

28 April 1967.

SPECIAL REPORT.

His Worship, the Reeve,
and Members of the Council.

Gentlemen:

Re: Water Utility.

In 1959 and 1960, in accordance with the terms of the Municipal Assistance Act, Chapter 260, R. S. B. C. 1960, Burnaby secured the guarantee of the Province of British Columbia on two separate issues of debentures totalling \$1,131,000. for Waterworks purposes. To qualify for the guarantee it was necessary to obtain from the Inspector of Municipalities, pursuant to Section 254 of the Municipal Act, a Certificate of Self-liquidation. This certificate is given when it is proved to the satisfaction of the Inspector that the revenues of the enterprise are sufficient to take care of the annual requirements of principal and interest of debentures and other debt; and the annual cost of management, administration, operation, and maintenance of the system. Inherent in the Certificate is the need to keep the enterprise in a self-liquidating position during the lifetime of the debentures under guarantee.

FINANCE.

Attached is a statement of Revenue and Expenditure for the years 1959 to 1966 inclusive, and as projected for the years 1967 to 1970 inclusive. It will be noted that the system has been in a self-liquidating position from 1959 to 1966. Water rates were increased by 25% in 1960, and by 5% in 1963. Connection fees were increased in 1962 and 1966.

During these years an operating surplus of \$190,853. has accumulated. At 31st December 1966 this was represented by Waterworks Inventory of \$105,594., Accounts Receivable of \$35,528., and an actual surplus available of \$49,731. The actual surplus of \$49,731. is available for use of the system for capital purposes or for emergencies.

The following is the Balance Sheet for the Current Fund of the Water System at 31st December 1966:

<u>Assets:</u>	Cash	-	\$ 85,205.
	Investments	-	200,000.
	Accounts Receivable	-	35,528.
	Inventory	-	<u>105,594.</u>
			<u>\$426,327.</u>
<u>Liabilities:</u>	Debenture Interest	-	\$ 440.
	Debenture Levies in advance of maturity	-	235,034.
	Surplus	-	<u>190,853.</u>
			<u>\$426,327.</u>

During the period 1959 to 1964, \$2,631,000. was borrowed for the reconstruction or extension of the system, and in 1961 and 1966, \$344,497. was committed to the Greater Vancouver Water District for the enlargement of North Burnaby main, the sum to be repaid over 25 years.

At 31st December, 1966 there was an unexpended balance of \$418,094. of borrowed funds. Works in progress total \$161,406., leaving a balance in By-law funds of \$256,688.

The question has been raised previously in Council that the financing of the Water System made no provision for Depreciation. The main reason why this is so is because the annual provision for debt servicing exceeds the amortization of the assets over their lifetime. A second reason is that the system is being rehabilitated regularly from operating funds. For these reasons it is not considered that Depreciation should be included.

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CAPITOL HILL PUMPING STATION.

The condition of the elevated storage tank on Capitol Hill has been carefully watched over recent years as there has been evidence of deterioration.

Dayton and Knight Ltd., Consulting Engineers, were commissioned to carry out:

1. Study of zone boundaries and water supply facilities for Capitol Hill.
2. Study of past and predicted future water use and demand.
3. Preliminary designs and cost estimates for new waterworks facilities.
4. Predictions of remaining useful life of existing waterworks supply facilities.

This survey has now been completed and a Report submitted dated 29th March 1967.

The substance of the findings of the Consulting Engineers and their recommendations is:

1. The Capitol Hill tank has reached the end of its useful life and should not be repaired.
2. The existing ground storage reservoir at Delta and Cambridge should be retained in its present condition pending completion of the comprehensive study on water supply and distribution in Burnaby by the Greater Vancouver Water District.
3. A new pumping station and feeder main from the Greater Vancouver Water District supply main are recommended for immediate construction at an estimated cost of \$174,000.
4. Installation of variable speed dual drive pumping units in the station will allow the existing elevated storage tank on Capitol Hill to be dismantled.

Your Municipal Manager has been assured that these recommendations above will not be inconsistent with the survey being conducted by the Greater Vancouver Water District.

There would be three pumps, two of them with independent prime movers. The practice is accepted by the fire underwriters.

Your Municipal Manager recommends that:

- (a) the recommendations of the Consulting Engineers be accepted.
- (b) that the required funds estimated at \$174,000. be provided from Capital Funds available of \$256,688. referred to under Finance.
- (c) that authority be granted for the preparation of plans and specifications to tender call.

NEW WORKS.

