

**METRO VANCOUVER REGIONAL DISTRICT
LIQUID WASTE COMMITTEE**

REGULAR MEETING

September 19, 2019

1:00 p.m.

28th Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia

REVISED AGENDA¹

1. ADOPTION OF THE AGENDA

1.1 September 19, 2019 Regular Meeting Agenda

That the Liquid Waste Committee adopt the agenda for its regular meeting scheduled for September 19, 2019 as circulated.

2. ADOPTION OF THE MINUTES

2.1 July 11, 2019 Regular Meeting Minutes

That the Liquid Waste Committee adopt the minutes of its regular meeting held July 11, 2019 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Iona Island Secondary Wastewater Treatment Plant Project Quarterly Update

Verbal Update

Designated Speaker: Fred Nenninger, Director, Policy, Planning and Analysis, Liquid Waste Services

5.2 2019 Update on Liquid Waste Sustainability Innovation Fund Projects

Designated Speaker: Fred Nenninger, Director, Policy, Planning and Analysis, Liquid Waste Services

The attached report titled, "Update on Liquid Waste Sustainability Innovation Fund Projects," was provided for information to:

- May 17, 2019 Climate Action Committee (Item 5.1), and;
- May 22, 2019 Metro Vancouver Regional District Board (Item I1)

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

and is presented here to the Liquid Waste Committee for its information.

5.3 2018 Environmental Management and Quality Control Annual Report

Designated Speaker: Andjela Knezevic-Stevanovic, Director, Environmental Management and Quality Control, Liquid Waste Services

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".

5.4 Biosolids Management Strategic Direction

Designated Speaker: Lillian Zaremba, Program Manager, Utility Residuals Management, Liquid Waste Services

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.

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

Designated Speakers: Roy Moulder, Director, Purchasing and Risk Management, Financial Services, and Houston Marsh, Acting Operations Supervisor, Utility Residuals Management, Liquid Waste Services

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.

5.6 Award of a Contract Resulting from Tender No. 19 - 243: Northwest Langley Wastewater Treatment Plant Phase 2 Ground Improvement and Preload

Designated Speakers: Roy Moulder, Director, Purchasing and Risk Management, Financial Services, and Paul Wilting, Program Manager, Northwest Langley Wastewater Treatment Projects, Liquid Waste Services

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.

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

Designated Speakers: Roy Moulder, Director, Purchasing and Risk Management, Financial Services, and Jeff Chan, Division Manager, Project Delivery, Liquid Waste Services

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.

5.8 2019 Regional “Wipe It, Green Bin It” Campaign - Update

Designated Speaker: Larina Lopez, Division Manager, Corporate Communications, External Relations

That the Liquid Waste Committee receive for information the report dated August 29, 2019, titled “2019 Regional “Wipe It, Green Bin It” Campaign Update”.

5.9 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 11, 2019.

6. INFORMATION ITEMS

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

**Added
On Table**

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

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 September 19, 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

Svensden, 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 1:00 p.m. on Thursday, July 11, 2019 in the 28th Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia.

MEMBERS PRESENT:

Chair, Mayor Richard Stewart, Coquitlam
 Vice Chair, Mayor Mike Little, North Vancouver District
 Councillor Pietro Calendino, Burnaby
 Councillor Lisa Dominato, Vancouver (arrived at 1:12 p.m.)
 Councillor Doug Elford, Surrey
 Councillor Steve Ferguson, Langley Township
 Councillor Alexa Loo, Richmond
 Councillor Ryan Svendsen, Maple Ridge
 Councillor Mary Trentadue, New Westminster
 Mayor Val van den Broek, Langley City
 Mayor Darryl Walker, White Rock

MEMBERS ABSENT:

Mayor Rob Vagramov, Port Moody

STAFF PRESENT:

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

1. ADOPTION OF THE AGENDA

1.1 July 11, 2019 Regular Meeting Agenda

It was MOVED and SECONDED

That the Liquid Waste Committee adopt the agenda for its regular meeting scheduled for July 11, 2019 as circulated.

CARRIED

2. ADOPTION OF THE MINUTES

2.1 June 13, 2019 Regular Meeting Minutes

It was MOVED and SECONDED

That the Liquid Waste Committee adopt the minutes of its regular meeting held June 13, 2019 as circulated.

CARRIED

3. DELEGATIONS

No items presented.

4. INVITED PRESENTATIONS

No items presented.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 2019-2022 Board Strategic Plan

Report dated July 3, 2019 from Ann Rowan, Manager, Collaboration and Engagement, External Relations, and Megan Gerryts, Corporate Projects Coordinator, CAO Executive Office, seeking endorsement of the Liquid Waste Services Strategic Directions for the *2019-2022 Board Strategic Plan*.

1:12 p.m. Councillor Dominato arrived at the meeting.

Members were provided with a presentation on the Liquid Waste Services strategic directions for the *2019-2022 Board Strategic Plan*, highlighting purpose, context, and vision statement themes, regional context, and next steps.

Presentation material titled “2019-2022 Board Strategic Plan Liquid Waste Services” is retained with the July 11, 2019 Liquid Waste Committee agenda.

It was MOVED and SECONDED

That the Liquid Waste Committee endorse the Liquid Waste Services Strategic Directions as presented in the attachment dated June 25, 2019, titled “Strategic Directions: Liquid Waste Services”.

CARRIED

5.2 Liquid Waste Services Capital Program Expenditure Update as at April 30, 2019

Report dated July 3, 2019 from Bryan Shoji, Director, Project Delivery, Liquid Waste Services, providing members with the status of the Liquid Waste Services’ capital program expenditure for the period ending April 30, 2019.

Members were provided with a presentation on the progress of the 2019 Liquid Waste Services Capital Program, highlighting project updates for the South Surrey Interceptor Fraser River scour protection, Hastings Trunk Sewer Twinning,

Highbury Interceptor Air Treatment Facility, Northwest Langley Wastewater Treatment Plant ground improvements, and Annacis Island Wastewater Treatment Plant cogeneration engines.

Presentation material titled "Liquid Waste Services Capital Program Expenditure Update as at April 30, 2019" is retained with the July 11, 2019 Liquid Waste Committee agenda.

It was MOVED and SECONDED

That the GVS&DD Board receive for information the report dated July 3, 2019, titled "Liquid Waste Services Capital Program Expenditure Update as at April 30, 2019".

CARRIED

5.3 Award of Contract Resulting from Request for Proposal No. 19-011: Annacis Island Wastewater Treatment Plant Trickling Filter Media, Rotary Distributor and Ducting Replacement

Report dated July 2, 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 Request for Proposal (RFP) No. 19-011: Annacis Island Wastewater Treatment Plant Trickling Filter Media, Rotary Distributor and Ducting Replacement, and recommending award of the contract in an amount of up to \$32,870,400 (exclusive of taxes) to Maple Reinders Constructors Ltd.

It was MOVED and SECONDED

That the GVS&DD Board:

- a) approve the award of a contract for an amount of up to \$32,870,400 (exclusive of taxes) to Maple Reinders Constructors Ltd., resulting from Request for Proposal No. 19-011: Annacis Island Wastewater Treatment Plant Trickling Filter Media, Rotary Distributor and Ducting Replacement; and
- b) authorize the Commissioner and the Corporate Officer to execute the contract.

CARRIED

5.4 Regional Sewerage Services – Village of Anmore

Report dated July 5, 2019 from Fred Nenninger, Director, Policy, Planning and Analysis, Liquid Waste Services, providing information on the feasibility of extending the sewerage system to service properties in the Village of Anmore.

Members were provided with a presentation on the sewerage system connection to Anmore Green Estates, highlighting the *GVS&DD Cost Apportionment Bylaw*, three-way sewer services agreement between the City of Port Moody, the Village of Anmore and the GVS&DD, and estimated costs for sewerage services.

Pursuant to the *Non-Member Attendance at Board and Committee Meetings Policy*, the Liquid Waste Committee considered authorizing Mayor John McEwen, Anmore, to participate in discussion regarding the extension of the sewerage system to service properties in Anmore Green Estates in the Village of Anmore.

It was MOVED and SECONDED

That the Liquid Waste Committee authorize Mayor John McEwen, Anmore, to participate in discussion related to Item 5.4 Regional Sewerage Services – Village of Anmore”.

CARRIED

Discussion ensued on the equitable payment of growth charges incurred by residents in Anmore Green Estates and members of the GVS&DD, potential for service outside the Urban Containment Boundary, and provincial requirements for service.

In response to questions, members were informed of potential amendments to the *GVS&DD Cost Apportionment Bylaw*, alternative sewerage management options, and next steps.

Presentation material titled “Regional Sewerage Service – Village of Anmore” is retained with the July 11, 2019 Liquid Waste Committee agenda.

It was MOVED and SECONDED

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.

CARRIED

5.5 Manager’s Report

Report dated June 27, 2019 from Peter Navratil, General Manager, Liquid Waste Services, providing an update on the 2019 Liquid Waste Committee Work Plan.

It was MOVED and SECONDED

That the Liquid Waste Committee receive for information the Manager’s Report dated June 27, 2019.

CARRIED

6. INFORMATION ITEMS

No items presented.

7. OTHER BUSINESS

No items presented.

8. BUSINESS ARISING FROM DELEGATIONS

No items presented.

9. RESOLUTION TO CLOSE MEETING

It was MOVED and SECONDED

That the Liquid Waste Committee close its regular meeting scheduled for July 11, 2019 pursuant to the *Community Charter* provisions, Section 90 (1) (k) as follows:

“90 (1) A part of the meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

- (k) negotiations and related discussions respecting the proposed provision of a regional district service that are at their preliminary stages and that, in the view of the board or committee, could reasonably be expected to harm the interests of the regional district if they were held in public.”

CARRIED

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED

That the Liquid Waste Committee adjourn its regular meeting of July 11, 2019.

CARRIED

(Time: 2:14 p.m.)

Genevieve Lanz,
Legislative Services Coordinator

Richard Stewart, Chair

To: Liquid Waste Committee

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

Date: July 23, 2019 Meeting Date: September 19, 2019

Subject: **Update on Liquid Waste Sustainability Innovation Fund Projects**

The attached report titled, "Update on Liquid Waste Sustainability Innovation Fund Projects," was provided for information to:

- May 17, 2019 Climate Action Committee (Item 5.1), and;
- May 22, 2019 Metro Vancouver Regional District Board (Item I1)

and is presented here to the Liquid Waste Committee for its information.

Attachment

1. 2019 Update on Liquid Waste Sustainability Innovation Fund Projects, May 2, 2019

To: Climate Action Committee

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

Date: May 2, 2019

Meeting Date: May 17, 2019

Subject: **2019 Update on Liquid Waste Sustainability Innovation Fund Projects**

RECOMMENDATION

That the Climate Action Committee receive for information the report dated May 2, 2019, titled "2019 Update on Liquid Waste Sustainability Innovation Fund Projects".

PURPOSE

This report provides an update on projects funded under the Liquid Waste Sustainability Innovation Funds.

BACKGROUND

The Liquid Waste Sustainability Innovation Fund was created by the Board in 2004 to provide financial support to Liquid Waste Utility projects that contribute to the region's sustainability. The GVS&DD Board adopted the *Liquid Waste Sustainability Innovation Fund Policy* on June 27, 2014, with further amendments in 2016, to guide the use and management of the Fund. The policy requires that the Climate Action Committee be updated on an annual basis on the deliverables, outcomes and measurable benefits of the projects receiving funding.

This report presents an update on projects that have not yet been reported as complete to the Climate Action Committee. The projects outlined below were approved for funding from 2016 to 2018. Projects that were approved for funding in 2019 have not been included in this report, but will be reported on in 2020, per the policy.

Project	Approval Year	Amount Approved	Status
Smart Sewers: Development of Wireless In-Situ Sensors	2016	\$200,000	In Progress
High Efficiency Aeration Demonstration	2017	\$750,000	In Progress
Genomics Approach to Anaerobic Digestion Optimization	2017	\$460,000	In Progress
Microwave-enhanced Advanced Oxidation Process Sludge Destruction Pilot	2017	\$850,000	In Progress
Capture of wastewater contaminants of concern and beneficial use of residuals	2018	\$450,000	In Progress
Intelligent Water Systems - Making Use of Sensors and Big Data Analytics	2018	\$200,000	In Progress
Hydrothermal Processing - Biofuel Demonstration Facility	2018	\$8,250,000	In Progress

SMART SEWERS: DEVELOPMENT OF WIRELESS IN-SITU SENSORS: IN PROGRESS

The goal of this project is to develop a smart sensor capable of early detection of nuisance odours and corrosion that erodes the service life of Metro Vancouver's multi-billion dollar sewage collection network. Since funding approval in May 2016, the UBC Engineering Team from the Advanced Thermo-Fluidic Laboratory has leveraged Sustainability Innovation Funds to secure two grants from the federal Natural Sciences and Engineering Research Council, totaling \$225,000 to date.

Applying advanced electro-mechanical engineering techniques, the UBC Team is applying iterative design and manufacturing of two functionally distinct types of sensor prototypes using 3D printers. The sizing of prototypes has decreased with each iteration, while recent innovations have enabled operation in explosive sewer atmospheres. Auxiliary components under development include a touchscreen graphical user interface and a multi-stage sample filtration module. Sensor testing on sewage is currently under way, with plans for pilot-testing in a continuously flowing sewer-reactor set for mid-2019.

HIGH EFFICIENCY AERATION DEMONSTRATION: IN PROGRESS

More than one-half of the energy consumed at a wastewater treatment facility can be for aerating the wastewater. A new device called the Perlemax Fluidic Oscillator has shown its ability to increase energy efficiency by 25% at small scale and this project is to evaluate the device at near-full water depths. The Perlemax device induces the formation of microbubbles using standard air diffusers to effectively increase the area of contact between oxygen and water given the same volume of air.

