To: Performance and Audit Committee

From: Joe Sass, Director, Financial Planning/Deputy CFO

Date: March 15, 2022 Meeting date: May 12, 2022

Subject: **Semi-Annual Report on GVS&DD Development Cost Charges**

RECOMMENDATION

That the Performance and Audit Committee receive for information the report dated March 15, 2022, titled "Semi-Annual Report on GVS&DD Development Cost Charges".

EXECUTIVE SUMMARY

Total GVS&DD Development Cost Charges (DCC's) collected in 2021 was $85.1 million, up from $62.9 million in the prior year. Development in the Region continued to be strong despite Covid-19.

Development activity in the Region for 2021 was relatively steady with January to December 2021 building permit values approaching close to $10.0 billion (2020 - $10.2 billion). The vast majority of the building permit activity in 2021 (72%) was in the residential development sector (2020 - 70%.)

Affordable housing development cost charge (DCC) waivers were approved in 2021 for a total of 2,223 units (2020 – 415 units) in the 4 sewer areas of Fraser, Vancouver, Lulu Island and North Shore representing close to $4.3 million (2020 - $1.1 million) in forgone DCC collections.

Total DCCs held in deferred revenue reserve balances as at December 31, 2021 were $258.6 million (December 31, 2020 - $213.1 million.) DCC's will now be updated annually as part of the budget process to ensure that Metro Vancouver stays current and maximized this revenue stream to reduce rate impacts of the capital program.

PURPOSE

To report on the 2021 GVS&DD Development Cost Charge (DCC) revenues and any implications on their adequacy, as required by the Performance and Audit Committee Terms of Reference.

BACKGROUND

Regional GVS&DD Development Cost Charges (DCC's) are collected on behalf of Metro Vancouver, as set out in the Board approved DCC Bylaw, by member municipalities and remitted twice a year. DCC's are used to fund growth related capital expenditures. The Performance and Audit Committee Terms of Reference requires that the DCC collections be reported to the Committee on a semi-annual basis. This is the second and final report for 2021.

DCC COLLECTIONS

The collections received for 2021 were $85.1 million (35.3 %) higher than that for 2020. Though there were only substantial increases in two of the four sewer areas, the collections still reflect a

fairly consistent and, certainly in two sewerage areas, an elevated level of development activity in the Region. DCC collections received by sewerage area are as follows:

DCC's Collected

($ millions)	**Fraser**	**Lulu**	**North Shore**	**Vancouver**	***Total***
2021 TOTAL	$70.762	$1.235	$2.067	$11.041	$85.105
2020 TOTAL	$52.011	$3.079	$1.697	$6.084	$62.871

Building permit activity in the Region has been relatively consistent over the last 12 months with January to December 2021 building permit values totaling approximately $10.0 billion (January to December 2020 permit value - $10.2 billion). The bulk of the recent 2021 building permit activity has been in the residential development sector (averaging close to 72% of building permit values over the period January to December 2021) with the balance being generated in the industrial (3%), commercial (20%) and institutional/governmental (5%) development sectors over the same period. [compare to 2020 - residential 70%, industrial 3%, commercial 19%, institutional/governmental 8%]

The DCC collections are net of waivers for qualifying affordable housing developments under the GVS&DD DCC Waiver for Affordable Housing Bylaw, No. 314, 2018, adopted in May 2018. Previously, waivers were permitted under GVS&DD DCC Bylaw No. 254, 2010. For 2021, DCC waivers were provided for 2,223 affordable housing units, located in the Fraser Sewerage Area (35 %), Vancouver Sewerage Area (57 %), Lulu Island West Sewerage Area (4 %) and the North Shore Sewerage Area (4 %). This equates to close to $4.3 million in forgone DCC collections. The amount of DCC revenue forgone in 2021 increased by close to 290 % compared to that for 2020 ($1.1 million) while the number of waived units increased by about 435 % (2020 - 415 units were waived.) Since 2010, the cumulative amount of DCC waivers issued is close to $10.5 million (for 8,139 units.)

APPLICATION OF DCC FUNDING

The 2021 funding applications to be approved through *Greater Vancouver Sewerage and Drainage District Development Cost Charge Reserve Fund Expenditure Bylaw No. 355, 2022* are shown below:

DCC Funding Applied

($ millions)	**Fraser**	**Lulu**	**North Shore**	**Vancouver**	***Total***
2021 DCC's Applied-Total	$33.922	$1.351	$1.548	$5.383	$42.204
2021 DCC Applied-Debt	*$33.922*	*$1.351*	*$1.548*	*$5.383*	*$42.204*
2021 DCC Applied-Capital	*$0*	*$0*	*$0*	*$0*	*$0*
2020 DCC's Applied-Total	$58.759	$4.473	$3.804	$14.617	$81.653

Each year, the sewerage growth capital projects that are undertaken are funded through long term debt financing utilizing a 15-year amortization period, for which the DCC's are used to pay for the principal portion of the borrowing, or be applied directly to fund growth capital expenditures. Excess DCC revenue collections are maintained as deferred revenues for future application as required. DCC deferred revenue balances as at December 31, 2021 by Sewer Area were as follows:

Fraser Sewer Area	$ 186,838,447
Lulu Island Sewer Area	22,411,795
North Shore Sewer Area	8,910,623
Vancouver Sewer Area	40,472,650
	$258,633,515

As illustrated in the 2022 - 2026 Financial Plan endorsed by the Board last fall, DCC utilization levels due to growth projects is expected to increase significantly in the short term. A review of the DCC program was last completed in 2017 resulting in the implementation of new DCC rates effective May 1, 2018 to generate additional future funding for regional growth capital requirements. The next review of the DCC rates for Liquid Waste is expected to be completed by the end of this year.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The DCC program was established pursuant to the concept of "growth pays for growth". Should the revenue collections be inadequate to fund future Sewerage growth related projects, the funding burden would default to Sewer levies collected annually from the GVS&DD member municipalities.

SUMMARY / CONCLUSION

DCC collections for 2021 were $85.1 million. DCC's received are used to pay for the principal portion of the borrowing or directly for capital expenditures for growth related GVS&DD projects or for both. As the requirement for capital projects related to growth is substantial and continues to grow, a further review of current DCC program rates is expected to be completed by the end of this year.

49218923

To: Zero Waste Committee

From: Terry Fulton, Senior Project Engineer, Solid Waste Services

Date: May 5, 2022 Meeting Date: May 13, 2022

Subject: **2021 Waste Composition Data**

RECOMMENDATION

That the Zero Waste Committee receive for information the report dated May 5, 2022, titled "2021 Waste Composition Data".

