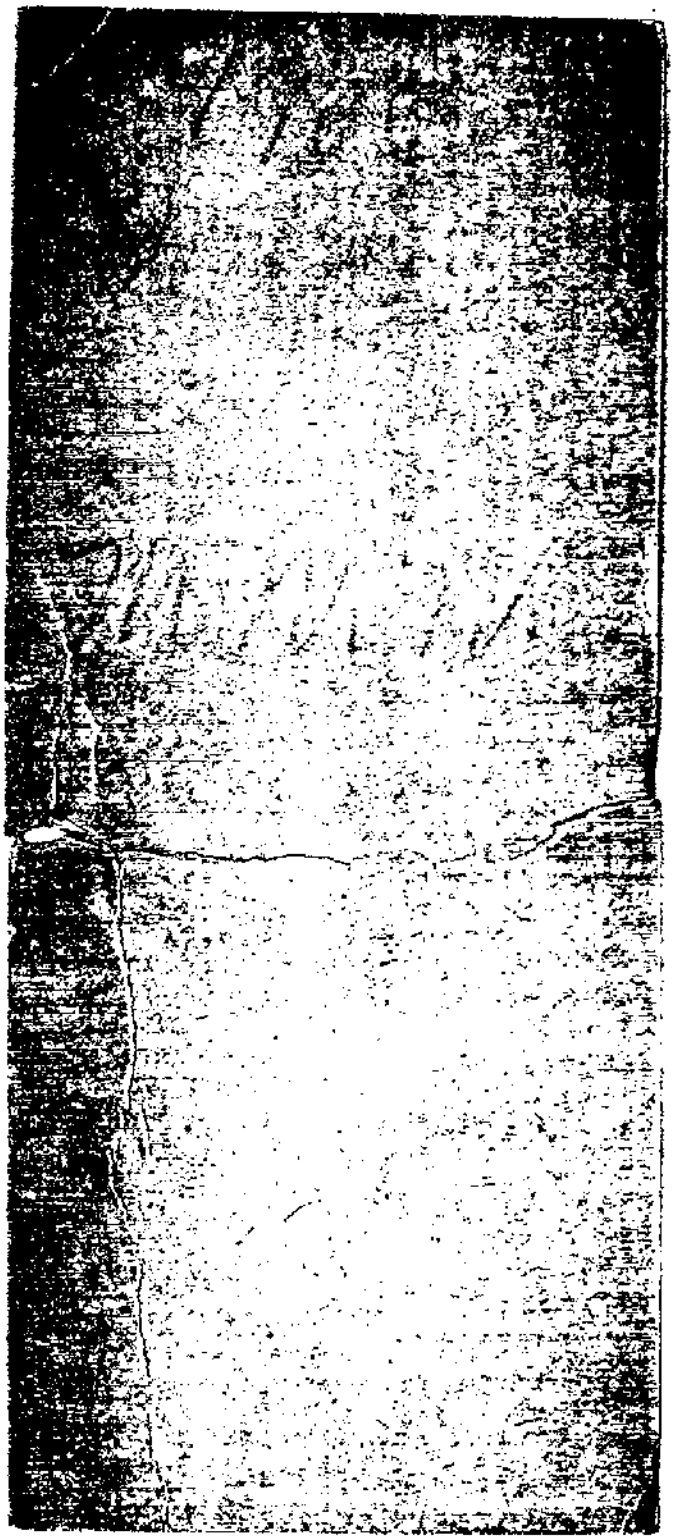


Bell Tel. Main 3811 — CHARBON ANTHRACITE ET BITUMINEUX — 367 Rue Richmond

The Best American
HARD COAL.

ERNEST LEMIRE

MARCHAND DE

All kinds of
SOFT COAL.

Bois, Charbon, Grain, Foin, en Gros et en Detail

Montreal, 21 Décembre 1904 190

Mr Geo-Janin,

Surintendant du Département de L'Aqueduc,

Hotel-de-Ville-

Montreal.

Cher Monsieur:-,

En reponse a votre telephone de bien vouloir soumissionner pour le charbon a vapeur dont vous avez de besoin pour les pompes du bas niveau a la Pointe-St-Charles, je vous soumets les charbons et les prix suivants:-,

800 tonnes de charbon mou a vapeur DOMINION, au prix de $4.05 par 2000 lbs

110 " " " " " " PORT-HOOD " " " $3.95 " " "

Le tout livré sur demande a la Station des Roues a la Pointe-St-Charles.

En espérant Monsieur d'avoir la faveur du contrat;

Je demeure,

Votre tout respectueusement soumis

E. Lemire

William E. Muir

WHOLESALE

COAL MERCHANT

300 Wellington St.

MONTREAL, Dec. 22nd. 1904. 190

Geo. Janin Esq.

Supt. Montreal Water Dept.

Dear Sir:-

Referring to your enquiry, I offer to supply about 800 tons of Old Sydney Rummine Coal, to be delivered at your Lower Pumping Station, at $ 3.90 per 2000 lbs. As this coal will be taken out of my Warehouse at the Wellington Basin it will be free from ice and snow.

Hoping I will be favored with your order, I remain,

Yours Very Truly,

Wm E. Muir

J.O. LABRECQUE & CIE

ESSAYEZ LE CELEBRE CHARBON DIAMANT NOIR

Tel. Bell, East 1251
" Marchands 358

83 RUE WOLFE

MONTREAL 22 Dec 1904

M. les Jamin
Surintendant
Commission de l'Eau

Monsieur

Notre prix pour le charbon dont vous aurez besoin d'ici 1er Janvier prochain sera environ 800 tonnes sera
$3.85 par 2000 lbs pour Dominion Coal Co.
4.25 " 2000 " à Reynoldsville.

Dans l'espérance d'une réponse satisfaisante nous vous demeurons,

Avec respect
J.O. Labrecque

Cable Address.
Baile.
A-B-C-5th EDITION.

Telephone Main 4622 & 4623.

Andrew Baile,
Importer and Dealer in Coal and Coke.
Pig Iron, Charcoal, Fire Bricks, &c.

OFFICE, 69 McGILL ST.

Montreal,

Dec. 22, 1904.

Geo. Genin, Esq., Supt.,

Water Works,

Montreal.

Dear Sir:-

I beg to offer to supply your Department with 800 tons Run-of-Mine Old Sydney Steam Coal at $3.83 per ton of 2000 lbs., delivered at Low Level Pumping Station, immediate delivery.

Hoping that this will meet with your acceptance, I am,

Yours very truly,

A.B. Andrew Baile

THE T. F. MOORE COMPANY,

COAL & WOOD

1099 DEMONTIGNY STREET
AND
267 ST. TIMOTHEE STREET
AND
WAREHOUSE ON WHARF.

BELL TELEPHONE, EAST 133.