Since project start in 2017, Metro Vancouver has retained Perlemax as the technology provider who has provided their conceptual design, secured the Water Research Foundation as a third party independent evaluator, and staff are in the process of formalizing collaborative work with the District of Columbia Water and Sewer Authority (DC Water) at their large wastewater treatment plant. DC Water has provided in-kind contributions to the project by way of specialized test facilities and some staff time for the duration of our collaboration.

GENOMICS APPROACH TO ANAEROBIC DIGESTION OPTIMIZATION: IN PROGRESS

The goal of this project is to increase energy generation from existing anaerobic digestion processes used at Metro Vancouver Wastewater Treatment Plants. There are two academic teams on this project: i) environmental genomic experts at UBC's Department of Microbiology and Immunology, and ii) anaerobic digestion experts from UBC's School of Engineering, Bioreactor Technology Group. Since project approval in February 2017, the genomics team and Bioreactor Technology Group have leveraged Sustainability Innovation Funds to secure four grants from the Natural Sciences and Engineering Research Council totaling over \$700,000.

The team has completed sampling of existing anaerobic digesters at the Lulu Island WWTP for baselining and grant proposal submissions. Preliminary findings show that less than 1% of microorganisms present are methanogens, those responsible for producing the methane content in biogas. Given the relatively small starting community of methanogens, even a marginal increase in this population should result in a significant increase in methane production. The genomic analysis suggests methane-limiting conditions are present such as availability of trace elements and electron donors. Ongoing work involves execution of agreements, student recruitment, laboratory set-up, and

bench testing to identify the key constraints to methane production. Insights to alleviate the constraints are informing prototype design of a potentially patentable Renewable Natural Gas Optimizer.

MICROWAVE-ENHANCED ADVANCED OXIDATION PROCESS SLUDGE DESTRUCTION PILOT: IN PROGRESS

Anaerobic digestion (AD) at Wastewater Treatment Plants is a common process to convert municipal sewage sludge into biogas that can be used as a renewable source of energy. Sludge pre-treatment processes can accelerate sludge destruction to increase AD efficiency and biogas production. At its February 24, 2017 meeting, the GVS&DD Board approved the allocation of funds from the Liquid Waste Sustainability Innovation Fund to the Microwave-enhanced Advanced Oxidation Process Sludge Destruction Pilot. The process consists of exposing secondary sludge to microwave heating after injection of hydrogen peroxide (H₂O₂). The combination of heat and H₂O₂ increases solids disintegration, making them more available for biogas production. The project is being undertaken in collaboration with academics in the Civil Engineering Department of UBC who patented this process in 2006. Leveraging contributions from the Sustainability Innovation Fund, UBC was successful in a NSERC funding award of \$518,000 for this project.

The first phase of the project is underway and will be completed by end of 2019. The trailer pilot plant was designed and built. Installation at the Annacis Research Centre (ARC) is under way and commissioning will be completed in May 2019. This first phase will test the process to assess potential for methane recovery, energy consumption and life cycle costs to confirm cost effectiveness of the process. If this first phase is successful, a second phase will be considered to carry out pilot testing at one of Metro Vancouver Wastewater Treatment Plants.

CAPTURE OF WASTEWATER CONTAMINANTS OF CONCERN AND BENEFICIAL USE OF RESIDUALS: IN PROGRESS

Dr. Loretta Li at the Civil Engineering Department at the University of British Columbia (UBC) has been developing a process using sewage sludge-based activated carbon (SBAC) to capture contaminants of emerging concern (CECs) in storm water and is proposing to apply her research to the capture of contaminants in municipal wastewater. On February 23, 2018, the GVS&DD Board approved funding for the project from the Liquid Waste Sustainability Innovation Fund for \$450,000 over three years, starting in 2018. On December 5, 2018, a Collaborative Research Agreement (CRA) was executed between UBC, GVS&DD and KWL for the project titled "Sludge-Based Activated Carbon for Contaminants Capture". That CRA covers the work associated with the first phase of the research work at UBC aimed at demonstrating technical feasibility. Subsequent phases of the research work will be covered under a future or amended CRA, following confirmation of technical feasibility in the Phase 1 work.

A separate collaboration agreement between GVS&DD and KWL to cover KWL's scope of work was executed on January 1, 2019. KWL's scope of work includes developing a preliminary business case including SBAC material quantity requirements, production costs and market size and assessment of the commercial feasibility of the opportunity. KWL has also applied for additional funding from Mitacs Inc., a federal not-for-profit corporation that supports industrial and social innovation in Canada, to

hire researchers to work on the project with UBC. Once funding is confirmed at the end of April, UBC will hire researchers and initiate Phase 1 technical work.

INTELLIGENT WATER SYSTEMS - MAKING USE OF SENSORS AND BIG DATA ANALYTICS: IN PROGRESS

Metro Vancouver and its municipal members currently monitor and collect large amounts of data from many different sources. With the advent of new and less expensive sensor and data collection technology this trend is expected to increase exponentially. This results in the need to be able to collect, process, and analyze a large amount of data (Big Data) before it can become usable information. The process to adapt to this shift for the water industry is currently in its infancy. There is a need to identify and evaluate new and innovative tools and techniques to take advantage of this change, and this project is intended to help Metro Vancouver prepare for the coming wave of "Big Data".

The Water Research Foundation (WRF) is managing a study to help the water industry prepare for the need to manage this coming wave of data. Metro Vancouver is partnering with WRF through a \$200,000 Sustainability Innovation Fund contribution and will be a key subject case study. A possible example is to explore the use of Artificial Intelligence for comprehensive quality assessment and quality control of data. Another possible example is to develop procedures to assess patterns and predict malfunctions for adapting operational rules or scheduled maintenance. Other study considerations can include the integration of various datasets, and the ability to input and process key information such as real time rainfall and flow data, land use and population data, and environmental monitoring data.

HYDROTHERMAL PROCESSING - BIOFUEL DEMONSTRATION FACILITY: IN PROGRESS

Hydrothermal Processing is a technology that has proven at bench-scale, its ability to transform Annacis Island wastewater sludge into a low carbon biocrude oil. The biocrude can be subsequently refined into liquid transportation fuels having carbon intensities that are three-fold lower than that produced from typical petroleum sources. A complete Hydrothermal Process includes two steps. This demonstration project covers Step 1 to validate operational viability of the core technology, assess its outputs for revenue-generation potential or return to treatment, and calculate greenhouse gas reductions.

In addition to contributions from the Sustainability Innovation Fund, Metro Vancouver has raised funding from external partners for this project as outlined below.

Line	Funding Source	Amount	Status
1	Province of BC, Innovative Clean Energy (ICE) Fund	\$750,000	Received in 2018
2	Parkland Fuel Corporation, Part 3 Agreement	\$2,475,000	Received in 2018
3	Parkland Fuel Corporation, Part 3 Agreement	\$1,775,000	Future year contributions
4	Sustainability Innovation Fund	\$4,000,000	Approved in 2018
Total Project Cost		\$9,000,000	

The \$9 million in total funding covers the design, fabrication, implementation, as well as approximately one year of operating Step 1 of the complete Hydrothermal Process. To date, the project team has secured the demonstration site at the Annacis Island Wastewater Treatment Plant, retained rights to proprietary technology, as well as preliminary design and support from Genifuel

Corporation. The team will proceed with additional contracts for an owner's engineer, fabricator, operator, and evaluator in the coming months.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The projects summarized in this report, had funding approved by the GVS&DD Boards in 2016, 2017, and 2018. The disbursements of funds were made in accordance with the applicable *Sustainability Innovation Fund Policy* that governs the use and management of the Funds. Annually, \$1,127,000 is contributed to the reserve fund. The projected 2019 reserves in the Liquid Waste Sustainability Innovation Fund total \$13.6million.

The table below outlines the funding approved and the amount spent to date for each project. Any unspent funds for completed projects remain in the Sustainability Innovation Fund reserve.

Project	Total Amount of Funding Approved	Amount Spent (as of Mar 31, 2019)
2016 Approval Year		
Smart Sewers: Development of Wireless In-Situ Sensors	\$200,000	\$200,000
2017 Approval Year		
High Efficiency Aeration Demonstration	\$750,000	\$91,871
Genomics Approach to Anaerobic Digestion Optimization	\$460,000	\$98,718
Microwave-enhanced Advanced Oxidation Process Sludge Destruction Pilot	\$850,000	\$585,000
2018 Approval Year		
Capture of wastewater contaminants of concern and beneficial use of residuals	\$450,000	\$103,000
Intelligent Water Systems - Making Use of Sensors and Big Data Analytics	\$200,000	\$0
Hydrothermal Processing - Biofuel Demonstration Facility	\$8,250,000	\$1,224

SUMMARY / CONCLUSION

This report has presented an update on seven projects funded under the Liquid Waste Sustainability Innovation Fund. The Sustainability Innovation Funds were created by the Board in 2004 to provide financial support to utility or Regional District projects that contribute to the region's sustainability.

29022729

To: Liquid Waste Committee

From: Andjela Knezevic-Stevanovic, Director, Environmental Management and Quality Control, Liquid Waste Services

Date: August 22, 2019 Meeting Date: September 19, 2019

Subject: **2018 GVS&DD Environmental Management and Quality Control Annual Report**

RECOMMENDATION

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".

PURPOSE

To provide the Liquid Waste Committee with a summary of the 2018 GVS&DD Environmental Management and Quality Control Annual Report.

BACKGROUND

This report is being brought forward to satisfy annual reporting requirement under the Ministerial conditions of provincial approval of Metro Vancouver's *Integrated Liquid Waste and Resource Management Plan* (ILWRMP). The report was presented to and received for information by the Regional Engineers Advisory Committee (REAC) on July 5, 2019.

SUMMARY OF RESULTS

The Executive Summary of the 2018 GVS&DD Environmental Management and Quality Control Annual Report (Attachment 1) summarizes the regulatory and process control information gathered through the various monitoring and risk assessment programs that are in place to meet GVS&DD's commitments under the ILWRMP, including those for: wastewater treatment plant influent, effluent, odour and process streams; operation of the collection system; effluent toxicity testing; receiving and ambient environment quality; and biosolids. For additional details please refer to the 2018 GVS&DD Environmental Management and Quality Control Annual Report available through Metro Vancouver's website and through the Metro Vancouver Library.

In order to assess wastewater treatment system performance and reliability, its impact on human health and the environment, and to perform biosolids and environmental quality monitoring, the Environmental Management and Quality Control Division performed over 207,000 analyses in 2018. Major conclusions are as follows:

- a) The five wastewater treatment plants (WWTPs) treated over 456 billion litres of wastewater in 2018. The quantities of biochemical oxygen demand (BOD) and total suspended solids (TSS) removed were 58,000 tonnes and 57,000 tonnes, respectively.
- b) The WWTPs consistently complied with Operational Certificate requirements except in seventeen instances as detailed in the Executive Summary.

- c) 16,000 tests were performed on biosolids in 2018. Metal concentrations in weekly composite samples and fecal coliform counts in biosolids were all generally below the regulatory limits outlined in the *Organic Matter Recycling Regulation* (OMRR).
- d) All effluent samples from all wastewater treatment plants passed the required monthly acute toxicity test except for four Iona Island effluent samples which required oxygen in excess of that specified by the Environment and Climate Change Canada method.
- e) As part of the characterization of wastewater from all five WWTPs for contaminants of emerging concern, analysis of trace organic and endocrine disrupting substances was initiated in 2014 and continued through 2018. Analyzed substances include: organochlorine pesticides (OCPs) and other types of pesticides, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs), volatile organic compounds, phenolic compounds, surfactants, polybrominated diphenyl ethers (PBDEs), hormones and sterols, pharmaceuticals and personal care products (PPCPs). Results are used to inform decisions regarding the management of these substances, including source control initiatives.
- f) Assessment of monitoring results from the Strait of Georgia, Burrard Inlet and Boundary Bay indicated that the applicable objectives or guidelines were met, except for dissolved oxygen and boron, for which results were consistent with typical concentrations in Canadian coastal marine waters. Monitoring results from the Annacis Initial Dilution Zone (IDZ) met the applicable objectives and guidelines, except un-ionized ammonia on occasion did not meet the CCME guideline at the IDZ boundary. However, total ammonia concentrations met the site-specific Fraser River Water Quality Objective.
- g) Bacteriological water quality for primary-contact recreation was met for most bathing beaches from May through September, except for 9 beach locations detailed in the annual summary. Swimming advisories were posted by the Health Authorities at the affected areas which resulted in swimming advisory postings that lasted between 2 to 21 days.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

Ongoing environmental management, monitoring and quality control works are proceeding as required under the GVS&DD *Integrated Liquid Waste and Resource Management Plan* and the associated costs are included in the Liquid Waste Services Environmental Management and Quality Control annual operating budget.

SUMMARY / CONCLUSION

Annual reporting of the GVS&DD Environmental Management and Quality Control is a regulatory requirement under the *Integrated Liquid Waste and Resource Management Plan*. This report summarizes the compliance, process control and regional environmental quality information

gathered through various monitoring and risk assessment programs that are in place to meet GVS&DD's commitments under the ILWRMP.

As illustrated by the 2018 GVS&DD Environmental Management and Quality Control Annual Report, Metro Vancouver's wastewater treatment plants continue to meet performance expectations with respect to reduction of contaminant loadings to the receiving environment and are consistently providing ongoing benefits to the region. Various monitoring programs continue to fulfill their role of confirming that the wastewater treatment plants are operating efficiently and with no adverse effects on human health or the environment. Findings of the environmental monitoring programs confirm that regional liquid waste discharges continue to be effectively managed in a manner that is protective of aquatic life.

Attachment

1. 2018 GVS&DD Environmental Management and Quality Control Annual Report Executive Summary

31060868

2018 GVS&DD ENVIRONMENTAL MANAGEMENT AND QUALITY CONTROL ANNUAL REPORT EXECUTIVE SUMMARY

The Greater Vancouver Sewerage and Drainage District (GVS&DD or the District) operates five wastewater treatment plants (WWTPs) in the region. Three of the five plants provide secondary treatment (Annacis Island, Lulu Island and Northwest Langley) and discharge treated effluent into the lower Fraser River. The other two wastewater treatment plants (Iona Island and Lions Gate) provide primary treatment and discharge treated effluent to Georgia Strait and First Narrows of Burrard Inlet, respectively.