The Municipal Engineer was also directed to check the Waterworks System and he has prepared two lists of projects for replacement of temporary mains and proposed improvements to the system. The list for replacement of temporary mains totals \$106,090. and that for other system improvements totals \$188,400.

The Engineer also suggested that the above work be carried out over a three year period with approximately equal amounts to be spent each year of 1967, 1968 and 1969.

This would require an annual outlay of \$97,163. In addition to these planned programs it is considered that an annual sum of \$65,000, should be available for unscheduled improvements such as oversized mains in subdivisions, looping, and emergent work as may arise.

The total annual sum requested is \$162,163. which can be compared with the anticipated sums to be available as shown in Table "B" of the Statement of Revenue and Expenditure which forms part of this Report.

On the favourable side, the Municipal Engineer advises that the Burnaby Waterworks System is in good shape except for the Capitol Hill Storage Tank and should not require a level of annual capital expenditure of greater amount than projected above. In this case, it is reasonable to avoid creating further debenture debt for the system at this time.

Your Municipal Manager recommends that an annual expenditure of approximately \$162,163. for system development be considered in the examination of Water Rates.

RATES.

There are two major considerations in the determination of water rates to be charged. The first and foremost of these is the necessity of keeping the Utility in a Self-Liquidating position. The second consideration is the extent to which the Utility can take care of itself without resort to Capital Borrowing.

This second consideration is a matter of policy but it is submitted that such a policy should take into consideration the fairness of the water rates charged. In the case of Burnaby it will be shown that a fair rate can be established which will enable the system to look after the anticipated needs of the Utility for a period of three to five years. The cost of this is represented by the figure of \$162,163. per annum developed in the previous Section of this Report.

Tables have been prepared for the information of Council and these form part of this Report. The tables are:

Schedule 1: Comparative Statement of Revenue and Expenditure - Burnaby Water Supply System 1959-1970.

Schedule 2: Comparison of Commercial and Industrial Water Rates Chargeable in 1967 in Lower Mainland Municipalities for Quantities expressed in Cubic Feet per Month.

The following Table shows the current flat water rates charged in Lower Mainland Municipalities:

	<u>Single Family</u>	<u>Two Family</u>
Burnaby	\$ 26.25	\$ 43.00
Coquitlam	Metered	Metered
Delta N.	24.00	48.00
Delta S.	36.00	72.00
New Westminster	Metered	Metered
Port Coquitlam	30.00	Metered
Port Moody	* 24.00	* 36.00
Richmond	32.00	Metered
Surrey	39.00	69.00
North Vancouver District	35.00	65.00
North Vancouver City	* 25.00	* 50.00
West Vancouver	# 30.00 to \$ 40.00	\$60.00 to \$70.00
Vancouver	31.50 to \$ 50.00	43.50 to \$67.00

Note: * discount of 10% allowed if paid by specific dates.

discount of 5% allowed if paid by specific dates.

One Revenue item for the Burnaby Utility has already been considered by Council. At the inception of the Utility form of operation it was calculated that 20% of the debt, maintenance, and operation cost of the system should be charged to the Municipality as a

whole for the portion of the system built to excess capacity for fire protection service. This 20% now represents an annual cost of \$125,000. and Council accepted this figure in the 1967 Annual Budget.

Burnaby's By-law provides for flat rate charges for single and two-family homes, with all other services being metered except certain public institutions such as Schools.

The statement provided above indicates that Burnaby's flat rates are low compared with the majority of other communities reported upon.

Burnaby's flat rate water revenue for 1967 may be calculated as follows:

<u>No. of Services</u>	<u>Type</u>	<u>Amount</u>
25,371	S. F. Dwellings @ \$26.25	\$ 665,988.75
971	2 Family Dwellings @ \$43.00	41,753.00
19	Municipal properties	5,219.11
<u>26,361</u>		<u>\$ 712,960.86</u>
	81 Swimming Pools @ \$10.00	810.00
		<u>\$ 713,770.86</u>
375	Estimated new services past year	4,729.14
		<u>\$ 718,500.00</u>

It is recommended that the flat water rates charged by Burnaby be increased effective 1st July 1967 as follows:

Single Family - from \$26.25 to \$30.00 - increase \$3.75 per year
 Two-Family - from \$43.00 to \$50.00 - increase \$7.00 per year

On an annual basis, the above increases would provide an estimated additional revenue of \$103,344.50. Coupled with the \$45,000. increase in general revenue contribution for fire protection service, the total new revenue would be \$148,000. approximately.

This increase is barely adequate to meet the anticipated needs of the system for capital expansion and replacement to the system.

