

REPORT
OF THE
BOARD OF WORKS
WITH
REPORT OF CITY ENGINEER
ON
CITY SEWERAGE.

TORONTO:
PRINTED BY MACLEAR, THOMAS & CO.,
KING STREET.
1857.

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TO THE WORSHIPFUL THE
MAYOR, ALDERMEN, AND COMMONALTY
OF THE
CITY OF TORONTO.
IN COMMON COUNCIL ASSEMBLED.

The Board of Works beg leave to present their Report No. 4.

The Board beg to submit to the Council the accompanying Report upon City Sewerage, received by them from the City Engineer, with a Plan of the City, shewing the various Drainage Districts and Sections of the Streets in which Mains and Connections are required; also, an Estimate of the Cost of Sewers proposed to be constructed under this Plan during the present year. Having given this Report careful and mature consideration, the Board would recommend its adoption by the Council.

They would at the same time remark that the construction of the Esplanade makes it imperative to proceed with the carrying out of a Plan of Drainage for the City at once.

The Council will observe, that by this Plan and Report the whole Sewerage of the City may at any subsequent period be carried eastwardly across the River Don should it ever be considered advisable to do so.

All of which is respectfully submitted.

(Signed,)

JOHN WORTHINGTON,
Chairman.

Board of Works Office,
Toronto, 23rd March, 1857.

REPORT

ACCOMPANYING PLAN PROVIDING FOR THE FUTURE DRAINAGE OF THE CITY OF TORONTO.

In reporting upon a system of Drainage for the City of Toronto and its liberties, it is needless to enter into the questions as to whether it is desirable or not, or as to its utility and benefit in a sanitary point of view, for all parties who have thought for a moment upon the subject, must be convinced of the absolute necessity there exists of a proper plan being adopted by which the health and consequent physical happiness of its inhabitants can be secured. I will, therefore, without further preface, proceed to explain the plan by which that object is proposed to be attained.

The plan is a skeleton map of the city, embracing the various Streets now laid out, or proposed to be opened, between the second Concession line on the north, and the Bay on the south, Don River on the east, and Garrison Creek on the west.

The site of the city is upon an inclined plain, rising gradually from the Bay northward, the northern limit of the city being on the average about 132 feet above the water of the Bay, and on the other hand the ground has a gentle incline eastward from Spadina Avenue to the River Don, falling off also to the west towards the Garrison Creek. Between the Don and Garrison Creek the city is intersected in a south-easterly direction by two creeks, with their several tributary forks, one entering the Bay at or near the foot of Simcoe Street, the other at the foot of Parliament Street, these are and have been sources of great annoyance by their overflowing in the spring and fall, causing considerable damage to the property on their banks, but are intended in the present plan to be tapped by various main sewers, by which their power of destruction will be turned into one of benefit, by their waters being conveyed into the sewers, and by their constant flow, obviate, to some extent, by

flushing or cleansing them, the want of that aid to sanitary schemes a good and efficient supply of water. There is also another creek running through the College Grounds, but which is now tapped at Caer Howell by the Simcoe and William Street main sewer.

On reference to the plan it will be seen that the city is divided into eight districts of nearly equal area, the drainage of each district being distinct and complete in itself, six of them—Nos. 2, 3, 4, 5, 6 and 7 having a main sewer running north and south, having its outlet through the Esplanade into the Bay, into which main all other sewers, required in the same district will enter. District No. 1 will be drained into the River Don, and district No. 8 will be drained into the Garrison Creek, the outlet of which is into the Lake west of the Queen's Wharf. The principal main in both districts being on Queen Street.

Description of Main Sewers.

No. 1. This main runs the whole length of Parliament Street, commencing at the Bay and running up to Queen Street, a distance of 676 yards, being a brick sewer of an egg-shape, 5 feet high and 3 feet 6 inches wide. From Queen Street to Gerrard Street the size will be reduced to 3 ft. 6 in. \times 2 ft. 6 in., a distance of 870 yards. From Gerrard Street to East Street, being the head of Parliament Street, a 2 ft. barrel drain will suffice, this distance being 1133 yards. The grades are various, 1 in 30 being the highest and 1 in 275 being the lowest, the average depth being 16 ft. 6 in.