Under the provisions of the Environmental Management Act, the Minister of Environment approved Metro Vancouver's Integrated Liquid Waste and Resource Management Plan (ILWRMP, or the Plan) in May 2011. The Plan has three goals: protect public health and the environment; use liquid waste as a resource; and effective, affordable and collaborative management. Metro Vancouver manages its liquid waste in accordance with the ILWRMP and WWTP specific Operational Certificates. These Certificates authorize the GVS&DD to discharge treated effluent from its WWTPs to the receiving waters. The federal Wastewater Systems Effluent Regulations (WSER) under the Fisheries Act came into effect on July 18, 2012. GVS&DD is required to monitor and report effluent quality under WSER on a quarterly basis.

The District's objective is to maintain ongoing compliance with the provincial Operational Certificates and federal WSER, and by doing so continue to protect human health and the environment. The purpose of this report is to document the performance of the collection system and WWTPs in 2018 and to summarize findings of numerous environmental management initiatives and monitoring programs.

Most of the monitoring, laboratory analytical services and data analyses upon which WWTP performance is assessed were provided by the Environmental Management & Quality Control Division of Metro Vancouver's Liquid Waste Services.

This report provides an overview of the information collected as a result of Environmental Management & Quality Control's monitoring programs for the wastewater treatment plants, including monitoring for effluent and biosolids quality, and receiving and ambient environment quality. Other programs and projects discussed in this report are in support of ongoing commitments under the ILWRMP or compliance with conditions of the Plan approved by the Minister of Environment.

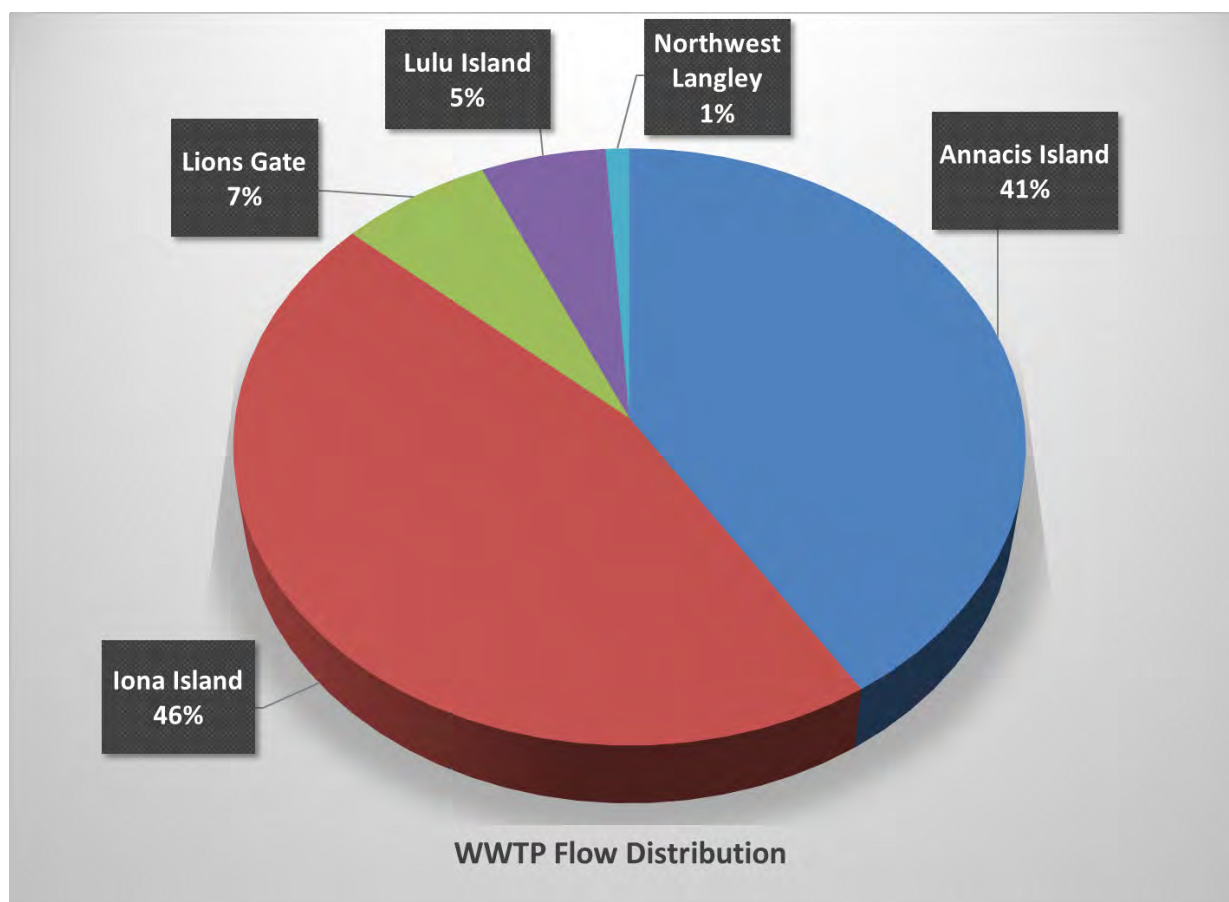
WASTEWATER TREATMENT PLANTS

Operational Certificates

The Operational Certificates (OCs) issued by the Ministry of Environment (MOE) under the provisions of the Environmental Management Act include daily compliance levels for flow and daily loadings for Biochemical Oxygen Demand (BOD) (or Carbonaceous Biochemical Oxygen Demand (cBOD), where applicable) and Total Suspended Solids (TSS). The loading parameters listed as “maximum daily discharge loadings” are used to calculate the annual discharge authorization fees as required by the Permit Fees Regulation and are based on a calendar year.

Among other OC conditions, requirements are listed for disinfection of the effluent at all WWTPs except Iona Island, so that fecal coliform water quality objectives for the receiving water body are met at the edge of the initial dilution zone as defined by the Municipal Wastewater Regulation. When chlorine is used for disinfection, it must be removed from the effluent before discharge to the receiving waters.

In 2018, about 456 billion litres of wastewater were treated at the GVS&DD’s five wastewater treatment plants. Of this total, over 239 billion litres received primary treatment (at Iona Island and Lions Gate) with the remaining 217 billion litres treated at the three secondary wastewater plants (at Annacis Island, Lulu Island and Northwest Langley). Individual treated effluent flows for each wastewater treatment plant and quantities of BOD and suspended solids removed in 2018 are summarized below:



Total for 2018	Annacis Island WWTP	Iona Island WWTP	Lions Gate WWTP	Lulu Island WWTP	Northwest Langley WWTP	Total
Effluent Flow, ML	186,392	207,898	30,916	25,486	4,853	455,545
BOD, Tonnes Removed	34,561	13,046	1,553	6,938	1,508	57,966
Suspended Solids, Tonnes Removed	30,748	16,820	3,191	5,251	1,218	57,227

Treatment Plant Performance Review

The overall performance of the GVRD's five wastewater treatment plants was good. BOD and TSS operational certificate requirements were generally met throughout 2018. The following table summarizes the average reduction in BOD and TSS loadings for all plants.

Wastewater Treatment Plant	% BOD Reduction	% TSS Reduction
Iona Island *	45	61
Lions Gate*	41	67
Annacis Island **	94	91
Lulu Island **	97	96
Northwest Langley**	95	93

* Reduction for primary plants expected to be about 30% for BOD and 60% for TSS

** Reduction for secondary plants expected to be about 90% for both TSS and BOD

In 2018, GVS&DD reported 17 events to the Ministry of Environment. These events can be grouped into 2 categories.

Category 1 (8 events) includes instances of disinfection or dechlorination system interruptions, plant bypasses, controlled discharges and spills. Probable causes and potential environmental effects are discussed in the table below.

Description	Plant	Date	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects (Determined based on dilution dispersion modelling of downstream concentrations)
Controlled discharge of trickling filter effluent	Annacis Island	Jan 29	1.3 to 1.9 million litres	10.67 hours	Wet weather caused high influent flows	Not Applicable	Trickling filter effluent was contained in a construction excavation area located within the boundaries of Annacis Island WWTP.
Disinfection System Interruption*	Annacis Island	Apr 16	6.96 million litres	10.97 minutes	BC Hydro power interruption	Not Applicable	The applicable Health Canada Recreational Water Quality Guidelines were predicted to have been met at designated recreation areas. The applicable BC MOE Water Quality Guidelines for fecal coliforms were predicted to have been met at known registered water licence diversion points. The applicable BC MOE Water Quality Guidelines for chlorine were expected to have been met in the Fraser River.
Disinfection System Interruption*	Lulu Island	April 23	0.10 million litres	2.35 minutes	BC Hydro power interruption	Not Applicable	The applicable BC MOE Water Quality Guidelines for chlorine were expected to have been met in the Fraser River.
Disinfection System Interruption*	Lions Gate	June 20	0.03 million litres	32 seconds	BC Hydro power interruption	Not Applicable	The applicable Health Canada Recreational Water Quality Guidelines were predicted to have been met at designated recreation areas. The applicable BC MOE Water Quality Guidelines for chlorine were expected to have been met in Burrard Inlet.
Disinfection System Interruption*	Annacis Island	July 25	1.15 million litres	4.07 minutes	Power interruption to chlorination equipment	Not Applicable	The applicable Health Canada Recreational Water Quality Guidelines were predicted to have been met in the Fraser River. The applicable BC MOE Water Quality Objectives for fecal coliforms were predicted to have been met in the Fraser River.

Description	Plant	Date	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects (Determined based on dilution dispersion modelling of downstream concentrations)
Disinfection System Interruption and Plant Bypass*	Lulu Island	Sept 13	Disinfection Interruption: 6.67 million litres Plant Bypass: 1.04 million litres	Disinfection Interruption: 2.62 hours Plant Bypass: 0.43 hour	Loss of power to one of the plant Power Distribution Centers	Not Applicable	There was potential for exceeding the applicable Health Canada and BC MOE Recreational Water Quality Guidelines at Garry Point Park. There was potential for exceeding the applicable BC MOE Water Quality Guidelines for fecal coliforms at known registered water license diversion points. The applicable BC MOE Water Quality Objectives for TSS and dissolved oxygen were expected to have been met in the Fraser River. The applicable BC MOE Water Quality Guidelines for chlorine were expected to have been met in the Fraser River.
Treated Primary Effluent Spill to ground	Lions Gate	Nov 27	0.003 million litres	1.0 hour	High tide levels combined with high effluent flow conditions	Not Applicable	Soil chemistry results indicated the concentrations of arsenic, copper and zinc above the Canadian Environmental Quality Guidelines and Canadian Soil Quality Guidelines for industrial land use. E. Coli was also detected in the soil at a relatively high concentration. There is no standard for E. Coli in soil. Water chemistry results indicated the concentrations of cadmium, copper, lead and zinc above the BC Water Quality Guidelines, Canadian Surface Water Quality Guidelines and Federal Interim Groundwater Guidelines for industrial land use and marine life. E. Coli was also detected in the water at a relatively high concentration. There is no standard for E. Coli in water.
Secondary Treatment Bypass*	Lulu Island	Dec 20	21.157 million litres	5.73 hours	Loss of power from BC Hydro	Not Applicable	The applicable BC MOE Water Quality Objectives for TSS and dissolved oxygen were expected to have been met in the Fraser River.

* Event was reported to the MOE and their assessment determined that conditions and requirements under *Emergency Procedures* clause of the Operating Certificate were met. Plant was deemed to be in compliance with its Operating Certificate.

Category 2 (9 events) were the results of daily discharge loadings for suspended solids or cBOD above the maximum load limits as well as daily rate of effluent discharge above the maximum limits. These events typically have no significant environmental effect.

Description	Plant	Date	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects (Determined based on dilution dispersion modelling of downstream concentrations)
Suspended Solids Loading	Annacis Island	March 26	20.4 tonnes/day	Not Applicable	Wet weather caused high influent flow conditions	No remedial action required	The applicable BC MOE Water Quality Objective for TSS was expected to have been met in the Fraser River.
Suspended Solids Loading	Annacis Island	April 3	20.1 tonnes/day	Not Applicable	Elevated final effluent TSS due to poor settling characteristics of the solids	Polymer was added to enhance secondary clarification until settling characteristics returned to typical.	The applicable BC MOE Water Quality Objective for TSS was expected to have been met in the Fraser River.
Suspended Solids Loading	Annacis Island	April 5	22.5 tonnes/day	Not Applicable	Elevated final effluent TSS due to poor settling characteristics of the solids	Polymer was added to enhance secondary clarification until settling characteristics returned to typical.	The applicable BC MOE Water Quality Objective for TSS was expected to have been met in the Fraser River.
cBOD Loading	Northwest Langley	Oct 18	0.506 tonnes/day	Not Applicable	High soluble CBOD fraction in the Trickling Filter Effluent	The number of trickling filter units in service was increased by 33%	The applicable BC MOE Water Quality Guideline for dissolved oxygen was expected to have been met in the Fraser River.