Montreal, Dec 22nd 1904

Mr George Janin C.E.
Supt. Water Works
City Hall

Dear Sir,

We are glad to quote for the immediate delivery of 500 tons steam coal run of mine, to the Low Level pumping Station Pointe St Charles at the following prices:

Dominion Sydney R/m $3.95 per 2000 lbs
Old Sydney R/m $3.80 per 2000 lbs
Lawrence R/m $3.70 per 2000 lbs
Intercolonial R/m 3.70 per 2000 lbs

Hoping to hear from you at your earliest convenience, We Remain Dear Sir

Yours truly
The T.F. Moore Co
per [illegible]

Montreal 5 Janv 1905

M. Le Président
Commission de Eau

Monsieur

Notre prix pour 100 tonnes de charbon à Vapeur Dominion Coal Co. Run of Mine est $ 3.70

Nous vous ferons remarquer que ce charbon malgré son bas prix est du charbon de cette année

Avec respect
A. O. Labrecque

Cable Address.
Baile.
A-B-C-5TH EDITION.

Telephone Main 4622 & 4623.

Andrew Baile,

Importer and Dealer in Coal and Coke.

Pig Iron, Charcoal, Fire Bricks, &c.

OFFICE, 69 McGILL ST.

Montreal,

Jan. 24, 1905.

Geo. Janin, Esq., Supt.,

Water Works Dept.,

Montreal.

Dear Sir:-

I beg to offer you about 100 tons Steam Coal, to be delivered immediately to the Low Level Pumping Station, at the following prices:--

Old Sydney, screened at mines.....$4.25,

Dominion Run-of-Mine.....4.00.

The Dominion Coal is the same as that recently supplied you. It is of good quality and in good condition.

Hoping to be favored with your order, I remain,

Yours very truly,

J.D.B.

Cable Address:
DOBELL, MONTREAL.

HENRY DOBELL & CO.

Montreal, 25 May 1905

Geo. Lawson Esq
Supt. Water Works.

Dear Sir:

We will be pleased to supply you with 100 tons Best Sonnie Steam Coal @ $3.50 per 2000 lb delivered at Low Level Pumping Station

Yours faithfully
Henry Dobell & Co
per

Jan 25/05

	Old Highway	Dorchester	Wellington	Lambert	Cameron	Red Hood
Nat. Coal W.	4.25					
Cohen		4.00	3.90			
Bélair		3.80				+ 400 T
F. J. Moore	3.95	3.95		3.70		
Dobell					3.50 — 250 T	
Lemire		4.05			3.95 (110 T)	

Bell Tel. Main 3811 | CHARBON ANTHRACITE ET BITUMINEUX | 367 Rue Richmond

The Best American
HARD COAL.

ERNEST LEMIRE

MARCHAND DE

All kinds of
SOFT COAL.

Bois, Charbon, Grain, Foin, en Gros et en Detail

Montreal, II Janvier 1905 190

Mr Georges Janin,

Surintendant du Département de L'Aqueduc,

Hotel-de-Ville-

Montreal.

Cher Monsieur:-,

Je vous vendrai plus ou moins des sept cents tonnes de charbon mou a vapeur DOMINION, dont vous avez de besoin immediatement pour la Station des Pompes du bas-niveau a la Pointe St-Charles au prix de $4.05 par tonne de 2000 lbs livré.

Aussi j'ai actuellement en mains a vous offrir, IIO tonnes de charbon mou PORT-HOOD, de la Iere qualité, au prix de $3.95 par 2000 lbs livré.

En espérant Monsieur:-, que mes prix vous seront satisfaisants,

Je demeure,

Votre tout respectueusement soumis,

E. Lemire

H. MONTAGU ALLAN,
President.

CHAS. J. COLL,
General Manager.

E. W. RILEY,
Sec.-Treas.

Main Office
STELLARTON,
N. S.

Shipping Pier
PICTOU LANDING,
N. S.

Acadia Coal Company, (Limited).

MINERS AND SHIPPERS
OF THE CELEBRATED
ACADIA COAL
DELIVERED BY RAIL OR WATER

COLIN CAMPBELL,
Sales Agent,
17 St. John Street,
MONTREAL.

TELEPHONE Main 2488.

All Contracts and Deliveries are made contingent upon Strikes, Fires, Accidents, Car Supply and Causes beyond our Control.

Montreal, December 21st 1904

Geo. Janin Esq.

Superintendent.

Water Works Office.

City.

Dear Sir:-

In compliance with your request by telephone this A. M. I beg to quote you for 800 tons of our Acadia "Run of Mine" Steam Coal for present delivery at the Low Level Pumping Station @ $3:65, per ton of 2000 lbs.

I am, dear Sir:-

Yours very truly.

Colin Campbell

SALES AGENT

Cable Address:
DOBELL, MONTREAL.

HENRY DOBELL & CO.