It is also necessary to examine the metered rates as well.

Schedule 2 shows the sums payable in lower mainland municipalities for given quantities of water. This is the most logical method of presenting this information because all metered rates employ the block system and direct comparison of rates is impractical because of the use of different blocks.

In the opinion of your Municipal Manager there is little room for upward adjustment of the meter rates. Monthly and quarterly charges should be adjusted upward to ensure that the minimum rate does not provide an advantage to a metered customer over a flat-rate customer.

It is recommended that the minimums be adjusted as follows:

Monthly - from \$1.75 per month to \$2.05 per month.
 Quarterly - from \$5.20 per quarter to \$6.15 per quarter.

If your Municipal Manager's recommendations contained in this report are accepted by Council, it is possible to predict the operating experience for 1967 to 1970. The following Table depicts this prediction:

	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
New revenue	\$ 74,000.	\$ 148,000.	\$ 148,000.	\$ 148,000.
Calculated available	67,670.	62,500.	55,700.	46,900.
	<u>\$141,670.</u>	<u>\$ 210,500.</u>	<u>\$ 203,700.</u>	<u>\$ 194,900.</u>
Minimum development required predicted	<u>162,163.</u>	<u>162,163.</u>	<u>162,163.</u>	<u>162,163.</u>
^s Surplus or ^d Deficit	\$ 20,493.D	\$ 48,337.S	\$ 41,537. S	\$ 32,737.S
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SIMON FRASER UNIVERSITY WATER SUPPLY.

When it was decided to locate the new University in Burnaby on Burnaby Mountain this Municipality undertook to provide an adequate water supply to the site selected. It was appreciated at that time that such a supply would have to be at the proper elevation and would require a storage facility.

Subsequently, the Municipality agreed with the University that it (the University) would decide upon the capacity of the storage facility and would build it. Burnaby's original responsibility would be replaced by a commitment to contribute \$60,000. toward the cost of the storage facility, and other responsibility would cease at the connection point approximately 5' outside the Reservoir. The Reservoir is just now undergoing another inspection and this Corporation has not at this date paid over the \$60,000. to the University.

The supply lines cost approximately \$100,000. and the Kingsgate Pumping Station approximately \$175,000.

There is no formal agreement but there is a letter on file from the University which agrees to a "special" rate being applied to the University.

The University is being charged for water at present at By-law rates. The purpose of this section of this Report is to explore any justification for a "special" rate being applied to the S.F.U. either greater or less than those rates charged other customers of the Utility.

As the system for S.F.U. is now installed there is no benefit to any part of the Utility System except S.F.U. The water demand is increasing but is a long way from its potential -though the student enrolment is running ahead of original predictions.

Your Municipal Manager then, contends that there is no justification for any lesser rate than By-law rates being applied to S.F.U.

Regarding argument for any increase in rates for S.F.U. over By-law rates it is necessary to examine the entire system.

Obviously, the University does not at its inception nor in its early years of life have a sufficient demand to amortize the costs of the University service, particularly in the term of the debentures issued to provide the funds.

Basically, a Municipality, in undertaking to render a Utility service assumes certain responsibilities, among which are:

1. To provide the capital assets to perform a public service adequately and efficiently.
2. To establish rates calculated to yield revenue sufficient to cover all costs.

Sound economic theory dictates that an enterprise should not produce or provide service beyond the point where marginal cost of providing additional service exceeds the marginal revenue obtained from such provision of service. This is one of the most difficult tasks confronting a Utility, that is, the general requirement of non-discrimination in its charges. The requirement of non-discrimination and the adoption of the sound economic theory regarding marginal revenue are in conflict with one another.

In practice, experience has shown that standard rate schedules which go beyond a recognition of two basic elements, being demand or readiness to serve, and the other, the actual consumption of energy, are too complex for practical purposes. It is now universal practice for public utilities to group customers into certain basis classifications which reflect the uses to which the service is to be put and the inherent recognition that the value of the service to customers differs. The next step is devising rates, which takes account of varying quantity of service purchased by the individual customer. In the case of the Burnaby Water Utility there are numerous cases of providing service beyond the point where marginal cost exceeds marginal revenue. In another section of this Report the needs of rehabilitating the Capitol Hill portion of the system

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RE WATER UTILITY
BY MUNICIPAL MANAGER
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were discussed. Basically, except for number of customers there is no difference between Capital Hill and Simon Fraser University.

To extend the argument further into another Municipal utility, the Sewer Utility, the Corporation makes no differentiation between areas served relatively simply by gravity as opposed to those where pumping facilities and force mains are essential to provide the service.

