,000	450,000	-	1,950,000	2,050,000
LIWWTP CDACS Replacement Program							
LIWWTP CDACS Replacement Program	1,400,000	1,650,000	1,300,000	1,000,000	1,100,000	6,450,000	6,750,000
LIWWTP High Efficiency Boiler							
LIWWTP High Efficiency Boiler	100,000	-	800,000	250,000	100,000	1,250,000	1,330,000
LIWWTP PA-Sed Tank Refurbishment							
LIWWTP PA-Sed Tank Refurbishment	1,050,000	1,050,000	900,000	-	-	3,000,000	4,115,000
LSA Flow Metering Program							
LSA Flow Metering Program	50,000	50,000	50,000	50,000	-	200,000	300,000
Marshend PS Rehab							
Marshend PS Rehab	-	2,200,000	2,000,000	1,950,000	-	6,150,000	7,000,000

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
New West Interceptor - Annacis Section 2							
NWI - Annacis Section 2 Improvement	1,500,000	10,200,000	16,300,000	16,000,000	-	44,000,000	45,000,000
New West Interceptor Grit Chamber							
New West Interceptor Grit Chamber	-	3,000,000	5,000,000	-	-	8,000,000	8,250,000
New Westminster Interceptor Repair Columbia St. Section							
New Westminster Interceptor Repair Columbia St. Section	3,300,000	5,150,000	1,100,000	-	-	9,550,000	10,882,000
NLWWTP Screw Pump Replacement							
NLWWTP Screw Pump Replacement	500,000	500,000	450,000	-	-	1,450,000	1,550,000
NSA Flow Metering Program							
NSA Flow Metering Program	250,000	300,000	200,000	-	-	750,000	900,000
NSI Rehab or Replacement							
NSI Rehab or Replacement	9,150,000	20,750,000	11,200,000	1,500,000	3,000,000	45,600,000	46,950,000
NWL WWTP 25 kV Substation Replacement							
NWL WWTP 25 kV Substation Replacement	2,500,000	1,000,000	1,000,000	-	-	4,500,000	10,025,000
Ocean Park Trunk Crescent Section (OPC) Pipe Rehabilitation/Replacement							
Ocean Park Trunk Crescent Section (OPC) Pipe Rehabilitation/Replacement	2,150,000	1,050,000	-	-	-	3,200,000	4,953,000
Ocean Park Trunk Manholes Lining							
Ocean Park Trunk Manholes Lining	-	50,000	350,000	150,000	-	550,000	550,000
Port Coquitlam Pump Station Refurbishment							
Port Coquitlam Pump Station Refurbishment	-	250,000	1,000,000	2,000,000	4,000,000	7,250,000	9,250,000
Royal Ave PS Rehabilitation							
Royal Ave PS Rehabilitation	2,000,000	2,000,000	1,500,000	-	-	5,500,000	7,238,000
Sewer Relocations and Protections at Fraser Surrey Docks							
Sewer Relocations and Protections at Fraser Surrey Docks	750,000	15,000,000	5,000,000	3,200,000	-	23,950,000	25,800,000
Sewer Relocations and Protections for Pattullo Bridge Replacement Project							
Sewer Relocations and Protections for Pattullo Bridge Replacement Project	750,000	5,250,000	500,000	250,000	-	6,750,000	7,000,000
SSI Influent Control Chamber Repair and Replace Gates							
SSI Influent Control Chamber Repair and Replace Gates	750,000	-	-	-	-	750,000	1,305,000
Surrey Corrosion Control Facility Replacement							
Surrey Corrosion Control Facility Replacement	1,200,000	1,200,000	-	-	-	2,400,000	2,900,000

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
VSA Flow Metering Program							
VSA Flow Metering Program	900,000	1,600,000	1,650,000	900,000	-	5,050,000	5,800,000
Westridge FM Replacement							
Westridge FM Replacement	2,050,000	700,000	300,000	-	-	3,050,000	3,650,000
Westridge Pump Stations 1 & 2 Refurbishment							
Westridge Pump Stations 1 & 2 Refurbishment	1,000,000	5,300,000	5,000,000	3,000,000	1,650,000	15,950,000	16,250,000
Works Yard							
Works Yard	32,000,000	-	-	-	-	32,000,000	32,000,000
	$ **150,250,000**	$ **187,700,000**	$ **139,250,000**	$ **86,150,000**	$ **62,450,000**	$ **625,800,000**	$ **858,043,000**
SD Infrastructure Resilience Capital							
AIWWTP Cogeneration Backup Power							
AIWWTP 69 kV Substation Modifications	$ 2,550,000	$ 2,700,000	$ 1,750,000	$ -	$ -	$ 7,000,000	$ 8,500,000
AIWWTP Cogeneration Backup Power	3,000,000	4,150,000	-	-	-	7,150,000	75,003,000
AIWWTP PST Area Walkway & Column Remediation							
AIWWTP PST Area Walkway & Column Remediation	500,000	100,000	-	-	-	600,000	3,100,000
AIWWTP UPS Condition Monitoring System							
AIWWTP UPS Condition Monitoring System	300,000	100,000	150,000	-	-	550,000	550,000
IIWWTP - Biogas Lines Relocation							
IIWWTP - Biogas Lines Relocation	550,000	-	-	-	-	550,000	5,780,000
IIWWTP Standby Diesel Generators							
IIWWTP Standby Diesel Generators	250,000	850,000	1,900,000	1,000,000	700,000	4,700,000	5,000,000
LIWWTP Power Reliability							
LIWWTP Power Reliability	4,700,000	2,300,000	-	-	-	7,000,000	8,202,000
SSI Sulfide Odour and Corrosion Control							
SSI Sulfide Odour and Corrosion Control	4,300,000	2,300,000	-	-	-	6,600,000	7,700,000
VSA Emergency Backup Power							
VSA Emergency Backup Power	8,550,000	8,100,000	-	-	-	16,650,000	24,310,000
	$ **24,700,000**	$ **20,600,000**	$ **3,800,000**	$ **1,000,000**	$ **700,000**	$ **50,800,000**	$ **138,145,000**
SD Infrastructure Upgrade Capital							
AIWWTP Ammonia Removal – Sidestream							
AIWWTP Ammonia Removal – Sidestream	$ -	$ -	$ 150,000	$ -	$ -	$ 150,000	$ 125,900,000

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
AIWWTP DAF Polymer Building Replacement							
AIWWTP DAF Polymer Building Replacement	50,000	-	-	-	-	50,000	550,000
AIWWTP Electrical Distribution System Protection Control and Monitoring							
AIWWTP Electrical Distribution System Protection Control and Monitoring	600,000	900,000	450,000	400,000	-	2,350,000	2,650,000
AIWWTP Replacement of Protective Relays							
AIWWTP Replacement of Protective Relays	1,000,000	-	-	-	-	1,000,000	3,258,000
All WWTPs Power Quality Monitoring & Outage Alarming Network							
All WWTPs Power Quality Monitoring & Outage Alarming Network	550,000	400,000	150,000	-	-	1,100,000	2,870,000
Biosolids Dryer							
Biosolids Dryer	7,700,000	2,000,000	-	-	-	9,700,000	14,700,000
IIWWTP Biosolids Dewatering Facility							
IIWWTP Biosolids Dewatering Facility	36,550,000	6,250,000	2,000,000	-	-	44,800,000	61,300,000
IIWWTP Sludge Lagoons Dewatering Facility							
IIWWTP Sludge Lagoons Dewatering Facility	2,350,000	500,000	-	-	-	2,850,000	2,850,000
New CSO Management Gates for New Westminster Interceptor							
New CSO Management Gates for New Westminster Interceptor	200,000	600,000	800,000	2,000,000	2,200,000	5,800,000	5,925,000
WWTPs Electrical System Studies & Upgrades							
WWTPs Electrical System Studies & Upgrades	200,000	450,000	400,000	500,000	250,000	1,800,000	1,900,000
	$ **49,200,000**	$ **11,100,000**	$ **3,950,000**	$ **2,900,000**	$ **2,450,000**	$ **69,600,000**	$ **221,903,000**
SD Infrastructure Upgrade: Secondary Treatment Capital							
Iona Secondary Wastewater Treatment							
Iona Secondary Treatment Upgrade	$ 7,400,000	$ 13,000,000	$ 60,000,000	$ 100,000,000	$ 155,000,000	$ 335,400,000	$ 1,904,500,000
North Shore WWTP Secondary Upgrade and Conveyance							
North Shore WWTP Secondary Upgrade and Conveyance	345,470,000	207,240,000	75,210,000	72,320,000	11,600,000	711,840,000	881,900,000
	$ **352,870,000**	$ **220,240,000**	$ **135,210,000**	$ **172,320,000**	$ **166,600,000**	$ **1,047,240,000**	$ **2,786,400,000**
SD Opportunity Capital							
AIWWTP Hydrothermal Processing Pilot							
AIWWTP Hydrothermal Processing Pilot	$ 1,750,000	$ 4,500,000	$ 2,000,000	$ -	$ -	$ 8,250,000	$ 8,980,000

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
CAPITAL PROGRAMS AND PROJECT TOTALS
LIQUID WASTE SERVICES
2020-2024 CAPITAL PLAN

	2020 CAPITAL BUDGET	2021 CAPITAL PLAN	2022 CAPITAL PLAN	2023 CAPITAL PLAN	2024 CAPITAL PLAN	2020 TO 2024 TOTAL	TOTAL PROJECT COSTS
Fraser Sewerage Area Integrated Resource Recovery (IRR) Study							
Fraser Sewerage Area Integrated Resource Recovery (IRR) Study	100,000	500,000	500,000	-	-	1,100,000	1,200,000
LIWWTP Biogas Clean-up Project							
LIWWTP Biogas Clean-up Project	7,800,000	1,300,000	-	-	-	9,100,000	13,800,000
LIWWTP Pilot Digestion Optimization Facility							
LIWWTP Pilot Digestion Optimization Facility	2,000,000	100,000	-	-	-	2,100,000	3,100,000
North Surrey Interceptor - Port Mann Section - Odour Control							
North Surrey Interceptor - Port Mann Section - Odour Control	200,000	1,000,000	1,100,000	2,000,000	3,050,000	7,350,000	7,500,000
	$ **11,850,000**	$ **7,400,000**	$ **3,600,000**	$ **2,000,000**	$ **3,050,000**	$ **27,900,000**	$ **34,580,000**
TOTAL CAPITAL EXPENDITURES	$ **883,420,000**	$ **759,890,000**	$ **529,460,000**	$ **617,770,000**	$ **634,050,000**	$ **3,424,590,000**	$ **7,092,419,000**

CAPITAL FUNDING						
New External Borrowing	$ 552,270,000	$ 474,990,000	$ 356,860,000	$ 437,870,000	$ 459,950,000	$ 2,281,940,000
Contribution to Capital	86,800,000	94,100,000	105,000,000	115,300,000	128,700,000	529,900,000
Surplus from Prior Year/ Reserves/ DCC	55,950,000	49,600,000	39,400,000	56,300,000	45,400,000	246,650,000
External Funding - Interagency	188,400,000	141,200,000	28,200,000	8,300,000	-	366,100,000
Total	**$ 883,420,000**	**$ 759,890,000**	**$ 529,460,000**	**$ 617,770,000**	**$ 634,050,000**	**$ 3,424,590,000**

DEBT SERVICING TOTALS/RATIO						
Operating Programs - Liquid Waste Services	$ 184,200,000	$ 195,600,000	$ 202,400,000	$ 211,100,000	$ 204,400,000	$ 997,700,000
Debt Service - Existing	55,500,000	57,000,000	80,800,000	117,800,000	148,300,000	459,400,000
Debt Service - New	1,700,000	24,600,000	37,100,000	31,700,000	37,000,000	132,100,000
Contribution to Capital	86,800,000	94,100,000	105,000,000	115,300,000	128,700,000	529,900,000
Total	**$ 328,200,000**	**$ 371,300,000**	**$ 425,300,000**	**$ 475,900,000**	**$ 518,400,000**	**$ 2,119,100,000**
% Debt Service	**17%**	**22%**	**28%**	**31%**	**36%**	**28%**

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

LIQUID WASTE SERVICES
Policy, Planning and Analysis

Description of services

Liquid Waste Services provide wastewater collection and treatment services through the Liquid Waste function under the Greater Vancouver Sewerage & Drainage District (GVS&DD). The Policy, Planning and Analysis division provides policy development and implementation strategy development; utility analysis, computer modeling and planning work for the sewer system, drainage areas and wastewater treatment plants (WWTPs); coordination of service growth planning with municipalities; implementation of the key components of the Integrated Liquid Waste and Resource Management Plan (ILWRMP); facilitation of plans and strategies to comply with the GVS&DD Act, Provincial Environmental Management Act, and Federal legislation; processing of municipal requests with respect to new membership in the GVS&DD and sewerage or drainage area amendments; Source Control Program and policy development; and the project definition work for the Iona Island WWTP secondary upgrade.

Strategic directions and high level goals supported

Board Strategic Plan

- Enhance the management of the liquid waste system with a commitment to innovative approaches to protect the health of the public and the environment.
- Ensure the long-term resilience of the regional sewage and drainage system to withstand natural hazards, climate change and other significant disruptions.
- Develop and implement financial plans and policies that reflect a commitment to sound financial management and long-term planning, in consideration of current and future ratepayers.
- Strengthen awareness and engagement with the public, members, other orders of government, and key stakeholders on a range of initiatives that will ensure that the regional liquid waste system protects public health and the environment, now and into the future.

Integrated Liquid Waste and Resource Management Plan:

- Goal 1 - Protect public health and the environment
- Goal 2 - Use liquid waste as a resource
- Goal 3 - Effective, affordable and collaborative management

Performance indicators

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Annual number of wet-weather related sanitary sewer overflow (SSO) events from Metro Vancouver sewers	MV 3-year average: 34 2018: 53 2017: 39 2016: 10	40	0

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Annual CSO Volume (ML)	MV 3-year average: 34,744 2018: 41,300 2017: 35,000 2016: 27,931	34,000	28,500
Percentage of Assets Meeting Basic Service	MV 3-year average: 95% 2018: 95% 2017: 95% 2016: 95%	95%	95%

2020 Key actions

- Complete work with the Cities of Burnaby, New Westminster and Vancouver to identify options and strategies to cost effectively eliminate combined sewer overflows and separate combined sewers.
- Continue to work with members to identify strategies and options leading to improved management of inflow and infiltration into sanitary sewers.
- Continue development, calibration, and maintenance of Sewerage Area hydraulic models.
- Continue system wide capacity and sewer separation analyses for Fraser and Vancouver Sewerage Areas.
- Continue Source Control outreach programs including the regional 'Grease' and 'Unflushables' campaigns.
- Continue Source Control regulatory initiatives including a review of the Food Sector Grease Interceptor Bylaw and the Sewer Use Bylaw (with respect to trucked liquid waste).
- Complete the Still Creek-Brunette River Drainage Area flood mapping project.
- As a part of a Sustainability Innovation Fund project, work with the Water Research Foundation on the Intelligent Water Systems initiative to identify new and innovative solutions for sewer system data collection, management and analysis.
- Initiate the review of the *Integrated Liquid Waste and Resource Management Plan* for updating in 2021.
- Initiate the development of a comprehensive plan that identifies challenges and outlines strategic options to 2100 for Liquid Waste Services.
- Complete the Iona Island WWTP Project Definition Report including the development of an indicative design for the new plant.
- Complete the Framework and Best Practices Guide for Capital Project Permit Fees.
- Initiate a policy or protocol to define responsibilities within Drainage Areas.

LIQUID WASTE SERVICES
Project Delivery

Description of services
Liquid Waste Services provides wastewater collection and treatment services to the region through the Liquid Waste function under the authority of the Greater Vancouver Sewerage and Drainage District (GVS&DD). The Project Delivery Division is responsible for the delivery of the core major and minor capital projects, including trunk sewers, pump stations, SSO storage and wastewater treatment facilities identified in the GVS&DD long range plan and minor operating projects.

Strategic directions and high level goals supported
Board Strategic Plan
- Enhance the management of the liquid waste system with a commitment to innovative approaches to protect the health of the public and the environment.
- Ensure the long-term resilience of the regional sewage and drainage system to withstand natural hazards, climate change and other significant disruptions.
- Develop and implement financial plans and policies that reflect a commitment to sound financial management and long-term planning, in consideration of current and future ratepayers.
- Strengthen awareness and engagement with the public, members, other orders of government, and key stakeholders on a range of initiatives that will ensure that the regional liquid waste system protects public health and the environment, now and into the future.

Integrated Liquid Waste and Resource Management Plan
- Goal 1 - Protect public health and the environment
- Goal 2 - Use liquid waste as a resource
- Goal 3 - Effective, affordable and collaborative management

Performance indicators

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Percent of Major Capital Program Expenditures Achieved	MV 3-year average: 94% 2018: 84% 2017: 104% 2016: 93%	68%	85%
Percent of Minor Capital Program Expenditures Achieved	MV 3-year average: 67% 2018: 59% 2017: 67% 2016: 76%	70%	80%
AIWWTP Stage 5 Expansion Phase 1	83%	85%	93%
AIWWTP Outfall - Construction	n/a	1%	30%

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
AIWWTP Cogeneration - Construction	75%	98%	100%
IIWWTP Solids Handling - Construction	85%	95%	100%
IIWWTP Biosolids Dewatering Facility – Design Build- Construction	2%	15%	70%
Northwest Langley WWTP Projects - Detailed Design - Ground Improvements (overall)	 n/a n/a	 5% 33%	 50% 66%
North Shore WWTP	n/a	12%	57%
Burnaby Lake North Interceptor – Winston St Section - Design - Construction	 50% n/a	 97% 0%	 100% 20%
Gilbert Trunk Sewer - Construction (Phases 2-4)	3%	35%	50%
Sapperton Pump Station - Construction	65%	93%	100%

2020 Key Actions

- Substantially complete construction on the 5 primary sedimentation tanks, 2 solids contact tanks, and 6 secondary clarifiers within the Annacis Island WWTP Stage 5 Phase 1 Expansion Project.
- Complete construction of the 2 vertical launch/receiving shafts and commence tunneling of chlorine contact tank effluent section for the Annacis Island WWTP Outfall Project.
- Complete commissioning and begin operation of the Annacis Island WWTP Cogeneration Back-Up Power System.
- Complete construction of the Iona Island WWTP Digester Mixing Project.
- Start construction of the open cut and tunneled sections of the Burnaby Lake North Interceptor – Winston Section
- Achieve total completion of the two South Surrey Interceptor Odour Control Facilities (King George and Highway 10)
- Start construction of the last section of the South Surrey Interceptor
- Award the Design Build contract for the North Surrey Interceptor SSO Tank
- Complete Hastings Sanitary Trunk Sewer, North Road Trunk Sewer (Phase 1), Albert Street Sanitary Trunk Sewer (Phase 1), Highbury Interceptor Air Management Facility
- Substantially complete the Sapperton Pump Station
- Remove all preload from North Shore WWTP site, complete 90% of excavation, and commence foundation pouring
- Complete First Narrows Pump Station construction.
- Complete the Northwest Langley WWTP Phase 2 Ground Improvements.
- Award the Golden Ears Forcemain Fraser River Crossing construction tender

LIQUID WASTE SERVICES
Operations and Maintenance

Description of Services

Liquid Waste Services provides wastewater collection and treatment services to the region through the Liquid Waste function under the authority of the Greater Vancouver Sewerage and Drainage District (GVS&DD). The Operations and Maintenance division is responsible for managing the operations and maintenance of the five regional wastewater treatment plants (WWTPs) and the sewer collection systems. This includes long-range facility planning and day-to-day management of the infrastructure assets and supporting infrastructure (works yards, communications systems, and control systems) with the objective of complying with provincial and federal regulations and recovering as much resources from the wastewater as economically feasible.