This main drains district No. 2, having a superficial area of about 350 acres, and taps the main creek crossing King Street at Parliament Street, also a fork of a smaller creek a little above Queen Street, and a third at Beech Street.

Table of Sewers now constructed in District No. 2, that will have their outlets into Main Sewer, shewing their size and location.

Parliament Street, from King Street to Queen Street	Ft. In.	Ft. In.
Power " " " " " "	3 0	\times 1 9
King " " George to Caroline "	4 6	\times 2 6
" " " Caroline to Parliament "	3 0	\times 1 9
" " " Parliament to Power "	18 in.	barrel.
Palace " " Caroline to Creek east of Parliament	14 in.	box.
Duke " " Parliament to Caroline Street	18 in.	barrel.
" " " Caroline and west of Frederick Street	2 0	\times 1 3

			Ft.	In.	Ft.	In.
Duke	“	“	Frederick to Nelson	“	2	0 × 1 3
Duchess	“	“	Parliament to Creek		2	6 × 1 3
“	“	“	Caroline to Nelson Street		2	6 × 1 3
Queen	“	“	Parliament to Caroline Street		2	6 × 1 3
“	“	“	Creek west of Caroline to Nelson St ...		3	6 × 3 0
George	“	“	King to Duchess Street		2	0 × 1 3
Caroline	“	“	King to the Bay		4	6 × 2 6
“	“	“	Duchess to King Street.....		2	3 × 1 3
McMahon	“	“	Queen to north of Sydenham Street ...		2	0 × 1 3
Ontario	“	“	Queen to Creek north of Duke “ ...			

No. 2. This main runs the whole length of Nelson and Jarvis Streets. The outlet for this main crosses the Esplanade and its construction for a distance of 107 yards northward from the southern line of the Esplanade is provided for in the Esplanade contract, from that point up to where the creek crosses Jarvis Street north of Shuter Street, a distance of 910 yards, is proposed to be egg-shaped, of brick 5 ft. 0 in. × 3 ft. 6 in., and at which point the creek will be turned into it; from thence to Carleton Street, a distance of 800 yards, a 2 ft. barrel sewer was put in, in 1855, and which will, in all probability, serve for some years to come; from Carleton Street to the city limits it is proposed to continue the sewer the same size—a distance of about 1133 yards. The highest grades of this main is 1 in 50, the lowest 1 in 300, and the average depth being about 15 ft. 9 in.

This main drains district No. 3, containing a superficial area of about 375 acres.

Table of Sewers now Constructed in District No. 3, &c.

			Ft.	In.	Ft.	In.
Nelson	Street, from the Bay to King Street.....		3	0 × 1 9		
“	“	“	King to Queen Street			
Jarvis	“	“	Creek north of Shuter to Carleton St.		2	0 barrel.
Church	“	“	King to Gerrard Street		3	0 × 1 9
“	“	“	Carleton to Wellesley Street		3	0 × 1 9
“	“	“	King to Front Street			
West Market,	“	“	King Street to the Bay		2	3 × 1 6
Colborne	Street, “	“	Yonge Street to Church Street.....		2	6 × 1 3
“	“	“	Church Street to West Market		2	0 barrel.
Front	“	“	Yonge Street to Church Street.....		3	0 × 1 9
“	“	“	Church Street to West Market.....		2	0 barrel.
Wellington	“	“	Yonge Street to Church Street.....		3	0 × 1 9
King	“	“	Yonge Street to Nelson Street.....		4	6 × 2 6
Adelaide	“	“	Yonge Street to Church Street, and Church Street to Nelson Street.....		2	0 × 1 3

			Ft.	In.	Ft.	In.
Stanley	“	“	Victoria Street to Nelson Street	2	0	1 3
Richmond	“	“	Yonge Street to Nelson Street.....	2	0	1 3
Queen	“	“	Yonge Street to Church Streets.....	3	0	1 9
“	“	“	Church Street to Nelson Street.....	3	0	1 9
Toronto	“	“	King Street to Adelaide Street.....			
Victoria	“	“	Adelaide Street to Richmond Street...	2	6	1 3
“	“	“	Queen Street to Gerrard Street.....	2	6	1 3
Shuter	“	“	Yonge Street to Bond Street.....	0	18	barrel.
Crookshank	“	“	Church Street to Bond Street.....			
Carlton	“	“	Yonge St. to Creek west of Church St.	0	18	barrel.
Palace	“	“	George Street to East Market.....	2	6	1 3