EXECUTIVE SUMMARY

Metro Vancouver's waste composition program includes a series of annual studies to learn about the types and quantities of waste disposed in the region. In 2021, both a full-scale study examining waste disposed from all sectors and a multi-family sector specific study were completed. Results from the full-scale study indicate that waste composition in 2021 was similar to 2018, with 2020 being an outlier year due to the COVID-19 pandemic. Key similarities in 2018 and 2021 waste composition include quantities of organics and building material disposed. Single-use item disposal increased in 2021 compared to 2020, but is lower overall than pre-pandemic levels. Personal protective equipment disposal, particularly masks, also increased in 2021. Multi-family waste composition demonstrates that compostable organics remain the largest component of multi-family waste and a key opportunity for waste diversion in this sector. Waste composition results help identify priorities for solid waste management plan update and inform behavior change campaigns such as "Food Scraps Aren't Garbage."

PURPOSE

The purpose of this report is to update the Zero Waste Committee on the results of the two waste composition studies completed in 2021.

BACKGROUND

On October 16, 2020 the Zero Waste Committee received for information the report titled "Waste Composition Program Plan" which outlined a proposed schedule of waste composition studies to be carried out annually. The new plan increased the frequency of full-scale studies and sector-specific studies from alternating every other year to occurring annually. Waste composition studies provide valuable estimates of the types and quantities of material disposed in the region and provide baseline data for the solid waste management plan update.

2021 WASTE COMPOSITION PROGRAM

The 2021 waste composition program included two separate waste composition studies: a full-scale waste composition study examining material received at regional disposal facilities from residential and commercial/institutional sources, and a multi-family sector specific waste composition study focusing on material generated in multi-family residential buildings throughout the region.

Overall Results

Field work for the 2021 full-scale waste composition study took place in November and December 2021 at the North Shore Recycling and Waste Centre, the Waste-to-Energy Facility, and the Vancouver South Transfer Station. The study was completed during the ongoing COVID-19 pandemic and provides an interesting snapshot of how habits changed in 2021 since the previous study was completed in September 2020. Findings indicate that waste composition in 2021 was more similar to 2018 and years prior than it was to 2020. Public health restrictions, economic impacts and shifting behavior in the first year of the pandemic corresponds to a large decrease in waste generated from the commercial/institutional sector. Lessening restrictions and a gradual return to the workplace may have contributed to the normalizing of 2021 waste composition results.

In particular, compostable organics and building material, two categories that changed significantly in 2020, appeared to have rebounded in 2021. Compostable organics made up 26% of total waste disposed in 2018, decreased to 20% in 2020, and returned to 29% in 2021. Building material was 6% in 2018, increased to 10% in 2020, and decreased back to 5% in 2021. Non-compostable organics, which primarily consists of painted and engineered wood, decreased significantly from 16% in both 2018 and 2020 to 9% in 2021. This decrease can primarily be attributed to a decrease in wood waste generated at single family and multi-family homes.

The majority of building material and non-compostable organics disposed come from small load waste delivered in hand unloaded vehicles by residents and contractors. Metro Vancouver has initiated a procurement process to manage small load waste to recover any remaining recyclable materials and produce a low-carbon alternative fuel product. The initiative will result in up to 60,000 tonnes per year of material being diverted from the waste stream.

Table 1: Regional Waste Disposal by Material

	2018		2020		2021	
Material	**kg/capita**	**Percent**	**kg/capita**	**Percent**	**kg/capita**	**Percent**
Paper	63	18%	44	14%	60	19%
Plastic	57	16%	57	19%	59	19%
Compostable Products and Packaging	<1	<1%	<1	<1%	<1	<1%
Compostable Organics	91	26%	61	20%	89	29%
Non-Compostable Organics	57	16%	49	16%	28	9%
Metal	13	4%	14	4%	11	3%
Glass	8	2%	7	2%	6	2%
Building Material	20	6%	30	10%	14	5%
Electronic Waste	4	1%	6	2%	3	1%
Household Hazardous	3	<1%	3	1%	6	2%
Household Hygiene	26	7%	24	8%	30	9%

Bulky Objects	2	<1%	11	3%	2	1%
Fines	5	2%	2	1%	6	2%
Total	**350**	**100%**	**310[1]**	**100%**	**302[1]**	**100%**

[1] Per capita tonnages for waste composition studies are typically based on the last reported year of data available at the time of publishing. In 2020, the tonnage was adjusted to reflect anticipated decreases in overall tonnage as of December 2020. In 2021, actual 2020 tonnages are used however it should be noted that total tonnage for 2021 has not yet been reported and will likely be higher.

Single-Use Items

Metro Vancouver has been counting single-use items disposed in the municipal solid waste stream since the 2018 waste composition study. Despite representing only 3% of the waste stream by weight, single-use items can have detrimental impacts on marine ecosystems and represent an opportunity to encourage waste reduction. The categories listed correspond with the items prioritized in Metro Vancouver's Single-Use Item Reduction Toolkit (Reference 3) and includes items most commonly targeted by municipal single-use item reduction bylaws. Single-use items are typically disposed in higher concentrations in streetscape waste, which is delivered to regional solid waste facilities in dedicated loads or comingled with other types of waste, and was not included in this study. As samples are randomly selected for sorting in waste composition studies, the single-use item data may not capture the contribution of streetscape waste to overall single-use item disposal.

Total single-use item disposal increased from 2020 to 2021, but still demonstrates a decrease compared to pre-pandemic levels. Retail bag disposal, which increased during the pandemic, remained high in 2021 compared to 2018, however it should be noted that sampling was done prior to widespread plastic bag bans in the region. Items which decreased significantly from 2018 to 2020, such as single-use cups and utensils, have increased from 2020 to 2021. Take out containers, which increased significantly from 2018 to 2020, decreased in 2021 to levels similar to 2018.

Table 2: Single-Use Items

	2018		2020		2021	
SUI Item	**Items/ capita**	**Total items (millions)**	**Items/ capita**	**Total items (millions)**	**Items/ capita**	**Total items (millions)**
Retail Bags	101	256	117	318	116	321
Cups	102	262	64	174	98	271
Containers	70	179	95	259	65	180
Straws	40	102	34	92	33	91
Utensils	130	331	49	135	80	221
Totals	**443**	**1130**	**359**	**978**	**391**	**1082**

Personal Protective Equipment

Metro Vancouver residents disposed an estimated 260 million masks and 350 million gloves in 2021. While glove disposal in 2021 was similar to 2020, mask disposal increased significantly from 40 masks/capita to 94 masks/capita. This is consistent with public health mandates regarding mask usage which came into place following the 2020 waste composition study and stayed in place for the majority of 2021.