This business area is also responsible for managing the operations and maintenance of Urban Drainage areas including the Still Creek/Brunette, Port Moody/Coquitlam and UBC Drainage areas.

Strategic Directions and High Level Goals Supported

Board Strategic Plan

- Enhance the management of the liquid waste system with a commitment to innovative approaches to protect the health of the public and the environment.
- Ensure the long-term resilience of the regional sewage and drainage system to withstand natural hazards, climate change and other significant disruptions.
- Develop and implement financial plans and policies that reflect a commitment to sound financial management and long-term planning, in consideration of current and future ratepayers.
- Strengthen awareness and engagement with the public, members, other orders of government, and key stakeholders on a range of initiatives that will ensure that the regional liquid waste system protects public health and the environment, now and into the future.

Integrated Liquid Waste and Resource Management Plan

- Goal 1 - Protect public health and the environment
- Goal 2 - Use liquid waste as a resource
- Goal 3 - Effective, affordable and collaborative management

Performance Indicators

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Volume treated per year (ML)	MV 3-year average: 447,715 2018: 456,083 2017: 449,542 2016: 437,520	445,000	450,000
Operating cost per million litres collected and treated ($/ML)	MV 3-year average: $329 2018: $349 2017: $323 2016: $314	$375	$409

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Energy use in the collection and treatment of liquid waste kilowatt hour per million litres (kWh/ML)	MV 3-year average: 220 2018: 255 2017: 209 2016: 196	258.6	214
Percent of digester gas used at the Wastewater Treatment Plants	MV 3-year average: 60% 2018: 44% 2017: 68% 2016: 69%	45%	72%
Compliance with treatment plant Operational Certificates (%)	MV 3-year average: 99.96% 2018: 99.95% 2017: 99.93% 2016: 99.99%	99.98%	100%
Number of reported events of sanitary sewer overflows (SSOs): non-weather related	MV 3-year average: 18.3 2018: 24 2017: 17 2016: 14	16	0
Number of odour complaints received	MV 3-year average: 14.7 2018: 12 2017: 21 2016: 11	12	15

2020 Key Actions

- Complete satellite yard implementation at two yards to reduce travel time, vehicle wear, motor vehicle accident risks and greenhouse gases while increasing efficiencies for Sewers and Drainage Operations Staff.
- Renovate Annacis Island Warehouse and relocate Staff to centralize Maintenance services support field staff which will result in improved efficiencies of services with a benefit of off-loading space demands at LCOC.
- Implement a mobile technology pilot for sewer and drainage field staff to identify optimal hardware and software intended to increase real time access to critical operational procedures, asset information and creation and updates to work orders.
- Implement Asset Management Condition Assessment Programs across O&M.
- Develop strategies and implement pilot work on technologies for full pipe condition inspections.
- Provide commissioning operations and maintenance services for the Annacis Island major capital projects, i.e. Stage V and Co-Generation.
- Develop and implement a water reduction program to offset high water use demands required for the recently commissioned Iona Island Solids Handing System.
- Complete Maintenance Service Enhancement Initiatives to review maintenance practices, efficiency, transparency/accuracy of data and level of customer service with the intent to optimize resources, procedures and practices.

LIQUID WASTE SERVICES
Environmental Management & Quality Control

Description of services

This business area is responsible for management of environmental programs and initiatives for GVS&DD, analytical services for liquid waste, water and solid waste regulatory, quality control, source control and process control purposes, and federal and provincial regulatory reporting of environmental and wastewater quality and treatment. The work includes environmental investigations, laboratory analyses, modeling, forecasting, simulations, monitoring, risk assessments, management of stormwater and urban drainage, development of an Environmental Management System for Liquid Waste Services, implementation of source control programs, and liaison with senior governments, academia and environmental stakeholders.

Strategic directions and high level goals supported

Board Strategic Plan:

- Enhance the management of the liquid waste system with a commitment to innovative approaches to protect the health of the public and the environment.
- Ensure the long-term resilience of the regional sewage and drainage system to withstand natural hazards, climate change and other significant disruptions.
- Develop and implement financial plans and policies that reflect a commitment to sound financial management and long-term planning, in consideration of current and future ratepayers.
- Strengthen awareness and engagement with the public, members, other orders of government, and key stakeholders on a range of initiatives that will ensure that the regional liquid waste system protects public health and the environment, now and into the future.

Integrated Liquid Waste and Resource Management Plan:

- Goal 1 - Protect public health and the environment
- Goal 2 - Use liquid waste as a resource
- Goal 3 - Effective, affordable and collaborative management

Performance indicators

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Percent of recreational water quality results that do not meet the applicable criteria	MV 3-year average: 0.9% 2018: 2.4% 2017: 0.0% 2016: 0.2%	0.4%	2.6%
Fraser River water quality index[1]	MV 3-year average: 82 2017: 82 2016: 82 2015: 82	88	88

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Burrard Inlet water quality index	MV 3-year average: 86 2016: 87 2015: 87 2014: 84	90	90
Sturgeon Bank water quality index	MV 3-year average: 95 2016: 92 2015: 96 2014: 96	92	92

[1] Water Quality Index (WQI) ranking of water quality: Excellent (WQI value 95-100), Good (WQI value 80-94), Fair (WQI value 65-79), Marginal (WQI value 45-64), Poor (WQI value 0-44)

2020 Key actions

- Produce the 2019 GVS&DD Environmental Management & Quality Control Annual Report.
- Complete and submit 2019 National Pollution Release Inventory (NPRI) and Greenhouse Gas (GHG) Reports to Environment Canada and the BC Ministry of Environment, respectively.
- Complete a comparative ecological and human health risk assessment for twelve Metro Vancouver combined sewer overflow (CSO) locations.
- Complete characterization of the collection system at key manholes in the Vancouver Sewerage Area to establish baseline concentrations of selected contaminants of emerging concern for the Source Control and Biosolids Management Programs.
- Initiate mass balance calculations for selected contaminants of emerging concern for the Northwest Langley Wastewater Treatment Plant (WWTP).
- Implement the 2020 portion of the groundwater monitoring program at Lions Gate WWTP and around the sludge lagoons and biosloids land-drying area at Iona Island WWTP as part of the plant upgrades.
- Develop a three-dimensional hydrodynamic model for the Strait of Georgia to improve accuracy of regulatory reporting of the liquid waste system environmental performance.
- Complete the requirements from Canadian Association for Laboratory Accreditation (CALA) bi-annual assessment and accreditation carried out in November 2019.
- Obtain CALA accreditation for analysis of selected pharmaceutical compounds in wastewater.

LIQUID WASTE SERVICES
Management Systems and Utility Services

Description of services

Liquid Waste Services provides wastewater collection and treatment services to the region through the Liquid Waste function under the authority of the Greater Vancouver Sewerage and Drainage District (GVS&DD). The Management Systems and Utility Services division is responsible for the following Liquid Waste Services functions: business and financial planning and management; capital budget planning; asset management; performance management; safety management; research and opportunity projects; residuals beneficial use management; energy management; the Technical Knowledge Management Program (TTAP); and the Annacis Research Centre.

Strategic directions and high level goals supported

Board Strategic Plan

- Enhance the management of the liquid waste system with a commitment to innovative approaches to protect the health of the public and the environment.
- Ensure the long-term resilience of the regional sewage and drainage system to withstand natural hazards, climate change and other significant disruptions.
- Develop and implement financial plans and policies that reflect a commitment to sound financial management and long-term planning, in consideration of current and future ratepayers.
- Strengthen awareness and engagement with the public, members, other orders of government, and key stakeholders on a range of initiatives that will ensure that the regional liquid waste system protects public health and the environment, now and into the future.

Integrated Liquid Waste and Resource Management Plan

- Goal 1 - Protect public health and the environment
- Goal 2 - Use liquid waste as a resource
- Goal 3 - Effective, affordable and collaborative management

Performance indicators

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Percent of biosolids beneficially used	MV 3-year average: 92.9% 2018: 97.9% 2017: 98.0% 2016: 82.7%	97%	97%
Percentage of Biosolids beneficially used in Metro Vancouver Region	MV 3-year average: 17.2% 2018: 18.1% 2017: 24.6% 2016: 8.8%	15%	17%

Indicator	Historical and/or industry benchmark	Current performance	2020 performance objective
Research Effort (% of Operating Budget)	MV 3-year average: 1.29% 2018: 1.56% 2017: 1.25% 2016: 1.07%	1.42%	0.83%
Energy Savings Realized (kWh/y)	MV 3-year average: 796,509 2018: 607,407 2017: 510,121 2016: 1,272,000	600,000	600,000

2020 Key actions

- Identify and analyze alternate models for single sewage area allocation.
- Continue decommissioning Iona Island WWTP sludge lagoons and removing stockpiled biosolids and grit dump material.
- Update Biosolids Management Plan Framework.
- Continue development of Asset Management program in alignment with the Asset Management for Liquid Waste Services Policy, including asset assessment plans, facility-level risk assessments and asset management plans.
- Seek Board approval and apply for CleanBC grant funding for Lulu Island WWTP effluent heat recovery project.
- Complete Fraser Sewerage Area Integrated Resource Recovery study, as required by Integrated Liquid Waste and Resource Management Plan.
- Establish Board Reclaimed Water Policy for water reclaimed from wastewater treatment plants
- Initiate action on Liquid Waste Climate Action Plan by establishing monitoring studies for fugitive methane, N2O, and other greenhouse gas emissions sources as appropriate.
- Continue Sustainability Innovation Fund projects: Microwave-enhanced Sludge Destruction, Optimization of Anaerobic Digestion through Genomic Analysis, Sludge-based Activated Carbon, and Hydrothermal Processing Technology Pilot.
- Continue to support projects at the Annacis Research Centre that are aimed at developing efficiency improvements to treatment processes and testing advanced aeration processes, and develop new projects to support objectives identified in the Liquid Waste Climate Action Plan.
- Implement revised development and maintenance model for Technical Knowledge Management program.

2020 to 2024 – WHAT'S HAPPENING

Below is a summary of the significant initiatives to be undertaken by Liquid Waste Services over the next 5 years.

Initiative	Description	Theme
2020		
Lulu Island WWTP Biogas Cleanup Project	Commencement of operation of biogas scrubbing system that will treat excess digester gas to generate green biomethane that will be sold to the natural gas utility.	Environmental Sustainability
Sapperton Pump Station	Commencement of operation of the new pump station at Sapperton Landing, which will have increased capacity to address growth in the Fraser Sewerage Area and reduce chronic Sanitary Sewer Overflows at the Braid Street Outfall.	Regional Growth
Highbury Interceptor Air Management Facility	Commencement of operation of system to clean foul air generated in the Highbury Interceptor to reduce corrosion and odour generation.	System Stewardship
North Shore WWTP	Construction underway for the new plant.	Regulatory and Legislative Environment
Iona Island WWTP Secondary Upgrade	Complete the scope definition, cost estimate and indicative design for the new Iona Island Secondary WWTP.	Regulatory and Legislative Environment
2021		
Integrated Liquid Waste and Resource Management Plan	Update the Integrated Liquid Waste and Resource Management Plan. The Plan was approved in 2011.	Regulatory and Legislative Environment
Liquid Waste Services Comprehensive Long-Range Plan	Commence work on Comprehensive Plan for Liquid Waste Services, identifying infrastructure needs over the next 100 years.	Environmental Sustainability
Annacis Island WWTP Hydrothermal Processing Demonstration Facility	Commencement of operation of the facility demonstration facility and initial production of biocrude oil.	Environmental Sustainability
Iona Island WWTP Biosolids Dewatering Facility	Commence mechanical dewatering of digester sludge to allow the completion of decommissioning of the existing sludge lagoons and sludge drying beds in preparation for the construction of the Iona Island secondary treatment plant.	Regulatory and Legislative Environment
North Shore WWTP Conveyance Project	Construction of the First Narrows Pump Station and conveyance piping complete.	Regulatory and Legislative Environment
South Surrey Interceptor	Completion of Construction of the South Surrey Interceptor – Johnson Road Section, the last part of the system to be twinned.	Regional Growth

Initiative	Description	Theme
Expansion of accreditation of the LWS Chemistry Laboratory to include selected contaminants of emerging concern	On-site assessment to verify that laboratory operations adhere to ISO and Canadian national standards, to provide Certification of Accreditation as assurance on the quality and competence of laboratory results.	Environmental Sustainability
2022		
Iona Island WWTP Biosolids Stockpile Removal	Completion of the removal of all biosolids stockpiles including sludge lagoons in preparation for the construction of the secondary treatment plant.	Regulatory and Legislative Environment
Sanitary Storage Overflow (SSO) Tanks	Completion of construction and commencement of operation of the Golden Ears and North Surrey Interceptor SSO tanks to manage excess Inflow and Infiltration entering the system upstream of the trunk sewers.	Environmental Sustainability
Gilbert Trunk Sewer	Completion of the twinning of the Gilbert Trunk Sewer to improve system reliability and resiliency.	System Stewardship
Annacis Island WWTP Stage 5 Expansion	Completion of construction of Phase 1 (Primary Sedimentation Tanks, Solids Contact Tanks and Secondary Clarifiers) and commencement of operation.	Regional Growth
2023		
Iona Island WWTP Secondary Upgrade	First release of construction tenders for Iona Island WWTP Upgrade.	Regulatory and Legislative Environment
Burnaby Lake North Interceptor	Completion of construction of the Burnaby Lake North Interceptor – Winston Road Section.	Regional Growth
Annacis Island WWTP Trickling Filters	Completion of replacement of media, distributor arms and foul air ducting.	System Stewardship
Northwest Langley WWTP Projects	Completion of construction of Golden Ears Forcemain and river crossing.	Regional Growth
2024		
Annacis Island WWTP Outfall System	Completion of construction of the Outfall System.	Regional Growth
Northwest Langley WWTP Projects	Completion of ground improvements and detailed design for Northwest Langley WWTP.	Regional Growth
North Surrey Interceptor Odour Control	Completion of construction of odor control system.	System Stewardship

ATTACHMENT 5

METRO VANCOUVER DISTRICTS
2020-2024 PROJECTED RESERVES - LIQUID WASTE SERVICES

OPERATING RESERVES

	2019 ENDING BALANCE	2020 OPENING BALANCE	CONTRIBUTION	WITHDRAWALS	INTEREST	2020 ENDING BALANCE	2021 ENDING BALANCE	2022 ENDING BALANCE	2023 ENDING BALANCE	2024 ENDING BALANCE
Liquid Waste Services	$ 16,537,336	$ 16,537,336	$ 785,607	$ -	$ 342,023	$ 17,664,965	$ 18,301,410	$ 19,438,155	$ 20,120,275	$ 20,984,463

DISCRETIONARY RESERVES

	2019 ENDING BALANCE	2020 OPENING BALANCE	CONTRIBUTION	WITHDRAWALS	INTEREST	2020 ENDING BALANCE	2021 ENDING BALANCE	2022 ENDING BALANCE	2023 ENDING BALANCE	2024 ENDING BALANCE
Liquid Waste Services										
Biosolids Inventory Reserve	$ 15,755,598	$ 15,755,598	$ 12,748,967	$ (17,500,900)	$ 267,593	$ 11,271,258	$ 6,416,596	$ 3,222,199	$ 740,986	$ 755,806
Liquid Waste General Debt Reserve Fund	584,913	584,913	-	-	11,698	596,611	608,543	620,714	633,129	645,791
Lions Gate Contingency	971,157	971,157	-	-	19,423	990,580	1,010,391	1,030,599	1,051,211	1,072,235
Drainage General Reserve	5,175,408	5,175,408	-	(115,000)	102,358	5,162,766	5,240,771	5,320,337	5,401,493	5,484,273