No. 3. This main runs the whole length of Yonge Street. The outlet for this main also crosses the Esplanade, and its construction for a length of 103 yards is also provided for in the Esplanade contract, from this point to Albert Street, a distance of 917 yards, the egg-shaped 5 ft. \times 3 ft. 6 in. sewer is proposed; from thence to the creek above Carlton Street 3 ft. \times 2 ft. 3 in. sewer will suffice a distance of 1200 yards; thence to the City limits a distance of 900 yards a 2 ft. barrel will complete the main.

The highest grade is 1 in 30, and the lowest 1 in 168, and the average depth 17 ft. 3 in.

This main drains No. 4 District, containing a superficial area of about 380 acres.

Yonge Street is at present drained from Ann Street down to Front Street with a sewer 3 ft. \times 1 ft. 9 in., a size much too small and of very insufficient depth, causing a great amount of inconvenience and annoyance to parties, who, in many cases, are unable to drain the whole of their premises. It is not proposed at present to take up the whole length of these old sewers, but only from King Street southward; the portions above King Street may serve for a few years, but all must eventually be taken up, lowered, and enlarged as mentioned above.

Table of Sewers now constructed in District No. 3, &c. &c.

			Ft.	In.	Ft.	In.
Yonge	Street,	from Front Street to King Street.....	3	0	1 9	
“	“	“ King Street to Gould Street.....	3	0	1 9	
“	“	“ Gould Street to Ann Street.....	3	0	1 9	
King	“	“ Yonge Street to Simcoe Street.....	4	6	2 6	
Queen	“	“ Yonge Street to Sayer Street				
“	“	“ York Street to Simcoe Street				

			Ft.	In.	Ft.	In.
Wellington	“	“	York Street to Yonge Street	2	0	1 3
Front	“	“	Yonge Street to Bay Street.....	3	0	1 9
Melinda	“	“	do. do.	2	6	1 3
Boulton	“	“	East of York Street	0	18	barrel.
“	“	“	from York Street to Simcoe Street	2	0	1 3
Adelaide	“	“	Yonge Street to Simcoe Street	2	6	1 3
Temperance	“	“	Yonge Street to Bay Street.....	2	0	1 3
Richmond	“	“	Yonge Street to Simcoe Street.....	2	6	1 3
Albert	“	“	Yonge Street to Elizabeth Street.....	2	9	1 6
Osgoode	“	“	Sayer Street to Centre Street			
Louisa	“	“	Yonge Street to Terauley Street.....	0	18	barrel.
“	“	“	Terauley Street to Elizabeth Street ...	0	18	“
Elm	“	“	Centre Street to Park Lane.....	0	18	“
James	“	“	Queen Street to Louisa Street.....	2	6	1 3
Terauley	“	“	Queen Street to Elm Street	2	6	1 3
Elizabeth	“	“	Queen Street to Agnes Street.....	2	9	1 6
Sayer	“	“	Queen Street to Elm Street	2	6	1 3
“	“	“	Elm Street northward	0	18	barrel.
Centre	“	“	Osgoode Street to Elm Street	2	6	1 3
“	“	“	Elm Street northward	0	18	barrel.
Bay	“	“	Front Street to Queen Street	2	9	1 6
Jordan	“	“	King Street to Wellington Street.....	2	0	1 3

No. 4. This main runs the whole length of Simcoe and William Streets, and is already constructed, being of brick, circular, and 4 ft. in diameter; at Caer Howell it receives the creek running through the College grounds. This main will be found to be of ample size, as one-third of the district it has to drain will probably never be built upon, namely, the grounds of the University, and which are already drained by the creek before named.

The outlet for this main also crosses the Esplanade, and a distance of 123 yards is provided to be constructed in the Esplanade contract from thence to the north side of Front Street, about 65 yards, will require to be constructed to connect the old main with the outlet.

The grade of this main is 1 in 83 throughout, and the average depth is 16 feet.

District No. 5 is drained by this main, containing about 430 acres.