Montreal, 7 Dec 1907

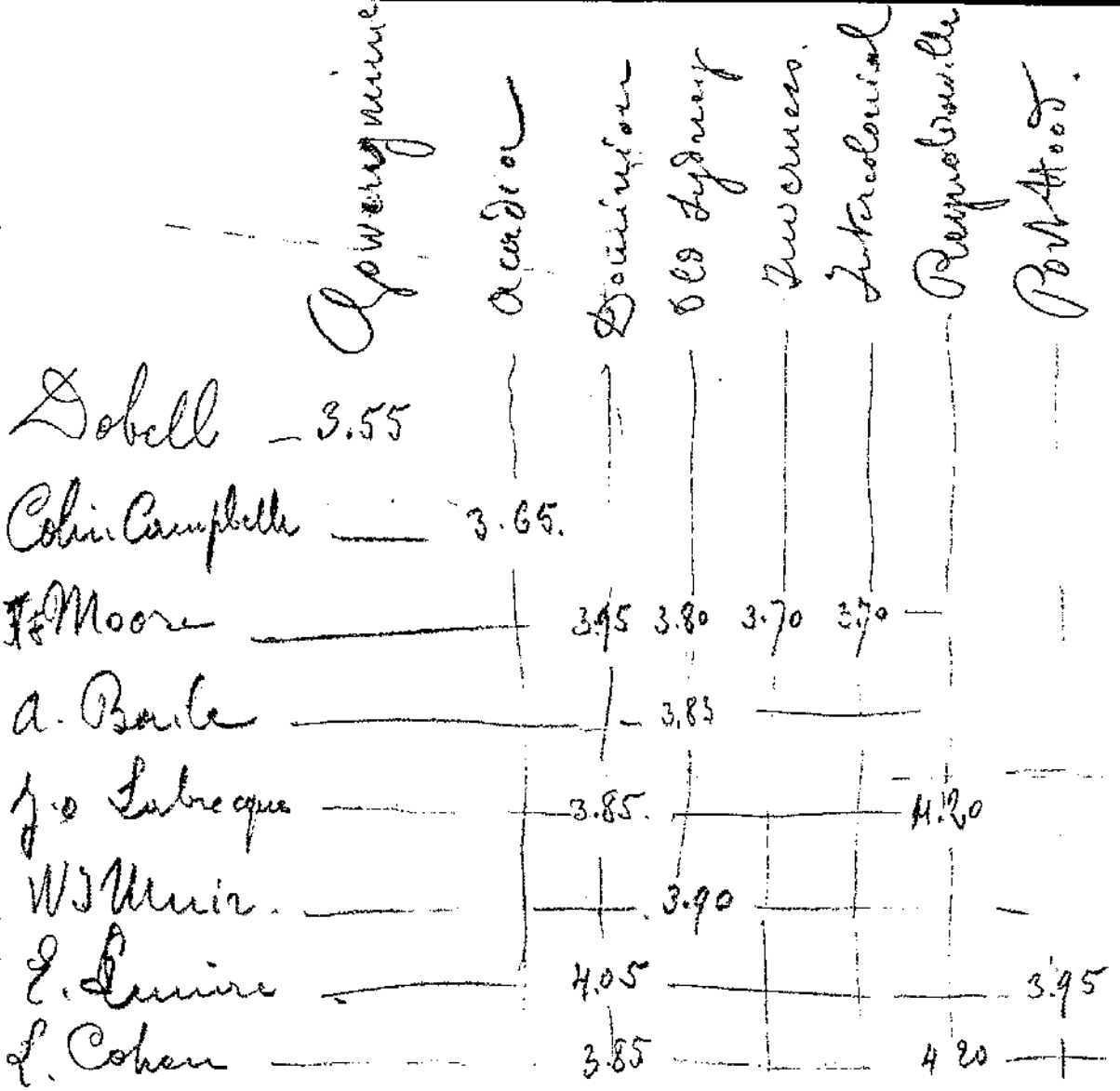
Mr. Mc Montreal Water Works Dept
City

Gentlemen:

We shall be pleased to supply you with 800 tons of Best Gowrie Mines Steam Coal at $3.50 per ton of 2000 lbs delivered at the Lower Level Dumping Station.

Your Obedient Servants
Henry Dobell & Co
per

Private Archives
called Jas Shiaw
Can. 1905--



GEO. JANIN, C. E.,
CHIEF ENG. & SUPT.

T. W. LESAGE, C. E.,
ASST. SUPT.

Subject:

Office of the

Superintendent of Water Works

Montreal, 190

Low Level Pumping Station

Dec 19 1904

Geo. Jamieson Esq.
Supt. M. O. W.

Dear Sir

Coal on hand from 12.00 o'clock p.m. this date 264 tons
exclusive 100 tons ordered which are
have not received.

Required for the balance
15 days ending January 1st
800 tons.

Yours truly
D. Pedley
Engr.

4 25/16

M 3 2

6 15/1

5 3/6 20,83

166

OFFICE OF

L. COHEN & SON,

36 PRINCE STREET

FOUNDRY FACINGS & SUPPLIES

COAL, COKE & CHARCOAL

Phones: Main 881 & 882. Montreal, Dec. 22nd, 190 4.

Geo. Janin, Esq.,
Supt. Montreal Water Works,
City.

Dear Sir:-

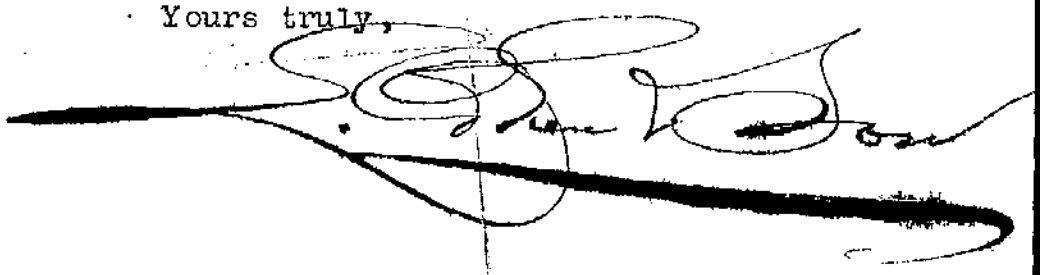
In reply to your enquiry for a price on about Eight Hundred (800) Tons Steam Coal to be delivered to the Low Level Pumping Station of Montreal Water Works, we beg to quote you as follows:-

Dominion Run of Mine Steam Coal	$3.85
American Reynoldsville	4.20

All per ton of 2000 pounds.

We guarantee to give you perfect satisfaction, and trust to be favored with your order.

Yours truly,



Jan 30/1905

	Gauvreau	Gardiner	Mauricien	Cie d. Hydro	Dominion	Dominion
N. Lebel 460						
N. Lebel 06 -	3.50					
Campbell		360				
J.O. Labrecque			3.70 x	autre 100 lbs		
A. Raile				4.25 ÷ 400		
L. Cadieux						3.70

L. COHEN & SON
COHEN'S CLEAN COAL
DRY KINDLING WOOD
36 PRINCE ST MONTREAL

OFFICE OF **L. COHEN & SON,** 36 PRINCE STREET

FOUNDRY FACINGS & SUPPLIES

COAL, COKE & CHARCOAL

Phones: Main 881 & 882.

Montreal, Jany. 26th, 1905.

Geo. Janin, Esq.,
Supt. Montreal Water Works,
City.

Dear Sir:-

Replying to your enquiry for a price on One Hundred tons of Coal, we beg to quote you $3.70 per ton of 2000 pounds for Dominion Run of Mine Steam Coal delivered at the Low Level Pumping Station of the Montreal Water Works.

Trusting to be favored with your order.

We are,

Yours truly,

L. Cohen & Son

H. MONTAGU ALLAN,
President.

CHAS. J. COLL,
General Manager.

E. W. RILEY,
Sec.-Treas.

Main Office
STELLARTON,
N. S.

Shipping Pier
PICTOU LANDING,
N. S.

Acadia Coal Company, (Limited).

MINERS AND SHIPPERS
OF THE CELEBRATED
ACADIA COAL
DELIVERED BY RAIL OR WATER

COLIN CAMPBELL,
Sales Agent,
17 St. John Street,
MONTREAL.

TELEPHONE Main 2438.

