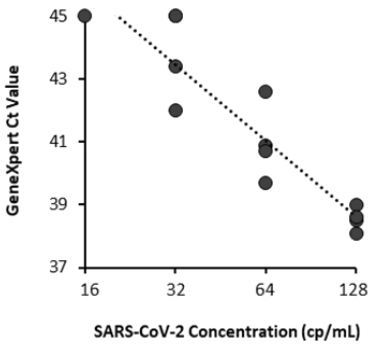
Supplementary Material:

Supplementary Table 1: List of SARS-CoV-2 Primers and Probes used for the Laboratory-Developed q-RT-PCR Test (Source, US Centers for Disease Control and Prevention).

Assay	Oligonucleotide	Sequence (5' -- 3')	Concentration (µM)
N1	2019-nCoV_N1 forward primer	GAC CCC AAA ATC AGC GAA AT	0.5
	2019-nCoV_N1 reverse primer	TCT GGT TAC TGC CAG TTG AAT CTG	0.5
	2019-nCoV_N1 reverse probe	FAM-ACC CCG CAT TAC GTT TGG TGG ACC-NFQ	0.125
N2	2019-nCoV_N2 forward primer	TTA CAA ACA TTG GCC GCA AA	0.5
	2019-nCoV_N2 reverse primer	GCG CGA CAT TCC GAA GAA	0.5
	2019-nCoV_N2 reverse probe	FAM-ACA ATT TGC CCC CAG CGC TTC AG-NFQ	0.125

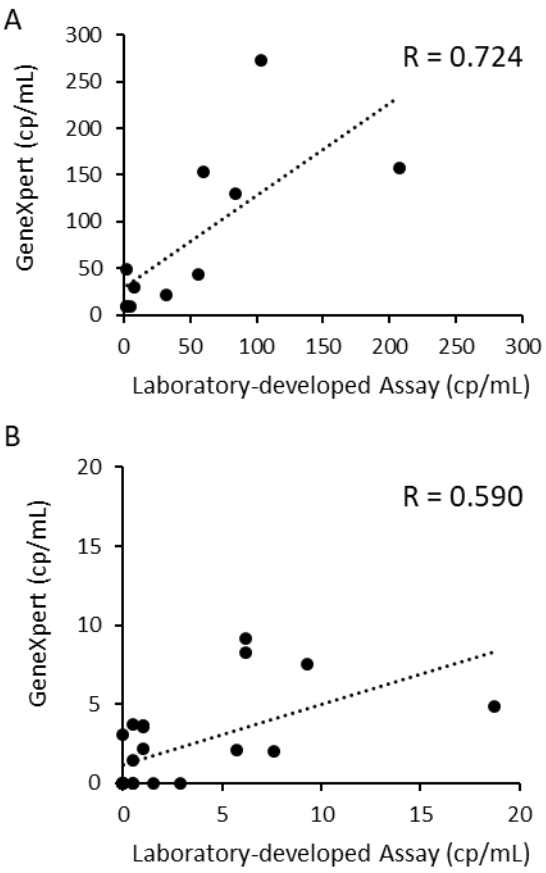
Supplementary Table 2: Standard Curve Parameters for the N1 and N2 primers used for the laboratory-developed wastewater test in this study.

	N1	**N2**
Slope	-3.36	-3.43
Intercept	36.27	37.02
R^2	0.9979	0.9965
Efficiency	98.44	95.68



Input Concentration (cp/mL)	GeneXpert CT value			
	Replicate # 1	Replicate #2	Replicate #3	Replicate #4
128	38.5	38.1	39.0	38.6
64	39.7	40.9	40.7	42.6
32	42	43.3	Endpoint Pos.	Endpoint Pos.
16	Negative	Negative	Endpoint Pos.	Negative

Supplementary Figure 1: Detection of SARS-CoV-2 in wastewater using the GeneXpert system. Gamma irradiated SARS-CoV-2 culture fluid was diluted in wastewater to final concentrations between 16 – 128 copies (cp/mL). All points in the dilution series were tested using four independent replicates, diluted in negative wastewater samples collected from four locations across Canada. All inputs of greater than 32 cp/mL were identified as positive or endpoint positive (pos.) on the GeneXpert system.



Supplementary Figure 2: Correlation of GeneXpert (with Amicon concentration) and laboratory-developed assay for the quantification of SARS-CoV-2 in wastewater. (A) Correlation of SARS-CoV-2 quantification with the GeneXpert and laboratory-developed assay using input wastewater samples collected from multiple sites across Canada (See Fig 2B). (B) Correlation of SARS-CoV-2 quantification with the GeneXpert and laboratory-developed assay using input wastewater samples collected from Yellowknife Lift Station 5 (See Fig 3A).