Table of Sewers now constructed in District No. 5, &c. &c.

			Ft.	In.	Ft.	In.
Simcoe and William Streets, from the Bay to Caer Howell.....			4	0	barrel.	
Wellington Street, from Peter Street to Government Creek.....			2	9	1 6	
“ “ “ Simcoe Street to York Street.....			2	0	1 3	
King “ “ Peter Street to Government Creek.....						

			Ft.	In.	Ft.	In.
Queen	“	“	Simcoe Street to West William Street..	2	0	barrel.
Dummer	“	“	Queen Street North, 180 yards.....	0	18	barrel.
John	“	“	St. George's Square to Queen Street...	2	6	× 1 3
John	“	“	Queen Street to the Creek.....	3	0	× 1 9
John	“	“	King Street to Wellington Street	2	0	× 1 3

No. 5. This main runs the whole length of Brock Street and Spadina Avenue, the outlet also crosses the Esplanade, and its construction for a length of 168 yards is also provided for in the Esplanade contract from this point to where the creek crosses the avenue, a distance of 1400 yards, a brick sewer 5 ft. 6 in. × 4ft. egg-shaped, is proposed. This increase in size is rendered necessary by the large volume of water which accumulates in the course of the creek to the north-west, and which causes those destructive freshets in the Spring and Fall of the year, as well as to receive the large surface drainage of the lands to the north of the City limits, which finds its way down the Brunswick Avenue and other new avenues to this point. From the creek north to the Crescent Gardens, a distance of 666 yards, a sewer 3 ft. 6 in. × 2 ft. 6 in. is proposed, and thence to the City limits a distance of 1000 yards a 2 ft. barrel sewer will complete this main. The highest grade is 1 in 30, and the lowest 1 in 106, and the average depth 18 ft. 3 in.

This main drains district No. 6, containing a superficial area within the City limits of 500 acres.

Table of Sewers now constructed in District No. 6, &c. &c.

			Ft.	In.	Ft.	In.
Front Street,	from	John Street to Peter Street.....	2	6	× 1 3	
King	“	“	Portland Street to Peter Street	2	6	× 1 3
Queen	“	“	Peter Street to Brock Street.....	3	0	× 1 9
Queen	“	“	Brock Street to Laidlaw's Lane.....	2	6	× 1 3
Peter	“	“	Queen Street to the Bay	3	0	× 1 9
Mercer	“	“	John Street to Peter Street.....	0	18	barrel.
John	“	“	Wellington Street to Front Street.....	2	6	× 1 3

No. 6. This main runs the whole length of Bathurst Street and Crookshank Lane. The portion south of Queen Street is already constructed, being a brick sewer 3 ft. 9 in. × 2 ft. 6 in., and its outlet is into the Garrison Creek, at the foot of Bathurst Street, which empties itself into the Lake west of the Queen's Wharf. The average depth of this portion is 15 ft. 6 in. From Queen Street up to the creek it is proposed to carry a sewer the same size, a distance of 850 yards; from thence to the City limits, a distance of 1335

yards, a 2 ft. barrel sewer will complete this main, the highest grade being 1 in 56, and the lowest 1 in 115, the average depth being 17 ft.

This main drains district No. 7, containing a superficial area of 365 acres.

Table of Sewers now constructed in District No. 7, &c. &c.

			Ft.	In.	Ft.	In.
Bathurst Street, from Front Street to Queen Street.....			3	9	2	6
Douro “ “ Tecumseth to Bathurst Street.....			0		18	barrel.
King “ “ Portland Street to Bathurst Street.....			2	6	1	3
Adelaide “ “ Portland Street to Bathurst Street.....			0		18	barrel.
Queen “ “ Laidlaw’s Lane to Bathurst Street.....			2	6	1	3
Queen “ “ Bathurst Street to Lumley Street.....			2	6	1	3
Denison’s Avenue “ Queen Street North 150 yards.....			0		18	barrel.
Portland Street, “ King Street to Adelaide Street.....			0		18	barrel.