Table 3: Personal Protective Equipment				
	2020		2021	
PPE Item	**Items/capita**	**Total items (millions)**	**Items/capita**	**Total items (millions)**
Masks	40	109	94	260
Gloves[1]	136	371	126	350
Wipes	18	48	36	100
Total	**194**	**528**	**257**	**710**

1 Gloves are counted individually

Multi-Family Waste Composition Study

The 2021 Multi-Family Waste Composition Study characterized waste disposed at 100 multi-family residences throughout the Metro Vancouver region. Results indicated that the largest component of multi-family waste remains compostable organics (37% or 77kg/capita), followed by plastic, household hygiene products such as diapers and pet waste, and paper. This is similar to the percentage of compostable organics found from the last multi-family waste composition study completed in 2017 (38% or 80 kg/capita). These results will help to inform Metro Vancouver's behavior change campaigns such as "Food Scraps Aren't Garbage" as well as the solid waste management plan update process. Metro Vancouver residents remain well above the national average in access to composting programs, with 87% of residents composting kitchen scraps in comparison to the national average of 62%.

Table 4: Multi-Family Waste Composition				
	2017		2021	
Material	**kg/capita**	**Percent**	**kg/capita**	**Percent**
Paper	31	16%	30	15%
Plastic	34	15%	34	17%
Compostable Products and Packaging	<1	<1%	<1	<1%
Compostable Organics	80	38%	77	37%
Non-Compostable Organics	10	5%	8	4%
Metal	6	3%	5	3%
Glass	6	3%	7	3%
Building Material	4	2%	4	2%
Electronic Waste	4	2%	4	2%
Household Hazardous	1	1%	1	1%
Household Hygiene	31	15%	31	15%
Bulky Objects	<1	<1%	5	3%
Fines	1	1%	1	1%
Total	**212**	**100%**	**206**	**100%**

Metro Vancouver's waste composition consultant estimated overall rates of disposal, recycling and organics recycling based on pick-up frequency and bin volumes at the time of collection. The 2021 multi-family waste generation rate was 206 kg/capita, slightly lower than the 2017 rate of 212/kg capita. Overall recycling (including all types of recyclable material) was estimated at 103 kg/capita, compared to 82 kg/capita in 2017, and organics recycling was 50 kg/capita, compared to 35 kg/capita in 2017. The multi-family study will be repeated in 2022 to further assess generation rates.

The multi-family study also included a visual inspection of contamination in multi-family recycling and organics containers, indicating that 30 to 55% of all bins observed contained clearly visible contamination. Film plastic remains a common contaminant in both recycling and organics containers.

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

FINANCIAL IMPLICATIONS
The waste composition program is ongoing and is included in the solid waste services annual operating budget.

CONCLUSION
Metro Vancouver's waste composition program provides valuable information on the progress of various waste reduction and recycling initiatives, as well as identifying potential target materials for future programs and policies. Two studies were completed in 2021: a multi-family waste composition study and a full-scale waste composition study. The 2021 full-scale study demonstrated that waste composition during the second year of pandemic is more similar to composition in 2018 than to waste composition during the initial stages of the pandemic in 2020. The multi-family waste composition study found that compostable organics remain the highest proportion of multi-family residential waste disposed, by weight. Metro Vancouver will continue to monitor waste composition annually with the intention of completing four waste composition studies in 2022.

References
1. 2021 Multi-Family Waste Composition Study
2. 2021 Full-Scale Waste Composition Study
3. Single-Use Item Reduction Toolkit

49472238

To: Zero Waste Committee

From: Karen Storry, Senior Engineer, Solid Waste Services

Date: May 4, 2022 Meeting Date: May 13, 2022

Subject: **Single-Use Item Reduction Regulatory Update**

RECOMMENDATION

That the Zero Waste Committee receive for information the report dated May 4, 2022, titled "Single-Use Item Reduction Regulatory Update".

EXECUTIVE SUMMARY

Since the GVS&DD Board (the Board) approved the *Regionally Harmonized Approach to Municipal Single-Use Item Reduction Bylaws* on November 26, 2021 the Government of Canada, the Government of BC, and member jurisdictions have implemented or announced plans to implement single-use item reduction regulations. While the proposed regulations largely align with the regionally harmonized approach, there are some proposed additions such as banning plastic ring carriers at the federal level and banning compostable foodservice ware at the provincial level. The proposed regulations for Canada and BC, once enacted, will provide a high level of harmonization. At the same time, the flexibility of the proposed BC regulations will allow municipalities to pursue new policies to address single-use waste that go beyond the scope of the provincial and federal government regulations. Five of Metro Vancouver's member jurisdictions have bylaws and three have received direction to work on bylaws. In addition, recent changes to the BC Food Safety Act allow customers to bring containers to be filled by restaurants.

PURPOSE

To update the Zero Waste Committee on single-use item reduction regulations that are being contemplated by the Government of Canada, the Government of BC, and member jurisdictions.

BACKGROUND

At its November 26, 2021, the Board of Directors of the Greater Vancouver Sewerage and Drainage District (Metro Vancouver) adopted the following resolution:

That the GVS&DD Board:

a) approve the following regionally harmonized approach to municipal single-use item reduction bylaws:
   - *i. ban on plastic checkout bags with prescribed minimum fees for recycled paper bags and reusable bags;*
   - *ii. ban on polystyrene foam service ware containers;*
   - *iii. ban on plastic drinking straws not required for medical and accessibility needs with alternatives such as paper drinking straws provided only on request by the customer;*
   - *iv. ban on plastic stir sticks with all other utensils provided only on request by the customer; and*

b) write the Minister of Environment and Climate Change Strategy requesting that municipalities be authorized to require businesses to charge prescribed minimum fees for single-use cups.

Metro Vancouver does not have regulatory authority to restrict the sale and use of single-use items. It is up to each municipality to develop its own bylaw that aligns with the regionally harmonized approach.

SINGLE-USE ITEM REGULATIONS

Since the Board approved the *Regionally Harmonized Approach to Municipal Single-Use Item Reduction Bylaws* on November 26, 2021, the Government of Canada, the Government of BC, and several local governments have implemented or announced plans to implement single-use item reduction regulations.