All Contracts and Deliveries are made contingent upon Strikes, Fires, Accidents, Car Supply and Causes beyond our Control.

Montreal, January 25th 1905

Geo. Janin. Esq.

Superintendent.

Water Works Office.

City.

Dear Sir:-

In compliance with your request by telephone - I beg to quote you for 100 tons of our Acadia "Run of Mine" Steam Coal for present delivery at the Low Level Pumping Station @ $3:60, per ton of 2000 lbs.

I am, dear Sir:-

Yours very truly.

Colin Campbell

SALES AGENT.

Cable Address:
DOBELL, MONTREAL.

HENRY DOBELL & CO.

Montreal, 11 June 1903

Montreal Water Works Dept
Montreal

Dear Sirs.

We are pleased to supply you with 1000 tons of best Grade Nova Scotia Steam Coal, at $3.50 per 2000 lbs, delivered at the lower level Pumping Station

Yours very truly
Henry Dobell & Co.
per

THE T. F. MOORE COMPANY,

COAL & WOOD

1099 DEMONTIGNY STREET
AND
267 ST. THIMOTHEE STREET
AND
WAREHOUSE ON WHARF.

BELL TELEPHONE: EAST 133.

Montreal, Jan 12 1905

Mr. Geo. Jarvis
Supt. Water Works
City Hall

Dear Sir,

In answer to your telephone message we are glad to quote for steam Coal run of mine for immediate delivery at the Low Level Pumping Station at the following prices:

700 tons Dominion Sydney at 3.19 per 2000 lbs
700 tons Intercolonial " 3.70 per 2000 lbs
500 tons Old Sydney " 3.95 per 2000 lbs

Hoping to hear from you at your earliest convenience, We remain Dear Sir

Yours truly
The T. F. Moore Co
per [illegible]

Cable Address,
Baile.
A-B-C- 5TH EDITION.

Telephone Main 4622 & 4623.

Andrew Baile,
Importer and Dealer in Coal and Coke.
Pig Iron, Charcoal, Fire Bricks, &c.

OFFICE, 69 McGILL ST.

Montreal.

Jan. 12, 1905.

J. B. Clearihue, Esq., Chairman,

Water Works Committee,

Montreal.

Dear Sir:-

I beg to name you price of $3.80 per ton of 2000 lbs., delivered, for 700 tons Dominion Coal Company's Coal, delivered at Low Level Resevoir.

If this price meets with the acceptance of your Board, your order will receive prompt attention.

Awaiting your favors, I am,

Yours very truly,

Andrew Baile

A.B.

OFFICE OF **L. COHEN & SON,** 36 PRINCE STREET

FOUNDRY FACINGS & SUPPLIES,

COAL, COKE & CHARCOAL

Phones: Main 881 & 882. Montreal, Jany. 12th, 190 5.

Geo. Janin, Esq.,
Supt. Montreal Water Works,
City.

Dear Sir:-

Replying to your enquiry for a price on Steam Coal for delivery at the Low Level Pumping Station of the Montreal Water Works, we beg to quote you as follows:-

Dominion R/M Steam Coal ~~$3.00~~ 3.90 per ton of 2000 Lbs. Delivered.
Inverness ~~3.00~~ do.

Trusting to be favored with your order,

We are,

Yours truly,

L. Cohen & Son

M. J. T. TRUDEL.
General Manager.

MEMORANDUM

J. GRAHAM

The National Coal & Wood Co.

IMPORTERS & DEALERS IN

Coal, Coke, Wood, Hay, Oats, &c.

Bell Tel. East 107
Branch Tel. Main 1392
Res. Tel. East 1822

247 CRAIG St., Corner Amherst St.

Montreal 11 Jan 1905

Mr. Geo. Genest,
Surintendant du Dept de l'eau.
Ville de Montreal.

Cher Monsieur

Nous soussignés, soumissionnons pour 700 Tonnes, plus ou moins de Charbon. 1 Old Sydney. 1 Run of mine au prix de $4.25 la tonne de 2000 Lbs.

Vos Serv. Dévt.
The NATIONAL COAL & WOOD CO.
Jancede Trudel.

	Old Lyd. rec of m.	Do sec.d	Cape Brét. cow. bay.	Dom Raymd q. of m	Do q. of m	Port Hood 1. of m	Do Inters. 1 of m
Baile	3.85.	4.10.					
Dobell.			3.55				
Muir.	4.35.						
Gelien				4.10, 4.20.			
Labrecque.				4.10, 4.00			
Lemire.						4.00	
Moore	3.75	3.70		3.95	4.10.		3.70

THE T. F. MOORE COMPANY,

COAL & WOOD

1099 DEMONTIGNY STREET
AND
267 ST. THIMOTHEE STREET
AND
WAREHOUSE ON WHARF.

BELL TELEPHONE: EAST 132.

Montreal, Dec 5th 1904

Wm J B Clearihue Chairman
Water Department
City

Dear Sir,

We are glad to quote, as required, for 400 tons Steam Coal Run of mine to be delivered during this month, at the low level Dumping Station at the following prices:

Dominion Sydney	Run of mine	$3.95	per 2000 lbs
Old Sydney	" "	$3.75	per 2000 lbs
Intercolonial	" "	$3.70	per 2000 lbs
Reynoldsville	" "	$4.10	per 2000 lbs
Lawrence	" "	$3.70	per 2000 lbs

Hoping to hear from you at your earliest convenience, We remain, Dear Sir,

Yours truly
The T. F. Moore Co
per [illegible]

Bell Tel. Main 3611 — CHARBON ANTHRACITE ET BITUMINEUX — 367 Rue Richmond

The Best American
HARD COAL.

ERNEST LEMIRE

MARCHAND DE

All kinds of
SOFT COAL.

Bois, Charbon, Grain, Foin, en Gros et en Detail

Montreal, 2 Decembre 1904 190

Mr Geo-Janin,

Surintendant du Département de L'Aqueduc,

Hotel-de-Ville,

Montreal.

Cher Monsieur:-,

Il me fait plaisir de vous dire que j'ai actuellement en entrepôt un beau lot de charbon mou PORT-HOOD, qui a donné déjà entière satisfaction a plusieurs de mes clients, et que j'espere si vous voulez en faire l'essai, fera très bien l'affaire pour la station du bas niveau je vous vendrai ce charbon au prix de $4.00 par tonne de 2000 lbs, rendu a la station du bas niveau.

En espérant que vous me favoriserez de votre commande,

Je demeure, Monsieur:-,

Votre tout respectueusement soumis,

E. Lemire

Montreal 3 Dec/1904

M. Ker Jarvis
Surintendant
Département des Eaux

Monsieur.