The foregoing descriptions of the various mains, with the statements of the accompanying tables, shew clearly the system proposed to carry out the present and future drainage of the city; and as the mains will be fixed and permanent, and as the old sewers, where necessary, will be altered to suit those mains, it will be an easy matter to determine when new sewers are required, their capacity, position, and outlets. It might render this report more complete, if every street, and the particulars of all the new sewers that will be required, were named in the foregoing tables for each district, but a difficulty arises in the greater number of streets not having any known names by which they may be distinguished. And as the greater number are, also, entirely new, and many only laid down on paper, it would be almost impossible to do so. In the meantime, it is necessary, in order to render the present sewers available to the new system, that certain alterations and additions should be made; and I shall now proceed to point out those which I should respectfully recommend to be proceeded with at once, presenting at the same time an estimate of their cost.

Description of works to be constructed at once.

No. 1 District—Requires no special provision, as little or no drainage is now done.

No. 2 District.—The main sewer on Parliament Street will be the first thing to be commenced, and it should be constructed from the outlet, which will be on the southern side of the embankment formed by the Grand Trunk Railway for their approach on to the Esplanade, up to the creek which crosses King Street at the junction with Par-

liament. This portion will receive the creek which has for so long been a source of annoyance and damage to the properties on the south side of King and east side of Parliament Streets, and into which the present sewers on Queen Street between Nelson and Parliament, Sherborne, Ontario, Duchess, Duke, and King Street east of Caroline, Power Street, and King Street east of Parliament, and the one in Parliament Street, now empty; also, by tapping the new box drain on Palace Street, it will receive the drainage from the present sewers on Duchess Street, Duke and King Streets west of Caroline, George and Caroline Streets. The sewer in Caroline Street, below King Street, which is now the outlet for the whole of King Street, east of Simcoe, will require turning into the new box on Palace Street; but as King Street will be tapped by the main in Nelson Street, the capacity of the box will be ample to take all that may arise from that point.

The cost of this portion of main No. 1, and the necessary alterations in this district will be as follows:—

Parliament Street.

Outlet, same as others in Esplanade contract, 67 yards at 150s.	£502 10 0
Egg-shaped main, 9 in. brick-work 5 ft. \times 3 ft. 6 in.—300 yards,.....at 80s.	1200 0 0
Junctions—2 on Palace Street, 3 on King and Parliament Streets—No. 5,.....at 400s.	100 0 0
	1802 10 0

Total Expenditure recommended in District No. 2..... £1802 10 0

District No. 3.—The main sewer on Nelson Street, from the northern end of outlet contracted for by the Grand Trunk Company, to the creek above Shuter Street, should be first commenced. There is at present a sewer on this street, between King and Queen Streets, but its capacity and depth render it totally unserviceable as a main. It is also most desirable that the creek should be tapped at this point, where there is not only a considerable flow of water from the west, but where is also received the sewerage of that portion of this main constructed in 1855, the amount of which, being very considerable, has rendered the creek a source of damage and annoyance to the lands through which it passes on its course eastward.

The portion of main proposed now to be made will receive from the east the drainage of George Street between Palace and King Streets, and Palace from George Street, which latter will require to be taken up and reversed. From the west it will receive King

Street from Yonge Street, which receives the Church Street sewer with its tributaries from the north and west, also the sewers on Adelaide, Richmond, and Queen Street, from Church Street and part of Stanley Street.

The sewer now on Front Street, between Yonge and Church Street, is of great depth and ample capacity, but its outlet at present is through a wooden box, extending from Front Street into the Bay. This must be cut off, and the sewer continued eastward from Church Street into the new main down Nelson Street, which extension will receive the drainage from Colborne Street, Church Street between Colborne and Front Street, Wellington Street from Yonge Street and West Market Street. The wooden box in the lower part of West Market Street will require continuing across the rear of the City Hall block into the main.

The cost of this portion of main No. 2, and the necessary alterations in this district, will be as follows :—

Nelson Street.