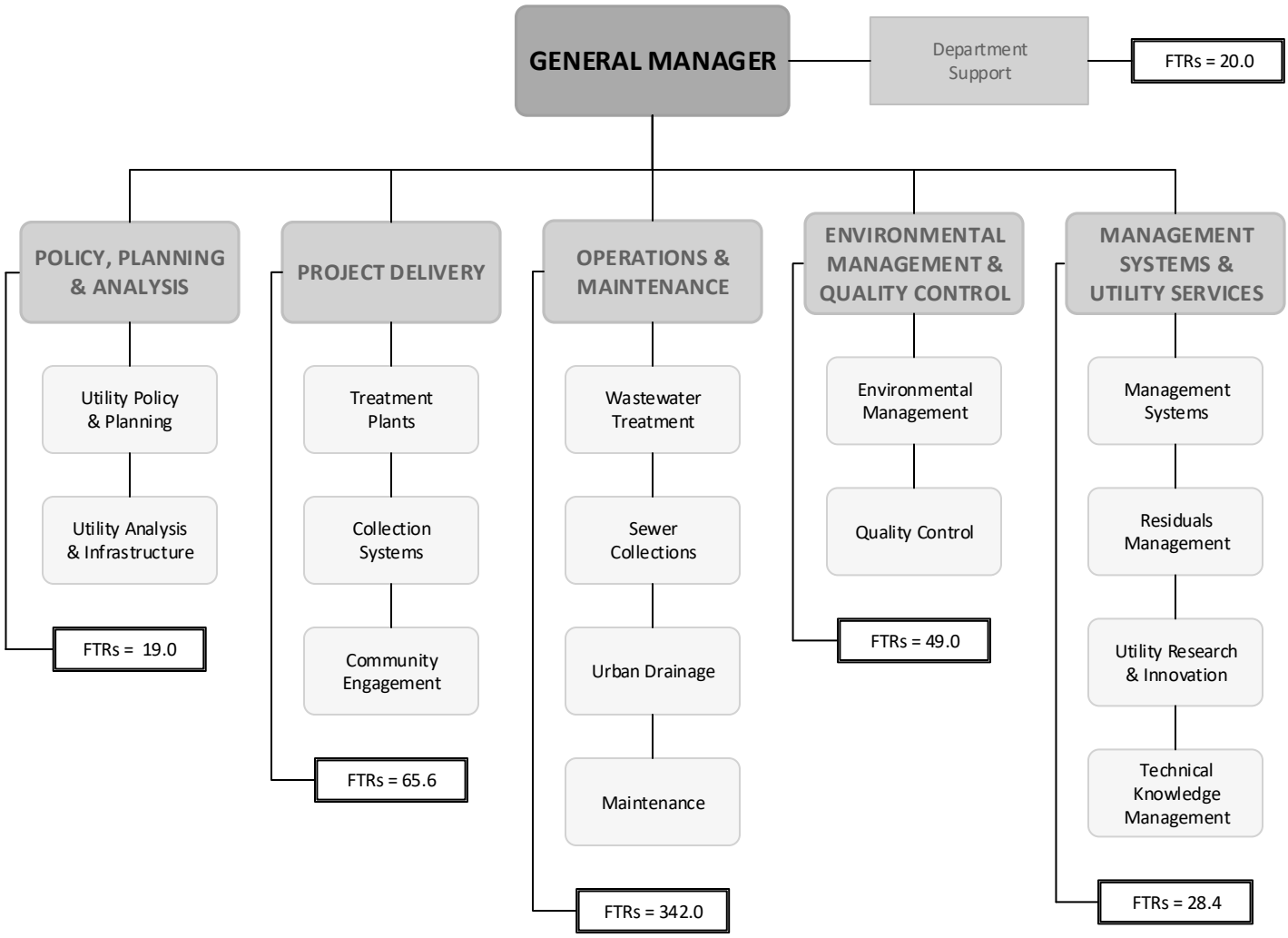
STATUTORY RESERVES

	2019 ENDING BALANCE	2020 OPENING BALANCE	CONTRIBUTION	WITHDRAWALS	INTEREST	2020 ENDING BALANCE	2021 ENDING BALANCE	2022 ENDING BALANCE	2023 ENDING BALANCE	2024 ENDING BALANCE
Liquid Waste Services										
Liquid Waste Laboratory Equipment Reserve	$ 683,420	$ 683,420	$ 99,854	$ (150,000)	$ 13,167	$ 646,440	$ 762,340	$ 882,720	$ 1,007,679	$ 1,135,854
Liquid Waste Sustainability Innovation Fund Reserve	16,125,078	16,125,078	1,127,000	(555,000)	328,222	17,025,300	18,236,426	19,582,874	21,112,802	22,673,328

Liquid Waste Services

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

2019



Liquid Waste Services
2019 Total FTRs = 525.0
2020 Proposed FTRs = 533.0

30044487
October 10, 2019

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Board of Directors

From: Carol Mason, Commissioner/Chief Administrative Officer
Dean Rear, Acting General Manager, Financial Services/CFO

Date: October 15, 2019 Meeting Date: October 23, 2019

Subject: **Proposed 2020 Metro Vancouver Position Requests**

Provided to the Board below, is additional information regarding the rationale for proposed new permanent positions to be considered as part of the 2020 Metro Vancouver Budget process.

WATER SERVICES:

Senior Project Engineer – Engineering and Construction

- This position is required to support projects that will provide the ability to deliver drinking water in the event of a prolonged power outage.
- Key facilities and projects include:
  - Westburnco Pump Station Back-Up Power
  - Barnston/Maple Ridge Pump Station Back-Up Power
  - CWTP Ozone Back-Up Power
  - Rechlorination Station Back-up Power
- Other activities will include ongoing treatment related projects at the SCFP and CWTP.

Senior Project Engineer – Operations and Maintenance

- The new Senior Project Engineer will be dedicated to O&M Asset Management with duties that will include:
  - Analyzing Level 1 asset condition information and determine the need for further more detailed Level 2 assessments.
  - Analyzing the data collected from Level 2 assessments to determine cost-effective repair or replacement strategies.
  - Managing external consultants and contractors performing Level 2 condition assessments.
  - Optimizing current work processes to promote capture of asset condition information during regular operations and maintenance activities.
  - Developing and maintaining an inventory of WS building structures for condition assessment and long term budget planning.

Engineering Technician II – Operations and Maintenance

- This proposed new position will provide a technical resource to focus on meeting new Provincial and Federal regulations which require that a written report be submitted by the "responsible person" within 30 calendar days when a spill to the environment occurs. This position will manage these reports including the following duties:
  - Preparing the written report and manage the review / approval process for each report prior to final submittal (both End-of-Spill and Updates to Minister reports).
  - Completing and submitting all reports in a timely manner to ensure Water Services continues to meet regulatory obligations.

- Conducting workshop sessions and collaborating with subject matter experts from Water Services Divisions that are focused on the environmental review and Qualified Environmental Professional reports.

Utility System Operator II - Operations and Maintenance

- This position is proposed to support the increased workload related to Asset Management Level 1 and Level 2 inspections and facility condition inspections for transmission infrastructure. Duties will include:
  - Performing Level 1 assessments involving non-intrusive visual assessments (i.e. water main and chamber maintenance).
  - Supporting Engineering Specialist Level 2 assessment planning duties such as system isolation planning, lockout of equipment and systems, and confined space entries related to these inspections.
  - Supporting ongoing work for field operations including commissioning of new capital works, reservoir cleaning and line maintenance.

Senior Project Engineer - Management Systems

- Based on the volume and timelines of work expected, WS Management Systems is requesting one Senior Project Engineer to support implementation of the Asset Management Program and execution of the work plan. This new position will have the following responsibilities:
  - Writing and maintaining Facility Level Asset Management Plans
  - Maintaining asset inventory in the Asset Registry
  - Facilitating criticality and risk assessments for horizontal and vertical assets
  - Maintaining a linear risk assessment tool

LIQUID WASTE

Senior Project Engineer - Management Systems

- Based on the volume and timelines of work expected, one Senior Project Engineer is requested to help implement the Asset Management Program and execute the work plan. This new position will have the following responsibilities:
  - Writing and maintaining Facility Level Asset Management Plans
  - Maintaining asset inventory in the Asset Registry
  - Facilitating criticality and risk assessments for horizontal and vertical assets
  - Maintaining a linear risk assessment tool

Project Engineer - North Shore WWTP/ Iona WWTP

- A Project Engineer is requested under Project Delivery for the North Shore and Iona Wastewater Treatments Plant projects. Key responsibilities will include:
  - Providing technical support in responding to submissions from contractors and consultants.
  - Active participation in various project meetings and follow up actions.
  - Assisting with review of project submittals and coordination of input from various MV stakeholders.
  - Providing support to Senior Project Engineers on all three components (Pump Station/ Conveyance, WWTP and Decommissioning).

Project Engineer - Northwest Langley WWTP

- A Project Engineer is requested under Project Delivery for the Northwest Langley Wastewater Treatment Plant project. Key responsibilities will include:
  - Providing technical support in responding to submissions from contractors and consultants.
  - Active participation in various project meetings and follow up actions.
  - Assisting with review of project submittals and coordination of input from various MV stakeholders.
  - Providing support to Senior Project Engineers on all three components (Pump Station/ Conveyance, WWTP and Decommissioning).

Senior Project Engineer - **Operations and Maintenance**

- A Senior Project Engineer is requested for O & M that will support a wide variety of operational activities including:
  - Small capital projects for operations improvements
  - Odour control monitoring/management
  - Execution and management of service contracts for chemicals
  - Janitorial services and plant process improvement projects such as water conservation efforts at Iona
- This position will also have the following responsibilities:
  - Providing operational engineering technical support for all wastewater capital projects currently underway in LWS including project definition, detailed design, construction and startup commissioning services.
  - Providing input into benchmarking and performance monitoring activities.

Project Engineer - Operations and Maintenance

- A Senior Project Engineer is requested for O & M that will provide ongoing mechanical engineering technical support for new and existing LWS and WS assets. Responsibilities include:
  - Provision of technical maintenance related start-up and commissioning services for new assets including maintenance program development.
  - Overseeing predictive maintenance activities and programs.
  - Provide troubling shooting, failure analysis and maintenance task analysis across both utilities.

Engineering Technician I - Operations and Maintenance

- An Engineering Technician I position is proposed for O&M services. Key responsibilities will include:
  - Providing asset data collection services including confirming inspection technologies
  - Procuring and managing contracted assessment services.
  - Coordination and management of storage of assessment data and identifying priority infrastructure repair, rehabilitation and replacement work tasks.
  - Managing the assignment of identified repair, rehabilitation and replacement work activities to appropriate groups for execution and monitoring progress of these activities.

Clerk Stenographer – Project Delivery

- The position is required to provide administrative support for the large infrastructure projects in Project Delivery (PD) including the North Shore Wastewater Treatment Plant Project, the Iona WWTP project and the Northwest Langley WWTP project.
- A dedicated position will provide consistency and administrative expertise to support the management for all major projects.

Trades Foreman – Operations and Maintenance

- A Maintenance Foreman is proposed to oversee O&M activities at the Seymour Capilano Filtration Plant (SCFP) and Coquitlam Water Treatment Plant (CWTP). The position is classified under Liquid Waste Services as a "shared service" with Water Services.
- This position will provide supervision, technical expertise for maintenance work, assistance with planning, scheduling, prioritizing, and coordinating of work and ensure proper work practices and safety procedures are followed.
- Current KPI's are indicating maintenance levels at SCFP are back-logged in the mechanical, electrical and instrumentation areas.
- The position will help reduce the current back-log to the KPI target of <50 days for each trade and includes the following specific responsibilities:
    - Review and close completed work orders
    - Assist SCFP Maintenance Supervisor with safety audits and work plan execution
    - Provide technical, planning and scheduling support to the trades staff
    - Develop, implement and enforce safe work procedures

HOUSING SERVICES – TENANT PROGRAMS

Community Development Coordinator

- This position is proposed to support the 30 Tenant Associations in the Metro Vancouver Housing Corporation (MVHC) portfolio. Key responsibilities include:
    - Expanding and enhancing tenant program offerings
    - Creating capacity to support new Tenant Associations
    - Assisting in the redevelopment of existing MVHC sites, supporting the tenant relocation process and providing property management services for municipalities in new developments with rental requirements.

REGIONAL PLANNING

Policy Coordinator (Interagency Projects)

- A Policy Coordinator position is proposed as a centralized dedicated resource to ensure a consistent approach to dealing with the increasing volume of external projects that have impacts on Metro Vancouver assets, operational interests and legislated responsibilities.
- The position will ensure a coordinated response among Metro Vancouver entities on projects being undertaken by external agencies such as Translink, Port of Vancouver, and the Ministry of Transportation and Infrastructure.

BOARD AND INFORMATION SERVICES

Legislative Services Analyst

- This position is proposed to provide additional, dedicated support in responding to the increasing volumes, complexities of new technology, and requirements under the *Freedom of Information and Protection of Privacy Act*.
- FOI requests have increased and become more complex, and privacy requirements more stringent. These areas have been increasing year over year:
    - FOI requests have increased from 65 in 2014 to 90 in 2019
    - Privacy matters have increased from 23 in 2014 to 62 in 2019
- Specific activities will include:
    - Responses to FOI requests
    - Preparations for privacy compliance i.e. Privacy Impact Assessments (PIA's) etc.

FINANCIAL SERVICES

Financial Systems Analyst

- An additional Financial System Analyst is requested as a technical resource to effectively design, configure, test and implement ongoing changes and improvements to the Finance related enterprise wide systems. Responsibilities will also include:
    - Providing ongoing user support
    - Report development
    - User training for new users and upgrades
    - Troubleshooting for all enterprise wide financial systems

33159485

To: Liquid Waste Committee

From: Peter Navratil, General Manager of Liquid Waste Services
Dean Rear, Acting GM Financial Services/CFO, Finance and Administration

Date: October 10, 2019 Meeting Date: October 17, 2019

Subject: **Proposed Amendments to GVS&DD Cost Apportionment Bylaw No. 283, 2014 – Village of Anmore**

RECOMMENDATION

That the GVS&DD Board give first, second and third reading to Greater Vancouver Sewerage and Drainage District's Cost Apportionment Amending Bylaw No. 332, 2019.

PURPOSE

To propose amendments to the GVS&DD Cost Apportionment Bylaw (see Attachment) that would come into effect upon membership of the Village of Anmore in the GVS&DD by proposing that a connection fee be remitted by the Village of Anmore for all residential dwelling units initially added to the Fraser Sewerage Area and a conditional waiver of the growth charge which would remain in effect until such time that the Village of Anmore requests additional amendments to the Fraser Sewerage Area.

BACKGROUND

At the March 29, 2019 GVS&DD Board meeting, the Board received the report titled "Support for the Village of Anmore's Membership in the Greater Vancouver Sewerage and Drainage District" and endorsed the following motion:

That the GVS&DD Board

a) support the Village of Anmore's application to the Province of British Columbia for membership in the Greater Vancouver Sewerage and Drainage District (GVS&DD), and

b) agree to provide sewerage services to the Village of Anmore subject to the following conditions:

i. that the Province grants GVS&DD membership to the Village of Anmore;

ii. that the Metro Vancouver Regional District Board resolves that the Village of Anmore's request for regional sewerage services meets the provisions of Metro 2040: Shaping Our Future;

iii. that the existing agreement between the Village of Anmore, the City of Port Moody and the GVS&DD to service Eagle Mountain Middle School be terminated and the Village of Anmore enter into a servicing agreement with the City of Port Moody to convey Anmore wastewater through Port Moody Infrastructure; and

iv. that an appropriate flow-based billing protocol be developed and implemented to facilitate annual GVS&DD servicing levies.

At their June 13, 2019 meeting, the Liquid Waste Committee received a delegation from the Village of Anmore requesting that the existing service agreement with the Eagle Mountain Middle School be extended to include residential properties at the Anmore Green Estates.

At the July 26, 2019 meeting the GVS&DD Board received the report titled "Regional Sewerage Services – Village of Anmore" and adopted the following:

> *That the GVS&DD Board direct staff to review the GVS&DD Cost Apportionment Bylaw No. 283, 2014 with respect to how growth charges are calculated and apportioned to Anmore.*

This report responds to the Liquid Waste Committee's request for further information on the request for extension of the sewerage system to service properties in the Village of Anmore and recommends parameters for amendments to the *GVS&DD Cost Apportionment Bylaw No. 283, 2014.*

GROWTH CHARGE CALCULATION – COST APPORTIONMENT BYLAW

Under the GVS&DD Cost Apportionment Bylaw, the annual levy consists of three streams of costs:

1. Operating Expenditures – costs to operate the sewer facilities within the Sewerage Area. (flow based allocation)
2. Non-Growth Capital Expenditures – costs to replace aging existing infrastructure (flow based allocation)
3. Growth Capital Expenditures (charge for growth) – the net costs, after the application of Development Cost Charges (DCC), to expand facilities to accommodate growth within the Sewerage Area (costs allocated based on 5-year average population growth)

The calculation of the charge for growth is based on a member's 5-year average population growth (the entire population of the municipality - not the population within the sewerage area). Specifically, the population information is derived from the population data for municipalities published by the Government of British Columbia.

For existing GVS&DD member municipalities the growth charge formula is fair and equitable. Of the 18 jurisdictions to which growth charges are allocated, ten have almost their entire municipal population within the serviced sewerage area boundary. The remaining eight jurisdictions have a relatively small portion of their population outside of the sewerage area boundary and serviced by on-site systems. These municipalities all have the majority of their population base connected to the GVS&DD sewerage system and the majority of their population growth is occurring within their sewerage area boundaries. The GVS&DD allocated growth charges are distributed by each member municipality to a large growing population base within the sewerage areas.

Village of Anmore Projected Growth Anomaly

The anomaly that exists when the Fraser Sewerage Area cost apportionment formula is applied to the Village of Anmore is that their initial serviced population will only include about 125 residents in Anmore Green Estates - a 51-unit townhouse complex with a failing on-site treatment system. The majority of the Anmore population, currently about 2500 residents, will be outside the initial sewerage area boundary in rural Anmore. These residents are each required to install, operate and maintain their own on-site wastewater systems at their own cost. Population growth in Anmore is projected to continue in the rural area using on-site systems and will not be connected to the

GVS&DD sewer system. Unlike the other GVS&DD members where the growth is occurring within the sewerage area, the growth in Anmore is occurring in the rural area outside the proposed GVS&DD sewerage area boundary.

Proposed Cost Apportionment Bylaw Waiver and Connection Fee

Given the anomaly of no anticipated growth within the boundaries of the Fraser Sewerage Area for that portion of the sewerage area defined within the Village of Anmore, it is proposed to initially waive the growth charge for the Village of Anmore once they become a member of the GVS&DD. Instead the Village would be assessed a one-time connection fee for the initial connection to the GVS&DD system. This connection fee would be based on the historical value of the Fraser Sewerage Area liquid waste system as well as investments made in the system in 2019 and 2020.

The first GVS&DD charges levied to the Village of Anmore would likely occur in 2021, hence the connection fee is based on the total investment to the end of 2020. A connection fee of $4907 would be applicable to each residential dwelling unit (Each individual strata unit in the case of Anmore Green Estates) joining the Fraser Sewerage Area. The Village of Anmore would be invoiced the total connection fee for each dwelling unit being added to the Fraser Sewerage Area.

Application of Connection Fees and Development Cost Charges

If additional residential or strata dwelling units are created within that portion of the Fraser Sewerage Area that includes the Village of Anmore that do not trigger a FSA boundary amendment, additional connection fees will be applied for each new dwelling unit added to the sewerage area. In addition, DCC's may apply if additional density pursuant to the provisions of the GVS&DD DCC Bylaw.

Future Amendment to the Fraser Sewerage Area Boundary

Should there be future amendments requested by the Village of Anmore to the Fraser Sewerage Area boundary to include lands beyond Anmore Green Estates, or to change the property footprints within Anmore Green Estates, the waiver provisions for the annual charge for growth and the connection fee would no longer apply. The annual growth charge set out in the GVS&DD cost apportionment bylaw would be fully applied and assessed to the Village of Anmore.

ALTERNATIVES

1. That the GVS&DD Board give first, second and third reading to Greater Vancouver Sewerage and Drainage District's Cost Apportionment Amending Bylaw No. 332, 2019.

2. That the GVS&DD Board receive for information the report dated October 3, 2019 titled "Regional Sewerage Services Growth Charge – Village of Anmore" and provide alternate direction.

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, the Cost Apportionment Amending Bylaw will be given three readings but will not be adopted. This will enable the Village of Anmore to determine the total cost of membership within the GVS&DD. Individual dwelling units within Anmore Green Estates would each be assessed a connection fee of $4907 per residential strata unit payable by the Village of Anmore within 120 days of bylaw adoption. The amending bylaw would not be adopted until after the Village of Anmore has been added as a member to the GVS&DD.