In conclusion, your Municipal Manager recommends that there be no "special" rate applied to S.F.U. and that the Scheduled rates in the By-law should apply, insofar as the present commitment of the Utility to Simon Fraser University.

Respectfully submitted,



H. W. Balfour,
MUNICIPAL MANAGER.

HB:eb

THE CORPORATION OF THE DISTRICT OF BURNABY
 COMPARATIVE STATEMENT OF REVENUE AND EXPENDITURE - WATER SUPPLY SYSTEM 1959 - 1970

SCHEDULE 1

	1959	1960(1)	1961	1962(2)	1963(3)	1964	1965	1966(4)	1967	1968	1969	1970
<u>Revenue</u>												
Flat rates	\$502,570.	\$620,165.	\$ 639,780.	\$ 648,023.	\$ 672,921.	\$ 698,162.	\$ 702,076.	\$ 709,571.	\$ 719,500.	\$ 729,000.	\$ 733,700.	\$ 766,000.
Metered rates	227,802.	274,152.	312,566.	324,570.	368,026.	391,495.	457,364.	470,732.	484,600.	497,600.	510,600.	528,000.
Revenue from sale of water	730,372.	894,317.	952,346.	972,593.	1,040,947.	1,087,647.	1,159,440.	1,180,303.	1,203,100.	1,226,600.	1,249,300.	1,272,000.
Meter rentals etc.	10,000.	13,052.	15,068.	16,258.	17,497.	18,949.	20,369.	21,931.	23,400.	24,900.	26,400.	27,800.
Fire service	80,000.	80,000.	80,000.	80,000.	80,000.	80,000.	80,000.	80,000.	80,000.	80,000.	80,000.	80,000.
Total Revenue	\$820,372.	\$987,369.	\$1,047,414.	\$1,069,851.	\$1,139,444.	\$1,186,596.	\$1,259,809.	\$1,282,234.	\$1,306,500.	\$1,331,500.	\$1,355,700.	\$1,379,800.
Deduct expenditures per Table A	760,634.	823,597.	958,643.	931,509.	1,010,631.	1,014,364.	1,121,839.	1,183,264.	1,182,830.	1,213,000.	1,244,000.	1,277,000.
Gross Profit	\$ 59,738.	\$163,772.	\$ 88,771.	\$ 137,342.	\$ 127,813.	\$ 172,232.	\$ 137,971.	\$ 98,970.	\$ 123,670.	\$ 118,500.	\$ 111,700.	\$ 102,800.
Deduct capital expenditures per Table B	54,754.	52,833.	74,091.	51,566.	87,784.	167,647.	121,787.	185,293.	123,670.	118,500.	111,700.	102,800.
NET PROFIT	\$ 4,984.	\$110,939.	\$ 14,680.	\$ 85,776.	\$ 40,029.	\$ 4,585.	\$ 16,184.	\$ (86,323.)	\$ -	\$ -	\$ -	\$ -

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Table A - Expenditures

Debt	\$277,415.	\$338,933.	\$ 351,827.	\$ 356,754.	\$ 376,876.	\$ 398,726.	\$ 431,720.	\$ 466,483.	\$ 469,830.	\$ 470,000.	\$ 470,000.	\$ 470,000.
Operation	129,783.	106,250.	147,988.	130,418.	139,326.	134,702.	136,047.	180,454.	151,000.	153,000.	155,000.	167,000.
Cost of water purchased	353,436.	378,414.	458,828.	444,337.	494,429.	480,936.	554,071.	536,327.	562,000.	590,000.	619,000.	650,000.
	\$760,634.	\$823,597.	\$ 958,643.	\$ 931,509.	\$1,010,631.	\$1,014,364.	\$1,121,839.	\$1,183,264.	\$1,182,830.	\$1,213,000.	\$1,244,000.	\$1,277,000.