Table 1 – Summary of Regulatory Measures to Reduce Single-Use Items

	Government of Canada (Proposed Regulations)	Government of BC (Proposed Regulations)	Metro Vancouver (Harmonized Approach for Member Jurisdictions)
Checkout Bags	-Ban plastic	-Ban plastic -Fees and recycled content in paper -Fees for reusables	-Ban plastic -Fees and recycled content in paper -Fees for reusables
Cups and Containers (foodservice ware)	Ban problematic plastics: -Polystyrene foam -PVC -oxo-degradable plastics	Ban problematic plastics: -Polystyrene foam -PVC -oxo-degradable plastics -compostable plastics	Ban problematic plastics: -Polystyrene foam
Plastic ring carriers	-Ban plastic		
Straws	-Ban plastic	-By-request	-Ban plastic -All others by-request
Utensils	-Ban plastic	-By-request	-By-request
Stir Sticks		-By-request	-Ban plastic -All others by-request
Disposable foodservice ware accessories		By request for: -condiment sachets -napkins -cup sleeves and other similar items	
All packaging		-Ban oxo-degradable plastics	

Government of Canada

On December 25th, 2021 the Government of Canada published its proposed prohibition on certain single-use plastics by 2023. The regulations propose prohibiting the manufacture, import, and sale of single-use plastic straws. In addition to straws, it looks at prohibiting the manufacture, import, and sale of single-use plastic checkout bags, single-use plastic cutlery, single-use plastic foodservice ware made of foam and other problematic plastics, single-use plastic ring carriers, or single-use plastic stir

sticks. While the Government of Canada's proposed regulations largely aligns with and expands on the regionally harmonized approach to single-use plastic bans (Table 1), they do not address the reduction of substitutions such as paper straws, paper bags, and reusable bags which are addressed in the regionally harmonized approach. The fact that the Government did not address substitutions resulted in some initial uncertainty for local governments about the implications for their local bylaws. Government of Canada staff provided clarification that local government bylaws and provincial regulations which address these substitutions would be complementary to the federal approach.

Government of BC

In February 2022, the Government of BC released a new policy for reusable containers on food premises. Customer-supplied containers are now allowed under the BC Food Safety Act. Businesses must identify which food and beverage items are appropriate for customer-supplied containers. The customer-supplied containers must be clean and suitable for food transport.

On April 22, 2022, the Government of BC released their *Preventing Single-Use and Plastic Waste in British Columbia Intentions Paper.* While they plan to align with the federal bans, their intentions paper recognizes that a combination of tools and policies are needed to successfully address the use of and the waste from single-use items in BC. To that end, their proposed regulations look towards circular economy approaches where nothing is 'waste' and reduce, reuse, and repair are the norm. For single-use specifically, they are looking to:

- Phase out unnecessary single-use and plastic items;
- Promote a shift to durable reusable options; and
- Ensure necessary single-use and plastic items are recycled or composted.

As shown in Table 1, the Government of BC's proposed regulatory measures align with and expand upon the both Government of Canada's proposed regulations and the regionally harmonized approach. In addition to addressing substitutions for single-use plastics through fee and by-request policies, the Government of BC proposes banning compostable plastic foodservice ware and all oxo-degradable plastic packaging. While compostable plastics are typically designed to be safe for soils if they properly break down during composting, oxo-degradable plastics contain additives that lead to fragmentation of the plastics into microplastics that further contaminate the environment.

Banning compostable plastics foodservice ware which are not readily accepted in composting facilities in BC aligns with feedback provided to senior levels of government by Metro Vancouver staff. Compostable plastics are often screened out and sent to disposal because many of the plastics labeled compostable cannot be readily processed by composting facilities.

In December 2021, The Metro Vancouver Board Chair wrote the Minister of Environment and Climate Change requesting that he consider providing BC municipalities with the authority to charge a prescribed fee for single-use cups. While the response from the Minister and the intensions paper does not explicitly provide this authority to BC municipalities, they recognize it is an emerging priority for BC municipalities, and state that they will monitor the impact of municipal bylaws to determine whether action applied at the local level could be applicable on a provincial scale. Feedback on the

intensions paper provides an opportunity to reiterate the need for fees on disposable beverage cups to change behavior and enable circular economy innovations such as cup share programs.

The Government of BC proposed regulations would stand alongside municipal bylaws that regulate the same items at the municipal level. However, municipal bylaws can be stricter than the provisions of the proposed regulation, and municipalities may further enforce and/ or educate at the local level about single-use and plastic reduction. For items not covered under the proposed regulation, municipalities can continue to submit bylaws to the province for minister approval.

The deadline for feedback on the intensions paper is June 21, 2022. Staff will work to provide a response in collaboration with the members through the Regional Engineers Advisory Committee Solid Waste Subcommittee. The intentions paper timeline shows a target date of December 2023 for implementing the checkout bag ban and by-request for disposable foodservice ware accessories. And a target date of 2024 for phasing out problematic plastic foodservice ware and oxo-degradable plastic packaging.

Local Governments

A survey of member municipalities in early April 2022 found that many members without bylaws were waiting for confirmation of the federal and provincial regulations. At the same time, several bylaws came into effect in 2022 and some members are moving forward with plans to develop bylaws that align with the regionally harmonized approach:

- City of Vancouver's bylaws were effective January 1, 2020, for foam, April 22, 2020, for straws and utensils, and January 1, 2022, for cup fees and bags;
- City of Surrey's bylaw became effective October 21, 2021;
- City of Richmond's bylaw became effective March 27, 2022;
- City of Port Moody's bylaw became effective April 22, 2022;
- City of Delta's bylaw becomes effective June 6, 2022;
- City of Coquitlam approved their Environmental Sustainability plan in January 2022 which included a priority action to "implement a single-use item bylaw that reflects the regional approach developed by Metro Vancouver";
- On February 28th, 2022, City of Burnaby Council requested staff to draft a single-use plastics reduction Bylaw for enactment prior to the end of 2022 which will follow the regionally harmonized approach; and
- City of Maple Ridge council passed a motion on April 12, 2022 "that staff prepare a single-use and other items bylaw for council consideration".

Outside of the region:

- Tofino, Ucluelet, and Chilliwack banned plastic utensils in advance of the proposed federal ban.
- At their April 21, 2022 meeting, the City of Victoria committee of the whole unanimously supported the staff's three policy recommendations:
    - utensils and packets of condiments only by request;
    - require reusable foodservice ware; and
    - $0.25 fee for any take-out cup or container.

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

FINANCIAL IMPLICATIONS
There are no direct financial implications for Metro Vancouver.

OTHER IMPLICATIONS
Metro Vancouver may need to make housekeeping amendments to the Board-approved *Regionally Harmonized Approach to Municipal Single-Use Item Reduction Bylaw* to align with proposed federal and provincial regulations.

CONCLUSION
Canadians asked their government to take action to reduce unnecessary single-use plastics and items. There are now not only regulatory measures in place by local governments who led this action to reduce single-use items, but also proposed regulations for Canada and BC which, once enacted, will provide a high level of harmonization. While the Government of Canada regulations address single-use plastics, they do not address substitutions. Therefore, there is still an important role for the government of BC and BC municipalities in addressing other single-use items. The flexibility of the proposed BC regulations will allow municipalities in BC to pursue new policies to address single-use waste that go beyond the scope of the provincial and federal government regulations.

References
1. Regionally Harmonized Approach to Municipal Single-Use Item Reduction Bylaws
2. Preventing Single-Use and Plastic Waste in British Columbia Intensions Paper
3. Provincial Policy on the Use of Reusable Food Containers in Food Premises in British Columbia

52362703

To: Zero Waste Committee

From: Larina Lopez, Division Manager, Corporate Communications
Alison Schatz, Sr. Communications Specialist, Corporate Communications

Date: May 5, 2022 Meeting Date: May 13, 2022

Subject: **2022 Food Scraps Recycling "Food Scraps Aren't Garbage" Results**

RECOMMENDATION

That the Zero Waste Committee receive for information the report dated May 5, 2022, titled "2022 Food Scraps Recycling "Food Scraps Aren't Garbage" Results."