Eagle Mountain Middle School previously paid an amount equivalent to a DCC fee when it was connected in 2014 and therefore, a connection charge will not apply to the school. If additional dwelling units or density is created within the boundaries of the Fraser Sewerage Area, additional connection fees will apply and DCC's may apply subject to the provisions of the GVS&DD DCC Bylaw.

Under Alternative 2, the Board may wish to provide alternate direction with respect to the proposed bylaw amendment which includes a waiver to the regional growth charge and the proposed connection fee approach.

SUMMARY / CONCLUSION

At the July 26, 2019 meeting the GVS&DD Board directed staff to review the *GVS&DD Cost Apportionment Bylaw No. 283, 2014* with respect to how growth charges are calculated and apportioned to Anmore.

Staff have reviewed the growth charge formula and identified an anomaly that exists when the formula is applied to Anmore should they join the GVS&DD. The initial serviced population will only include about 125 residents in Anmore Green Estates - a 51-unit townhouse complex with a failing on-site treatment system. The majority of the Anmore population, currently about 2500 residents, will be outside the initial sewerage area boundary in rural Anmore. Unlike the other GVS&DD members where the growth is occurring within the sewerage area and the growth charge is proportionately applied, the growth in Anmore is occurring in the rural area outside the proposed GVS&DD sewerage area boundary.

To address the growth charge anomaly, it is proposed that the Board consider giving 3 readings to an amending bylaw that would introduce a conditional waiver of the growth charge to the Village of Anmore, along with a one-time connection fee specific to the connection of individual residential strata units in Anmore Green Estates. Should the Village of Anmore apply for an expansion of the Fraser Sewerage Area in the future, the waiver would no longer apply and the Village would be subject to growth charges in the same manner as other GVS&DD members within the Fraser Sewerage Area.

The proposed approach will provide certainty to the residents of Anmore Green Estates and to the Village of Anmore with respect to the anticipated cost of membership within the GVS&DD. Connection to the GVS&DD system will resolve outstanding environmental issues associated with the failing septic system and will enable the Village of Anmore to avoid the requirement for completing its own Liquid Waste Management Plan. On this basis staff recommend approval of alternative one.

Attachment

1. Greater Vancouver Sewerage and Drainage District Cost Apportionment Amending Bylaw No. 332, 2019

32206804

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
BYLAW NO. 332, 2019
A Bylaw to Amend Greater Vancouver Sewerage and Drainage District Cost Apportionment Bylaw No. 283, 2014 to Allocate Charges to the Village of Anmore

WHEREAS:

A. the Board of Directors of the Greater Vancouver Sewerage and Drainage District adopted "Greater Vancouver Sewerage and Drainage District Cost Apportionment Bylaw No. 283, 2014" on March 28th, 2014;

B. "Greater Vancouver Sewerage and Drainage District Cost Apportionment Bylaw No. 283, 2014" sets out the method of apportioning annual sewerage and drainage expenditures among the member municipalities, as permitted by section 55(4) of the Greater Vancouver Sewerage and Drainage District Act; and

C. the Board of Directors of the Greater Vancouver Sewerage and Drainage District wishes to amend the "Greater Vancouver Sewerage and Drainage District Cost Apportionment Bylaw No. 283, 2014".

NOW THEREFORE the Board of the Greater Vancouver Sewerage and Drainage District enacts as follows:

Citation

1. This Bylaw may be cited as the "Greater Vancouver Sewerage and Drainage District Cost Apportionment Amending Bylaw No. 332, 2019".

Amendment of Bylaw

2. "Greater Vancouver Sewerage and Drainage District Cost Apportionment Bylaw No. 283, 2014" is hereby amended as follows:

    (a) the definition "**Village of Anmore Flow**" is added to the definitions in section 1 in alphabetical order as follows:

    "**Village of Anmore Flow**" in respect of any 12-month period means 80 percent of the average daily flow of water discharged from the Village of Anmore, as determined by the Corporation, and based upon:

        (i) water metering at Anmore Green Estates and Eagle Mountain Middle School, and

        (ii) such other data deemed relevant by the Corporation for making a determination of such average daily flow;

2. Section 4.8 is added as follows:

4.8 Special Apportionment for the Fraser Sewerage Area

(a) Despite section 4.5, for the Fraser Sewerage Area, the Corporation will not apportion to the Village of Anmore costs apportioned to the Fraser Sewerage Area under sections 4.2 and 4.3, except if the Fraser Sewerage Area boundary within the Village of Anmore is further extended to service sites beyond the existing building footprint at Anmore Green Estates or sites beyond the Fraser Sewerage Area boundary at Eagle Mountain Middle School, in which case the Corporation will, in accordance with section 4.5, further apportion to the Village of Anmore as a member municipality those costs apportioned to the Fraser Sewerage Area under sections 4.2 and 4.3.

3. Section 7.4 is deleted and replaced as follows:

7.4 Except as otherwise provided in this bylaw, the total of:

(a) the portion of the Regional Share apportioned to the Fraser Sewerage Area under section 6.1;

(b) the Sewerage Area Share apportioned to the Fraser Sewerage Area under section 6.2;

(c) the Tier I Non-Growth Component apportioned to the Fraser Sewerage Area under section 6.3; and

(d) all other costs apportioned to the Fraser Sewerage Area pursuant to section 9,

will, except for the amount apportioned under section 8A.1, be apportioned among the member municipalities of the Fraser Sewerage Area in the proportion that 100% of the Dry Weather Flow for each member municipality during the five year period ending June 30 of the previous year, less 100% of the Industrial Flows for each such member during the same period, bears to 100% of the Dry Weather Flow for the entire Fraser Sewerage Area, less 100% of the Industrial Flows for the entire Fraser Sewerage Area, during the same period.

4. Section 8A is added as follows:

8A. Special Apportionment for the Fraser Sewerage Area

8A.1 For the purposes of further apportioning costs apportioned to the Fraser Sewerage Area, under section 7.4:

(a) The amount to be apportioned to the Village of Anmore in respect of Anmore Green Estates and Eagle Mountain Middle School will be equal to that portion of the Tier I Non-Growth Component, Tier II Non-Growth Component and Tier III Non-Growth Component Costs apportioned to the Fraser Sewerage Area that are attributable to Village of Anmore Flow; and

(b) As of the date of adoption of this Bylaw, for each individual residential strata lot that exists or is created within the Village of Anmore in the Fraser Sewerage Area, Anmore must pay to the Corporation a connection fee equivalent to $4,907.00 per residential strata lot.

Read a first time this _____ day of _____, _____.

Read a second time this _____ day of _____, _____.

Read a third time this _____ day of _____, _____.

Passed and finally adopted this _____ day of _____, _____.

_____
Sav Dhaliwal, Chair

_____
Chris Plagnol, Corporate Officer

To: Liquid Waste Committee

From: Bryan Shoji, Director, Project Delivery, Liquid Waste Services

Date: October 10, 2019 Meeting Date: October 17, 2019

Subject: **Liquid Waste Services Capital Program Expenditure Update as at August 31, 2019**

RECOMMENDATION

That the Liquid Waste Committee receive for information the report dated October 10, 2019, titled "Liquid Waste Services Capital Program Expenditure Update as at August 31, 2019".

PURPOSE

To report on the status of the Liquid Waste Services' capital program and financial performance for the eighth month period ending August 31, 2019.

BACKGROUND

The Capital Expenditure reporting process as approved by the Board provides for regular status reports on capital expenditures with interim reports sent to the Water, Liquid Waste, Zero Waste, and Performance and Audit Committees in June/July and October/November, and a final year-end report to the Committees and the GVWD and GVS&DD Boards in April of each year.

This report is the second in a series of three reports for 2019 and looks at both the overall capital program for Liquid Waste Services with a multi-year view of capital projects and the actual capital spending for the 2019 fiscal year in terms of comparison to the annual budget.

2019 CAPITAL EXPENDITURES

Capital Program Funding

The capital spending for Liquid Waste Services is funded through the Liquid Waste Operating Budget by a combination of contribution to capital (pay-as-you-go funding) and debt service costs (principal and interest payments) which is generated annually from the regional ratepayers. As a result, the annual impact on the ratepayers is significantly less than the level of budgeted capital expenditures.

Any surplus resulting from a 2019 underspend will be used to directly fund capital in 2020 and avoid future borrowing.

Overall Capital Program

The overall capital program for Liquid Waste includes capital projects which require multiple years to complete. These projects are broken down into various phases such as project definition, pre-design, detailed design and construction. With the completion of each phase more information is learned for the appropriate costing of subsequent phases.

It is projected that the capital spending on all Liquid Waste capital projects completed in 2019 or ongoing at some point in 2019 will be under budget by $37.9 million, this is within 0.5% of budget.

Table 1 in Attachment 1 provides a summary of Liquid Waste capital expenditures for both ongoing and completed projects. Completed Projects include a summary of actual spending compared to the Board approved spending limits while the Ongoing Projects include a summary of projected spending to completion compared to Board approved spending limits. With the rare exception, projects tend to complete with actual spending below the approved limits predominantly due to savings on budgeted contingency amounts.

Attachment 2 provides the details behind the summary information including specific capital projects, summary financial information and notes are required. Attachment 3 provides additional project status information of some of the key projects included in Attachment 1 – Table 1.

2019 Capital Program Progress

The Metro Vancouver financial planning process included Board approval of both an annual Operating Budget (operations, contribution to capital and debt service) and an annual Capital Budget for the planned capital infrastructure projects. The annual Capital Budget comprises the projected spending for a list of capital projects either continuing or to be started within the calendar year.

In the first eight months of 2019, capital expenditures for Liquid Waste Services were $163.5 million compared to a prorated budget of $376.7 million. Projecting forward to year end, it is estimated that capital expenditures will be $384.1 million compared to a total capital budget of $564.8 million. This underspend projection is primarily due to delays with a single major project under construction and several projects in the pre-construction phases experiencing various delays.

Table 2 in Attachment 1 provides a summary of the 2019 actual capital spending compared to the Board approved Capital Budget.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

Capital expenditures are funded internally (pay as you go) and through debt financing. As capital expenditures are incurred, short term financing is secured and converted twice per year to long term debt through the Municipal Finance Authority. If capital expenditures are less than budgeted for the year, this surplus, per policy, will be used in future years to fund capital and avoid debt.

SUMMARY / CONCLUSION

This is the second in a series of three capital expenditure progress reports for 2019. Liquid Waste Services is projecting to be underspent for both ongoing and completed capital projects to August 31, 2019. Liquid Waste Services is projecting to underspend its annual Capital Budget by $180.7 million (32%). The variance is primarily due to construction delays with a major project and obtaining third party approvals in a timely manner.

Although the 2019 Liquid Waste Services Capital Budget is projecting a year-end underspend, the variance is a result of cash flow timing. It is projected that in aggregate, ongoing capital projects will be close to or less than the overall budget for that project. Any surplus resulting from a 2019 underspend will be used to directly fund capital in 2020 and avoid future borrowing.

Attachments

1. Liquid Waste Services Capital Expenditure Summary as at August 31, 2019
2. Detailed Capital Expenditure Summary – Liquid Waste Services
3. Liquid Waste Services Capital Project Status Information

32710147

Metro Vancouver

Capital Expenditure Summary
Liquid Waste Services
As at August 31, 2019

Table 1 – Ongoing and Completed Project Summary

	Total Projected to Completion	Total Budget	Projected Variance
Liquid Waste Services			
Ongoing	$ 6,691,036,000	$ 6,749,946,000	$ 58,910,000
Completed	41,664,000	20,609,000	(21,055,000)
Not Started	552,305,000	552,305,000	-
	$ 7,285,005,000	**$ 7,322,860,000**	**$ 37,855,000**

Table 2 – 2019 Capital Spending Summary

	2019 Budget	2019 Budget to August 31, 2019	Actual Expenditures to August 31, 2019
Liquid Waste Services			
Infrastructure Growth Capital	$ 225,350,000	$ 150,234,000	$ 108,107,073
Infrastructure Maintenance Capital	83,600,000	55,877,000	28,146,364
Infrastructure Resilience Capital	32,200,000	21,467,000	12,311,576
Infrastructure Upgrade – Secondary Treatment Capital	182,100,000	121,400,000	7,561,112
Infrastructure Upgrade Capital	32,000,000	21,331,000	6,038,570
Opportunity Capital	9,600,000	6,400,000	1,384,097
	$ 564,850,000	**$ 376,709,000**	**$ 163,548,791**

ATTACHMENT 2

Metro Vancouver
Liquid Waste Services Capital Expenditures Summary
As of August 31, 2019

Project	Project Location	Lifetime Total Project Budget	Lifetime Total Expenditures to Date	Lifetime Remaining Budget	Lifetime Projected Expenditures	Projected Remaining Budget	Percent Complete	Status	Project on Schedule?	Note	Comments
Infrastructure Growth Capital											
AIWWTP Site Construction Layout	Delta	600,000	37,933	562,067	600,000	-	6%	Ongoing	N		Slow start to earlier phase.
Albert Street Trunk Sewer	Port Moody	5,550,000	511,145	5,038,855	6,245,000	(695,000)	9%	Ongoing	N		Project costs for future work (Phase 2) are uncertain due to property and adjacent development issues.
Annacis Outfall System	Delta	378,000,000	47,530,765	330,469,235	378,000,000	-	13%	Ongoing	Y		
Annacis Stage 5 Expansion Phase 1 T1 & T2	Delta	243,500,000	226,882,253	16,617,747	243,500,000	-	93%	Ongoing	Y		
Annacis Stage 5 Expansion Phase 2	Delta	22,000,000	15,164,282	6,835,718	22,000,000	-	69%	Ongoing	Y		
Annacis Stage 5 Expansion Phase 2a	Delta	180,000,000	100,192,190	79,807,810	180,000,000	-	56%	Ongoing	Y		
Annacis Stage 5 Expansion Phase 2b	Delta	150,000,000	317,170	149,682,830	150,000,000	-	1%	Ongoing	Y		
Annacis Stage 5 Expansion Phase 2c	Delta	90,000,000	-	90,000,000	90,000,000	-	0%	Not Started	N		Construction anticipated to start in Q1 2020 due to site congestion
Burnaby Lake North Interceptor Cariboo Section	Burnaby	41,000,000	-	41,000,000	41,000,000	-	0%	Not Started	N		Delayed to prioritize the Winston (upstream) section.
Burnaby Lake North Interceptor Winston Section	Burnaby	116,950,000	3,138,183	113,811,817	116,950,000	-	3%	Ongoing	Y		
Burnaby South Slope Interceptor Main Branch	Burnaby	9,500,000	-	9,500,000	9,500,000	-	0%	Not Started	N		Scheduled to start in 2020
Burnaby South Slope Interceptor West Branch Extension	Burnaby	13,200,000	-	13,200,000	13,200,000	-	0%	Not Started	N		Scheduled to start in 2022
Cloverdale PS Upgrade	Surrey	31,100,000	176,586	30,923,414	31,100,000	-	1%	Ongoing	Y		
Cloverdale Trunk Sewer Upgrade	Surrey	29,000,000	-	29,000,000	29,000,000	-	0%	Not Started	N		Scheduled to start in 2020
Collingwood Trunk Sewer	Vancouver	5,415,000	5,350,745	64,255	5,615,000	(200,000)	99%	Ongoing	Y		Final restoration resulted in budget exceedance.
Glenbrook Combined Trunk Kingsway Sanitary Section	Burnaby	3,000,000	146,962	2,853,038	3,000,000	-	5%	Ongoing	Y		
Golden Ears Forcemain and River Crossing	Maple Ridge	86,000,000	3,544,726	82,455,274	86,000,000	-	4%	Ongoing	Y		
Golden Ears Pump Station	Maple Ridge	50,200,000	3,049,182	47,150,818	50,200,000	-	6%	Ongoing	Y		
Golden Ears SSO Storage	Maple Ridge	51,500,000	3,756,202	47,743,798	51,500,000	-	7%	Ongoing	Y		
Hastings Sanitary Trunk Sewer	Burnaby	15,031,000	6,429,241	8,601,759	14,031,000	1,000,000	43%	Ongoing	Y	(1)(2)	
Hastings Sanitary Trunk Sewer No. 2	Burnaby	20,000,000	4,287,321	15,712,679	13,000,000	7,000,000	21%	Ongoing	Y	(1)(2)	
Hastings-Cassiar Intake Connection	Vancouver	750,000	70,156	679,844	2,350,000	(1,600,000)	9%	Ongoing	N		Project delayed to confirm scope and consider improved functionality. Additional budget proposed for 2020.
Lozells Sanitary Trunk Golf Course Section	Burnaby	27,650,000	-	27,650,000	27,650,000	-	0%	Not Started	N	(3)(4)	Project delayed to confirm scope of replacement and potential alternate alignments.
Lulu Island WWTP Digester No 3	Richmond	53,300,000	45,583	53,254,417	53,300,000	-	1%	Ongoing	N	(4)	Waiting for completion of regional digester capacity study
Marshend Pump Station Capacity Upgrade	Burnaby	10,025,000	454,296	9,570,704	10,025,000	-	5%	Ongoing	Y		
NLWWTP Clarifiers	Langley Township	64,300,000	54,035,864	10,264,136	54,655,000	9,645,000	99%	Ongoing	Y	(2)	Under budget due to competitive construction tendering.
NLWWTP Ground Improvements	Langley Township	83,000,000	17,579,235	65,420,765	83,000,000	-	21%	Ongoing	Y		
NLWWTP Outfall	Langley Township	159,000,000	-	159,000,000	159,000,000	-	0%	Not Started	N		Scheduled to start in 2020
NLWWTP Property Purchase	Langley Township	12,000,000	-	12,000,000	12,000,000	-	0%	Not Started	N		Scheduled to start in 2021
NLWWTP Stage 1	Langley Township	889,000,000	1,904,104	887,095,897	889,000,000	-	0%	Ongoing	Y		
North Road Trunk Sewer	Coquitlam	7,675,000	746,537	6,928,463	11,675,000	(4,000,000)	10%	Ongoing	Y		Project budget increase requested for 2020. Budget exceeded due to higher tender prices than expected and changes in original concept.
North Road Trunk Sewer Phase 2	Coquitlam	3,938,000	633,732	3,304,268	3,938,000	-	16%	Ongoing	Y		
North Vancouver Interceptor - Lynn Branch Pre-build	Dist of North Van	3,950,000	285,111	3,664,889	3,950,000	-	7%	Ongoing	Y		
NSI Flow Management	Surrey	42,500,000	3,693,363	38,806,637	42,500,000	-	9%	Ongoing	N		Project is proceeding, but was delayed to improve scope definition and delivery method.
Port Moody PS Upgrade	Port Moody	9,755,000	381,824	9,373,176	9,755,000	-	4%	Ongoing	N		Project delayed to confirm scope
Port Moody South Interceptor Upgrade	Port Moody	3,450,000	-	3,450,000	3,450,000	-	0%	Not Started	N		Scheduled to start in 2020
Rosemary Heights Pressure Sewer Upgrade	Surrey	10,750,000	-	10,750,000	10,750,000	-	0%	Not Started	N		Scheduled to start in 2020
Sapperton Forcemain Pump Station Connections	New Westminster	10,000,000	9,916,507	83,493	10,000,000	-	100%	Completed	Y		
Sapperton Pump Station	New Westminster	82,003,000	55,392,959	26,610,041	73,003,000	9,000,000	68%	Ongoing	Y	(1)	
South Surrey Interceptor Johnston Section	Surrey	66,176,000	44,472,064	21,703,936	66,176,000	-	67%	Ongoing	Y		
Sperling PS Increase Pump Capacity	Burnaby	3,150,000	2,304,907	845,093	2,590,000	560,000	73%	Ongoing	Y	(2)	
SSI - King George Section - Odor Control Facility (OCF) and Grit Chamber	Surrey	19,500,000	7,094,217	12,405,783	19,500,000	-	36%	Ongoing	Y		Project is proceeding, but at a slower pace than expected due to contractor issues.
Surrey Central Valley Upgrade	Surrey	60,800,000	-	60,800,000	60,800,000	-	0%	Not Started	N		Scheduled to start in 2021.