Nos prix pour 450 tonnes de charbon pour le Robitaille a être pris suivant la garantie que vous voudrez.

Dominion Coal 4.00 par 2000 lbs
Reynolds 4.20 " "

A. Labrecque

OFFICE OF

L. COHEN & SON,

36 PRINCE STREET

FOUNDRY FACINGS & SUPPLIES

COAL, COKE & CHARCOAL

Phones: Main 881 & 882.

Montreal, Dec. 2nd, 1904.

Geo. Janin, Esq.,
Supt. Montreal Water Works,
City.

Dear Sir:-

Replying to your enquiry of this day for a price on 150 tons of Steam Coal to be delivered at the Low Level Pumping Station between now and the 1st of January 1905 in lots of about 50 tons, we beg to quote as follows:-

Dominion Run of Mine	$4.10
Reynoldsville Run of Mine delivered	$4.20

Both per ton of 2000 pounds, and trust to be favored with your esteemed order.

Yours truly,

L. Cohen & Son

William E. Muir
WHOLESALE
COAL MERCHANT
300 Wellington St.

MONTREAL, Dec. 2nd. 1904. 190

Geo. Janin Esq.

Supt. Montreal Water Dept.

Montreal.

Dear Sir:-

Referring to your enquiry, I offer to supply about 450 tons of Old Sydney Runmine coal, to be delivered at your Lower Pumping Station, at $ 4.35 per gross ton.

Hoping I will be favored with your order, I remain,

Yours Very Truly,

Wm. E. Muir

Cable Address:
DOBELL, MONTREAL.

HENRY DOBELL & CO.

Montreal, 2 Dec 1902

Jos Senecal Esq
Supt. Montreal Water Works
City

Dear Sir:

We shall be glad to supply your requirements, 400 to 500 tons, present delivery, best Cape Breton Coal, from the same mine we have always delivered, at $3.50 pr 2000 lbs delivered at Lower Pumping Station. Invoice to be made out on your weight returns, Cash on delivery.

Yours very truly
Henry Dobell & Co
Prop

We could sell you, as we think we have the best pile in town —

Cable Address.
Baile.
A-B-C- 5TH EDITION.

Telephone Main 4622 & 4623.

Andrew Baile,
Importer and Dealer in Coal and Coke.
Pig Iron, Charcoal, Fire Bricks, &c.

OFFICE, 69 McGILL ST.

Montreal.

Dec. 2, 1904.

Geo. Janin, Esq., Supt.,

Water Dept.,

Montreal.

Dear Sir:-

Complying with your request by telephone to-day, I beg to offer you 450 tons Old Mines Sydney Coal, for delivery at the Low Level Wheel house before the 31st of December, as follows:-

Run-of-Mine.....$3.85,

Screened at Mines..... 4.10,

both per ton of 2000 lbs.

Hoping to be favored with your order, I remain,

Yours very truly,

ANDREW BAILE

J.D.B.

H. MONTAGU ALLAN,
President.

CHAS. J. COLL,
General Manager.

E. W. RILEY,
Sec.-Treas.

Acadia Coal Company, (Limited).

Main Office
STELLARTON,
N. S.

Shipping Pier
PICTOU LANDING,
N. S.

MINERS AND SHIPPERS
OF THE CELEBRATED
ACADIA COAL
DELIVERED BY RAIL OR WATER

COLIN CAMPBELL,
Sales Agent,
17 St. John Street,
MONTREAL.

TELEPHONE Main 2488.

All Contracts and Deliveries are made contingent upon Strikes, Fires, Accidents, Car Supply and Causes beyond our Control.

Montreal, December 5th 1904

Geo. Janin Esq.

Superintendednt.

Water Works Office.

City.

Dear Sir:-

In compliance with your request by telephone this A. M. I beg to quote you for 450 tons of our Acadia "Run of mine" Steam Coal for present delivery at the Low Level Pumping Station @ $3:65, per ton of 2000 lbs.

I am, dear Sir:-

Yours very truly.

Colin Campbell

SALES AGENT

reçu à 2h 1/4

J.O. LABRECQUE & CIE

ESSAYEZ le Célèbre CHARBON DIAMANT NOIR

Tel. Bell, East 1251
" Marchands 358

83 RUE WOLFE — MONTREAL 24 Janv. 1905

A Monsieur Le Président
à Messieurs les Membres
de la Commission de l'Aqueduc
de la Cité de Montréal

Messieurs

Le Prix de notre charbon est $3.70 par 2000 lbs de charbon à vapeur Domain Coal de cette année par 2000 lbs livré au Pavillon des Rues Bas Niveau.
Pour le coke le prix sera $4.75 par 2000 lbs. livré au Pavillon du Haut Niveau.

Dans l'espérance que vous trouverez les prix satisfaisants

Nous nous souscrivons avec respect

Vos obt
J.O. Labrecque & Cie

J.O. Labucquière
Leider Jaicoul
Jai 24/05.

OFFICE OF **L. COHEN & SON,** 36 PRINCE STREET

FOUNDRY FACINGS & SUPPLIES

COAL, COKE & CHARCOAL

Phones: Main 681 & 682. Montreal, Jany. 24th, 190 5-

Geo. Janin, Esq.,
Supt. Montreal Water Works,
C i t y.

De ar Sir:-

We beg to offer to supply you with your requirements of Coal as per your advertisement of the 12th inst. as follows:-

4500 tons Dominion R/M Steam Coal same as usually supplied by us @ $3.70

per ton of 2000 pounds and delivered according to specification at the Low Level Pumping Station of the Montreal Water Works.

Trusting to be favored with your order and guaranteeing you satisfaction,

We are,

Yours truly,

L. Cohen & Son

L. Cohen & Son
Dundee Jan Cad
Jan 24/05

Montréal 24 Janvier 1905

Mm. Le Président
et Mm. Mm. de la Commission de l'Aqueduc,

Messieurs,

Nous vous fournirons le Charbon requis par votre Commission pour la Station du Haut-Niveau aux prix suivants,

1500 tonnes de Dominion Rgn. @ $4.25
1000 tonnes de Coke @ $4.48

Ci-inclus votre Chèque pour $600.00/100 tel que demandé,

Vos devoués
J. & A. Bourdon
360 Rue St Catherine

J & A. Saunders
tenders for Coal
Jan 24/05

H. MONTAGU ALLAN,
President.

CHAS. J. COLL,
General Manager.

E. W. RILEY,
Sec.-Treas.

Main Office
STELLARTON,
N. S.

Shipping Pier
PICTOU LANDING,
N. S.

Acadia Coal Company, (Limited).