Description	Plant	Date	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects (Determined based on dilution dispersion modelling of downstream concentrations)
cBOD Loading	Northwest Langley	Nov 1	0.508 tonnes/day	Not Applicable	Wet weather caused high influent flow conditions.	No remedial action required.	The applicable BC MOE Water Quality Guideline for dissolved oxygen was expected to have been met in the Fraser River.
Suspended Solids Loading	Annacis Island	Dec 13	21.1 tonnes/day	Not Applicable	Wet weather caused high influent flow conditions.	No remedial action required.	The applicable BC MOE Water Quality Objective for TSS was expected to have been met in the Fraser River.
Daily Authorized Rate of Effluent Discharge	Iona Island	Dec 13	1,591 million litres	Not Applicable	Wet weather caused high influent flow conditions.	No remedial action required.	The applicable BC MOE Water Quality Guideline for TSS was expected to have been met in the Strait of Georgia. The applicable BC MOE Water Quality Guideline for Dissolved Oxygen was expected to have been met in the Strait Georgia.
cBOD Loading	Lulu Island	Dec 20	3.81 tonnes per day	Not Applicable	Loss of power from BC Hydro	No remedial action required.	The applicable BC MOE Water Quality Objectives for dissolved oxygen were expected to have been met in the Fraser River.
Suspended Solids Loading	Annacis Island	Dec 20	22.3 tonnes/day	Not Applicable	Loss of power from BC Hydro	No remedial action required.	The applicable BC MOE Water Quality Objective for TSS was expected to have been met in the Fraser River.
Suspended Solids Loading	Annacis Island	Dec 28	20.5 tonnes/day	Not Applicable	Wet weather caused high influent flow conditions.	No remedial action required.	The applicable BC MOE Water Quality Objective for TSS was expected to have been met in the Fraser River.

A summary of events associated with clauses of the Operational Certificates reported to the MOE in the last six years is shown in the tables below. The number of events is shown against a total number of tests or data collected during the period.

Iona Island WWTP Operational Certificate ME 00023 – issued April 23, 2004

Parameter	2013	2014	2015	2016	2017	2018
Max. Daily Discharge (Exceeded)	0	0	0	0	0	1 (of 365)
Biochemical Oxygen Demand (BOD)	0	0	2 (of 105)	0	0	0
Suspended Solids	0	0	0	0	0	0
BOD Daily Loading	0	0	0	0	0	0
Suspended Solids Daily Loading	0	0	0	0	4 (of 364)	0
Plant Bypass	0	1 (of 365)	0	0	0	0

Lions Gate WWTP Operational Certificate ME 00030 – issued April 23, 2004

Parameter	2013	2014	2015	2016	2017	2018
Max. Daily Discharge (Exceeded)	0	0	0	0	0	0
Biochemical Oxygen Demand (BOD)	1 (of 112)	0	0	0	0	0
Suspended Solids	0	0	0	0	0	0
BOD Daily Loading	0	0	0	0	0	0
Suspended Solids Daily Loading	0	0	1 (of 360)	0	1 (of 365)	0
Chlorine Residual*	0	0	0	0	0	1** (of 160)
Disinfection Interruption	0	0	0	1 (of 157)	0	0
Fecal Coliform	0	0	0	0	0	0

* Measured during disinfection season only – after dechlorination

** Event was reported to the MOE and their assessment determined that conditions and requirements under *Emergency Procedures* clause of the Operating Certificate were met. Plant was deemed to be in compliance with its Operating Certificate.

Northwest Langley WWTP

Operational Certificate ME 04339 – issued December 21, 2017

Parameter	2013	2014	2015	2016	2017	2018
Max. Discharge Rate (Exceeded)	0	0	0	0	0	0
Carbonaceous Biochemical Oxygen Demand (cBOD)	0	0	0	0	0	0
Suspended Solids	0	0	1 (of 361)	0	0	0
cBOD Daily Loading	0	0	0	0	0	2 (of 156)
Suspended Solids Daily Loading	1 (of 365)	3 (of 364)	4 (of 361)	1 (of 366)	0	0
Chlorine Residual *	1 (of 154)	n/a	n/a	0	0	0
Disinfection Interruption	0	0	0	0	0	0
Fecal Coliform	0	0	0	0	0	0

* Measured during disinfection season only – after dechlorination

Annacis Island WWTP Operational Certificate ME 00387 – issued April 23, 2004

Parameter	2013	2014	2015	2016	2017	2018
Max. Daily Discharge (Exceeded)	0	0	0	0	0	0
Carbonaceous Biochemical Oxygen Demand (cBOD)	0	0	0	0	0	0
Suspended Solids	0	0	0	0	0	0
cBOD Daily Loading	0	1 (of 166)	0	0	0	0
Suspended Solids Daily Loading	0	1 (of 365)	0	1 (of 366)	0	6 (of 365)
Chlorine Residual*	0	0	0	0	2** (of 241)	0
Disinfection Interruption	0	0	0	1 (of 216)	0	2*** (of 219)
Fecal Coliform	0	0	0	0	0	0
Plant Bypass	0	0	0	0	0	0
Secondary Bypass	0	0	0	0	0	0
<i>Primary Effluent During Secondary Bypass</i>						
Biochemical Oxygen Demand (BOD)	0	0	0	0	0	0
Suspended Solids	0	0	0	0	0	0

* Measured during disinfection season only – after dechlorination

** Event was reported to the MOE and their assessment determined that conditions and requirements under *Emergency Procedures* clause of the Operating Certificate were met. Plant was deemed to be in compliance with its Operating Certificate.

Parameter	2013	2014	2015	2016	2017	2018
Max. Daily Discharge (Exceeded)	0	0	0	0	0	0
Carbonaceous Biochemical Oxygen Demand (cBOD)	0	0	0	0	0	1** (of 156)
Suspended Solids	0	0	0	0	1** (of 364)	0
cBOD Daily Loading	0	0	0	0	0	1 (of 156)
Suspended Solids Daily Loading	0	0	0	0	0	0
Chlorine Residual *	0	0	0	0	1** (of 216)	1** (of 220)
Disinfection Interruption	1 (of 215)	1 (of 220)	1 (of 221)	0	4** (of 218)	1** (of 214)
Fecal Coliform	0	0	0	0	0	0
Plant Bypass	0	0	0	0	1** (of 365)	1** (of 365)
Secondary Bypass	0	0	0	0	1** (of 365)	1** (of 365)
<i>Primary Effluent During Secondary Bypass</i>						
Biochemical Oxygen Demand (BOD)	0	0	0	0	1** (of 1)	0
Suspended Solids	0	0	0	0	0	0

* Measured during disinfection season only – after dechlorination

** Event was reported to the MOE and their assessment determined that conditions and requirements under *Emergency Procedures* clause of the Operating Certificate were met. Plant was deemed to be in compliance with its Operating Certificate.

Integrated Liquid Waste and Resource Management Plan (ILWRMP)

The ILWRMP also commits GVS&DD to operate the secondary wastewater treatment plants to meet the National Performance Standards for effluent specified by the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE):

Carbonaceous Biochemical Oxygen Demand (cBOD)	Total Suspended Solids (TSS)
Average	Average
≤ 25 mg/L	≤ 25 mg/L

A summary of average cBOD and TSS concentrations with the CWS – MMWE specified averaging period of monthly for Annacis Island and Lulu Island WWTPs and quarterly for Northwest Langley WWTP is shown in the table below.

Secondary Treatment Plants	Annacis Island WWTP		Lulu Island WWTP		Northwest Langley WWTP	
Parameters	TSS	cBOD	TSS	cBOD	TSS	cBOD
January	20	13	10	10		
February	18	13	10	10		
March	24	16	10	12	19	16
April	24	16	7	7		
May	15	12	9	9		
June	14	11	7	6	17	17
July	11	9	5	6		
August	11	9	5	6		
September	10	9	6	7	23	15
October	13	10	6	6		
November	14	10	6	7		
December	23	16	7	10	17	20

Wastewater Systems Effluent Regulation (WSER)

Quarterly monitoring reports were submitted through Environment and Climate Change Canada's Effluent Regulatory Reporting Information System (ERRIS) in 2018. As required by WSER, the effluent monitoring

data reported were: number of days that effluent was deposited; total volume of effluent deposited in m³; average effluent cBOD in mg/L; and the average effluent concentration of suspended solids in mg/L. In addition, reporting of effluent acute lethality for secondary treatment plants is required on a quarterly basis for Annacis Island and Lulu Island WWTPs and on an annual basis for the Northwest Langley WWTP.

A summary of events when the parameters regulated by WSER for the District's secondary wastewater treatment plants were not met in 2018 is shown in the following table:

Parameter	Annacis Island WWTP	Lulu Island WWTP	Northwest Langley WWTP
Suspended Solids	0	0	0
Carbonaceous Biochemical Oxygen Demand (cBOD)	0	0	0
Un-ionized Ammonia	0	0	0
Total Residual Chlorine	0	0	0*
Acute Lethality	0	0	0

* Peracetic acid (PAA) is used as the primary disinfectant for Northwest Langley WWTP

GVS&DD's primary treatment plants (Iona Island and Lions Gate) were issued transitional authorizations under WSER on September 5, 2014. A summary of events when the parameters regulated by the transitional authorizations for the District's primary wastewater treatment plants were not met is shown in the following table:

Parameter	Iona Island WWTP	Lions Gate WWTP
Suspended Solids	0	0
Carbonaceous Biochemical Oxygen Demand (cBOD)	0	0
Un-ionized Ammonia	0	0

BIOSOLIDS MONITORING PROGRAM

Process Requirements and Biosolids Management

The Organic Matter Recycling Regulation (OMRR) governs the management of biosolids and compost as soil amendments in the Province of British Columbia. Under this regulation, sampling frequencies and criteria values for fecal coliforms and metals as specified for Class A and Class B biosolids are based on several parameters including: type of treatment process (pathogen reduction requirements, vector attraction reduction); the amount of dry solids produced on a monthly basis; and the intended use of the

biosolids. The GVS&DD's biosolids management program ensures that any biosolids not meeting class specifications are identified, tracked and managed appropriately.

Thermophilic digestion at Annacis Island WWTP consistently meet requirements for pathogen reduction and vector attraction reduction to produce Class A biosolids. Lulu Island WWTP mesophilic digesters and Lions Gate WWTP thermophilic digesters are operated to produce Class B biosolids.

Iona Island WWTP mesophilic digesters produce digested sludge, which is further processed via lagoon stabilization and land-drying to produce a Class B biosolids product with soil-like consistency. These biosolids are currently used as a soil enhancement product. Northwest Langley WWTP aerobic digesters are no longer operated and thickened waste secondary sludge is trucked to Annacis Island WWTP for digestion.

Biosolids Quality

About 15,700 tests were performed on biosolids in 2018. The results showed that metals concentrations were generally well below the criteria value limits specified by OMRR.

In 2018, fecal coliform counts in biosolids were within the Class A or Class B criteria for Annacis Island, Lulu Island and Lions Gate WWTPs.

ENVIRONMENTAL PROGRAMS

Environmental monitoring programs form a major part of the Metro Vancouver's integrated approach to managing liquid waste. The purpose of monitoring is to characterize environmental conditions of relevant water bodies in the region in order to understand the relative contribution and significance of discharges from the regional and municipal systems, determine if the applicable regulatory requirements are being met, and to warn of possible environmental issues.

Overflow Quality Monitoring and Risk Assessments

Combined Sewer Overflows

In 2018, the Combined Sewer Overflow (CSO) Monitoring Program characterized the overflow water quality for seven selected CSO locations: Angus Drive, Cassiar, Clark Drive, English Bay, Glenbrook, Heather, and Macdonald. In addition, a receiving environment monitoring program report was completed for Clark Drive CSO and field work was completed for Borden CSO receiving environment monitoring program.

Sanitary Sewer Overflows

Metro Vancouver continued monitoring the receiving environment water quality after each sanitary sewer overflow and provided results to regulatory agencies and municipalities.

Whole Effluent Toxicity Monitoring.

In 2018, all effluent samples from all wastewater treatment plants passed the required monthly acute toxicity test using Environment and Climate Change Canada test protocols except for four samples of Iona Island WWTP effluent. Each of these Iona Island effluent samples required oxygen in excess of that specified by the Environment and Climate Change Canada method.

Periodically, some chronic toxicity of effluent, as well as some background toxicity in the Fraser River upstream from the influence of Metro Vancouver's WWTP discharges was observed. Additional testing and investigation to determine if there is a pattern to the observed variability, and subsequently to identify potential sources of apparent chronic toxicity has been conducted. A formal tiered toxicity identification evaluation (TIE) for chronic toxicity was initiated in 2018 and will continue through 2019 with the objective to identify the causes of the observed toxicity.

Environmental Monitoring in the Regional Waterbodies

In previous annual reports, Metro Vancouver reported separately on WWTP receiving environment monitoring (REM) and ambient environment monitoring (AEM) programs. Metro Vancouver has modified its programs to a more holistic water body approach and in 2018 conducted pilot studies which amalgamated receiving and ambient environment monitoring programs for Burrard Inlet water and sediment quality, and for Fraser River fish health. Additional environmental monitoring work in support of WWTP upgrades for Annacis Island and Northwest Langley was also conducted. Summary of the monitoring program findings for the regional water bodies is provided below.

Strait of Georgia

In 2018 Iona Island WWTP Deep Sea Outfall monitoring program included an annual sediment effects survey, a demersal fish survey and an effluent plume delineation study. Work continued on a multi-year collaboration with UBC to better understand the transport and deposition of substances of interest in the Strait of Georgia. Reports are under preparation. The assessment of the 2017 monitoring results completed in 2018 indicate that the applicable objectives or guidelines were met, except for dissolved oxygen and boron, for which results were consistent with typical concentrations in Canadian coastal marine waters.

Burrard Inlet

The 2018 water and sediment quality monitoring portions of the Burrard Inlet environmental monitoring program were an amalgamation of the previous Lions Gate WWTP receiving environment monitoring program and the Burrard Inlet ambient monitoring program into common water and sediment programs within Burrard Inlet. In 2017, site specific water quality objectives at the boundary of the initial dilution zone (IDZ) for the Lions Gate WWTP were met with the exception of dissolved oxygen and boron, which were also not met elsewhere in Burrard Inlet. The lower dissolved oxygen concentrations may be related to regional changes, while boron concentrations are consistent with those in Canadian coastal waters. Sediment monitoring results were similar to prior years and indicated some changes. Further assessment is expected to clarify whether these changes may be: outfall related; due to regional long-term fluctuations in oceanographic conditions; or due to a combination of these and other confounding factors. Reports are under preparation.

Fraser River

In 2018, water quality was monitored at the Annacis Island IDZ boundary, and the Fraser River ambient water quality monitoring was completed. All measured parameters at all ambient monitoring sites met the applicable objectives or guidelines.