Egg-shaped main, 9 in. brick-work, 5 ft. 0 in. \times 3 ft. 6 in.			
910 yards	at 80s.	£3640	0 0
Taking up and reversing sewer on Palace Street and George Street to main—100 yards.....	at 30s.	150	0 0
Extension of Front Street sewer from Church Street to main, 3 ft. 0 in. \times 1 ft. 9 in.—240 yards.....	at 50s.	600	0 0
Junctions,7 “	at 400s.	140	0 0
New box from West Market to main—110 yards.....	at 10s.	55	0 0
		<hr/>	
Total Expenditure recommended in this District, No. 3...		£4585	0 0

No. 4 District.—The portion of the main for this district, proposed to be now inserted, extends from King Street down to the point where the Esplanade contract leaves the outlet finished. Three new junctions of old sewers with the new main are all that is now required, to render the large amount of existing drainage in this district operative under the plan proposed; namely, at King and Yonge Street, Wellington and Yonge Street, and Front and Yonge Street.

The cost of this portion of main No. 3, and the necessary alterations in this district, will be as follows :—

Main Sewer on Yonge Street.

Egg-shape, 9 in. brick-work, 5 ft. 0 in. × 3 ft. 6 in.—375 yards.....	at 80s.	£1500	0	0
Junctions named.	at 400s.	80	0	0

Total Expenditure recommended in District No. 4..... £1580 0 0

No. 5 District.—There will require about 60 yards of this main constructing to connect the present sewer with the outlet comprised in the Esplanade contract. It will be necessary also to construct a new sewer on Front Street, to connect the York Street sewer with this main, as well, also, a short length on Front Street, to tap the creek, running through the Government House and the Parliament Buildings Grounds.

The cost of this portion of main No. 4, and the necessary additions in this district, will be as follows :—

Simcoe Street.

Barrel sewer, 9 in. brick-work, 4 ft. diameter, 65 yards, at 80s	£260	0	0	
Barrel sewer on Front Street to connect York Street, 2 ft. diameter—220 yards.....	at 40s.	440	0	0
Barrel sewer on Front to connect the creek, 67 yards...at 40s.	134	0	0	

Total Expenditure recommended in District No. 5..... £834 0 0

No. 6 district. It is proposed that the main sewer from this district shall be constructed from the point provided for in the Esplanade contract up to the creek which crosses Spadina Avenue. The length of this is very considerable and the expense proportionately great; but the large amount of damage and annoyance caused semi-annually by the freshets down this creek call for immediate steps to be taken to remedy the evil. There are also many urgent demands now before the Council for drainage in this district, and the lower parts being almost level in extent from east to west, the construction of this main is the only practicable way by which these demands can be satisfied, and the amount of benefit to be derived from it being almost incalculable, the expenditure, large as it may seem, will, I believe, meet with the greatest approbation. There will also require a length of new sewer on Front Street, to connect the sewers on John Street between Front and Wellington Streets, Front Street between John and Peter Streets, the whole of Peter Street, with its tributaries in Mercer, King, and Queen Streets, &c.; two new junctions will be required, one at King Street, to connect the sewer from the west, and one at Queen Street for the same purpose.

The cost of this portion of main No. 5, and the necessary additions and alterations in this district will be as follows :

Brock Street.

Egg-shaped main 9 in., brick-work 6 ft. 5 in. \times 4 ft, 1400 yards			
at 80s. per yard	£5600	0	0
Do. do. 3 ft. \times 1 ft. 9 in. 300 yards at 50s. per yard, to			
connect Peter Street	750	0	0
Junctions named 2, at 400s.	40	0	0

Total expenditure recommended in district No. 6..... £6390 0 0

No. 7 district requires no special provision as the main on Bathurst Street is now constructed having its outlet into the Garrison Creek.

No. 8 district requires no special provision, as the only sewers in the district, namely, those on Queen Street between Dundas Road and Bishop Streets now have their outlets into the Garrison Creek also.

Recapitulation of Amounts recommended to be expended.

In district No. 1	£		
“ “ 2	1802	0	0
“ “ 3	4585	0	0
“ “ 4	1580	0	0
“ “ 5	834	0	0
“ “ 6	6390	0	0
“ “ 7			
“ “ 8			

Total amount recommended.....£15191 0 0

Should this report and plan meet with the approbation of the Board, and be adopted by the Council, the consideration of appliances for the surface drainage of the streets, and the question of private drains will appropriately form the basis of a second report.

All of which is respectfully submitted.

(Signed)

THOMAS H. HARRISON,
City Engineer.

To the Board of Works, Alderman }
Worthington, Chairman. }

Toronto, 13th March, 1857.