EXECUTIVE SUMMARY

The 2022 "Food Scraps Aren't Garbage" campaign ran from January 3 to March 6, 2022. The campaign's primary objective is to increase the diversion of organic waste into the green bin. New in 2022 were two target audience segments: those on the fence about using the green bin (men age 18–44), and those who can further improve by reducing contamination (women age 45–65). A new key message making the connection between composting and climate change was added. Residents who have seen the campaign feel that reducing production of methane is the most important benefit of food scraps recycling (27% vs 17% unaware of advertising). This is likely a direct result of the new message. The campaign performed strongly, with 31 million impressions, 2 million reach, over 16,000 webpage visits. There were 12,700 likes, comments, and shares on social media, which is well above average. The campaign will run again in early 2023.

PURPOSE

To update the Committee on the results of the 2022 regional food scraps recycling campaign, "Food Scraps Aren't Garbage."

BACKGROUND

The food scraps recycling campaign is part of a suite of education, enforcement (policy) and engineering efforts by Metro Vancouver to reduce waste in the region. It supports the waste reduction objectives in the *Integrated Solid Waste and Resource Management Plan.* 2022 marked the ninth year of the campaign. This report provides an update on the results of the 2022 campaign as identified in the 2022 Zero Waste Committee Work Plan.

2022 REGIONAL FOOD SCRAPS RECYCLING CAMPAIGN

The 2022 "Food Scraps Aren't Garbage" campaign was in market from January 3 to March 6, 2022. Classically recognized organics are still in the garbage in significant quantities, so the primary campaign objective was to increase the diversion of organic waste into the green bin. The secondary objective was to reduce contamination overall (by single-use items, plastic bags, plastics labelled

"compostable" or "biodegradable," PPE, and other items). The campaign leveraged the existing googly-eyed food face characters (see Attachment 1 for sample creative).

The target audience was Metro Vancouver residents, with two distinct segments. Research provided insights into green bin behavior among different groups. Those who tend to use the green bin less were men age 18–44. Those who tend to use the green bin more and could further improve by reducing contamination were women age 45–65.

For the "on the fence" audience (men age 18–44), the strategy was to increase benefits by giving them a reason why they should use the green bin, and reduce barriers by emphasizing that it is easy to do so. To help the "on the fence" audience better understand the benefit of using the green bin, a message connecting food scraps recycling and climate change was added: "Recycling one tonne of food scraps prevents 0.4 tonnes of CO_2 emissions." Leading up to the campaign, three variations of this message were tested on Twitter, Facebook, and Instagram. The results demonstrated that the message above was most effective with the new audience segment. A new video, "Prevent Bad Gas," (Reference 1) was created. Two notable tactics were used to reach the younger male audience. Twitch (a video live-streaming service that focuses on video games) was tested in this campaign period. CFOX host Captain Scotty created on air spots and social media content to support the campaign (shared on CFOX's Instagram).

For those already using the green bin (women age 45–65), the strategy was to help them improve by reducing contamination, and to create content they would share to help amplify our message. New infographics about common, confusing contaminants with highly shareable information were created (Attachment 2). These were based on data from past campaign flights, including questions received and popular webpages.

The paid media strategy leveraged both broad and targeted tactics and included digital (YouTube, Facebook, Instagram, Twitch, Google Search), broadcast (geo-targeted television PSA (14 networks), radio (CFOX FM), and out-of-home advertising (transit shelter ads, elevator screens in multi-family buildings). All the placements directed to the campaign website (Reference 2).

Elevator screens in condo buildings were used to reach the multi-family audience segment. They included messages to address the specific barriers to using the green bin for multi-family residents.

Engagement of Metro Vancouver Members

Campaign materials were made available to all Metro Vancouver members, including social media content and co-branded assets like transit shelter ads and digital message boards. Several members used the materials on their social media channels and throughout their municipalities.

Results

Website Traffic

- Over the campaign period, there were 16,066 page views, which is 255 per day. This is slightly lower than previous years, but not unexpected given that the media mix did not include banner ads and the social media ads had an engagement objective (i.e. they were optimized for sharing, not clicks).

- Users spent on average of 2:24 viewing a page, longer than previous years, indicating that people were taking the time to read the content.
- Besides the landing page, the most popular pages were "What Goes in the Green Bin?" followed by "About Food Scraps Recycling," "Plastics in the Green Bin," and "What to Do with Confusing Items?"
- These pages were designed to answer specific questions that residents have, and the high amount of traffic and average time on page indicate that they are providing information that residents seek.

Media Performance

- The campaign delivered just over 31 million impressions.
- The broad traditional tactics delivered 23.5 million impressions across transit shelter ads, television, and elevator screens. The television PSA aired 19,476 times.
- The targeted digital tactics delivered 7.6 million impressions across social media, YouTube, and Google Search, with a reach of 608,000.
- There were 1.2 million video views on social media.
- Radio received 743,100 impressions (184 spots).

Social Media

- Social media placements had a total reach of 608,600 people.
- There were 12,701 engagements (likes, comments, and shares), which is well above average and indicates the engagement strategy was effective.

Post-Campaign Survey

A post-campaign survey was conducted in March 2022.

- 22% of residents reported having seen or heard the campaign. This is a strong result and indicates the campaign was effective overall.
- 34% of those who saw the advertising talked about it with others, indicating that the campaign message was shared by the audience.
- When asked about the most important benefit of a food scraps program, residents who have seen or heard Metro Vancouver's advertising are most likely to feel that reducing production of methane is the most important benefit (27% vs 17% unaware of advertising). This is likely a direct result of the new key message used in this year's campaign.

Plans for 2023 Regional Campaign

The campaign will run again in early 2023. It will continue to use the existing creative platform, as performance is strong. The target audience and key messages are to be determined, but will be based on insights from 2022's campaign and data from Solid Waste Services.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The 2022 food scraps recycling campaign has a budget of $110,000, supported under the Zero Waste Communications Program of the 2022 General Government budget.

CONCLUSION

2022 was the ninth year of the "Food Scraps Aren't Garbage" campaign, which aims to increase diversion of organic waste into the green bin. The food faces creative platform was used once again in 2022, with two different audience segments (men age 18–44 who are on the fence about using the green bin and women age 45–65 who already use the green bin but could improve by reducing contamination). Specific creative and tactics were used for each audience. The campaign performed strongly, with 31 million total impressions, 2 million reach, over 16,000 webpage visits, and 12,700 likes, comments, and shares on social media. When asked about the most important benefit of a food scraps program, residents who have seen or heard Metro Vancouver's advertising are most likely to feel that reducing production of methane is the most important benefit (27% vs 17% unaware of advertising). This is likely a direct result of the new key message used in this year's campaign. The campaign will run again in 2023, informed by learnings from 2022 and building on the long-term equity of the creative platform.