Assessment of the 2017 monitoring results for Annacis Island IDZ completed in 2018 indicated that all measured parameters met the applicable objectives and guidelines, except un-ionized ammonia, which on occasion did not meet the CCME guideline. However, total ammonia concentrations met the site-specific Fraser River Water Quality Objective.

In 2018, the Fraser River fish health monitoring program was modified to focus on exposure zones of the Fraser River WWTPs. The Fraser River Fish Community Monitoring Program involved collecting fish from an up-river reference location in the main arm of the Fraser River; exposure areas for the Northwest Langley, Annacis Island and Lulu Island WWTPs; and from the north arm of the Fraser River. Fish sampling was completed and the report is under preparation.

In support of the Annacis Island WWTP Stage V Outfall Upgrade Project, a sediment monitoring study was carried out in the Fraser River in the vicinity of the proposed outfall. The purpose of this work in 2018 was to improve the spatial resolution of pre-construction baseline sediment data collected in 2016 and 2017, in areas surrounding the proposed outfall) and to inform design of a post-outfall construction sediment monitoring program.

In 2018, a pilot study at Northwest Langley WWTP was continued. This work is intended to identify if the plant effluent plume could be detected and to determine if the proposed sampling methodology was logistically possible. Sediment samples were collected within a zone of probable plume influence and water quality samples were collected using a grid pattern. The report is under preparation.

In 2018, summer water quality monitoring was carried out at the sites upstream and downstream of Northwest Langley WWTP, to provide high river flow water quality data for studies related to expansion of the plant. The data obtained will also provide pre-construction baseline data.

Boundary Bay

In 2018, work was conducted to further analyze and interpret the previously generated biota results. Assessment of 2017 water monitoring results completed in 2018 indicated that the applicable objectives or guidelines were mostly met. Exceptions were dissolved oxygen and boron, for which results were consistent with typical concentrations in Canadian coastal marine waters. Measured levels of copper, chromium (VI) and zinc on at least one occasion at one site, did not meet the applicable guidelines or objectives.

Recreational Water Quality

Metro Vancouver monitored the bacteriological quality of recreational waters in the region at 113 sampling sites from 41 locations. In 2018, the bacteriological water quality for primary-contact recreation was met for most bathing beaches from May through September, except for 9 beach locations (i.e., English Bay, Kitsilano, Sunset Beach, Whytecliff Park, Sandy Cove, Ambleside, Kitsilano Point, Jericho Beach and Barnet Marine Park). Swimming advisories were posted by the Health Authorities at the affected areas which resulted in swimming advisory postings that lasted between 2 to 21 days.

To: Liquid Waste Committee

From: Lillian Zaremba, Program Manager, Utility Residuals Management, Liquid Waste Services

Date: September 13, 2019 Meeting Date: September 19, 2019

Subject: **Biosolids Management Strategic Direction**

RECOMMENDATION

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.
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PURPOSE

To seek GVS&DD Board direction toward establishing a regional biosolids drying facility that will allow the continued beneficial use of biosolids through the recovery of energy and nutrients.

BACKGROUND

The *Integrated Liquid Waste and Resource Management Plan* (ILWRMP, Reference 1) directs Metro Vancouver to use liquid waste as a resource and to evaluate opportunities to recover energy and nutrients from biosolids, using a business case approach. The ILWRMP refers to the *Biosolids Management Plan Framework* (Reference 2), which identifies three strategies to maximize environmentally sound, cost-effective, beneficial uses of biosolids:

- Use biosolids as a fuel to produce energy
- Use biosolids for land application
- Secure alternative uses or disposal for biosolids that cannot be used for land application or as a fuel.

On July 11, 2019, staff held a workshop with the Liquid Waste Committee to review long-term options for biosolids management. This report provides an update on the biosolids management strategy and seeks direction toward establishing a biosolids drying facility as part of the implementation of the *Biosolids Management Plan Framework*.

BIOSOLIDS MANAGEMENT OPTIONS**Current Biosolids Production and Beneficial Uses**

Metro Vancouver currently generates 55,000 bulk tonnes of biosolids annually from its five wastewater treatment plants (WWTPs). Ninety-eight per cent of biosolids generated by Metro Vancouver over the past 20 years have been beneficially used through land application, which recycles nutrients and organic matter. Beneficial use projects in 2017 and 2018 included:

- fabricating topsoil for landscaping projects in the region;
- fertilizing rangeland and reclaiming agricultural land in the BC Interior;

- reclaiming mine sites and gravel pits for revegetation; and
- constructing a biocover for landfill closure, which mitigates greenhouse gas emissions.

Future Biosolids Production

The quantity of biosolids generated by the region will increase substantially in the near future due to the upcoming WWTP upgrades from primary to secondary treatment, along with increases due to population growth. The annual quantity is expected to grow to over 90,000 tonnes per year by 2021 and over 150,000 tonnes per year by 2050. It is unlikely that Metro Vancouver can secure sufficient new land application projects to beneficially use the entire additional biosolids recovered. Land application projects are vulnerable to fluctuations in customer markets and public concern.

Metro Vancouver WWTPs no longer have space to stockpile biosolids, so excess biosolids that cannot be beneficially used would be sent to landfill disposal. Currently available landfill disposal options are located outside of the province, do not fulfill the ILWRMP goal of recovering energy and nutrients from biosolids, and have a higher cost than energy or nutrient recovery options. Diversification of resource recovery options and beneficial use markets will reduce the costs and risks of managing our growing quantities of biosolids.

Biosolids Management Options Analysis

Metro Vancouver commissioned a series of studies to investigate options for recovering energy from biosolids. A biosolids drying facility was identified as the most viable and cost-effective option. The facility would be built at one of the regional WWTPs, where biogas from the plant and natural gas would supply the energy for drying. The facility would produce dried biosolids that can be used as a fuel to replace coal in cement kilns or as an ingredient in blended fertilizer products. A recent market analysis anticipates that local cement kilns or the fertilizer market could each use the entire quantity of dried biosolids produced by a facility with capacity of 75,000 bulk tonnes per year. The feasibility-level capital cost estimate for a biosolids drying facility of this size is \$197 million.

Using dried biosolids as fuel and as fertilizer fulfils the ILWRMP goals to recover energy and nutrients. Using dried biosolids as fuel has the additional benefit of reducing regional greenhouse gas (GHG) emissions: the emissions from the natural gas that fuels the dryer are less than the avoided GHG emissions from replacing coal at cement kilns and reduced hauling distances. The lifecycle cost of drying biosolids is less than that of land application, primarily due to costs of hauling dewatered biosolids long distances to land application sites. Placing a value on GHG emissions as directed by the *Carbon Price Policy* (Reference 3) further improves the business case for the dryer. The costs of the biosolids management options are compared in the table below, based on a 30-year lifecycle.

Biosolids management option	Lifecycle cost (per bulk tonne of biosolids)	Lifecycle cost including carbon price (per bulk tonne of biosolids)
Dried biosolids	\$110	\$100
Land application	\$140	\$145
Landfill disposal	\$160	\$165

A limited volume of undried biosolids (25,000 bulk tonnes per year) could also be burned in Metro Vancouver's Waste-to-Energy Facility, which would not affect the business case for the biosolids drying facility.

Procurement Models for Biosolids Drying Facility

The feasibility study for the biosolids drying facility provided a cost estimate for design and construction. Further study is required to evaluate the costs and risks of different procurement models for design, construction, operation and maintenance of the dryer (design-bid-build or design-build-operate), for marketing of the dried biosolids (in-house or third-party), and for financing (Metro Vancouver or third-party concession).

ALTERNATIVES

1. That the GVS&DD Board:
 - a) endorse biosolids drying as a 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.
2. That the Liquid Waste Committee receive for information the report dated September 13, 2019, titled "Biosolids Management Strategic Direction" and provide alternate direction.

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, staff will complete the evaluation of procurement models and report back to the Committee and Board with the recommended procurement approach and associated costs for implementing a regional biosolids drying facility. If the procurement approach and associated costs are accepted, a capital project with a budget on the order of \$197 million will be added to the 10-year capital plan. Biosolids drying is expected to have a lower lifecycle cost compared to other biosolids management options, thereby resulting in a net reduction in overall household impact.

Under Alternative 2, if biosolids drying is not endorsed at this time and further steps towards implementing a regional drying facility are not initiated, additional biosolids quantities will be sent out of province for landfill disposal if sufficient beneficial use land application projects cannot be secured. The cost of landfill disposal is higher than both the cost of land application and the lifecycle cost of a new biosolids drying facility.

SUMMARY / CONCLUSION

The *Integrated Liquid Waste and Resource Management Plan* directs Metro Vancouver to recover energy and nutrients from biosolids. The *Biosolids Management Plan Framework* sets out three strategies for beneficial use of biosolids: use biosolids as a fuel to produce energy; use biosolids for land application; and secure alternative uses or disposal for biosolids that cannot be used for land application or as a fuel. To date, Metro Vancouver has successfully pursued land application projects to beneficially use biosolids. The amount of biosolids generated by the region will increase substantially in the near future. Diversifying the options for managing biosolids will reduce costs and risks associated with the increasing quantity of biosolids.

A biosolids drying facility has been identified as the most viable and cost-effective option for recovering energy from biosolids. The dried biosolids could be used as fuel or fertilizer. Using dried biosolids to replace coal in local cement kilns would reduce regional GHG emissions. The lifecycle cost of drying biosolids is less than that of land application or landfill disposal. The feasibility-level capital cost estimate for the dryer is \$197M. Further study is required to evaluate different procurement models for design, construction, operation, marketing and financing. If the Board supports the approach of drying biosolids, staff will complete the evaluation of procurement models for a regional biosolids dryer and will report back to the Board. Staff recommend the approval of Alternative 1.

References

1. [Integrated Liquid Waste and Resource Management Plan](#)
2. [Biosolids Management Plan Framework](#)
3. [Carbon Price Policy](#)

28843062

To: Liquid Waste Committee

From: Roy Moulder, Director, Purchasing and Risk Management, Financial Services
Houston Marsh, Acting Operations Supervisor, Utility Residuals Management, Liquid Waste Services

Date: August 22, 2019 Meeting Date: September 19, 2019

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

RECOMMENDATION

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.
-

PURPOSE

This report is to advise the GVS&DD Board of the results of Request for Proposal (RFP) No. 19-112: Utility Residuals Management Hauling Services and to recommend award of the contract in an amount of up to \$77,845,000 (exclusive of taxes) over a five (5) year term to Arrow Transportation Systems Inc.

BACKGROUND

Pursuant to the *GVS&DD Officers and Delegation Bylaw No. 284, 2014* (Bylaw) and the *Procurement and Real Property Contracting Authority Policy* (Policy), procurement contracts which exceed a value of \$5 million require the approval of the Board of Directors.

This report is being brought forward to the Liquid Waste Committee to consider a recommendation to the GVS&DD Board to authorize the award of a contract to provide hauling services for residuals, namely Biosolids, from Metro Vancouver's five (5) wastewater treatment plants and drinking water treatment residuals from the Seymour Capilano Filtration Plant.

DESCRIPTION OF SERVICES

The scope of work includes hauling services for biosolids from Metro Vancouver's five (5) wastewater treatment plants and drinking water treatment residuals from the Seymour Capilano Filtration Plant, to various sites, mainly in, but not limited to, southwestern British Columbia and western Alberta for beneficial use and disposal.

Hauling services for biosolids and drinking water treatment residuals are currently executed under two separate contracts. Early 2020 dewatered biosolids from the Iona Island Wastewater Treatment Plant will be produced for which there is no hauling services contract in place. RFP No. 19-112 will combine the two hauling services contracts into one contract and include the hauling requirements

for the dewatered biosolids, due to start early 2020, from the Iona Island Wastewater Treatment Plant.

RFP No. 19-112 was publically advertised on Metro Vancouver's and BC Bid websites. The RFP closed on May 28, 2019 and two (2) firms submitted proposals as follows:

Table: Proponent Submission Pricing

Proponent	Total Cost for Five Years (exclusive of taxes)
Arrow Transportation Systems Inc.	\$80,724,725
KBL Logistics	\$88,746,625

The evaluation of the proposals identified Arrow Transportation Systems Inc. (Arrow) as the highest ranked proponent, and their proposal was considered the most advantageous to Metro Vancouver. Arrow offered the lowest price and received the highest technical score from the evaluation team.

Proponents were evaluated on the experience and qualifications of their firm and team members as well as on their methods of addressing key components of the required services (i.e., the approach to undertaking the scope of work, proposed hauling equipment, flexibility on hauling requirements, communication strategy with project partners, and safety). Metro Vancouver's biosolids hauling services have been executed by Arrow for 24 years. Arrow's proposal demonstrated their experience and their ability to adapt to changes in hauling requirements.

The proposed fee of \$80,724,725 from Arrow was based on quantities and trips specified in the RFP which were intended to be used as a basis of comparison between proposals. Following the identification of the highest ranked proposal, negotiations ensued as allowed for in the RFP, and the actual forecast of biosolids and drinking water treatment residual quantities and the associated cost of hauling during the contract period were refined. As a result, the total cost was decreased to \$77,845,000 (exclusive of taxes).

ALTERNATIVES

1. 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.
2. That the GVS&DD Board terminate Request for Proposal No. 19-112: Utility Residuals Management Hauling Services and direct staff to report back to the GVS&DD Board with options for an alternate course of action.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves Alternative 1, a contract will be awarded to Arrow Transportation Systems Inc. in the amount of up to \$77,845,000 (exclusive of taxes). This amount is within the respective Liquid Waste Services and Water Services departments operating budgets allocated for this work.

As per the terms of the RFP, Metro Vancouver has the option to extend the contract by an additional five (5) years. Authorization from the GVS&DD Board to extend the contract will be sought at a later date subject to satisfactory execution of the services by Arrow through the initial term and further rate negotiations. If the five (5) year extension is executed, the overall ten (10) year contract value will exceed \$130,435,000. Hauling rates are subject to an inflation cost adjustment which factors in the Consumer Price Index and a fuel index which are factored into extended term hauling rates.