Metro Vancouver
Liquid Waste Services Capital Expenditures Summary
As of August 31, 2019

Project	Project Location	Lifetime Total Project Budget	Lifetime Total Expenditures to Date	Lifetime Remaining Budget	Lifetime Projected Expenditures	Lifetime Projected Remaining Budget	Lifetime Percent Complete	Status	Project on Schedule?	Note	Comments
		3,164,218,000	**619,525,344**	**2,544,692,656**	**3,143,508,000**	**20,710,000**					
Infrastructure Maintenance Capital											
AIWWTP Fibre Optic Infrastructure	Delta	1,500,000	65,967	1,434,033	1,500,000	-	4%	Ongoing	Y		
AIWWTP Gravity Thickner and DAF Steel Repair and Recoating	Delta	2,000,000	1,795,490	204,510	1,800,000	200,000	100%	Completed	Y	(2)	
AIWWTP IPS Pump Building Roof Replacement Phase 2	Delta	830,000	-	830,000	830,000	-	0%	Not Started	N	(4)	Deferred to 2024 based on results of detailed condition assessment.
AIWWTP Outfall Repair	Delta	2,300,000	-	2,300,000	2,300,000	-	0%	Not Started	N	(4)	Waiting for diving inspection to define scope.
AIWWTP Replacement of CDAC Equipment in Galleries	Delta	2,895,000	1,418,922	1,476,078	2,895,000	-	49%	Ongoing	Y		
AIWWTP Scheduled 64kV Potential & Current Transformer Replacements	Delta	800,000	-	800,000	800,000	-	0%	Not Started	N		Anticipated to start in Q1 2020.
AIWWTP SCL Flow Balancing	Delta	2,450,000	913,887	1,536,113	2,450,000	-	37%	Ongoing	N		Construction starts in 2020.
AIWWTP SCL Flow Control	Delta	63,500,000	1,059,412	62,440,588	31,500,000	32,000,000	2%	Ongoing	Y	(1)(2)	
AIWWTP Secondary Effluent Discharge Flowmeter Replacement	Delta	400,000	24,455	375,545	400,000	-	6%	Ongoing	N		Design anticipated to start in Q1 2020
AIWWTP Spare Trickling Filter Pump & Motor Purchase	Delta	1,950,000	-	1,950,000	1,950,000	-	0%	Ongoing	N	(3)	Pump motor purchased this year as spares.
AIWWTP Station Battery Replacement - PHASE 2	Delta	400,000	54,971	345,029	400,000	-	14%	Ongoing	Y		
AIWWTP Trickling Filter Media & Distributor Arms & Ducting Replacement	Delta	57,900,000	409,722	57,490,278	57,900,000	-	1%	Ongoing	Y		
Annacis Island WWTP - CDAC Component Replacement and Upgrade Program	Delta	1,500,000	999,853	500,147	1,500,000	-	67%	Ongoing	Y		
Annacis MCC 80 051, 80 070, 80 071 Replacement	Delta	2,844,000	1,656,037	1,187,963	2,844,000	-	58%	Ongoing	Y		
Annacis Secondary Clarifier Corrosion Repair	Delta	2,534,000	1,941,316	592,684	1,941,000	593,000	100%	Completed	Y	(2)	
Annacis Secondary Clarifier Corrosion Repair and Leveling Phase 2	Delta	22,000,000	7,713,545	14,286,455	22,000,000	-	35%	Ongoing	Y		
Cambie Trunk Sewer Relocation for Translink Millennium Broadway Extension	Vancouver	4,500,000	-	4,500,000	4,500,000	-	0%	Not Started	N		Project scope under review.
Cost Allocation Billing Network (Combined 96 F4)	Regional	5,230,000	5,092,775	137,225	5,230,000	-	97%	Ongoing	Y		
Crescent Beach FM - Replacement	Surrey	21,515,000	1,257,280	20,257,720	21,515,000	-	6%	Ongoing	Y		
English Bay/Balaclava Outfalls Improvement	Vancouver	900,000	-	900,000	900,000	-	0%	Not Started	N		Scheduled to start in 2021.
Gilbert/Brighouse Trunk Pressure Sewer Twinning Phase 2	Richmond	50,501,000	27,238,485	23,262,515	50,501,000	-	54%	Ongoing	Y		
Gilbert/Brighouse Trunk Pressure Sewer Twinning Phase 3	Richmond	44,400,000	1,043,372	43,356,628	44,400,000	-	2%	Ongoing	Y		
Gilbert/Brighouse Trunk Pressure Sewer Twinning Phase 4	Richmond	41,400,000	905,093	40,494,907	41,400,000	-	2%	Ongoing	Y		
Gilbert/Brighouse Trunk Pressure Sewer Rehab Phase 5	Richmond	23,200,000	-	23,200,000	23,200,000	-	0%	Not Started	N		Scheduled to start in 2023.
Glen Eagles Forcemains Replacement Phase 2	West Vancouver	7,750,000	161,750	7,588,250	7,750,000	-	2%	Ongoing	Y		
Glen Eagles Pump Stations Phase 1	West Vancouver	17,500,000	168,860	17,331,140	17,500,000	-	1%	Ongoing	Y		
Glen Eagles Pump Stations Phase 2	West Vancouver	25,000,000	-	25,000,000	25,000,000	-	0%	Not Started	N		Scheduled to start in 2020 – but is delayed due to the delay in Phase 1 work
Harbour West & East Interceptors Reloc & Protect	Vancouver	19,500,000	-	19,500,000	19,500,000	-	0%	Ongoing	Y		
IIWWTP CDAC IPS Control Replacement	Richmond	1,750,000	-	1,750,000	1,750,000	-	0%	Ongoing	Y		
IIWWTP Digester 4 Roof Replacement & Mixing Upgrade	Richmond	24,800,000	11,534,901	13,265,099	24,800,000	-	47%	Ongoing	Y		
IIWWTP HVAC upgrade	Richmond	2,095,000	2,017,702	77,298	2,018,000	77,000	100%	Completed	Y	(2)	
IIWWTP Influent Gate Refurbishment	Richmond	1,350,000	65,547	1,284,453	1,350,000	-	5%	Ongoing	Y		
IIWWTP Maintenance and Administration Building HVAC	Richmond	550,000	442,054	107,946	550,000	-	80%	Ongoing	Y		
IIWWTP MCC/Power Distribution Assess/Replace - Phase 2	Richmond	1,000,000	595,292	404,708	750,000	250,000	60%	Ongoing	Y	(2)	
IIWWTP PA-Sed Tank & Gallery Wall Refurbishment	Richmond	1,375,000	-	1,375,000	1,375,000	-	0%	Not Started	N		Work delayed to confirm scope of repair.
IIWWTP Replacement of CoGen Control System	Richmond	2,470,000	659,978	1,810,022	2,470,000	-	27%	Ongoing	Y		
IIWWTP Sed Tank Trough Replacement	Richmond	1,600,000	1,498,627	101,373	1,600,000	-	94%	Ongoing	Y		
IIWWTP Siphon Chamber Refurbishment	Richmond	2,200,000	-	2,200,000	2,200,000	-	0%	Not Started	N		Project delayed to allow improved coordination of other related works and improve safe operating conditions for work site.
IIWWTP Water Supply	Richmond	6,500,000	78,954	6,421,046	6,500,000	-	1%	Ongoing	N		On hold until YVR realigns Ferguson Rd northward.
Iona Grit System Upgrade	Richmond	8,100,000	7,489,230	610,770	8,100,000	-	92%	Ongoing	Y		
Iona Island Control & Instrumentation Replacement 2011	Richmond	2,750,000	1,700,958	1,049,042	2,750,000	-	62%	Ongoing	Y		
Iona MCC/Power Distribution Assess/Replace 2010	Richmond	953,000	788,208	164,792	953,000	-	83%	Ongoing	Y		
Iona MCC/Power Distribution Assess/Replace Future Years	Richmond	1,965,000	1,304,442	660,558	1,965,000	-	66%	Ongoing	Y		
Iona Solids Handling Upgrade Project	Richmond	30,500,000	29,691,059	808,941	30,436,000	64,000	97%	Ongoing	Y	(2)	
Lions Gate Control and Instrumentation Replacement 2011	West Vancouver	600,000	193,907	406,093	600,000	-	32%	Ongoing	Y		
LIWWTP - Process Waste Drainage (PWD) Replacement	Richmond	600,000	541,082	58,918	547,000	53,000	100%	Completed	Y	(2)	
LIWWTP CCT Isolation Gates	Richmond	2,050,000	52,921	1,997,079	2,050,000	-	3%	Ongoing	Y		
LIWWTP CDAC Component Upgrade	Richmond	360,000	176,737	183,263	360,000	-	49%	Ongoing	Y		
LIWWTP Fibre Optic Infrastructure	Richmond	600,000	263,983	336,017	600,000	-	44%	Ongoing	Y		
LIWWTP High Efficiency Boiler	Richmond	730,000	40,214	689,786	730,000	-	6%	Ongoing	Y	(4)	Deferred to after Biogas cleanup project is in operation.
LIWWTP PA-Sed Tank Refurbishment	Richmond	4,115,000	16,552	4,098,448	4,115,000	-	1%	Ongoing	Y		
Marshend PS Rehab	Burnaby	7,000,000	814,200	6,185,800	7,000,000	-	12%	Ongoing	Y		

Metro Vancouver
Liquid Waste Services Capital Expenditures Summary
As of August 31, 2019

Project	Project Location	Lifetime Total Project Budget	Lifetime Total Expenditures to Date	Lifetime Remaining Budget	Lifetime Projected Expenditures	Lifetime Projected Remaining Budget	Lifetime Percent Complete	Status	Project on Schedule?	Note	Comments
New West Interceptor Grit Chamber	New Westminster	8,250,000	214,125	8,035,875	8,250,000	-	3%	Ongoing	Y		
New Westminster Interceptor Repair Columbia St. Section	New Westminster	10,882,000	895,999	9,986,001	10,882,000	-	8%	Ongoing	Y		
NLWWTP Screw Pump Replacement	Langley City	1,550,000	25,653	1,524,347	1,550,000	-	2%	Ongoing	Y		
NSI Rehab or Replacement	Surrey	24,750,000	416,470	24,333,530	24,750,000	-	2%	Ongoing	N		Project delayed to improve scope definition, and coordination with other works.
NWI - Annacis Section 2 Improvement	Delta	45,000,000	197,044	44,802,956	45,000,000	-	1%	Ongoing	N		Project delayed to improve scope definition, and coordination with other works.
NWL WWTP 25 kV Substation Replacement	Langley Township	10,025,000	2,416,136	7,608,864	9,475,000	550,000	24%	Ongoing	Y	(1)	
NWL WWTP CDAC System Hardware Upgrade	Langley Township	1,500,000	1,309,279	190,721	1,500,000	-	87%	Ongoing	Y		
Ocean Park Trunk Manholes Lining	Surrey	550,000	-	550,000	550,000	-	0%	Not Started	N		Scheduled to start in 2021
Royal Ave. Sewer Pump Station (RYA) Building Expansion & Electrical Upgrade	New Westminster	4,218,000	1,014,088	3,203,912	4,218,000	-	24%	Ongoing	Y	(4)	Scope to be reviewed pending final result of hydraulic study.
Sewer Relocations and Protections at Fraser Surrey Docks	Surrey	24,200,000	-	24,200,000	24,200,000	-	0%	Not Started	N		Scheduled to start in 2020.
Sewer Relocations and Protections for Pattullo Bridge Replacement Project	New Westminster	7,000,000	-	7,000,000	7,000,000	-	0%	Not Started	N		
South Surrey Interceptor Fraser River Crossing Scour Protection	Delta	2,200,000	3,061,715	(861,715)	3,200,000	(1,000,000)	99%	Ongoing	Y		Project over budget due to tender prices higher than expected.
Surrey Corrosion Control Facility Replacement	Surrey	2,900,000	15,395	2,884,605	2,900,000	-	1%	Ongoing	Y		
Westridge FM Replacement	Burnaby	3,650,000	239,174	3,410,826	3,350,000	300,000	7%	Ongoing	Y		Design work done in house resulting in lower end costs.
Westridge PS 1 & 2 Upgrades	Burnaby	15,950,000	240,665	15,709,335	15,950,000	-	2%	Ongoing	Y		
WWTPs Electrical System Studies & Upgrades	Regional	1,900,000	-	1,900,000	1,900,000	-	0%	Not Started	N	(4)	Awaiting completion of AI Stage 5 Ph1 and AI Cogen projects studies.
		697,737,000	**123,933,485**	**573,803,515**	**664,650,000**	**33,087,000**					
Infrastructure Resilience Capital											
AIWWTP 69 kV Substation Modifications	Delta	8,500,000	12,198	8,487,802	2,752,000	5,748,000	1%	Ongoing	Y		Project under expenditure as BC Hydro requirements less than anticipated.
AIWWTP Automation of Influent Gates	Delta	3,700,000	3,500,699	199,301	3,700,000	-	95%	Ongoing	Y		
AIWWTP Cogeneration Backup Power	Delta	75,003,000	59,386,717	15,616,283	75,003,000	-	79%	Ongoing	N		Schedule slippage due to issues with OEM equipment & KCL supplied chillers
AIWWTP Influent System Remediation	Delta	82,600,000	41,665	82,558,335	82,600,000	-	1%	Ongoing	Y		
AIWWTP PST Area Walkway & Column Remediation	Delta	3,100,000	872,376	2,227,624	3,050,000	50,000	28%	Ongoing	Y		
FSA Easement Acquisition	Regional	1,500,000	1,161,122	338,878	1,500,000	-	77%	Ongoing	Y	(3)	
FSA Sewer Seismic Upgrades Implementation	Regional	187,100,000	550,263	186,549,737	187,100,000	-	1%	Ongoing	Y	(4)	
Highbury Interceptor Air Treatment Facilities	Vancouver	11,500,000	9,691,838	1,808,162	12,000,000	(500,000)	84%	Ongoing	N		$500K budget shortfall projected due to construction related issues. Project delayed due to contractor issues.
IIWWTP - Biogas Lines Relocation	Richmond	5,780,000	1,361,848	4,418,152	5,780,000	-	24%	Ongoing	Y		
IIWWTP Standby Diesel Generators	Richmond	8,500,000	1,436	8,498,564	8,500,000	-	1%	Ongoing	Y		
New CSO Management Gates for New Westminster Interceptor	New Westminster	5,925,000	51,919	5,873,081	5,925,000	-	1%	Ongoing	N	(3)(4)	Consulting Engineer being procured for summer design start.
Ocean Park Trunk Crescent Section (OPC) Pipe Rehabilitation/Replacement	Surrey	4,953,000	164,713	4,788,287	4,953,000	-	3%	Ongoing	N		Project delayed due to protracted property issues.
SSI Sulfide Odour and Corrosion Control	Delta	7,700,000	780,401	6,919,599	7,700,000	-	10%	Ongoing	Y		
VSA Easement Acquisition Program	Vancouver	670,000	458,784	211,216	670,000	-	68%	Ongoing	Y	(3)	
VSA Emergency Backup Power	Vancouver	20,510,000	3,608,410	16,901,590	20,510,000	-	18%	Ongoing	Y		
		427,041,000	**81,644,390**	**345,396,610**	**421,743,000**	**5,298,000**					
Infrastructure Upgrade - Secondary Treatment Capital											
Iona Secondary Treatment Upgrade	Richmond	1,904,500,000	8,064,683	1,896,435,317	1,904,500,000	-	1%	Ongoing	Y	(5)	
North Shore WWTP Secondary Upgrade and Conveyance	Dist of North Van	777,900,000	36,361,362	741,538,638	777,900,000	-	5%	Ongoing	Y	(5)	
Property Rights	Dist of North Van	-	22,000,000	(22,000,000)	22,000,000	(22,000,000)	100%	Completed	Y		
		2,682,400,000	**66,426,044**	**2,615,973,956**	**2,704,400,000**	**(22,000,000)**					
Infrastructure Upgrade Capital											
8th Avenue Interceptor Air Treatment Facilities	Vancouver	14,200,000	241,781	13,958,219	14,200,000	-	2%	Ongoing	N	(4)	Pre-design in progress with construction deferred beyond 10 year capital plan.
AIWWTP Ammonia Removal	Delta	112,900,000	735,519	112,164,481	112,900,000	-	1%	Ongoing	Y	(4)	More analyses required in 2022.
AIWWTP Biosolids Dryer	Delta	14,700,000	-	14,700,000	14,700,000	-	0%	Ongoing	N		Property purchase delayed.
AIWWTP DAF Polymer Building Replacement	Regional	550,000	54,057	495,943	550,000	-	10%	Ongoing	Y		
AIWWTP Electrical Distribution System Protection Control and Monitoring	Delta	2,650,000	5,194	2,644,806	2,650,000	-	1%	Ongoing	Y		
AIWWTP Replacement of Protective Relays	Delta	3,258,000	1,869,915	1,388,085	2,658,000	600,000	57%	Ongoing	Y	(1)(2)	

Metro Vancouver
Liquid Waste Services Capital Expenditures Summary
As of August 31, 2019