MINERS AND SHIPPERS
OF THE CELEBRATED
ACADIA COAL
DELIVERED BY RAIL OR WATER

COLIN CAMPBELL,
Sales Agent,
17 St. John Street,
MONTREAL.

TELEPHONE Main 2433.

All Contracts and Deliveries are made contingent upon Strikes, Fires, Accidents, Car Supply and Causes beyond our Control.

Montreal, January 24th 1905

"The City Clerk"

City Hall.

Montreal.

Dear Sir:-

On behalf of the Acadia Coal Company Limited - I beg to offer you 1500 tons of our Acadia "Run of Mine" Steam Coal delivered at the Low Level Pumping Station, at Point St Charles as per Tenders asked for, @ Three dollars and sixty cents ($3:60) per ton of 2000 lbs.

Enclosed please find, as requested cheque for $600:00.

I am, dear Sir:-

Yours very truly,

Colin Campbell Esq.

SALES. AGENT.

Acadia Coal Co.
Sundries for Coal
Jan 24/05.

Cable Address:
DOBELL, MONTREAL.

HENRY DOBELL & CO.

Montreal, 7th June 1905

L C David Esq
City Clerk

Dear Sir:

We will be pleased to supply you with 1000 tons best Grade Illinois Steam Coal (Screened at the Mines) and same as supplied on 17th inst, at $3.50 per ton of 2000 lbs, delivered at the Low Level Pumping Station.

Yours truly Dobell & Co
Henry Dobell
Mgr

N. Dobell & Co.
Quebec Jan Coal
2nd Jan 1905.

Cable Address.
Baile.
A-B-C- 5th EDITION.

Telephone Main 4622 & 4623.

Andrew Baile,

Importer and Dealer in Coal and Coke.

Pig Iron, Charcoal, Fire Bricks, &c.

OFFICE, 69 McGILL ST.

Montreal.

Jan. 24, 1905.

L. O. David, Esq., City Clerk,

Montreal.

Dear Sir:-

In compliance with the terms of your advertisement, dated Jan. 11th, for the supply of 4500 tons Coal to the Low Level Pumping Station, I beg to name the following prices:---

For immediate delivery---

350 tons Sydney Mines Coal, screened at mines...$4.25,

500 tons Dominion Coal..... 4.00,

For shipment from mines---

4500 tons American Steam Coal..... 4.30,

These prices are per ton of 2000 lbs., delivered.

Hoping that these prices will be found satisfactoryl and that I shall be favored with your acceptance, I remain,

Yours very truly,

J.D.B.

Andrew Baile

1905
Quebec

Andrew Bulo
Quebec Jan case
Jan 24/05.

RE Compte M.L.H. & P.Co

Quebec, 31 Jan 1905

AU PRESIDENT ET AUX MEMBRES

DE LA COMMISSION DE L'AQUEDUC.

L. J. ETHIER, C. R. J. L. ARCHAMBAULT, C. R.

Département en Loi. *Montréal,* 24 janvier 1905. 189

AU PRESIDENT ET AUX MEMBRES
DE LA COMMISSION DE L'AQUEDUC.

Messieurs,

RE Compte de la Montreal,Light,Heat & Power Company pour pouvoir électrique.

A une séance de Votre Commission,tenue le 11 janvier courant,une lettre de la Montreal,Light,Heat & Power Co'y demandant le règlement de son compte pour le pouvoir électrique fourni à la station du haut niveau de la Cité ayant été lue et soumise,il fut résolu de la référer aux avocats de la Cité pour opinion.

En réponse aux instructions de Votre Commission,nous avons l'honneur de faire rapport que d'après les documents annexés à la dite résolution et notamment par un rapport du Comité du Feu au Conseil de la Cité en date du 6 mai 1904,la question d'un arrangement entre la dite compagnie et la dite Cité pour mettre en opération le pouvoir électrique à la station du haut niveau a été discutée,contenant une recommandation pour faire des arrangements à certaines conditions,mais le tout sujet à l'approbation des avocats de la Cité.

Il appert par les pièces que dans une note signée par M.M.Ethier & Atwater, ~~que~~ ce rapport n'a pas été approuvé vu qu'ils ne croyaient pas que le contrat avec la compagnie de Lachine obligeait la Cité à faire cette dépense.

Nous réitérons la même opinion par les présentes et nous sommes d'avis que la réclamation produite doit être

être rejetée et que l'affaire doit suivre son cours.

Nous avons l'honneur d'être, Messieurs,

Vos humbles et obéissants serviteurs,

J. J. Ethier

J. L. Archambault

Avocats de la Cité.

Montreal, Feb'y 27th 1905

To the Chairman & Members of the

Water Committee.

Gentlemen,

The ever increasing consumption of water in the City of Montreal makes it a duty for me to no longer delay reporting on this subject and on the most practical means of meeting this increased consumption.

Taking only a period of the last 5 years, the mean consumption of water from 1900 to 1905 has gone up from 20 to 27 millions of gallons per day, that is it has increased by a third; it is reasonable to foresee that this increased consumption will go on for some time yet, and in planning for the future there is no exaggeration in accepting the amount to be provided for made by several of my predecessors who fixed this amount at 50 millions of gallons per day.

Almost all these former superintendents as well as the consulting engineers Messrs McAlpine, Keefer and Shanly, etc. had recommended the increase of hydraulic power by the construction of a canal or aqueduct of greater size than the present one. In my report to His Worship the Mayor dated Jan'y. 5th 1904, I mentioned my intention of further studying the project of increasing the present hydraulic power, and subsequently I asked for a special appropriation for aid in carrying out these studies. Although no appropriation was voted, nevertheless no imbued with the urgency and had such confidence in the advantages of the project, as I had conceived it, that I gave it much thought and with my assistant we gave considerable time to the study of the project basing our figures on the data of the previous estimates. We were thus able to sketch out the general outlines of the new project we have in view, with an approximate estimate of the cost, the description and figures of which I shall submit to you later on.

First of all I believe it my duty to recall to you the project of enlarging the aqueduct power as set forth by Mr McConnell, superintendent in 1888, who based his figures on the previous study of the question made by Mr. Louis Lesage, superintendent in 1873. A complete description of this project is given in the department's annual report of 1888, consisted as shown on the annexed plan A) in continuing the new aqueduct the first section of which or 4,800 feet is already built by a separate aqueduct alongside and parallel to the old with sufficient dimensions to furnish a maximum of 5000 horse power that is to assure at all times of low water and ice conditions, the 2000 effective Horse power necessary for the pumping of 60 millions of gallons per day.