The GVS&DD Board has the choice to not proceed with Alternative 1, but staff will need further direction in relation to the services. Continuous removal of biosolids and drinking water treatment residuals from Metro Vancouver's treatment plants is critical for the operation of these facilities, as there is no operational storage capacity available at any of the sites. A delay associated with Alternative 2 will significantly impact the ability of the wastewater treatment plants and the Seymour Capilano Filtration Plant to operate. This will require temporary on-site storage of biosolids and drinking water treatment residuals, which will create odour issues and could lead to rewetting of the material, resulting in higher hauling costs when the material is removed.

SUMMARY / CONCLUSION

Request for Proposal No. 19-112 was issued for Utility Residuals Management Hauling Services, and Arrow Transportation Systems Inc. was identified as the highest ranked and lowest cost proposal. It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract with Arrow Transportation Systems Inc. in an amount of up to \$77,845,000 (exclusive of taxes).

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To: Liquid Waste Committee

From: Roy Moulder, Director, Purchasing and Risk Management, Financial Services
Paul Wilting, Program Manager, Northwest Langley Wastewater Treatment Projects,
Liquid Waste Services

Date: August 28, 2019 Meeting Date: September 19, 2019

Subject: **Award of a Contract Resulting from Tender No. 19 - 243: Northwest Langley Wastewater Treatment Plant Phase 2 Ground Improvement and Preload**

RECOMMENDATION

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.
-

PURPOSE

This is to advise the GVS&DD Board of the results of Tender No. 19 – 243: Northwest Langley Wastewater Treatment Plant (NLWWTP) Phase 2 Ground Improvement and Preload, and to recommend award of the contract in the amount of \$26,511,384 (exclusive of taxes).

BACKGROUND

Pursuant to the *GVS&DD Officers and Delegation Bylaw No. 284, 2014* (Bylaw) and the *Procurement and Real Property Contracting Authority Policy* (Policy), procurement contracts which exceed a value of \$5 million require the approval of the Board of Directors.

This report is being brought forward to the Liquid Waste Committee to consider a recommendation to the GVS&DD Board to award a contract for the Phase 2, ground improvements at the Northwest Langley Wastewater Treatment Plant.

PROJECT DESCRIPTION

Design of the new Northwest Langley Wastewater Treatment plant must be built with appropriate seismic resistance. The treatment plant site has liquefiable soils and is immediately adjacent to the Fraser River. Consequently, during an earthquake, without ground improvements, the soil would liquefy causing structures to sink up to a metre and flow up to three metres toward the river.

The proposed ground improvements include the installation of stone columns, importing fill to raise the site grade above the Fraser River flood level and the provision of importing additional sand for preloading the site. The stone columns, installed by vibro-displacement, and installation of sand preloading will densify the ground so it will withstand the design earthquake. Preloading with a thick layer of sand will also mitigate any future settlement.

Phase 1 Ground Improvements were started late summer last year and will be completed in October of this year. This, the second phase, should be completed by the end of next year, with the third and final phase being completed in 2022. The total value of the ground improvements for the treatment plant site is \$83M.

As a result of Request for Qualifications (RFQ No. 19 - 051) that was publicly advertised on Metro Vancouver's and BC Bid websites, two experienced firms were shortlisted and invited to respond to Tender No. 19 - 243, for the second phase of the ground improvement. The tender closed on August 22, 2019 and both firms submitted tenders as follows:

Proponent	Tender Price (exclusive of taxes)
Pomerleau Inc.	\$26,511,384
JJM Construction Ltd.	\$29,530,750

The bids were reviewed for completeness by members of the engineering project team and Purchasing and Risk Management Division. Pomerleau Inc. has been identified as the lowest compliant bid and has completed several projects of similar size and complexity, including the NLWWTP Phase 1 Ground Improvements.

ALTERNATIVES

- 1) 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.
- 2) That the GVS&DD Board terminate Tender No. 19 – 243: Northwest Langley Wastewater Treatment Plant Phase 2 Ground Improvement and Preload and direct staff to report back to the GVS&DD Board with options for an alternate course of action.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves Alternative 1, a contract will be awarded to Pomerleau Inc. in the amount up to \$26,511,384 (exclusive of taxes). The tender submitted by Pomerleau Inc. is the lowest compliant bid and is within the budget allocated for the project.

SUMMARY / CONCLUSION

As part of the Northwest Langley Wastewater Treatment Projects, Tender No. 19 – 243 was issued for the second Phase of Ground Improvements, and Pomerleau Inc. was identified as the lowest compliant bid. It is recommended that the GVS&DD Board authorize the Commissioner and the Corporate Officer to award and execute a contract to Pomerleau Inc. in the amount of \$26,511,384 (exclusive of taxes).

To: Liquid Waste Committee

From: Roy Moulder, Director, Purchasing and Risk Management, Financial Services
Jeff Chan, Division Manager, Project Delivery, Liquid Waste Services

Date: August 29, 2019 Meeting Date: September 19, 2019

Subject: **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**

RECOMMENDATION

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.

PURPOSE

This report is to advise 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 to recommend award of the contract in the amount of \$9,337,000 (exclusive of taxes) to Bennett Mechanical Installations (2001) Ltd.

BACKGROUND

Pursuant to the *GVS&DD Officers and Delegation Bylaw No. 284, 2014* (Bylaw) and the *Procurement and Real Property Contracting Authority Policy* (Policy), procurement contracts which exceed a value of \$5 million require the approval of the Board of Directors.

This report is being brought forward to the Liquid Waste Committee to consider a recommendation to the GVS&DD Board to award a contract for the construction of the Annacis Island Wastewater Treatment Plant Stage 5 Phase 2 Digester Heat Exchanger Expansion Project.

PROJECT DESCRIPTION

The Annacis Island Wastewater Treatment Plant (AIWWTP), located in Delta, provides secondary treatment for approximately 1.2 million people in Metro Vancouver. At present, the Annacis facility treats about 175 billion litres of wastewater each year.

To accommodate growth, the facility is undergoing a major expansion which will increase its capacity to serve 1.5 million people. The Stage 5 Expansion Project includes design and construction of new turbo blowers, a new 3-storey Controls and Laboratory Building, additional odour control, additional primary sedimentation tanks, solids contact tanks, secondary clarifiers, new solids treatment (gravity

thickeners, digester heat exchanger systems & centrifuges), new trickling filter pump station and trickling filters, and maintenance workshops.

Over the past 6 years, roughly \$340 million of construction contracts have been awarded, of which over \$270 million of construction work has been completed under this program.

The Stage 5 liquid stream facilities expansion will produce additional solids. The digester heat exchangers are a high priority treatment process to be expanded after expansion is completed, as the existing digester heat exchangers do not have adequate capacity for current peak heating demands, particularly in the winter months.

The Digester Heat Exchanger Expansion Project consists of the following major work scope:

- four (4) additional Circulating Sludge / Heating Reservoir Heat Exchangers
- four (4) additional Digester Feed Pumps
- four (4) additional Digested Sludge Withdrawal Pumps
- four (4) additional Digested Sludge Circulation Pumps
- four (4) additional Hot Water Circulation Pumps
- two (2) additional HRS Digester Load Pumps.

As a result of Request for Qualifications (RFQ No. 19-074) that was publicly advertised on Metro Vancouver's and BC Bid websites, three experienced firms were invited to respond to Tender No. 19-110, for the construction of the Annacis Island Wastewater Treatment Plant Stage 5 Phase 2 Digester Heat Exchanger Expansion Project. The tender closed on July 25, 2019 and the following compliant bids were received:

Contractor	Total Tender Price (exclusive of taxes)
Bennett Mechanical Installations (2001) Ltd.	\$9,337,000
Tritech Group Ltd.	\$9,793,146
NAC Constructors Ltd.	\$9,806,000

Bids were reviewed for completeness by members of the project team in Liquid Waste Services Department and Purchasing and Risk Management Division, Financial Services Department. Bennett Mechanical Installations (2001) Ltd. has been identified as the lowest compliant bid.

ALTERNATIVES

1. 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.

2. That the GVS&DD Board terminate Tender No. 19-110: Annacis Island Wastewater Treatment Plant Stage 5 Expansion - Phase 2 Contract A507 - Digester Heat Exchanger Expansion and direct staff to report back to the GVS&DD Board with options for an alternate course of action.

FINANCIAL IMPLICATIONS

If the GVS&DD Board approves Alternative 1, a contract in the amount of \$9,337,000 (exclusive of taxes) will be awarded to Bennett Mechanical Installations (2001) Ltd. The tender submitted by Bennett Mechanical Installations (2001) Ltd. is the lowest compliant bid.

There are currently sufficient funds in the construction budget to award this contract.

The GVS&DD Board has the choice not to proceed with Alternative 1, but staff will need further direction in relation to completion of the project. Alternative 2 will delay the Corporation's ability to effectively stabilize the additional solids produced from the expanded liquid waste stream facilities currently being incorporated into the AIWWTP by the Stage 5 Phase 1 construction project. AIWWTP Digesters provide essential regional standby digester treatment for the Corporation's four other wastewater treatment plants. For example, AIWWTP currently treats solids produced by the Northwest Langley Wastewater Treatment Plant. The Corporation's ability to fulfil both these roles would be impacted.

SUMMARY / CONCLUSION

Tender No. 19-110 was issued for the construction of the Annacis Island Wastewater Treatment Plant Stage 5 Phase 2 Digester Heat Exchanger Expansion Project, and Bennett Mechanical Installations (2001) Ltd provided the lowest compliant bid. It is recommended that the GVS&DD Board authorize the Commissioner and Corporate Officer to award and execute the contract with Bennett Mechanical Installations (2001) Ltd., in the amount of \$9,337,000 (exclusive of taxes).

Attachment

1. Annacis Island Wastewater Treatment Plant (AIWWTP) Stage 5 Phase 2 Influent Pump Station (IPS) Expansion Project – Work Scope

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ATTACHMENT

Annacis Island Wastewater Treatment Plant (AIWWTP) Stage 5 Phase 2 Influent Pump Station (IPS) Expansion Project – Work Scope



*Additional Mixed Sludge Feed Pumps
to improve redundancy and meet future capacity*



*Additional Circulating Sludge/ Heating Reservoir Supply Heat
Exchangers with associated Hot Water Circulation Pumps and
Digested Sludge Circulation Pumps to meet future capacity*



*Additional Digested Sludge Withdrawal Pumps
to improve redundancy*



*Additional Heating Reservoir Supply Digester Load Pumps
to meet future capacity*

To: Liquid Waste Committee

From: Larina Lopez, Division Manager, Corporate Communications, External Relations

Date: August 29, 2019 Meeting Date: September 19, 2019

Subject: **2019 Regional “Wipe It, Green Bin It” Campaign Update**

RECOMMENDATION

That the Liquid Waste Committee receive for information the report dated August 29, 2019, titled “2019 Regional “Wipe It, Green Bin It” Campaign Update”.

PURPOSE

To update the Liquid Waste Committee on the upcoming regional “Wipe It, Green Bin It” campaign to reduce the household disposal of fats, oils and grease (FOG) into the sewer system.

BACKGROUND

The disposal of FOG into the regional sewer system is an ongoing problem that can cause clogs and sewer overflows into homes, businesses and the environment. As a region, Metro Vancouver spends an estimated \$2.7 million every year to deal with FOG-related issues in the wastewater system. In 2017, Metro Vancouver conducted its first regional grease campaign, which built on pilot projects in Surrey (2015) and Richmond (2016). The 2019 campaign will focus on problem areas (‘hot spots’) in four municipalities and will highlight additional foods (fats and oils) that cause clogs, using the ‘Wipe It, Green Bin It’ call to action.

This report provides an overview of the main components of the 2019 FOG campaign plans, as identified in the 2019 Liquid Waste Committee Work Plan.

2019 REGIONAL FOG CAMPAIGN

The 2019 campaign will target residents to encourage the correct disposal of fats, oils and grease into the green bin. The campaign will take place in two main phases, with the first phase running around Thanksgiving (September 16 – October 27) and a second phase around Christmas (December 2 - 29). The campaign will include region-wide promotion and will also work with specific members who have expressed an interest in engaging in a more targeted approach. This approach involves a baseline measurement for a specific ‘hot spot’ area of their municipality and on-going efforts to measure effectiveness throughout the campaign. Four members have self-identified: Coquitlam, Delta, Langley Township and Richmond; Richmond will have two locations as the Metro Vancouver pump station will also be included. This will allow the campaign to more effectively focus resources in areas with ongoing grease issues. New creative materials will be used to expand the campaign’s messaging to include additional food types.

Campaign Elements and Approach

In addition to grease, the 2019 campaign will emphasize other foods that contribute to sewer clogs: fats (dairy products, margarine, etc.) and oils (cooking oils, sauces, salad dressing, etc.). The findings

from previous campaigns and focus groups show that while most people know that grease (e.g. bacon grease) should not go down the sink, many are unaware that other types of foods – like fats and oils – are also problematic. The campaign will aim to reach residents at times when they are purchasing food or thinking about food preparation, such as in grocery stores prior to major holidays. The main campaign elements include:

- digital and social media, including YouTube pre-roll ads, images and videos depicting a range of foods, promoted via Facebook, Twitter and Instagram, Google banners and search words;
- transit shelter ads;
- advertising in grocery stores (checkout grocery bars and grocery carts);
- campaign website page further explaining the issue of fats, oils and grease;
- direct mail to residents in the four municipalities that have identified ‘hot spot’ areas; and
- in-person outreach in grocery stores and other locations to provide campaign branded spatulas to residents who engage with campaign representatives

The regional component will primarily involve messaging on various social media platforms and online banner ads.

New creative materials have been developed to better address the additional foods profiled in the campaign. The materials feature yogurt, bacon grease and salad dressing, with the ‘Wipe It, Green Bin It’ call to action (see Attachment). Focus group testing confirmed that the addition of the drain helped to clarify that the message is about more than just composting food scraps and that there are issues related to putting products down the drain.