Attachments:

1. "Food Scraps Aren't Garbage" Sample Creative
2. Shareable Infographic Examples

References

1. "Prevent Bad Gas" Video
2. "Food Scraps Aren't Garbage" Website

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"FOOD SCRAPS AREN'T GARBAGE" SAMPLE CREATIVE

Posters

Apple

Red Pepper

Napkin

Pineapple

Onion Peel

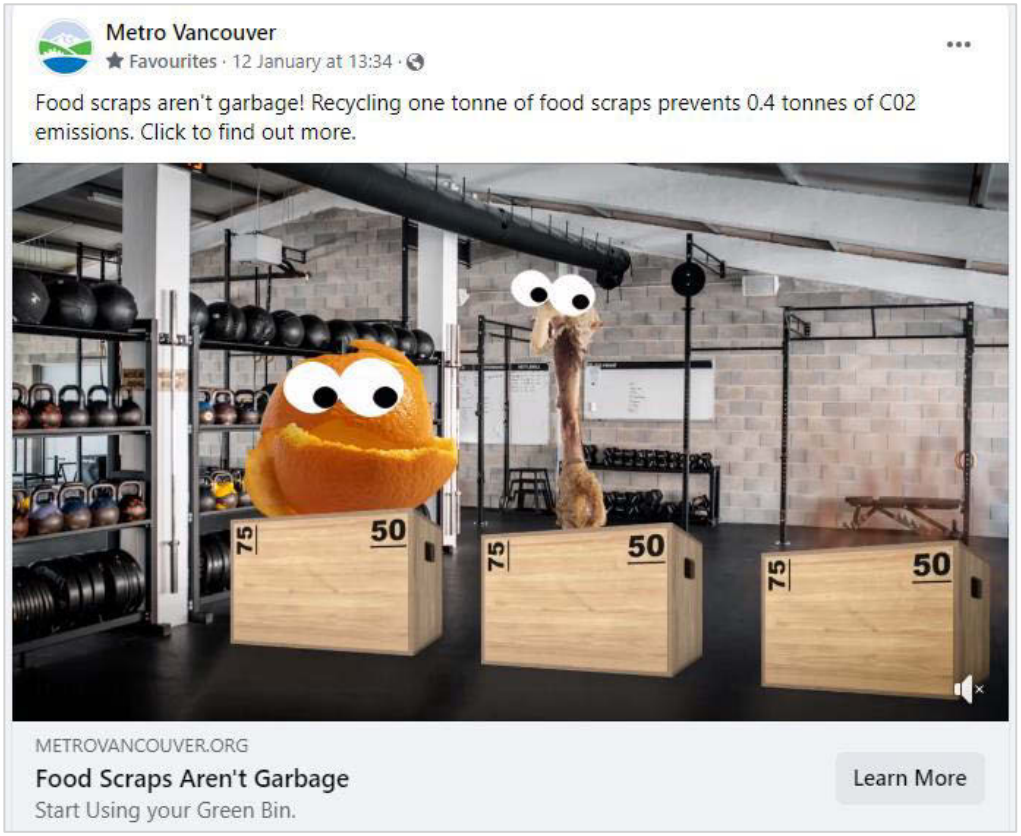
Coffee Filter

Transit Shelter Ad

Social Media Ads

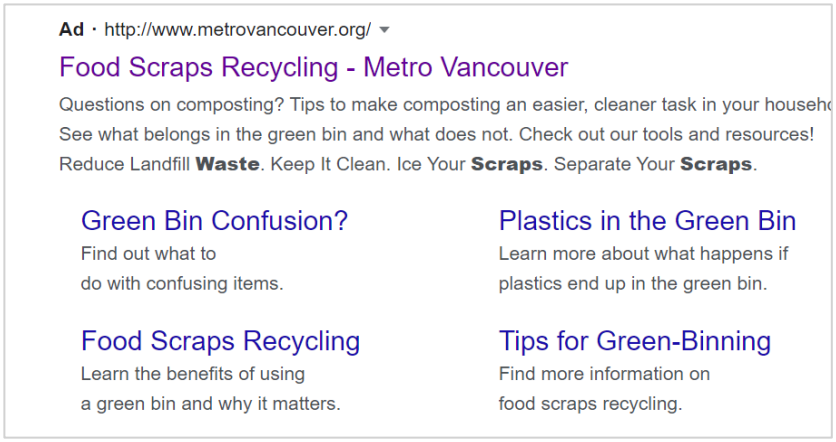
Facebook

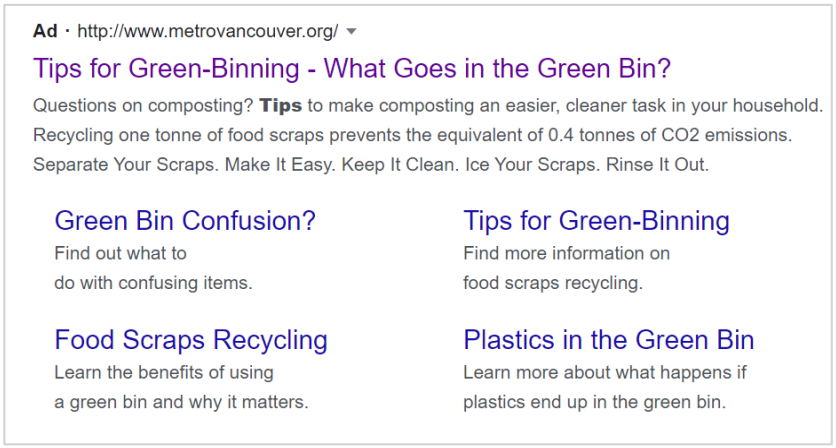
Instagram



Facebook (Video)