The figures for this project were as follows:

Section 1 being already built		
Section 2 Excavation, Bridges, Stop Gates fencing etc.	$945,000.00	
Section 3. do - do - do -	480,000.00	$1,425,000.00
Wheel House pumping machinery and rising mains		500,000.00
		$ 1,925,000.00
Purchase of land :		
Section 2 Land 100 arpents @ $200.00	$ 20,000.00	
Section 3 do. 147 " " " 571.00	84,000.00	104,000.00
Expenses of expropriation, Surveying and Engineering, etc.		50,000.00
T o t a l		$ 2,079,000.00

To understand the economy of the new project which we have studied out, it is indispensable to here note that the above discribed project of Mr McConell's left the water intake for the pumps in the same condition as at present, and as Mr McConnell Himself remarked the quality of the supply

Forward $ 2,079,000.00

would remain the same, and would thus necessitate before very long the establishing of a filtration system, which from present data would cost, for a supply of 50 million gallons per day, not less than - - - - - - - - - - - - - - - - - $ 800,000.00

This amount therefore added to ~~this~~ his figures would bring up the ultimate cost to - $ 2,879,000.00

And if we take into account the annual cost of renewals and maintenance of the filters, which would not be less than at the rate of $2.00 per million gallons, there would be a further annual amount for the 50 million gallons daily of not less than - $ 36,500.00

- - - - - N E W P R O J E C T - - - - -

The influences which led to the consideration of building the new aqueduct parallel and distinct from the present one, with the considerable increase of cost of expropriation of the necessary land, (over $100,000.-) were occasioned by the difficulty of keeping up the water supply to the pumps while the work of widening and deepening were being carried out. In our new project in order to get over this difficulty and enlarge the aqueduct on our own land, doing away with expensive expropriation proceedings we propose the construction of a permanent reinforced concrete water conduit alongside the present aqueduct as it will be widened.

This conduit will be of sufficient capacity to discharge 50 millions of gallons daily. By extending this conduit out into the river St Lawrence opposite the entrance of the aqueduct, the intake would be placed where there would be no risk of shore pollution and where recent official analyses show the water to be clearer and purer than in our present aqueduct. This conduit will have the advantage also of bringing the water under power to the pumps, and thus do away with the oft repeated objections to the present open aqueduct. This combination which would thus meet the often expressed wish of the public, would put off for a number of years at least the costly installation of a filtration plant.

In meeting before mentioned the widening of the present aqueduct on these lines, instead of requiring the expropriation of 250 arpents of land

uld only require the purchasing of a narrow strip, (about 20 arpents in ... in two portions where the Aqueduct lands are too narrow.

The new project which is herein submitted to you, gives to the ... the same dimensions as in the previous projects, and therfore ... would be the same water power as in the previous project; the esti- ... cost would be;

Lateral conduit in reinforced concrete to discharge 50 millions gallons daily	$ 660,000.00
Suction well for pumps at lower end of conduit	20,000.00
Extending the conduit out into the St Lawrence, by means of two pipes, with intake pier	75,000.00
Excavations, (Section 2 & 3) dry stone walls, puddling, farm bridges, stop gates, fencing etc.	817,000.00
Purchase of land - Section 3, 20 Arp @ $1000.	20,000.00
Widening and deepening of tail race	45,000.00
Wheel House - new pumping machinery, buildings, etc.	300,000.00

The cost of new force mains is not chargeable to the project, for in any case, these force mains will be required when the 50 millions daily consumption is reached

To this estimate there must be added however for the time the carrying out the works would take, say 3 years, the cost of pumping by steam power the water at present pumped by the water wheels, viz: - about 3610 millions of gallons yearly, at the price of the cost for steam pumping, less the cost of pumping by water, that is $8.75 per million x 3 say, 95,000.00

The total cost of the project would then be $2,132,000.00

The interest on this sum at 4% per annum would make an annual charge of $ 85,280.00

In this project a portion only of the excavated material could be used to form the banks, there being no adjoining land available for spoil banks. the balance

3

could be utilized to raise the banks of the St Gabriel levee: more of it could be used on the outside pier at the entrance of the aqueduct, to consolidate it and lengthen it up stream, to increase the head of water at the entrance.

To justify the adoption of the project above described, you will find enumerated below the various items of economy that might result:

1o From the first year of the working of the widened aqueduct:

The water pumped by steam power in 1904 was 6,530 millions of gallons: basing the increase in consumption on that shown by the last 5 years: this pumping will be, at the putting into operation of a new aqueduct, that is in 3 years time, 8.710 millions of gallons. at $8.75 (the present difference between steam and water pumping) the amount saved therefore by doing this work by water power, will be - - - - - - - - - $ 76,213.00

On the same basis the total water to be pumped will be 37 million gallons daily which will require in effective H.P. 1480.

On the 2000 effective H.P. that the new aqueduct will afford at all times there will thus remain to utilize an effective H.P. 520.

From this amount about 400 H.P. could be utilized to produce electric power for pumping at the High Level station; for which operation the City has at present a yearly contract for about 8,000.00

There would thus remain to dispose of in H.P. 120.

This would be sufficient to furnish the electric lighting to a number of the City's public buildings, parks etc., for the lighting of all

Forward. - - -$ 84,213.00

Forward $ 84,213.00

of which it costs the City now $10,000. per annum. It is reasonable to estimate the saving by using our own power as above at 1/4 of the amount, or - - - - - - - - - - - - 2,500.00

Besides the surplus of power produced during the ~~su~~ summer season, from April to November, could be utilized (even after the City's water consumption had reached 50 millions), to furnish at a reduced price, light or power to firms only requiring it at that season;

~~[illegible]~~

~~[illegible]~~

Taking this surplus power at only 1/2 its estimated quantity of 3,000 H.P. would leave 1500. H.P. at the very low rate of $5.00 per H.P. for the season would furnish a further sum of - - - - - - - - - 7,500.00

Total realizable savings. Say - - - - - - $ 94,000.00

SAVINGS THAT MAY BE EXPECTED TO BE REALIZED when the consumption of water will have reached 50 millions of gallons daily, that is, 40 millions more than the mean daily capacity of the present water wheel pumping;

- - - - - - - - - - - - -

In the event of the projected widening of the aqueduct not being done, these 40 million gallons would have to be pumped by steam power under the following conditions:

That 15 24 millions by the present steam plant, at the price of $8.75 (being the present cost of steam pumping, after deducting cost of pumping by water power) this would be for 365 days, 8,760 millions at $ 8.75 - - - - - - - - - - - - - $ 76,650.00

The remaining 16 millions daily, would be pumped by new pumps of higher duty than the old ones at a cost per million gallons $4.50 (being the estimated cost with high duty steam pumps, after deducting cost of

Forward	$ 76,650.00
pumping by water power, this would be for 365 days, or 5,840 millions at $4.50	26,280.00
there would remain about 1500 H.P. available in the summer season, as cited in the former case, which could be disposed of at a minimum of	7,500.00
Total realizable saving - - Say -	$ 110.000.00

On the progressive increase in consumption from the last 5 year period, the daily consumption of 50 millions of gallons would be reached in 11 years from the present, or 8 years after the completion of the widened aqueduct, if the widening is gone on with at once.