Collaboration with Members

All members were invited to take part in the campaign, including the more targeted approach, by identifying suitable grease ‘hot spot’ areas. As a result, four members - Coquitlam, Delta, Langley Township and Richmond have been conducting ongoing monitoring of grease levels in pump stations since December 2018 and have met periodically to share findings and discuss any issues. Their communications staff have helped identify approaches and local channels to reach residents in their hot spot areas. All members will be provided with social media and other materials that they can share on their channels during the campaign.

Evaluation

Metrics that will be used to evaluate the campaign include social media uptake, website traffic, in-person outreach and grease measurement results. Grease monitoring results may vary due to changing conditions in the sewer system, most significantly heavy rainfall events, and should be considered as a general indicator only; it may be more useful to look at trends over time.

The four municipalities involved in the more targeted approach are smaller ‘hot spots’ and will require different evaluation approaches than previous campaigns. Metro Vancouver is also exploring ways to directly survey residents within the ‘hot spot’ areas.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The budget for the regional FOG campaign is \$170,000. These costs are included in the 2019 Liquid Waste Communications Program Budget managed by the External Relations Department.

SUMMARY / CONCLUSION

Metro Vancouver and its members spend an estimated \$2.7 million every year to deal with the improper disposal of fats, oils and grease (FOG), which can lead to sewer clogs and overflows into homes, businesses and the environment. Metro Vancouver will be launching a campaign in 2019 to target residential sources of FOG, using the Wipe It, Green Bin It tagline to ask residents to put FOG in their green bins. Now in its third year, the 2019 regional campaign will use new creative materials to highlight fats and oils, in addition to grease (see Attachment). The campaign will take place in two phases: 1) a six-week phase in September/October around Thanksgiving; and 2) a four-week phase before Christmas. The campaign will have a regional component through social media, and a more targeted approach with members that have identified a specific ‘hot spot’ area of their municipality. This approach will more effectively focus resources in targeted areas with ongoing grease problems. The campaign’s ‘hot spot’ areas are located in four municipalities: Coquitlam, Delta, Langley Township and Richmond (two locations). Municipalities have been monitoring grease levels in pump stations since December 2018 and communications staff have helped identify channels to reach residents in ‘hot spot’ catchment areas. Campaign elements include: promotion on social media (Facebook, Twitter, Instagram), YouTube videos, online banner ads and Google search, advertising and in-person outreach in grocery stores, direct mail and a campaign website. Social media uptake, website traffic, in-person outreach results, grease monitoring and other metrics will be used to evaluate the campaign.

Attachment:

Sample of Campaign Artwork

Reference:

[Campaign website](#)

31598516

Sample of Campaign Artwork



metrovancover



oil doesn't
go down your
drain



WIPE IT  GREEN BIN IT

Oil clogs pipes. Learn more at wipeitgreenbinit.ca

metrovancover



grease
doesn't go down
your **drain**

WIPE IT  GREEN BIN IT

Grease clogs pipes. Learn more at wipeitgreenbinit.ca

To: Liquid Waste Committee

From: Peter Navratil, General Manager, Liquid Waste Services

Date: September 11, 2019

Meeting Date: September 19, 2019

Subject: **Manager's Report**

RECOMMENDATION

That the Liquid Waste Committee receive for information the "Manager's Report", dated September 11, 2019.

1. South Surrey Interceptor Project Awarded for Trenchless Tunnelling

Liquid Waste Services has received industry recognition for its work on the South Surrey Interceptor, which carries sewage from South Surrey, White Rock and Langley to the Annacis Island Wastewater Treatment Plant. The Tunnelling Association of Canada named the project the **2019 Canadian Project of the Year** (for projects worth up to \$100M CAD) and on the same day, industry publication Trenchless Technology awarded the project **2019 Runner Up for New Installations**.

The Surrey section receiving the recognition is 800 metres long and over three metres in diameter. The project is the largest diameter sewer pipe installed in a single-pass installation using microtunnelling in Canada.

Initially proposed as open cut, the trenchless technology helped to avoid significant disruption to area business parks and the complete closure of busy 152nd Street near 56th Avenue in Surrey.

The existing South Surrey Interceptor was constructed in the early 1970s and to expand sewer capacity and address regional growth, twinning of the pipe began in 1999. The microtunnelled section is one of the last to be installed for the twinning project, ultimately resulting in over 10 km of new sewer.

The project was constructed by Ward & Burke Microtunnelling Ltd. with Stantec serving as consultant. Project challenges for this project included very low ground cover, proximity to a City of Surrey sewer pipe, and a tight window for working with existing utilities in the ground. The project was delivered on time and on budget.

2. Regional Sewerage Services Growth Charge – Village of Anmore

Staff are preparing a report for the October Liquid Waste Committee meeting to present draft bylaw amendments to the GVS&DD Cost Apportionment Bylaw that would be enacted if Anmore proceeds in obtaining membership with the GVS&DD. The current cost apportionment formula has served the region well, as the bulk of each municipality population is served by the regional sewer system. Unlike other members, the Village of Anmore is fully rural and properties utilize on-site sewage treatment. If they become a member of the GVS&DD, less than 5% of the Village's population will be served by the

regional system including the Anmore Green Estates development which has a failing on-site septic system.

The Cost Apportionment Bylaw contains three types of costs – Operational costs, Non- Growth Capital and Growth Capital. Sewer flows are used to establish the Operational costs and Non-Growth Capital costs. Growth Capital charges however, are based on the rate of population increase for the member's entire population which creates an anomaly for the Village as only a small percentage of the population will be serviced.

To address the issue, Staff will present a proposal that will require the Village to pay all of the flow based costs (Operational and Non-Growth Capital), and will waive the Growth Capital charges. The waiver will remain in effect up until the Village requests additional sewerage area amendments. In lieu of paying Growth Capital charges, the bylaw will propose that the Village be assessed a "connection fee" for each dwelling unit that is granted sewerage service upon membership to the GVS&DD and the waiver of Growth Capital charges will only apply until such time as the defined sewer area boundaries are amended to add additional parcels to the regional sewer system.

3. Drugs in Wastewater

Statistics Canada is using wastewater to estimate the use of cannabis and selected drugs in Canada in a pilot study initiated in 2018. Metro Vancouver provided influent samples for this study from its five wastewater treatment plants, along with Edmonton, Toronto, Montreal and Halifax.

The first results associated with cannabis use were released by Statistics Canada in November of 2018. The findings of a longer time series encompassing other drugs and opioids was released on August 26, 2019. Results were presented on a per capita consumption basis for each city and suggest that cannabis use may be higher in Halifax and Montreal compared with Toronto, Edmonton and Vancouver, with universal seasonal peaks observed in late spring and December. Results for methamphetamine and cocaine use were different geographically, and appeared to suggest that methamphetamine use was higher in Vancouver and Edmonton, while cocaine use was relatively consistent among the five cities. Opioids studied include codeine and morphine, compounds commonly found in prescribed medications. The results indicate the highest codeine use in Edmonton, while the morphine use is much lower in Montreal and Toronto, compared with Vancouver, Edmonton and Halifax.

This information may also prove to be helpful for local municipalities and Health Authorities for deploying resources to address local social and health issues. However, further review of the data obtained in terms of its uncertainty and potential utility would need to be undertaken. While Statistics Canada has indicated an interest in continuing this project in the future, Metro Vancouver has committed to continue to provide samples for the remainder of 2019.

4. Liquid Waste Committee 2019 Work Plan

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

Attachment

1. Liquid Waste Committee 2019 Work Plan

ATTACHMENT**Liquid Waste Committee 2019 Work Plan**

Report Date: September 11, 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
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
2018 GVS&DD Environmental Management & Quality Control Annual Report	In Progress
Iona Island Secondary Wastewater Treatment Plant Project Definition Quarterly Update	In Progress
Status of Liquid Waste Capital Expenditures	In Progress
Poplar Landing	In Progress
Annual Energy Management Progress Update	In Progress
Capital Projects Policy Update	In Progress
Environmental Management Systems Update	Cancelled
Unflushables Campaign Results	In Progress
Grease Campaign Update	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

4th Quarter	Status
Annual Budget & 5 Year Financial Plan - Liquid Waste	In Progress
Iona Island Secondary Wastewater Treatment Plant Project Definition Quarterly Update	Pending
Status of Liquid Waste Capital Expenditures	Pending
Municipal Requests for Sewerage Area Boundary Amendments (as applicable)	Pending
Contract Approvals – Contracts > \$5M (as applicable)	Pending
Utility Policies (as applicable)	Pending

30539444



OFFICE OF THE MAYOR

August 30, 2019

Dear MPs, MLAs and Mayors:

Re: District of Mission Fraser River Sanitary Sewer Crossing Project

Recently, you may have heard through the media that the District of Mission is constructing a new sanitary sewer pipe under the Fraser River to connect with the Abbotsford-Mission shared wastewater treatment plant. The new pipeline is critical for preventing significant environmental damage from occurring should the existing aged pipe suffer a failure and for accommodating the forecasted growth for this portion of the Fraser Valley. While some grant funding was secured, the cost of completing the project has ballooned due to a variety of factors beyond the District's control.

Efforts to secure additional grant funding are ongoing but have not been successful to date. Given the magnitude of environmental damage and other impacts to downstream communities that would result from a failure of the existing pipe, I am requesting that you please consider supporting the District's request to secure additional grant funding. I have attached two letters, one to the Honourable Francois-Philippe Champagne (federal Minister of Infrastructure and Communities) and one to the Honourable Selena Robinson (provincial Minister of Municipal Affairs and Housing). I respectfully request that you consider sending these letters, under your letterhead, to Minister Robinson's and Minister Champagne's offices. Thank you in advance for your support.

Yours truly,

PAM ALEXIS
MAYOR

Enclosures (2)

August 30, 2019

The Honourable François-Philippe Champagne
Minister of Infrastructure and Communities
House of Commons
Ottawa, ON K1A 0A6

Dear Minister Champagne,

I am writing to draw your attention to the District of Mission's efforts to replace its aging sewage pipe below the Fraser River. [Municipality Name] is very concerned about the potential consequences for the environment, housing prices and developmental pressures in lower mainland BC if this project is significantly delayed.

In 1982, a steel pipe was installed to carry raw sewage from every household and business on Mission's sewer system across the Fraser River to the JAMES wastewater treatment plant in Abbotsford. With Mission's growth rate continuously accelerating, the 37-year-old pipe already reaches its capacity during peak flows and will reach full capacity by 2021, if not sooner.

While all pipes degrade over time, this pipe is uniquely challenging as it has been in continuous operation since installation and includes a nearly kilometer-long stretch in a corrosive environment buried below the Fraser River. Unlike pipes that convey flow by gravity, Mission's sewage pipe is pressurized and continuously flowing, making it impossible to inspect. A failure of this pipe has occurred in the past but was at a section buried adjacent to the Fraser River and containment was possible. If the existing pipe was to break below the Fraser River, over 11 million litres of raw industrial and residential sewage would discharge into the river every day for months, devastating natural habitats and impacting downstream communities from Mission to Vancouver and the Salish Sea.

Mission has been working for years on its current plan and all of the necessary approvals required to construct a new pipe, as well as the infrastructure required on land to accommodate it. This would allow Mission to isolate the existing and future pipe for inspections and repairs, prevent an environmental disaster, and enable sustainable growth in one of British Columbia's fastest growing communities.

In 2017, Mission joined the Government of BC and the Government of Canada where \$6.9 million in federal and provincial infrastructure funding was announced through the cost-shared

Clean Water and Wastewater Fund (CWWF) to support this project. However, factors beyond the control of Mission resulted in significant unexpected cost increases and the nature of the work required has necessitated a phased approach.

Our community is aware that Mission has engaged Federal representatives seeking additional funding in light of the exceptional circumstances surrounding this project, as well as formal recognition of the phased approach required to complete the project that would allow Mission to retain its existing CWWF grant. These measures would ensure Mission is able to accommodate its rapidly growing community, develop sustainably and avoid environmental disaster. With support from the Federal Government, the opportunity for a comprehensive solution and positive outcome for this project remains very real.

[Municipality Name] is requesting that you prioritize these issues and work with the District of Mission towards a collaborative solution.

Thank you for your time and consideration of this urgent matter.

Sincerely,

[Insert signature line]

CC: Mayor Pamela Alexis, District of Mission, palexis@mission.ca

August 30, 2019

The Honourable Selina Robinson
Minister of Municipal Affairs & Housing
PO Box 9056 Stn Prov Govt
Victoria, BC V8W 9E2

Dear Minister Robinson,

I am writing to draw your attention to the District of Mission's efforts to replace its aging sewage pipe below the Fraser River. [Municipality Name] is very concerned about the potential consequences for the environment, housing prices and developmental pressures in lower mainland BC if this project is significantly delayed.

In 1982, a steel pipe was installed to carry raw sewage from every household and business on Mission's sewer system across the Fraser River to the JAMES wastewater treatment plant in Abbotsford. With Mission's growth rate continuously accelerating, the 37-year-old pipe already reaches its capacity during peak flows and will reach full capacity by 2021, if not sooner.

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the control of Mission resulted in significant unexpected cost increases and the nature of the work required has necessitated a phased approach.

Our community is aware that Mission has engaged Provincial representatives seeking additional funding in light of the exceptional circumstances surrounding this project, as well as formal recognition of the phased approach required to complete the project that would allow Mission to retain its existing CWWF grant. These measures would ensure Mission is able to accommodate its rapidly growing community, develop sustainably and avoid environmental disaster. With support from the Provincial Government, the opportunity for a comprehensive solution and positive outcome for this project remains very real.

[Municipality Name] is requesting that you prioritize these issues and work with the District of Mission towards a collaborative solution.

Thank you for your time and consideration of this urgent matter.