Comparative Statement of Revenue and Expenditure -
Water Supply System 1959 1970

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
<u>Table B - Capital Expenditures from Revenue</u>												
Hydrants	\$ 6,899	\$ 9,568.	\$ 6,171.	\$ 9,934.	\$ 6,587.	\$ 5,748.	\$ 4,021.	\$ 5,349.	\$ 8,000.	\$ 8,000.	\$ 8,000.	\$ 8,000.
Mains	23,400.	29,431.	50,588.	17,847.	58,664.	131,738.	83,283.	132,096.	67,670.	62,500.	55,700.	46,900.
Services	76,750.	59,162.	57,298.	64,942.	59,224.	69,806.	73,624.	109,494.	110,000.	110,000.	110,000.	110,000.
	\$107,048.	\$ 98,161.	\$114,057.	\$ 91,723.	\$124,475.	\$207,292.	\$160,928.	\$246,928.	\$185,670.	\$180,500.	\$173,700.	\$164,900.
Deduct fees paid for services	52,294.	45,328.	39,966.	40,157.	36,691.	39,645.	39,141.	61,635.	62,000.	62,000.	62,000.	62,000.
	\$ 54,754.	\$ 52,833.	\$ 74,091.	\$ 51,566.	\$ 87,784.	\$167,647.	\$121,787.	\$185,293.	\$123,670.	\$118,500.	\$111,700.	\$102,900.

NOTES.

- (1) Flat rates increased from \$20.00 to \$25.00 and from \$33.00 to \$41.00, and metered rates increased by approximately 25%.
- (2) Connection fees increased to equal cost of installation.
- (3) Flat rates increased from \$25.00 to \$26.25 and from \$41.00 to \$43.00, and metered rates increased by approximately 5%.
- (4) Connection fees increased to equal cost of installation.
- (5) Deficit made up by appropriation from Accumulated Revenue Surplus.

13 April 1967

THE CORPORATION OF THE DISTRICT OF BURNABY

COMPARISON OF COMMERCIAL AND INDUSTRIAL WATER RATES CHARGEABLE IN 1967 IN LOWER MAINLAND MUNICIPALITIES
FOR QUANTITIES EXPRESSED IN CUBIC FEET PER MONTH

	10,000	20,000	30,000	40,000	50,000	80,000	100,000	500,000	2,000,000	5,000,000
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Burnaby	26.25	47.25	68.25	84.65	101.05	150.25	179.15	757.15	2,332.15	4,819.15
District of Coquitlam	32.50	57.50	77.50	95.50	113.50	161.50	191.50	791.50	3,041.50	7,541.50
North Delta	25.00	45.00	60.00	73.00	86.00	125.00	151.00	631.00	2,131.00	4,831.00
South Delta (commercial)	35.00	65.00	90.00	115.00	140.00	215.00	171.00	651.00	2,151.00	5,151.00
South Delta (industrial)	25.00	65.00	80.00	93.00	106.00	145.00	171.00	651.00	2,151.00	5,151.00
New Westminster (comm.)	28.80	53.80	75.80	94.80	110.80	153.80	177.80	657.80	2,457.80	6,057.80
New Westminster (indust.)	12.00	24.00	36.00	48.00	60.00	96.00	120.00	555.00	2,130.00	5,280.00
Port Coquitlam	28.73	47.73	62.73	77.73	92.73	137.73	167.73	767.73	3,037.73	7,537.73
Port Moody	20.50	39.50	56.00	71.00	86.00	119.00	141.00	581.00	2,231.00	5,561.00
Richmond	28.00	54.00	80.00	100.00	120.00	180.00	216.00	786.00	2,686.00	6,286.00
Surrey	30.00	48.00	65.00	81.00	96.00	135.00	159.00	639.00	2,439.00	6,039.00
District of North Vancouver	24.00	44.00	64.00	80.00	96.00	144.00	171.00	568.50	1,918.50	5,518.50
Vancouver	21.20	38.20	55.20	68.40	81.60	121.20	144.80	634.80	2,404.80	5,944.80
West Vancouver (commercial)	35.00	65.00	90.00	114.00	138.00	210.00	258.00	1,218.00	4,818.00	12,018.00
West Vancouver (industrial)	35.00	65.00	90.00	110.00	130.00	184.00	229.00	789.00	2,889.00	7,089.00
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Lower Class Burnaby	6	5	7	5	7	8	10	9	6	0
Higher Class Burnaby	8	9	7	9	7	6	4	5	8	14
Median	\$28.73	\$48.00	\$68.25	\$100.00	\$101.05	\$145.00	\$171.00	\$651.00	\$2,404.80	\$6,057.80
Burnaby	\$26.25	\$47.25	\$68.25	\$ 84.65	\$101.05	\$150.25	\$179.15	\$757.15	\$2,332.15	\$4,819.15
Burnaby plus 5%	\$27.56	\$49.61	\$71.66	\$ 88.88	\$106.10	\$157.76	\$188.11	\$795.00	\$2,448.75	\$5,056.95
Burnaby plus 10%	\$28.88	\$51.98	\$75.08	\$ 93.11	\$111.15	\$165.27	\$197.06	\$832.87	\$2,565.36	\$5,301.06
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