		Lifetime									
Project	**Project Location**	**Total Project Budget**	**Total Expenditures to Date**	**Remaining Budget**	**Projected Expenditures**	**Projected Remaining Budget**	**Percent Complete**	**Status**	**Project on Schedule?**	**Note**	**Comments**
AIWWTP Secondary Bypass	Delta	1,725,000	1,494,363	230,637	1,549,000	176,000	95%	Ongoing	Y		
All WWTPs Power Quality Monitoring & Outage Alarming Network	Regional	2,870,000	1,002,345	1,867,655	2,870,000	-	35%	Ongoing	Y		
Big Bend Forcemain - Gate Replacement	Richmond	2,680,000	70,209	2,609,791	2,680,000	-	3%	Ongoing	Y		
Combined Sewer Overflow Sampling Station Enhancements	Regional	1,900,000	39,472	1,860,528	1,900,000	-	2%	Ongoing	Y		
FSA Flow Metering Program – Phase 1	Regional	2,700,000	321,887	2,378,113	2,700,000	-	12%	Ongoing	Y		
FSA Wastewater Meter Upgrades	Regional	600,000	543,395	56,605	600,000	-	91%	Ongoing	Y		
Glenbrook Combined Trunk Sewer Separation	New Westminster	74,950,000	105,854	74,844,146	74,950,000	-	0%	Ongoing	Y		Current scope is conceptual level. Construction projected beyond 10 year capital plan.
IIWWTP Biosolids Dewatering Facility	Richmond	61,300,000	6,220,567	55,079,433	61,300,000	-	10%	Ongoing	Y		
IIWWTP Provision of a Redundant 12.5 kV Feeder to Switch House	Richmond	850,000	237,126	612,874	288,000	562,000	98%	Ongoing	Y	(1)(2)	Project under budget due to competitive pricing (work bundled with other projects).
Lions Gate Sludge Thickener No. 2	West Vancouver	3,380,000	3,358,080	21,920	3,358,000	22,000	100%	Completed	Y		
LIWSA Wastewater Meter Upgrades	Richmond	300,000	76,181	223,819	300,000	-	25%	Ongoing	Y		
LIWWTP Ammonia Removal	Richmond	600,000	199,949	400,051	600,000	-	33%	Ongoing	Y	(4)	More analyses required in 2022.
LIWWTP Power Reliability	Richmond	5,702,000	350,306	5,351,694	5,702,000	-	6%	Ongoing	Y		
NSA Flow Metering Program – Phase 1	West Vancouver	300,000	7,595	292,405	300,000	-	3%	Ongoing	Y		
NSSA Wastewater Meter Upgrades	Regional	300,000	73,026	226,974	300,000	-	24%	Ongoing	Y		
Sperling Pump Station Upgrade	Burnaby	7,500,000	7,091,577	408,423	7,500,000	-	95%	Ongoing	Y		
SSI Influent Control Chamber Repair and Replace Gates	Delta	1,305,000	13,554	1,291,446	1,305,000	-	1%	Ongoing	Y	(3)(4)	
VSA Flow Metering Program – Phase 1	Regional	3,200,000	66,267	3,133,733	3,200,000	-	2%	Ongoing	Y		
VSA Wastewater Meter Upgrades	Vancouver	464,000	378,859	85,141	464,000	-	82%	Ongoing	Y		
		320,884,000	**24,557,078**	**296,326,922**	**319,524,000**	**1,360,000**					
Opportunity Capital											
AIWWTP Hydrothermal Processing Pilot	Delta	8,980,000	39,113	8,940,887	8,980,000	-	1%	Ongoing	Y		
Fraser Sewerage Area Integrated Resource Recovery (IRR) Study	Regional	1,200,000	-	1,200,000	1,200,000	-	0%	Not Started	Y		
LIWWTP Biogas Clean-up Project	Richmond	10,400,000	2,497,846	7,902,154	10,400,000	-	24%	Ongoing	Y		
LIWWTP Pilot Digestion Optimization Facility	Richmond	2,500,000	457,911	2,042,089	3,100,000	(600,000)	18%	Ongoing	Y		Project budget increase requested for 2020.
North Surrey Interceptor - Port Mann Section - Odour Control	Surrey	7,500,000	98,647	7,401,353	7,500,000	-	1%	Ongoing	Y		
		30,580,000	**3,093,517**	**27,486,483**	**31,180,000**	**(600,000)**					
Grand Total Liquid Waste Services		**7,322,860,000**	**919,179,858**	**6,403,680,142**	**7,285,005,000**	**37,855,000**					

Notes:

(1) Project will be completed under budget - savings due to competitive pricing.
(2) Full contingency not required.
(3) Funds will be spent if/when opportunity arises.
(4) Project on hold.
(5) Separate quarterly status reports for the Secondary Wastewater Treatment Upgrade projects are being provided to the Liquid Waste Committee and Board.

ATTACHMENT 3

Capital Project Status Information
August 31, 2019

GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT (Liquid Waste Services)

Major GVS&DD liquid waste capital projects are generally proceeding on schedule and within budget. The following capital program items and exceptions are highlighted:

Infrastructure Growth Program

- **FSA – Albert Street Trunk Sewer** – The construction contract for Phase 1 of this project involves 700 m of new sewer along Seaforth Drive in Port Moody. It was awarded in June 2019, and at the end of August was about 50% complete. Construction is projected to be substantially complete by year end. Phase 2 construction start is dependent on the completion of property negotiations.

- **FSA – Burnaby Lake North Interceptor (also known as the Winston Street Sewer)** – Phase 1 of the sewer along Lougheed Highway west of Sperling Street is complete. Phase 2 and 3, with diameters of 1050 mm to 1800 mm, involves 2 km of tunneled sewer and 1.2 km of open cut sewer. It is currently under design, and will be located along Winston Street from Sperling to east of Piper Street. The open cut portion of the work is expected to be tendered in September 2019 and a recommendation to award presented to the GVS&DD Board in January 2020. The tunneling portion of the work will be tendered in 2020. Construction is scheduled to be complete in 2022. Phase 4, which continues to Cariboo Street, will be completed at a later date.

- **FSA – North Road Trunk Sewer** – This project will provide additional sewer service to the growing area near Lougheed Mall in the Cities of Burnaby and Coquitlam. The construction contract for Phase 1 of this project involves 800 m of new sewer along North Road from the New Westminster boundary to north of the Lougheed highway. The main construction contract was awarded in June 2019. As of the end of August, the contractor has mobilized, and is expected to be substantially complete in May 2020. Following the completion of the open cut sewer works, a second contract to build a pipe bridge spanning the BNSF Railway will be issued. Discussions with the Cities of Burnaby, Coquitlam and the railway are ongoing. Phase 2, which involves extending the sewer north of Lougheed Highway, is scheduled to be tendered in 2022.

- **FSA – South Surrey Interceptor Johnston Road Section** – This project involves construction of approximately 2.2 km of 3 m diameter corrosion resistant sewer, to provide additional capacity to service Surrey and Langley. Construction of the twinning started in 2015, and is being completed in 5 separate construction contracts. The first two contracts consisted of 1.1 km of open cut sewer from King George Boulevard to Panorama Drive. The third contract involves 820 m of tunnel and was awarded in April 2018. All of the tunneling has been completed, and it is expected the contract will be fully complete by the end of 2019. The last two contracts, involving 220 m of open cut and a large junction chamber, are scheduled to be tendered in early and late 2020 respectively. Total completion is expected in 2021.

- **FSA – South Surrey Interceptor – King George Section Odour Control Facility (OCF) and Grit Chamber**. This project involves three separate installations: two odour control facilities (at King George Boulevard near 56 Ave in Surrey and at Highway 10 and Highway 91 in Delta) and a grit chamber at the King George location. The grit chamber portion of this project is complete and in service. The contractor has procured the equipment and started construction of the Highway 91 OCF. Construction of the King George facility will start upon receipt of all required permits, expected in October 2019. Commissioning of the facilities is scheduled for the summer of 2020.

- **FSA – Sapperton Pump Station** – The construction contract was awarded in September 2016 and is expected to be substantially complete in 2020. Construction is currently 80% complete, with the below grade concrete structure completed. The above grade building, Brunette River foreshore restoration work and electrical work underway.

- **FSA – Annacis Island WWTP Stage 5 Expansion Phase 1** – This work involves expansion of treatment process units including primary sedimentation tanks, secondary clarifiers, solid contact tanks and odour control facilities. The $253 million construction contract was awarded to Graham and AECON Joint Venture in April 2017. Construction of the Phase 1 main contract is 80% completed and the anticipated substantial completion date is August 2021.

- **FSA – Annacis Island WWTP Outfall** – This project involves the construction of a new outfall with increased capacity to support population growth. The 4.2 m diameter outfall will be tunneled at a depth of approximately 40 m, and convey treated effluent approximately 1 km from the Plant to the Fraser River where it will discharge from a 2.5 m diameter, 250 m long diffuser manifold buried in the river bed. The construction contract was awarded on May 24, 2019, and the notice to proceed letter was issued August 1. The contractor is currently mobilizing to site and construction is scheduled to be complete by Spring 2024.

- **FSA – Northwest Langley Treatment Projects** – This work involves expansion of the treatment plant from serving 30,000 people to 230,000 people. It also includes a new river crossing, new pump station, SSO storage tank and outfall. The estimated construction cost is $1.3 billion and is scheduled to be complete by the end of 2026.

  Award of a $35M contract for the detailed design of the new treatment plant was approved at the June 28, 2019 Board meeting. The pump station and storage tank is currently out for construction tender. The river crossing design is approximately 40% complete, with construction tendering projected for late 2020. Phase 1 ground improvements have been completed and award of phase 2 ground improvements is scheduled for October. The overall project is currently on schedule.

- **VSA – Hastings Trunk Sewer –** The Hastings Trunk sewer (also known as the Douglas Trunk Sewer) will provide additional capacity to support rapid development and population growth in the Brentwood Mall and Gilmour areas in Burnaby. The project involves construction of 1.8 km of sewer ranging from 750 mm to 1200 mm in diameter, with 1 km being constructed using tunneling methods. All of the tunneling has been completed. The tie-ins, chamber work and open cut sections are projected to be completed in early 2020.

Infrastructure Maintenance Program

- **LSA – Gilbert Trunk Sewer Twinning** - Construction of the 3.5 km long Phase 1 is complete. The remaining 3 Phases have a total length of 6.5 km consisting of 1.5 m and 1.8 m diameter sewers. Phase 2 is under construction from Blundell to north of Westminster Highway and is approximately 60% complete, with completion projected for early 2020. Phase 4, from Steveston Highway to the Lulu Island WWTP, will be tendered in late 2019. Phase 3, which extends from Blundell Road south to the Steveston Highway will be completed last, with construction scheduled to start in 2021.

- **VSA – Iona Island WWTP Solids Handling Upgrade** – This project involves upgrades to the existing grit removal and sludge screening systems, increasing sludge thickening capacity, and improving the digester sludge mixing systems. Construction to refurbish the existing sludge thickener was completed on schedule in April 2016 and is back in full operation. The construction of the new screening, degritting and thickening facility was completed and in operation since August 2017. The Digester Mixing Upgrade contract started in November 2015 and, of the four digesters, Digesters No. 2, No. 3 and No. 4 upgrades are complete and back in service. Work on the last digester, Digester No. 1, started in July 2019 and is scheduled to be complete by February 2021.

- **FSA – Annacis Island WWTP Secondary Clarifier Corrosion Repair** – This project involves replacing 12 secondary clarifier mechanisms that have been damaged by corrosion and are at the end of their service life. The construction contract for this project includes the Secondary Clarifier Flow Control and Secondary Bypass components which involve the addition of 12 new influent flow balancing gates, and the replacement of 3 existing secondary bypass gates. To date, 7 mechanisms, 3 flow balancing gates and all 3 secondary bypass gates have been replaced. A tender for the remaining 5 mechanism units, and the replacement of the 12 existing effluent launders and weirs, was awarded in March 2019., Refurbishment work on the remaining existing clarifiers is scheduled to start in May 2020 following completion of the new Stage 5 secondary clarifiers, with construction projected to be complete in 2023.

Infrastructure Resilience Program

- **FSA – Annacis Island WWTP Cogeneration System** – The objective of this $75 million resiliency project is to install four new larger capacity cogeneration units (2000 kW each) complemented by two new emergency stand-by diesel generators (3000 kW each) in order to: 1) provide rapid response (< 60 seconds) emergency back-up power in case of BC Hydro utility outages, 2) optimize the use of digester gas produced at the plant, 3) increase the cogeneration capacity, 4) minimize the amount and cost of electricity imported from BC Hydro costs, and 5) minimize digester gas flaring. The project started in Q4 2017 and construction is substantially complete as of August 16. The new cogeneration engines and diesel gensets are anticipated to be commissioned in Q4 2019 and in service by Q1 2020.

- **VSA – Highbury Interceptor Air Treatment Facilities –** Construction of this odour control station located in Musqueam Park in Vancouver started in February 2018. Construction of the facility is 90% complete and is scheduled to be substantially complete by the end of October 2019. The air jumper component, which is a separate facility to allow the free movement of air in the sewer and extend odour control south to the Fraser River, is substantially complete.

- **VSA – Emergency Backup Power -** This project involves design, supply and installation of standby emergency backup generators at Chilco, Columbia, Harbour, Hudson, Jervis, Kent and Willingdon pump stations to allow the stations to remain operational during power failure event and reduce the risk of a spill. The tenders for the Columbia, Harbour, Hudson, Kent and Willingdon upgrades were issued in August. The equipment has been procured, and construction is scheduled to start in Q4 of 2019, and be complete in early Q1 2020. For the Chilco and Jervis facilities, permitting and planning with the Vancouver Parks Board are still underway prior to start of detailed design phase.

Infrastructure Upgrade Program

- **FSA – Sperling Pump Station** - The Sperling Pump Station Upgrading Project involves the upgrading and expansion of the existing aging and under capacity facility. The construction tender was awarded to NAC Constructors Ltd., with construction started in February 2017. Construction is complete and the facility commissioned with only minor deficiencies outstanding.

- **VSA – Iona Island WWTP Temporary Biosolids Dewatering Facility** – This project involves the design build construction of a mechanical dewatering facility to dewater on-going plant production of biosolids so that they can be transported for beneficial reuse or disposal. This facility will permit the decommissioning of the four existing digested sludge lagoons and the sludge drying area to facilitate the construction of the new treatment plant. The $55 million design-build contract was awarded to NAC Constructors in April 2019. The design phase is 60% complete. Ground improvement construction has begun on the installation of approximately 400 stone columns. The project is scheduled to be complete in Q1 2021.

32761047

To: Liquid Waste Committee

From: Tom Sadleir, Program Manager, Community Engagement, Liquid Waste Services

Date: October 1, 2019 Meeting Date: October 17, 2019

Subject: **Iona Island Wastewater Treatment Plant Project – Community Engagement Process**

RECOMMENDATION

That the GVS&DD Board authorize staff to complete the community engagement process, as presented in the report dated October 1, 2019, titled "Iona Island Wastewater Treatment Plant Project – Community Engagement Process".

PURPOSE

To receive authorization to complete the community engagement process in support of the Project Definition Phase and to inform the Indicative Design of the Iona island Wastewater Treatment Plant Project.

BACKGROUND

In May 2017, staff advised the Board they were proceeding with the Project Definition Phase of the Iona Island Secondary Wastewater Treatment Plant Project. In June 2018, the Board received for information an outline of the engagement process in support of early Project Definition Phase project activities.

This report presents the proposed community engagement process that allows stakeholders and First Nations to continue to provide input during the Project Definition Phase of the Iona Island Wastewater Treatment Plant Project.

ENGAGEMENT PROCESS

Metro Vancouver is committed to meaningful engagement with potentially impacted stakeholders and First Nations on the Iona Island Wastewater Treatment Plant Project.

Scope of the Engagement

Metro Vancouver is undertaking a variety of activities to provide information and receive input on the project, ensuring that input is considered during the Project Definition Phase. Interested stakeholders and First Nations are being offered opportunities to provide input on the three project objectives: upgrading the plant to secondary treatment, integrating the new plant with Iona Beach Regional Park and the surrounding environment, and exploring resource recovery opportunities. Engagement activities are designed and scheduled to inform the project team at key milestones of the Integrative Design Process. A summary of engagement activities and findings will accompany the Project Definition Report, including the new plant's Indicative Design, which staff anticipates will be presented to the Board in Q2 2020.

Stakeholders

Metro Vancouver is engaging the following stakeholder groups on the Iona Island Wastewater Treatment Plant Project:

- Local government staff and elected officials (Richmond, Vancouver, Burnaby)
- The University of British Columbia (UBC) and University Endowment Lands (UEL)
- Residential and business neighbours
- Environmental groups
- Recreational users of the park (birders, photographers, cyclists, walkers)
- Regulators and other government agencies

First Nations

Musqueam Indian Band reserve lands are located in close proximity to the Iona Island Wastewater Treatment Plant – their main reserve (I.R. #2) is directly across the north arm of the Fraser River. Metro Vancouver is working closely with Musqueam throughout the Project Definition Phase to gather their input to inform the development of the plant's Indicative Design.

Another 13 First Nations, as identified on the provincial Consultative Areas Database and in accordance with Metro Vancouver's corporate process for Information Sharing and Engagement with First Nations for Construction Projects, will continue to be provided with information on the project and the opportunity to provide feedback on their respective interests:

- Cowichan Tribes
- Halalt First Nation
- Lake Cowichan First Nation
- Lyackson First Nation
- Penelakut Tribe
- Seabird Island Band
- Shxw'ow'hamel First Nation
- Skawahlook First Nation
- Soowahlie First Nation
- Sto:lo Nation
- Sto:lo Tribal Council
- Stz'uminus First Nation
- Tsleil-Waututh Nation

Key Engagement Activities

Metro Vancouver started engagement in July 2018 and will continue to engage until the end of the Project Definition Phase in 2020. Engagement activities are aligned with key decision points in the project's Integrated Design Process.

Beginning in 2018, Metro Vancouver has hosted or participated in events and meetings to build awareness of the Project and to learn what people value and how they use Iona Beach Regional Park; these include a public community workshop, meetings with stakeholders, information booths at Iona Beach Regional Park and meetings with Musqueam Indian Band. Additional public and Musqueam community workshops and meetings are planned for the remainder of the Project Definition Phase.

Communication activities used to support and promote engagement activities include a website, newspaper advertisements, fact sheets, posters, Facebook posts, tweets and email correspondence.

Table 1 outlines the key activities undertaken to engage stakeholder groups and First Nations. For a list of detailed engagement activities, please refer to Key Engagement Activities to Date (Attachment 1) and Key Engagement Activities Planned (Attachment 2).