Google Search Ads





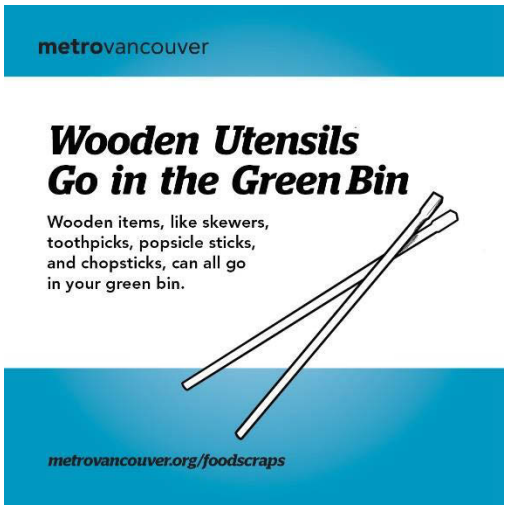
SHAREABLE INFOGRAPHIC EXAMPLES

Takeout Containers

De-package Food

Green Bin Liner

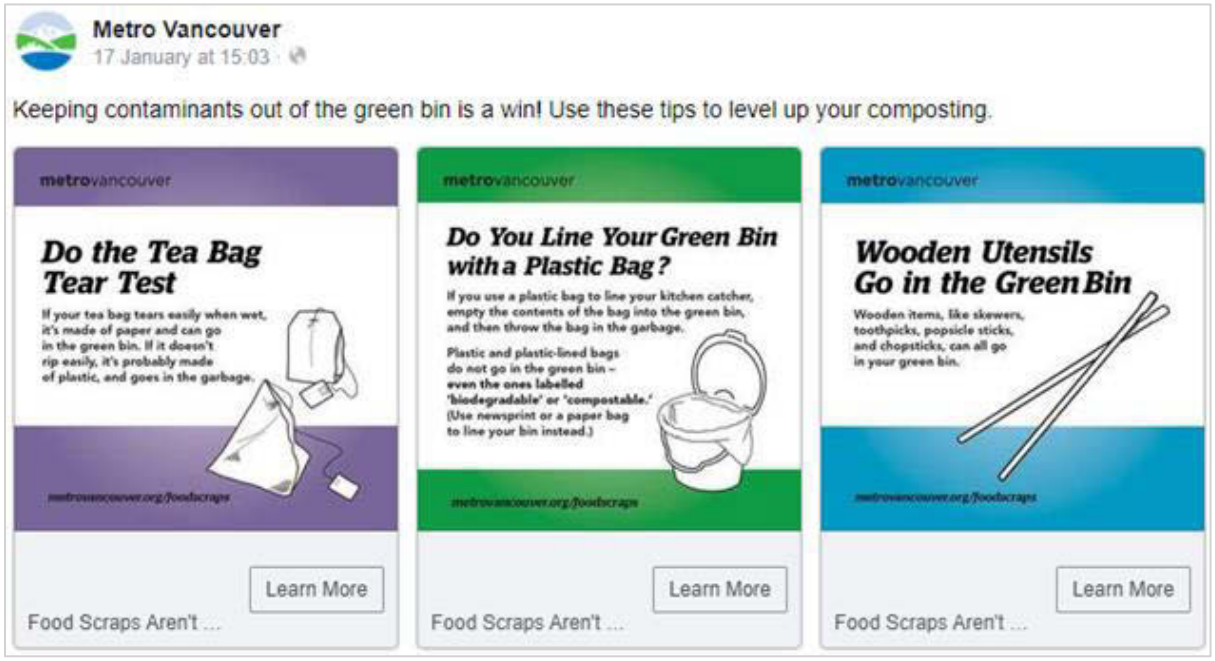
Coffee Cups



Wooden Utensils

Dog Poo

Sample Carousel Ad Using Infographics



To: Climate Action Committee

From: Lillian Zaremba, Program Manager, Collaborative Innovation, Liquid Waste Services

Date: April 20, 2022 Meeting Date: May 13, 2022

Subject: **2022 Update on Liquid Waste Sustainability Innovation Fund Projects**

RECOMMENDATION

That the Climate Action Committee receive for information the report dated April 20, 2022, titled "2022 Update on Liquid Waste Sustainability Innovation Fund Projects."

EXECUTIVE SUMMARY

This report provides an update on eight projects that were approved for funding in 2017 through 2021 under the Sustainability Innovation Fund. Of the eight projects, two are highlighted for significant milestones:

- Genomics Approach to Anaerobic Digestion Optimization. The United States Patent and Trademark Office granted a patent titled "Syntrophic Enrichment for Enhanced Digestion Processes" to Metro Vancouver in March 2022.
- Hydrothermal Processing – Biofuel Demonstration Facility. The contract for design of the hydrothermal processing unit was awarded in January 2022.

Descriptions of the other six projects that are progressing are included in the Attachment.

PURPOSE

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

BACKGROUND

The Liquid Waste Sustainability Innovation Fund (the 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 and 2021, 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 2017 to 2021. No new project proposals were submitted or approved in 2021; however, the previously approved Hydrothermal Processing - Biofuel Demonstration Facility received additional funding in February 2021 as identified below.

STATUS OF SUSTAINABILITY INNOVATION PROJECTS (APPROVAL YEARS: 2017 – 2021)

Project	Approval Year	Amount Approved	Status
High Efficiency Aeration Demonstration	2017	$750,000	In Progress
Genomics Approach to Anaerobic Digestion Optimization	2017	$460,000	Complete
Intelligent Water Systems - Making Use of Sensors and Big Data Analytics	2018	$200,000	In Progress
Hydrothermal Processing - Biofuel Demonstration Facility	2018 2021	$8,250,000 $6,130,000	In Progress
Multiphase Composite Coating (MCC) for Concrete Sewers	2019	$620,000	In Progress
Pump Station Optimization	2019	$330,000	In Progress
Advanced Resource Recovery from Sludge: Industrial Research Chair Program	2019	$2,985,000	In Progress
Handheld Wastewater Microbial DNA Monitor	2020	$330,000	In Progress

Genomics Approach to Anaerobic Digestion Optimization: Complete
The goal of this project is to identify a means to increase biomethane generation from existing anaerobic digestion processes at Metro Vancouver wastewater treatment plants. There were two academic teams on this project: i) environmental genomic experts at UBC Department of Microbiology and Immunology, and ii) anaerobic digestion experts from UBC School of Engineering, within the Bioreactor Technology Group.

Outcomes:

- Secured federal academic grants totaling over $700,000.
- Genomic sequencing of the microbiome provided insights for the invention of a compact add-on reactor to boost renewable natural gas production from existing digesters.
- The UBC team successfully tested a lab-scale prototype of the reactor for enhanced digestion.
- Creation of intellectual property. The United States Patent and Trademark Office granted a patent titled “Syntrophic Enrichment for Enhanced Digestion Processes” to Metro Vancouver in March 2022 and an international patent application is pending.

Hydrothermal Processing – Biofuel Demonstration Facility: In Progress
The goal of this project is to design, fabricate, and operationalize a hydrothermal processing demonstration facility at the Annacis Island Wastewater Treatment Plant. Compared to the current anaerobic digestion process, the hydrothermal processing technology promises a smaller footprint, reduced net costs, and production of biocrude that can be refined to low-carbon transportation fuels, include marine biofuel, sustainable aviation fuel, and biodiesel.

Outcomes to Date:

- Preliminary design completed in 2020.
- Contractor retained for design, fabrication, delivery and commissioning of the hydrothermal processing unit.