Sincerely,

[Insert signature line]

CC: Mayor Pamela Alexis, District of Mission, palexis@mission.ca

Subject: Input Opportunity - Integrated Liquid Waste and Resource Management Plan Progress Report

Attachments: Lion's Gate Wastewater Treatment letter Wilkinson Beech 05 06 19.pdf; McKenna SIGNED REPLY - Dhaliwal - MIN - 251337.pdf; LGWWTP Letter Provincial Liberals.pdf

From: [REDACTED]
Sent: Thursday, September 12, 2019 12:07 PM
To: LWMP <LWMP@metrovancover.org>
Cc: [REDACTED] <[REDACTED]>; [REDACTED] <[REDACTED]>; [REDACTED] <[REDACTED]>; [REDACTED] <[REDACTED]>; 'Lisa Muri' <MuriL@dnv.org>; 'Jonathan. Wilkinson' <Jonathan.Wilkinson@parl.gc.ca>; 'Terry. Beech' <Terry.Beech@parl.gc.ca>; Catherine.McKenna@parl.gc.ca; 'Glen Parker' <[REDACTED]>; 'Wiebe, Michael' <Michael.Wiebe@vancouver.ca>; [REDACTED] <[REDACTED]>; 'Lisa Muri' <MuriL@dnv.org>; 'Dominato, Lisa' <Lisa.Dominato@vancouver.ca>; [REDACTED] <[REDACTED]>; [REDACTED] <[REDACTED]>; [REDACTED] <[REDACTED]>; mayor@dnv.org; mtrentadue@newwestcity.ca; rsvendsen@mapleridge.ca; mayorandcouncillors@richmond.ca; sferguson@tol.ca; dwalker@whiterockcity.ca; mayor@langleycity.ca; rvagramov@portmoody.ca; rstewart@coquitlam.ca; muril@dnv.org; doug.elford@surrey.ca; lisa.dominato@vancouver.ca; pietro.calendino@burnaby.ca; 'Tony Valente (Councillor)' <tvalente@cnv.org>; [REDACTED] <[REDACTED]>; [REDACTED] <[REDACTED]>; 'Seyd, Jane (LMP)' <JSeyd@nsnews.com>; [REDACTED] <[REDACTED]>; [REDACTED] <[REDACTED]>; 'George Orr' <george.orr@greenparty.ca>; ralph.sultan.MLA@leg.bc.ca; jane.thornthwaite.mla@leg.bc.ca; jordan.sturdy.MLA@leg.bc.ca; bowinMa.MLA@leg.bc.ca; 'Milobar.MLA, Peter' <Peter.Milobar.MLA@leg.bc.ca>; Chair Dhaliwal <chair@metrovancover.org>; Linda Buchanan <lbuchanan@cnv.org>; 'Mary-Ann Booth' <mbooth@westvancouver.ca>; 'Mike Little' <littlem@dnv.org>
Subject: Input Opportunity - Integrated Liquid Waste and Resource Management Plan Progress Report

Hello: I have been away and realize I have missed the September 9th date for requesting to speak to the committee but I would like to have the following shared with the Liquid Waste Committee:

To Members of the Liquid Waste Committee:

I believe it is safe to say the views expressed below are supported by most "fish groups" and specifically I can speak for the North Shore Streamkeepers and the North Shore Save Our Shores Society.

The message to the committee is that cumulative effects matter and the partially treated liquid wastes discharged into our waterways have a negative impact. Treating liquid waste to a tertiary level costs about 20% more than the minimum legal limit of secondary treatment. We believe 20% is a reasonable price to pay for protecting the environment over the longer terms associated with liquid waste management infrastructure! We request Metro Vancouver adopt a policy of tertiary treatment for all liquid wastes and seek ways to use the “clean” discharges to enhance our waterways for fish and people. Metro attempts to be a leader in so many environmental areas: why are we a laggard with respect to liquid waste management?

Attached are letters to Metro supporting liquid waste treatment at levels beyond the “minimum legal standard” from the DFO Minister Jonathan Wilkinson/MP Terry Beech, from Environment Minister Catherine McKenna and the BC Liberals.

Glen Parker P.Eng.

Home: [REDACTED], Mobile: [REDACTED]



April 23, 2019

VIA EMAIL

The Honourable Jonathan Wilkinson, Minister of Fisheries, Oceans and the Canadian Coast Guard, MP, North Vancouver
Sav Dhaliwal, Chair, Metro Vancouver
Carol Mason, Commissioner/Chief Administrative Officer, Metro Vancouver

Recently, concerned members of our North Shore community engaged MLAs concerning important issues related to the new Lions Gate Wastewater Treatment Plant.

When in government, MLAs were led to believe that this facility would be of the highest environmental quality and standard in the country. It is now apparent this is not entirely the case. We could be missing a once-in-a-generation opportunity to truly deliver a highest-grade tertiary treatment plant.

This project was once held out to be a point of pride for North Shore residents: their ability to find a suitable site that residents were happy with, was in stark comparison to the Capital Region District.

It now appears it will have serious effluent discharge issues. Effluent cannot be discharged into fish habitat. Even though subject to the same regulations, the CRD facility in Victoria will be built to standards of tertiary treatment, unlike the North Shore's secondary treatment facility. We are therefore missing an opportunity to build a tertiary treatment with the water of sufficient quality to be being discharged into our streams and estuaries. This would provide more salmon habitat. Treated wastewater could also be used to restore historically damaged estuaries at the foot of Philips and Pemberton.

We understand that recently Metro Vancouver has revisited the original tertiary treatment decision and now emphasizes that provision has been made for an add-on of tertiary capability later, after the plant is commissioned. If that is now Metro Vancouver's view, our suggestion is that the 'revisiting' time schedule be accelerated so the public can be assured that fish-friendly effluent can be discharged directly into Vancouver harbour when the plant is commissioned rather than rely upon a \$100-million pipe travelling all the way for discharge of only partially treated waste opposite West Vancouver's waterfront. We also assume Metro Vancouver will be 100% transparent on the \$100 million of taxpayer capital being spent on this pipe.

It is our hope that this project is not too far along, and that we could revisit a decision that seems to have been made without consideration for the long-term benefits a tertiary treatment facility would have for the North Shore. Given the project's scope, size, and cost, we feel that taxpayers would want the biggest bang for their buck. Once the facility is built this opportunity is lost and we will look back and ask why we did not spend the money and build the best.

We look forward to your response.

BC Liberal Official Opposition
Parliament Buildings
Victoria, BC V8V 1X4
T: 250-356-6171

Liquid Waste Committee



LEGISLATIVE ASSEMBLY

of BRITISH COLUMBIA

Sincerely,

Jane Thornthwaite, MLA
North Vancouver – Seymour

Ralph Sultan, MLA
West Vancouver – Capilano

Jordan Sturdy, MLA
West Vancouver – Sea-to-Sky

CC: Terry Beech, MP, Burnaby North – Seymour
Linda Buchanan, Vice-Chair, Metro Vancouver, Mayor, City of North Vancouver
Mary-Ann Booth, Mayor, District of West Vancouver
Pamela Goldsmith-Jones, MP West Vancouver — Sunshine Coast — Sea to Sky Country
Mike Little, Mayor, District of North Vancouver
Bowinn Ma, MLA for North Vancouver- Lonsdale
Peter Milobar, MLA for Kamloops - North Thompson, BC Liberal Critic for Environment and Climate Change



Mayor Richard Stewart
Chair, Liquid Waste Committee
Metro Vancouver
rstewart@coquitlam.ca

June 5, 2019

Re: Lions Gate Wastewater Treatment Plant

Dear METRO VAN Liquid Waste Committee Chair, Richard Stewart, and Committee members:

I am the Member of Parliament for North Vancouver and the Minister of Fisheries and Oceans and the Canadian Coast Guard. My colleague, Terry Beech, the Member of Parliament for Burnaby North–Seymour and Parliamentary Secretary to the Minister of Transport, has also reviewed this letter and wishes to lend his full support to its contents.

In both my capacity as North Vancouver's MP and as Minister of DFO, I am well aware that there are a number of discussions ongoing regarding the construction of the new Lion's Gate wastewater treatment plant in North Vancouver. Given the importance of the issues involved, I wanted to ensure that you, as elected officials, are aware of our views on this important subject.

Over the past few years, I have expressed to senior Metro Vancouver officials, and to provincial and municipal leaders on the North Shore, that I am most interested in working to help define reasonable and mutually acceptable pathways to move towards a higher level of wastewater treatment than secondary. As you are aware, the current design for the Lion's Gate Wastewater Treatment Facility is aimed at simply meeting the minimum federal/provincial wastewater treatment requirements.

I was very much involved in working to obtain federal funds that would enable this project to proceed. However, even at that time – in 2015/16 – I made clear my preference for Metro to build a tertiary treatment plant – a plant that would address emerging contaminants of concern and provide for superior environmental outcomes.



Last year, when I was in the role of Parliamentary Secretary to the Minister of Environment and Climate Change, the federal government convened an Expert Panel on Emerging Contaminants of Concern. This Panel was chaired by Dr. Don Mavinic, a leading wastewater expert and a resident of the North Shore. The findings eventually published by this panel suggest that we undoubtedly can and should – from an environmental perspective - be looking at doing more than the bare minimum.

As MP for North Vancouver, I am determined to see how we can collectively work towards what we all know are more effective levels of environmental protection. In my role as federal Minister of Fisheries and Oceans, with primary responsibility for recovery efforts relating to the Southern Resident Killer Whales and for the overall health of our marine ecosystem, I am very much interested in seeing a higher level of treatment of wastewater and associated contaminants before the water is deposited into the Salish Sea.

I recognize that there are a number of important timing and cost-related issues facing Metro Vancouver regarding this matter. Engaging in discussion about what would be entailed in moving to a higher level of treatment – whether in the immediate term or over some reasonable period of time – is important. Of course, Metro Vancouver, the North Shore municipalities, the Province, Environment Canada and the Squamish Nation must be involved in any such conversation.

As you are likely aware, a number of weeks ago in my capacity as MP for North Vancouver, I convened an initial discussion on this subject with the North Shore municipalities, the Squamish Nation, Metro Vancouver and Environment Canada. At that meeting, Metro Vancouver officials advised participants that it had in fact asked staff to look at issues and options associated with tertiary treatment.

By way of this letter, I want to state clearly that I am – as is my colleague Terry Beech - interested in working with Metro Vancouver and all key stakeholders to determine what can be done to ensure that the major capital decision that Lion's Gate represents, is something that will provide cost effective and environmentally sensitive services to citizens of Metro Vancouver and to our surrounding environment for decades to come.

We look forward to continuing to engage in this important discussion, and would be happy to speak with your Committee in person.

Sincerely,



Jonathan Wilkinson,
M.P. for North Vancouver



Terry Beech,
M.P. for Burnaby North–Seymour

Cc: Metro Vancouver Liquid Waste Committee members:

Mike Little, VC
Lisa Muri
Pietro Calendino
Lisa Dominato
Doug Elford
Steve Ferguson
Alexa Loo
Ryan Svendsen
Mary Trentadue
Rob Vagramov
Val van den Broek
Darryl Walker

Bowinn Ma, MLA North Vancouver-Lonsdale
Jane Thornthwaite, MLA North Vancouver–Seymour
Mike Little, DNV
Linda Buchanan, CNV
Mary Ann Booth, DWV
Chris Lewis, Chair, Squamish Nation Service Agreement Committee
Don Mavinic, Chair, Expert Panel on Emerging Wastewater Technologies



JUL 22 2019

Mr. Sav Dhaliwal
Chair
Metro Vancouver Board
4703 Kingsway
Burnaby BC V5H 0C6

Dear Mr. Dhaliwal:

Thank you for your correspondence of July 8, 2019, seeking federal funding for upgrades to the new North Shore Wastewater Treatment Plant to achieve tertiary treatment, which goes beyond the regulatory requirement to achieve secondary treatment.

On June 28, Dr. Stephen Lucas, Deputy Minister of Environment and Climate Change Canada, wrote to Ms. Carol Mason, Commissioner/Chief Administrative Officer for Metro Vancouver, expressing the Government of Canada's support for the modification of the wastewater treatment plant project that is being built so that it could achieve a tertiary level of treatment. This upgrade would provide better environmental protection and, in particular, would reduce the release of harmful contaminants (including persistent organic pollutants) known to be affecting endangered southern resident killer whales. Reducing harmful pollution from entering the Salish Sea, a critical habitat for these whales, is essential to protecting this iconic species.

As you know, the Government of Canada has already committed up to \$212 million in federal funding to help Metro Vancouver build this new wastewater treatment facility. The proposal to achieve tertiary level of treatment, which I strongly support, could be eligible for additional federal funding under the environmental quality sub-stream of the Green Infrastructure stream of the Investing in Canada plan. This additional funding would need to be provided on a cost-shared basis with the Government of British Columbia, and would require the province to identify the new North Shore Wastewater Treatment Plant as a priority for additional funding. The maximum funding from all federal sources to a project that is approved for the Green Infrastructure stream will not exceed 40 percent for eligible expenditures for a local government.

.../2

In summary, the Government of Canada supports tertiary treatment as it can reduce the release of harmful pollution into the Salish Sea. We are working with the Government of British Columbia to seek its support to prioritize this project under the Green Infrastructure stream of the Investing in Canada plan, and encourage you to do the same.

Sincerely,

A handwritten signature in blue ink, appearing to read 'C McKenna', with a long horizontal flourish extending to the right.

The Honourable Catherine McKenna, P.C., M.P.

c.c.: The Honourable François-Philippe Champagne, P.C., M.P.
The Honourable Jonathan Wilkinson, P.C., M.P.
Mr. Terry Beech, M.P.
The Honourable John Horgan, Premier, Government of British Columbia
The Honourable Selina Robinson, Minister of Municipal Affairs
and Housing, Government of British Columbia
The Honourable George Heyman, Minister of Environment and Climate
Change Strategy, Government of British Columbia
The Honourable Doug Donaldson, Minister of Forests, Lands, Natural
Resource Operations and Rural Development, Government of
British Columbia
Ms. Kaye Krishna, Deputy Minister of Municipal Affairs and Housing,
Government of British Columbia
Liquid Waste Committee Members