Table 1: Key engagement activities by stakeholder groups and First Nations

Stakeholders & First Nations	**Key activities**
GVS&DD Board (Liquid Waste Committee, Regional Parks Committee)	• Reports • Presentations
Vancouver Sewerage Area staff and elected officials (Richmond, Vancouver, Burnaby, University of British Columbia and University Endowment Lands)	• Monthly update meetings with staff • Presentations to councils/committees
Residential and business neighbours	• Information booths at Iona Beach Regional Park events • Public community workshops • Presentations • Email updates
Recreational users of the park (birders, photographers, cyclists, walkers)	• Information booths at Iona Beach Regional Park events • Public community workshops • Presentations • Email updates
Community Associations (Dunbar, West Southlands, Marpole, University Neighbourhoods Association, Burkeville, Deering Island, Sea Island)	• Presentations • Email updates • Plant tours
Non-governmental organizations (Vancouver Bird Advisory Committee, Bird Studies Canada, Nature Vancouver, Delta Naturalists' Society, Nature Vancouver, Ducks Unlimited, WildResearch, Georgia Straight Alliance)	• Meetings • Presentations • Public community workshops • Email updates
Regulators and other governmental agencies (Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Environment Canada, YVR, Canada Post, Vancouver Fraser Port Authority)	• Meetings • Presentations • Email updates
Musqueam Indian Band	• Staff-to-staff meetings • Community meetings • Participation in Integrated Design Process workshops
Other First Nations	• Letter updates

ALTERNATIVES

1. That the GVS&DD Board authorize staff to complete the community engagement process, as presented in the report dated October 1, 2019, titled "Iona Island Wastewater Treatment Plant Project – Community Engagement Process."

2. That the Board provide alternate or additional direction to engage stakeholders and First Nations.

FINANCIAL IMPLICATIONS

Community engagement activities are included in the 2019 GVS&DD budget and anticipated in the 2020 proposed GVS&DD budget. Any additional resources are provided through the Board-approved Iona Island Wastewater Treatment Plant Project Definition budget ($13 million).

SUMMARY

This report is being presented to update the Board on the community engagement activities undertaken to date and to seek the Board's authorization to complete the community engagement process as presented in this report through to completion of the Project Definition Phase.

Metro Vancouver has engaged stakeholders and First Nations on the Iona Island Wastewater Treatment Plant Project since June 2018. Staff seek Board authorization to complete the engagement to allow stakeholders and First Nations to continue to provide input during the Project Definition Phase and to inform the plant's Indicative Design.

Staff recommend Alternative 1.

Attachments

1. Key Engagement Activities to Date
2. Key Engagement Activities Planned

32710684

Key Engagement Activities to Date

The following activities have been completed in order to inform the Project Definition Phase and Indicative Design.

Date	Activity	Purpose
June 21, 2018	Musqueam celebration of National Indigenous Peoples Day	Introduce the project and other liquid waste projects at the plant and in the area
July 12 & 21, 2018	Information booth at Iona Beach Regional Park	Meet park users, introduce project, identify values and priorities, explore plant integration with the park and promote future community events
September 15, 2018	Community event at Iona Beach Regional Park: Great Canadian Shoreline Cleanup	Engage with park users and others to share information; introduce project, identify values and priorities, explore plant integration with the park, and promote future events
November 23, 2018	Letter 1 to First Nations	Introduce the project to 14 First Nations identified in the Consultative Areas Database
December 12, 2018	Meeting with Vancouver Sewerage Area staff	Update on project status, schedule, and public and First Nations engagement
January 9, 2019	Public Community Workshop 1: Sea Island, Richmond	Introduce project, identify values and priorities and explore site use.
January 31, 2019 March 21, 2019	Meetings with Vancouver Sewerage Area staff	Update on project status, schedule, and public and First Nations engagement
April 4, 2019	Stakeholder meeting: Birders & naturalists	Provide project overview, specifically on lagoon decommissioning and habitat restoration opportunities
May 1, 2019	Musqueam staff-to-staff Meeting 1	Introduce project and receive input for Musqueam community engagement
May 7, 2019	Stakeholder meeting: Dunbar Residents Association	Provide project overview
May 15, 2019	City of Vancouver – staff report to Council	Provide project overview

Date	Activity	Purpose
May 22, 2019	Stakeholder meeting: Georgia Straight Alliance	Provide project overview and hear priorities on coastal water protection and opportunities
May 30, 2019	Meeting with Vancouver Sewerage Area staff	Update on project status, schedule, and public and First Nations engagement
June 5, 2019	Musqueam Community Meeting #1	Introduce the IIWWTP project and other associated projects, and receive input from community members
June 10, 2019	Stakeholder meeting: Vancouver Bird Advisory Committee	Provide project overview, specifically on lagoon decommissioning and habitat restoration opportunities
June 11, 2019	Stakeholder workshop: Ecological and potential partnership groups (NGOs and government organizations)	Provide project update and discuss ecological and related community health enhancements and potential partnership and funding opportunities
Jul 24-26, 2019	Integrated Design Process Workshop (4) at Musqueam Indian Band	Introduce broader project team to the Musqueam Indian Band reserve and the Fraser River, and welcome Musqueam staff and council to participate in the workshop to identify concerns and opportunities
August 1, 2019	Meeting with Vancouver Sewerage Area staff	Update on project status, schedule, and public and First Nations engagement
August 24, 2019	Stakeholder event: Wings Over Iona (at Iona Beach Regional Park)	Engage with park users and others interested in environment to share information; introduce project, identify values and priorities, explore plant integration with the park, and promote future events
August 26, 2019	Musqueam staff-to-staff Meeting 2	Receive input from Musqueam Indian Band on ecological priorities and opportunities for Iona Island
September 12, 2019	Musqueam staff-to-staff Meeting 3	Discuss how Musqueam ecological priorities could be incorporated into design concepts
September 21, 2019	Stakeholder event: Great Canadian Shoreline Cleanup (Iona Beach Regional Park)	Engage with park users and others interested in environment to share information; introduce project, identify values and priorities, explore plant integration with the park, and promote future events

Date	Activity	Purpose
September 24, 2019 and ongoing	Meeting with Vancouver Sewerage Area staff	Update on project status, schedule, and public and First Nations engagement
September 25, 2019	Stakeholder event: Tour of IIWWTP for Dunbar Residents Association	Show current plant and explain future plant project opportunities

Key Engagement Activities Planned
The following activities are planned to inform the Project Definition Phase and Indicative Design.

Date	Activity	Purpose
Ongoing 2019/20	Community stakeholder meetings	Provide project update on design concepts and receive feedback *Vancouver: West Southlands Ratepayers Association, Deering Island Homeowners Society, Dunbar Residents Association, Southlands Community Association, Marpole-Oakridge Community Association, Kerrisdale Community Centre Society, Southwest Marine Drive Ratepayers' Association Richmond: Sea Island Community Association UEL & UBC: Community Advisory Council, University Neighbourhoods Association*
November 2019	Presentation to City of Vancouver Council	Provide project update on design concepts and receive feedback
November 2019	Presentation to City of Burnaby Council	Provide project update on design concepts and receive feedback
November 2019 TBD	Stakeholder meeting: Vancouver Fraser Port Authority	Provide project overview, learn of planned Port work in the area and potential opportunities for ecological restoration
November 2019	Present to Richmond Public Works & Transportation C'tee	Provide project update on design concepts and receive feedback
November 7, 2019	Musqueam staff-to-staff meeting 4	Review presentation for Chief and Council
November 18, 2019	Musqueam Chief and Council	Present design concepts and receive input
January 2020 TBC	Public Community workshop 2	Present design concepts and receive input
January 2020 TBC	Musqueam Community meeting 2	Present design concepts and receive input
March 2020	Special Meeting of the Liquid Waste Committee	To workshop refined design concepts and recommended design

To: Liquid Waste Committee

From: Fred Nenninger, Director, Policy, Planning & Analysis, Liquid Waste Services

Date: September 26, 2019 Meeting Date: October 17, 2019

Subject: **Iona Island Wastewater Treatment Plant – Project Definition Update**

RECOMMENDATION

That the Liquid Waste Committee receive for information the report dated September 26, 2019 titled "Iona Island Wastewater Treatment Plant – Project Definition Update".

PURPOSE

To update the Liquid Waste Committee on the work underway to complete the Project Definition Phase for the new Iona Island Wastewater Treatment Plant.

BACKGROUND

In May 2011, Metro Vancouver's *Integrated Liquid Waste and Resource Management Plan* was approved by the BC Minister of Environment. The plan requires that the Iona Island Wastewater Treatment Plant upgrade should be completed within 20 years. The Federal Wastewater Systems Effluent Regulation that became law in 2012 requires the plant be upgraded by no later than December 31, 2030.

This report is being brought forward to advise the Committee and Board on the progress of the technical work and the engagement process that is underway for the Iona Island Wastewater Treatment Plant Project Definition Phase.

TECHNICAL WORK

The Project Definition Phase consists of eight integrated design workshops involving Metro Vancouver and a consultant team. The workshop titles are as follows:

- Workshop 1 – Goals, Objectives and Process
- Workshop 2 – Objective Hierarchy and Evaluation
- Workshop 3 – Plant Concepts integration
- Workshop 4 – Plant Concept Evaluation
- Workshop 5 – Plant Concept Selection
- Workshop 6 – Plant Concept Indicative Design
- Workshop 7 – Project Definition Draft Report Review
- Workshop 8 – Project Definition Final Report Presentation

Workshop 1 was held on November 19 and 20, 2018 with the purpose of aligning the project team on the overall goals, objectives and process for the Project Definition.

Workshop 2 was held on January 21 and 22, 2019 and focused on developing a hierarchy for the new plant design objectives and the evaluation process to be utilized to assess the various design concepts.

After Workshop 2, the engineering consultant team identified several wastewater treatment technologies and integrated these technologies into three main treatment process options based on the project's requirements and objectives. These options meet the project's three main goals of secondary treatment, resource recovery and community/park integration as well as being adaptable to higher levels of treatment.

The architectural consultant team assembled seven themes that each focus on a set of characteristics specific to community and park integration. These characteristics include community health, public awareness, site history, ecology, stewardship and architecture.

Workshop 3 was held on April 10 and 11, 2019 and focused on integrating the wastewater treatment process options with the themes to obtain three overall wastewater treatment plant build scenarios.

Since Workshop 3, the engineering consultant team further developed the three wastewater treatment processes into three distinct options and further integrated each option with each architectural theme. The three wastewater treatment processes consist of the following technologies:

Option	Liquid Treatment		Solids Treatment
	Primary Treatment	Secondary Treatment	
Base Plant	Inclined plate clarifiers	Activated sludge	Anaerobic digestion & biosolids land application
Base plant + Tertiary Treatment	Biologically enhanced clarification	Activated sludge with clarification (plus tertiary filtration)	Thermal hydrolysis, anaerobic digestion & biosolids drying
Alternate Tertiary Plant	Biologically enhanced clarification	Membrane bioreactor	Sludge waste-to-energy

The architectural team further developed three distinct architectural and ecological themes to meet specific community and park integration requirements and fully integrated each theme with the wastewater treatment process options.

Workshop 4 was held on July 24 and 25, 2019, with the first day at the Musqueam Cultural Pavilion, and focused on evaluating and obtaining feedback on how the architectural themes and engineering treatment process options meet the project goals, objectives and requirements. Several specific topic areas were considered and are listed below:

- Ecology and Park Experience

- Education and Community
- Site Design Layout and Impact
- Wastewater Treatment Operations and Maintenance
- Adaptation and Resilience
- Integrated Resource Recovery and Research
- Risk Management
- Constructability
- Geotechnical
- Re-use of Existing Infrastructure

Over the next few months, the feedback from Workshop 4 will be reviewed and integrated into the three wastewater treatment plant build scenarios and cost estimates, energy requirements and greenhouse gas profiles will be determined for each scenario.

New hybrid options may emerge through combinations of functionality between the current three options. The intent will be to identify the optimal design concept that best suits the needs of the region.

ENGAGEMENT PROCESS
This is the subject of a separate report to the Liquid Waste Committee titled "Iona Island Wastewater Treatment Plant Project – Community Engagement Process" dated October 1, 2019.

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
The Project Definition financial status as of June 2019 is shown in the following table.

Board Approved Budget for Project Definition	Contract Commitments for Project Definition	Project Definition Actual Spent to Date (June 2019)
$13,000,000	$10,643,183	$4,377,667

SUMMARY / CONCLUSION
The Iona Island Wastewater Treatment Plant Project Definition Technical Workshop 4 was held on July 24th and 25th, 2019. This workshop focused on evaluating and obtaining feedback on how the architectural themes and engineering treatment options meet the project goals, objectives and requirements. With this feedback, the three wastewater treatment plant build scenarios will be further developed and life cycle cost estimates, energy requirements and greenhouse gas profiles will be determined for each scenario.

To: Liquid Waste Committee

From: Brent Burton, Division Manager, Policy, Planning and Analysis, Liquid Waste Services

Date: October 8, 2019 Meeting Date: October 17, 2019

Subject: **Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019 – Fraser Sewerage Area – 7969 Highway 91 Connector, Delta**

RECOMMENDATION

That the GVS&DD Board:

a) give first, second and third reading to the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019*; and

b) pass, and finally adopt the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019*.

PURPOSE

To seek GVS&DD Board approval to amend the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018* to include the property (MK Delta Lands) located at 7969 Highway 91 Connector in the City of Delta, within the Fraser Sewerage Area (Attachments 1 & 2).

BACKGROUND

Metro Vancouver provides regional sewerage services to GVS&DD member municipalities. For a municipal property to receive sewerage services, it must be located within one of Metro Vancouver's sewerage areas. Sewerage area boundaries were fixed by the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018*. Sewerage areas are occasionally amended through an amending bylaw and in accordance with Sections 31 and 32 of the GVS&DD Act, typically at the request of a GVS&DD member.

This report responds to a council resolution, submitted to Metro Vancouver from the City of Delta on February 12, 2019, requesting an amendment of the Fraser Sewerage Area (FSA) to include the property located at 7969 Highway 91 Connector.

METRO 2040 CONSIDERATION

Following adoption of *Metro 2040* (the Regional Growth Strategy) in 2011, Metro Vancouver procedures regarding the amendment of regional sewer services are subject to the provisions of *Metro 2040*. Therefore, any requests from member municipalities to amend a GVS&DD sewerage area must be presented to the Metro Vancouver Regional District (MVRD) Board for consideration of consistency with the provisions of *Metro 2040*. Once consistency with *Metro 2040* has been established, the decision to amend the sewerage area rests with the GVS&DD Board, subject to technical considerations. The following summarizes the considerations for this boundary amendment:

- Metro Vancouver received a council resolution from the City of Delta requesting that the regional land use designation of the property at 7969 Highway 91 Connector be changed from Agricultural

to Industrial, and that the property be included within the Urban Containment Boundary. The resolution also requested that the Fraser Sewerage Area be amended to include the subject property.

- On October 4, 2019 a report pertaining to the MK Delta Lands was presented to the MVRD Board (Reference 1), and it was resolved:

> *That the MVRD Board:*
> *a) receive for information the comments from the affected local governments and agencies as presented in the report dated September 17, 2019 titled "Regional Growth Strategy Amendment Bylaw No. 1283 – MK Delta Lands, City of Delta";*
> *b) give 3rd reading to Metro Vancouver Regional District Growth Strategy Amendment Bylaw No. 1283, 2019;*
> *c) pass and finally adopt Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1283, 2019 and notify the City of Delta; and,*
> *d) accept the City of Delta's amended Regional Context Statement showing, for the MK Delta Lands site, a regional Industrial land use designation, and alteration of the Urban Containment Boundary.*

As the MVRD Board resolved to accept the City of Delta's Regional Context Statement amending the property to an Industrial land use designation, and include the property within the Urban Containment Boundary, the property thus became eligible to receive regional sewerage services subject to approval of the GVS&DD Board.

GVS&DD CONSIDERATION

Metro Vancouver staff examined the proposed amendment for financial, technical and operational impacts, and effects on service levels, and concluded that:

- There are no financial impacts to the GVS&DD as costs will be borne by the property owner; and
- The estimated sewage flows will have a negligible impact on the FSA sewerage system.

ALTERNATIVES

1. That the GVS&DD Board:
   a) give first, second and third reading to the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019*; and
   b) pass, and finally adopt the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019*.

2. That the GVS&DD Board receive for information the report dated October 8, 2019, titled *"Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019 – Fraser Sewerage Area – 7969 Highway 91 Connector, Delta"* and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

There are no financial impacts to the GVS&DD as connection costs will be borne by the property owner.

SUMMARY / CONCLUSION

The City of Delta has requested that the GVS&DD amend the Fraser Sewerage Area to include the property located at 7969 Highway 91 Connector in Delta. On October 4, 2019, the MVRD Board resolved to accept the City of Delta's Regional Context Statement amending the property to a regional Industrial land use designation, and include the property within the Urban Containment Boundary, thus making it eligible to receive regional sewer services subject to approval by the GVS&DD Board. Analysis completed by Metro Vancouver staff has shown that there will be a negligible impact on the regional sewerage system and that there are no financial impacts to the GVS&DD. Staff recommend that the *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018* be amended to include the property located at 7969 Highway 91 Connector within the Fraser Sewerage Area.