Milestone:

- The design of the hydrothermal processing unit was awarded in January 2022.

Next steps involve completing the detailed design and awarding the fabrication phase of the hydrothermal processing unit.

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 Board from 2017-2021. The disbursals of funds were made in accordance with the applicable *Sustainability Innovation Fund Policy* that governs the use and management of the Funds.

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	Est. Spent (as of Mar. 31, 2022)
2017 Approval Year		
High Efficiency Aeration Demonstration	$750,000	$124,481
Genomics Approach to Anaerobic Digestion Optimization	$460,000	$402,705
2018 Approval Year		
Intelligent Water Systems - Making Use of Sensors and Big Data Analytics	$200,000	$184,562
Hydrothermal Processing - Biofuel Demonstration Facility	$8,250,000 $6,130,000	$1,099,300
2019 Approval Year		
Multiphase Composite Coating (MCC) for Concrete Sewers	$620,000	$137,618
Pump Station Optimization	$330,000	$195,043
Advanced Resource Recovery from Sludge: Industrial Research Chair Program	$2,985,000	$953,528
2020 Approval Year		
Handheld Wastewater Microbial DNA Monitor	$330,000	$88,750

The balance in the Liquid Waste Sustainability Innovation Fund at Dec. 31, 2021 was $18.8 million.

CONCLUSION
This report presented an update on eight projects funded under the Liquid Waste Sustainability Innovation Fund. The Fund was created by the Board in 2004 to provide financial support to Liquid Waste Utility projects that contribute to the region's sustainability.

Attachment
Update on other Liquid Waste Sustainability Innovation Fund Projects in Progress

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UPDATE ON OTHER LIQUID WASTE SUSTAINABILITY INNOVATION FUND PROJECTS IN PROGRESS

High Efficiency Aeration Demonstration: In Progress
Aeration is energy-intensive – it can consume more than half of the energy required by a wastewater treatment plant. This project will assess the performance at pilot scale of the Perlemax Fluidic Oscillator, a new device that has shown its ability to improve aeration energy efficiency by 25% in small tanks. Project partners are the District of Columbia Water and Sewer Authority (DC Water), where the testing will be conducted, and the Water Research Foundation (WRF), who are coordinating a third-party independent validation.

Outcomes to Date:

- Perlemax delivered a preliminary design of their system for testing at DC Water.
- WRF assembled an expert independent evaluation panel.
- Finalized contract with DC Water to construct and test the pilot.
- Detailed design of pilot aeration tank approved by all project partners.

Testing is scheduled to begin in late 2022.

Intelligent Water Systems – Making Use of Sensors and Big Data Analytics: In Progress
Metro Vancouver and its member jurisdictions monitor and collect large amounts of data. As increasing numbers of less expensive sensors are deployed, the volume of data is expected to increase exponentially. The purpose of this project is to identify and evaluate innovative tools and techniques to help regional and municipal liquid waste utilities create information from the wave of "Big Data" that is transforming the industry. The project partner is the Water Research Foundation (WRF).

Outcomes to Date:

- In partnership with the WRF, a consultant has been retained to explore how Big Data techniques can be unified and leveraged with artificial intelligence to enable predictions, adapt operational rules, schedule maintenance and the like. Other considerations include integration of databases for precipitation, land use, population, and environmental monitoring.

Next steps involve working with the consultant using Metro Vancouver as a case study.

Multiphase Composite Coating (MCC) for Concrete Sewers: In Progress
The overall goal of this project is to field test and validate the performance of a new coating material developed by UBC with the potential to protect both new and existing concrete sewer pipes from biological corrosion, which can dramatically reduce the service life of sewer networks and result in significant repair and replacement costs. The project partners are UBC's Department of Civil Engineering, Ocean Pipe, and Metro Testing & Engineering.

Outcomes to Date:

- Laboratory testing of coating material in progress at UBC.

- A spray-on version of the coating is under development at UBC with plans for piloting on a small scale rehabilitation project.
- An NSERC proposal was submitted by UBC in December 2021 for additional funding to further develop the spray placement of the MCC coating using robotics and artificial intelligence.
- Field and laboratory testing is progressing on the pilot application of the coating material in a heavily corroded concrete sewer chamber in Delta. Physical, chemical and mechanical properties of the coating are currently being evaluated and showing positive results.

Milestone:

- Significant laboratory work has been done on the yield stress and viscosity of the material to allow the coating to be sprayed more effectively, increasing its potential for commercial viability. This represents a major jump in the development of this coating material.

Performance testing of the pilot application will continue into 2023.

Pump Station Optimization: In Progress

The goal of this project is to investigate opportunities to improve wet weather system performance and save energy by adjusting operating strategies at sanitary pump stations. Metro Vancouver's 33 pump stations consume electricity that costs approximately $2.4 million per year. This project is a partnership with the UBC Sauder School of Business involved in the field of Operations Research.

Outcomes to Date:

- Advanced modelling and new operational controls for Metro Vancouver's Lynn Pump Station in the North Vancouver indicate a potential 25% reduction in energy use.
- COVID-related priorities, facility lock-downs, and operational restrictions suspended work in 2020 and 2021.
- The UBC collaboration effort was discontinued in 2021 due to the closure of UBC's industry partnership program.

A trial of the amended control strategy for the Lynn Pump Station is scheduled for 2022.

Advanced Resource Recovery from Sludge: In Progress

The main goals of this 5-year project are: i) assess the integration of hydrothermal and anaerobic digestion processes and characterize the potential for nitrogen and phosphorus recovery, ii) evaluate the effectiveness of hydrothermal processing in destroying a wide range of micropollutants, iii) develop a prototype and pilot-scale bioreactor that can augment biomethane production. Advancing the recovery of resources from wastewater to produce value-added output for use by other industries can help build a stronger circular economy. The project partners are UBC School of Engineering and the Natural Sciences and Engineering Research Council.

Outcomes to Date:

- UBC successfully tested a wide range of configurations and identified the optimal arrangement for integrating hydrothermal processes and anaerobic digestion.
- UBC's prototyping provided valuable insights for bioreactor scoping and design at the pilot scale.

Next steps include developing a method to detect and quantify the fate of prioritized compounds of environmental concern through hydrothermal processes.

Handheld Wastewater Microbial DNA Monitor: In Progress

The goal of this project is to adapt an off-the-shelf DNA sequencer to test the microbes in wastewater samples taken from treatment processes, which will provide quantitative results to support existing visual assessments. Combined with the development of artificial intelligence, this system could provide early warning of treatment process upsets, allowing greater time to take corrective action and prevent process failure.

Outcomes to Date:

- UBC entered into a Collaborative Research Agreement and kicked off research in 2021.
- UBC researchers began collecting wastewater samples at Annacis Island WWTP to develop and validate the DNA extraction method, with promising initial results.

Full scale testing will begin in 2022.

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