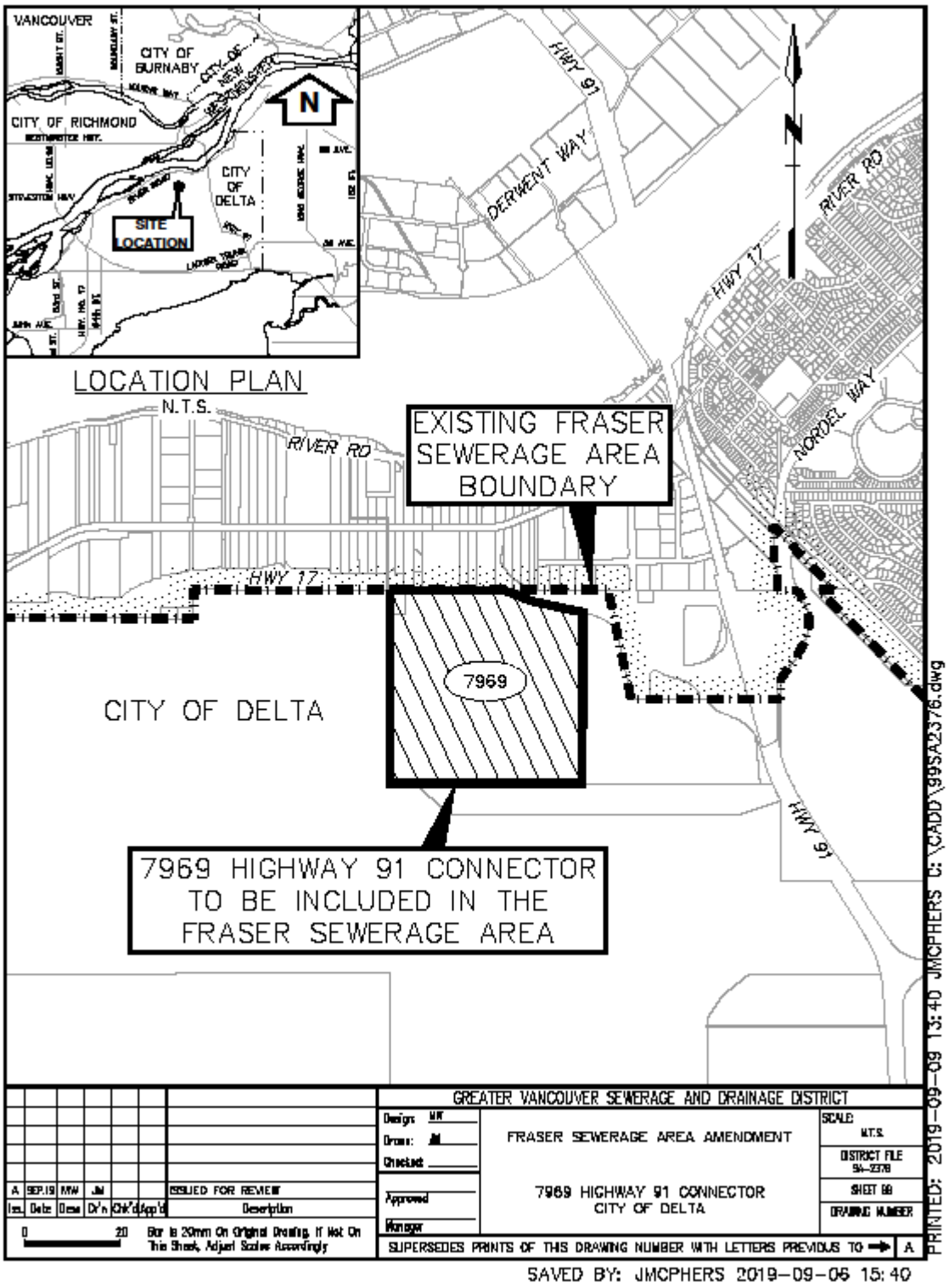
Attachments

1. Drawing SA-2376 Sheet 99 – Fraser Sewerage Area Amendment 7969 Highway 91 Connector City of Delta
2. *Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019*

References

1. *Regional Growth Strategy Amendment Bylaw No. 1283 – MK Delta Lands, City of Delta*, report to the MVRD Board, Section G, 1.2, dated September 17, 2019

32502419


VANCOUVER
CITY OF BURNABY
CITY OF NEW WESTMINSTER
CITY OF RICHMOND
CITY OF DELTA
SITE LOCATION
N
LOCATION PLAN
N.T.S.
HWY 91
DERWENT WAY
RIVER RD
HWY 17
NORDEL WAY
EXISTING FRASER SEWERAGE AREA BOUNDARY
7969
CITY OF DELTA
7969 HIGHWAY 91 CONNECTOR TO BE INCLUDED IN THE FRASER SEWERAGE AREA
GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
FRASER SEWERAGE AREA AMENDMENT
7969 HIGHWAY 91 CONNECTOR
CITY OF DELTA
SCALE: N.T.S.
SHEET 99
DRAWING NUMBER
ISSUED FOR REVIEW
SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO → A
PRINTED: 2019-09-09 13:40 JMCPHERS C:\CADD\99SA2376.dwg
SAVED BY: JMCPHERS 2019-09-06 15:40

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
BYLAW NO. 329, 2019

A Bylaw to Amend the "Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018"

WHEREAS:

A. the Board of Directors of the Greater Vancouver Sewerage and Drainage District has adopted "Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018", to fix the boundaries of GVS&DD Sewerage and Drainage Areas; and

B. the Board of the Greater Vancouver Sewerage and Drainage District wishes to amend "Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018";

NOW THEREFORE the Board of the Greater Vancouver Sewerage and Drainage District enacts as follows:

1. This bylaw may be cited as "Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Amending Bylaw No. 329, 2019".

2. "Greater Vancouver Sewerage and Drainage District Sewerage and Drainage Areas Boundaries Bylaw No. 310, 2018" is amended as follows:

    a. by adding to the Fraser Sewerage Area lands located at 7969 Highway 91 Connector in the City of Delta and shown on the attached Schedule "A", forming part of this bylaw; and

    b. by replacing Schedule "B" with the attached Schedule "B", forming part of this bylaw, containing Drawing Number S-3200 Sheet 2 titled "Greater Vancouver Sewerage and Drainage District Plan of Fraser Sewerage Area" dated September 20, 2019 to show the boundaries of the Fraser Sewerage Area, as amended.

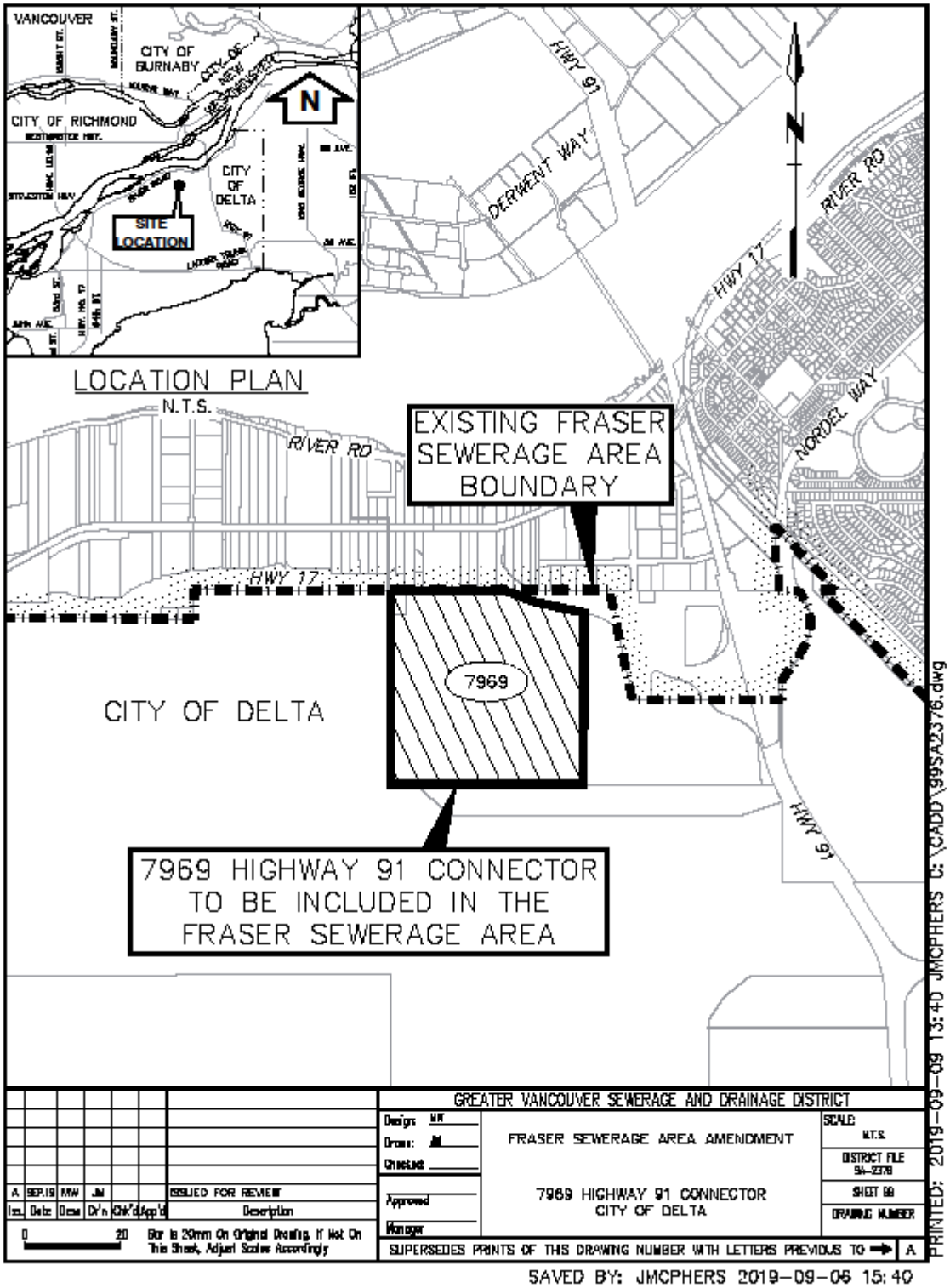
READ A FIRST, SECOND, AND THIRD TIME this _____ day of _____, 2019.

PASSED, AND FINALLY ADOPTED this _____ day of _____, 2019.

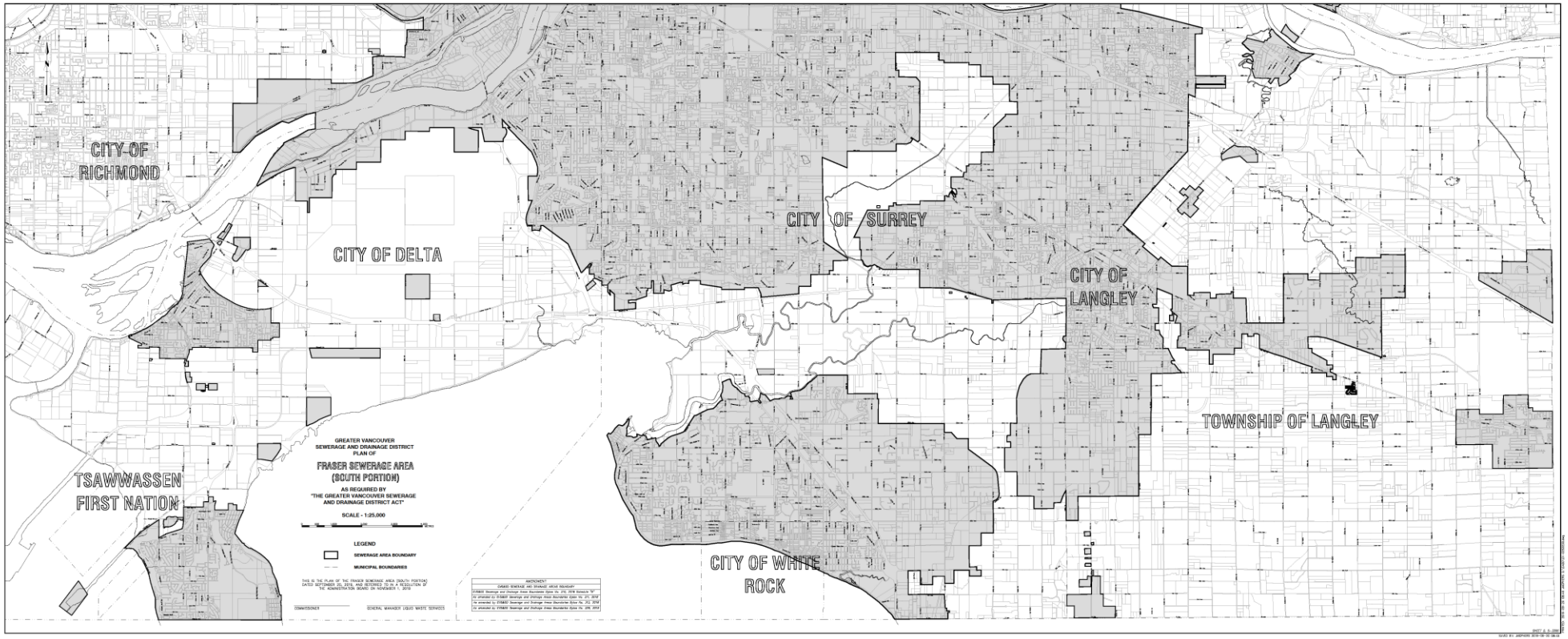
_____
Sav Dhaliwal, Chair

_____
Chris Plagnol, Corporate Officer

SCHEDULE "A"
PLAN IDENTIFYING PROPERTY



SCHEDULE "B"
MAP OF FRASER SEWERAGE AREA



To: Liquid Waste Committee

From: Peter Navratil, General Manager, Liquid Waste Services

Date: September 30, 2019 Meeting Date: October 17, 2019

Subject: **Manager's Report**

RECOMMENDATION
That the Liquid Waste Committee receive for information the "Manager's Report", dated September 30, 2019.

1. Attendance at 2020 Standing Committee Events

Participation by Liquid Waste Committee members at external events provides important learning and networking opportunities. The following event that fall under the purview of the Liquid Waste Committee are included in the 2020 Leadership and Engagement budget. For the following event, up to two spots are available for Committee members:

- **AWWA / WEF Utility Management Conference 2020**
  Date and Place: February 25–28, 2020; Anaheim, CA
  Number of attendees: 2

  Jointly sponsored by the American Water Works Association and the Water Environment Federation, the Utility Management Conference is one of the leading, most informative, and most prestigious management conferences available. Water and wastewater managers and professionals will gather to hear the latest approaches, practices, processes, techniques, case studies, and research in all aspects of utility management.

Please notify the Committee Chair as soon as possible, but no later than November 14, 2019, if you are interested in attending the above-noted event. As the funds for this event is budgeted in general government, the Finance and Intergovernment Committee will consider approval of the event, but final approval on attendance rests with the Board Chair.

2. Iona Beach Regional Park Road Update

In 2018, Liquid Waste Services staff assessed the condition of the road network leading into the Iona Island Wastewater Treatment Plant (IIWWTP) and the Iona Beach Regional Park. The road sections needing repair were west of the entrance to the Plant towards the park and south of the Plant along the causeway. These sections, approximately 2,100 m^2 in area (250 linear meters), were rehabilitated in the fall of 2018 at a cost of approximately $105,000 (see Attachment 1 - Paving Plan).

Recently staff identified the need for an additional 2,000 m^2 (300 linear meters) of pavement rehabilitation extending west of the 2018 paving work towards the park and approximately 500 m^2 (100 linear meters) of paving rehabilitation south of the 2018 paving work along the causeway. This

work is scheduled to be completed before the end of 2019 at an estimated cost of approximately $125,000. This work will address the remaining rehabilitation needs for the road leaving it in good useable condition. In the future years, staff will continue to monitor the road condition and additional repair work will be performed based on condition assessments.

During the construction of the IIWWTP secondary upgrade project, the portion of the road used for construction will be maintained by the project to facilitate its use for both existing wastewater treatment plant operations and the construction project. At the conclusion of the project a road condition assessment will be performed by the project team and the road will be rehabilitated, if and where required, to ensure it is left in a condition that meets all applicable municipal road standards.

3. Liquid Waste Committee 2019 Work Plan

Attached is the updated Work Plan indicating the status of the Committee's key priorities for this year.

Attachments:

1. Iona Beach Regional Park Road Paving Plan
2. Liquid Waste Committee 2019 Work Plan

ATTACHMENT 1

Iona Beach Regional Park Road Paving Plan

ATTACHMENT 2

Liquid Waste Committee 2019 Work Plan
Report Date: September 30, 2019

Priorities	
1st Quarter	**Status**
2019 Liquid Waste Capital Projects	Complete
Iona Island Secondary WWTP Project Definition Quarterly Update	Complete
North Shore Wastewater Treatment Plant Construction Update	Complete
Climate Change Impacts on Precipitation and Stormwater Management	Complete
Unflushables Campaign Update	Complete
GVS&DD DCC Bylaw Revisions	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Utility Policies (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
2nd Quarter	
Recreational Water Quality Monitoring	Complete
Status of Liquid Waste Capital Expenditures	Complete
Iona Island Secondary Wastewater Treatment Plant Project Definition Quarterly Update	Complete
Integrated Liquid Waste and Resource Management Plan Biennial Report 2017-2018	Complete
Biosolids Management Strategy	Complete
GVS&DD Membership Requests	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
Utility Policies (as applicable)	Complete
3rd Quarter	**Status**
Status of Liquid Waste Capital Expenditures	Complete
2018 GVS&DD Environmental Management & Quality Control Annual Report	Complete
Iona Island Secondary Wastewater Treatment Plant Project Definition Quarterly Update	Complete
Grease Campaign Update	Complete
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Complete
Contract Approvals – Contracts > $5M (as applicable)	Complete
Utility Policies (as applicable)	Complete
4th Quarter	**Status**
Annual Budget & 5 Year Financial Plan - Liquid Waste	In Progress
Sewer Overflow and WWTP Process Interruption Public Notification Process	In Progress
30 Year Financial Plan – Liquid Waste Scenarios	In Progress
Integrated Liquid Waste and Resource Management Plan Overview	In Progress
Poplar Landing	In Progress
Annual Energy Management Progress Update	In Progress
Capital Projects Policy Update	In Progress
Unflushables Campaign Results	In Progress
Iona Island Secondary Wastewater Treatment Plant Project Definition Quarterly Update	In Progress
Status of Liquid Waste Capital Expenditures	In Progress
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	In Progress
Contract Approvals – Contracts > $5M (as applicable)	In Progress
Utility Policies (as applicable)	In Progress

BRITISH COLUMBIA

Reference: 346762
X-Ref: 10400-60 LWMP Metro Vancouver

SEP 1 1 2019

Sav Dhaliwal, Chair
and Directors
Metro Vancouver Regional District
4730 Kingsway
Burnaby BC V5H 0C6

Dear Chair Dhaliwal and Directors:

I am writing to follow up on my email of December 11, 2018, regarding an amendment of the Greater Vancouver Sewerage and Drainage District (GVS&DD) Integrated Liquid Waste and Resource Management Plan (ILWRMP) to extend the plan review cycle timeline by two years, to 2021.

I am satisfied that the public notification is adequate to support an amendment to your ILWRMP. Pursuant to Section 24(5) of the *Environmental Management Act*, I hereby approve the amendment to extend the review cycle of the ILWRMP from eight to ten years (to be initiated in 2021), subject to the condition that the GVS&DD work with ministry staff to address the following actions:

1. Develop approaches to involve and collaborate with local Indigenous Peoples for the development and implementation of the ILWRMP.
2. Refresh terms of reference for the Environmental Monitoring Committee (EMC). This would include, but is not limited to, a review of the mandate and objectives, membership, roles and responsibilities, meeting frequency and revisiting how monitoring programs are designed, reviewed, implemented and amended.
3. Review the membership of the Stormwater Interagency Liaison Group and consider including municipal members in leadership positions. Seek comments and advice from the EMC regarding initial adaptive management framework reports associated with municipal integrated stormwater management plans.
4. Submit one comprehensive report for each of the GVS&DD receiving water bodies (Fraser River, Burrard Inlet, Boundary Bay and the Strait of Georgia). The terms of reference should be developed in consultation with ministry staff prior to completing each report.

...2

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

5. Promote transparency by ensuring that data and summary receiving environment and ambient monitoring reports for each of the GVS&DD receiving water bodies are made accessible to the public at an appropriate level of complexity.
6. Develop a system to notify the public, in real time, of sewer overflows and wastewater treatment interruptions.
7. Prepare a comprehensive plan for the review of the ILWRMP that defines the scope of the review and how GVS&DD addressed the conditions of the May 30, 2011, Ministerial approval letter.

These actions must be completed to the satisfaction of the Director, *Environmental Management Act*, no later than October 30, 2020.

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

Sincerely,

George Heyman
Minister

cc: AJ Downie, Director, Authorizations – South, Environmental Protection Division, Ministry of Environment and Climate Change Strategy