From the figures given above, it is easy to perceive that the economy of the project which I lay before you, would consist especially in assuring to Montreal under its absolute and perpetual control, a better source of water supply in sufficient quantity for the future and at the lowest price, for not only will the interest on the cost of the improvement be realized from the start, but the increased savings would, as a sinking fund extinguish the capital account in less than 40 years.

To inspire confidence in the estimates of the project which I herein recommend, I would remind you that the data upon which are based the calculations are the same as were used in the construction of the first section, or Inland Cut, already built, and that the carrying out of this work has shown their correctness, as the actual cost of that section was very close to the estimated cost. A study with more care and in greater detail, would no doubt confirm and even diminish some of the items, as we adopted safe figures as is usual in a preliminary estimate.

I firmly believe it to be in the best interests of the City that the City Council should take up the question of the project which I have here laid before you in a summary manner, the execution of which project, would be the most economical means of putting the Water Works of Montreal on a safe footing, for the present and for the future, to satisfy all requirements of the health of the public and protection against fire.

Respectfully submitted,

Geo. Janin

Chief Engineer
and Superintendent M W W.

Montréal, le 27 février, 1905.

A M. le Président et à M.M. les Membres
de la Commission de l'Aqueduc.

L'augmentation de plus en plus considérable de la consommation d'eau de la cité de Montréal m'impose le devoir de ne pas retarder la présentation d'un rapport sur ce sujet et sur le moyen que je crois le plus économique pour y faire face.

Pour ne prendre que les années les plus proches, la consommation d'eau de 1900 à 1905 a été portée de 20 à 27 millions de gallons par jour, c'est-à-dire qu'elle a augmenté d'un tiers. Il est raisonnable de prévoir que cette augmentation se continuera longtemps encore et il n'y a pas lieu de s'étonner à accepter les prévisions de plusieurs des surintendants qui nous ont précédé et qui s'étaient basées sur une consommation de 50 millions de gallons.

Feu l'ingénieur Fouchemoulin, ainsi que les ingénieurs qui lui ont été adjoint (MM. McAlpine, Chanel et Keefer) ont proposé comme solution du problème, recommandé l'augmentation de la force motrice hydraulique au moyen de la construction d'un aqueduc plus grand que celui qui existe actuellement.

De mon côté, dans mon rapport en date du 5 janvier 1904 à Son Honneur le Maire, je faisais mention de mon intention d'étudier, sous un nouvel aspect, le projet d'augmentation de la force hydraulique actuelle et également, je demandais un crédit spécial pour pousser à fond cette étude. Bien que ce crédit ne m'ait pas été voté, je comprenais tellement l'importance et j'avais une telle confiance dans les avantages du projet que je le conçevais, que je me consacrai avec l'aide de mon assistant à explorer tous les environs dont nous pûmes disposer, à l'étude de ce projet et, me basant sur les données des projets antérieurs, j'ai pu tracer les grandes lignes et faire une estimation approximative des travaux du nouveau projet dont je vous soumets ci-après, la description et les chiffres.

Je crois devoir, avant tout, vous rappeler le projet élaboré par M.McConnell, surintendant, en 1888, lequel projet était basé lui-même sur l'étude faite par M. Louis Lesage, surintendant, en 1873. Ce projet dont la description complète se trouve dans le rapport annuel du département, pour l'année 1888, consistait (voir plan ci-annexé A) à continuer, sur un nouveau terrain latéral à l'ancien aqueduc, le nouvel aqueduc achevé actuellement sur une longueur d'environ 4,800 pieds, avec des dimensions suffisantes pour fournir 5000 forces maximum, c'est-à-dire pour assurer, même au temps des basses eaux et des glaces, les 2000 forces effectives nécessaires pour le pompage de 50 millions de gallons d'eau par jour.

Les chiffres de ce projet étaient les suivants:

Section 2. Excavation, ponts, portes-vannes, clôtures etc., - - - - - - - - -	$ 945,000.-	
do. 3. -	480,000.-	$1,425,000.
Nouveaux bâtiments, machinerie et conduites élévatoires. - - - - - - - - - - - -		500,000.
		$1,925,000.

Terrains à acheter :-

Section 2. 100 arpents à $200.-	$ 20,000.-	
do. 3. 147 do. " 571.-	84,000.-	104,000.
Dépenses d'expropriation, d'arpentage, surveillance etc. - - - - - - - - - - - -		50,000.
		$ 2,079,000.

Pour comprendre l'économie du nouveau projet que nous avons élaboré, il est indispensable de noter que le projet de M.McConnell ci-dessus décrit laissait dans les mêmes conditions la prise d'eau actuelle; or, comme le faisait remarquer M.McConnell lui-même, la qualité de l'eau pompée restait la même et, par conséquent, sujette dans un temps plus ou moins rapproché, à necessiter l'établissement d'un system de filtration qui d'après les données actuelle, ne coûterait, pour 50 millions de gallons, pas moins de - 800,000.

Ce qui aurait porté le coût définitif de ce projet à - - - - $ 2,879,000.

Sans compter les frais annuels de fonctionnement et d'entretien des filtres qui ne s'élèveraient pas à moins de $ 2.00 par millions de gallons, soit annuellement, pour 50 millions de gallons à - - - - - - - - - - - - - - - - - $ 36,500

N O U V E A U P R O J E T

Le motif qui avait fait adopter précédemment un parcours parallèle et distinct de l'aqueduc actuel avec les frais considérables d'expropriation de terrains, (plus de $100,000.-) avait été déterminé par la difficulté qu'il paraissait d'alimenter les pompes pendant la durée des travaux d'élargissement et l'approfondissement de l'aqueduc existant.

Dans notre nouveau projet, afin de tourner cette difficulté, en adoptant l'agrandissement de l'aqueduc actuel sur notre propre terrain, et par conséquent en évitant des expropriations très coûteuses, nous proposons la construction d'une conduite permanente, en beton armé, parallèle à l'aqueduc actuel agrandi, et d'une capacité suffisante pour 50 millions de gallons d'eau.

En prolongeant cette conduite au large du fleuve St Laurent, en face de l'entrée de l'aqueduc, on prendrait l'eau à un point où elle ne risque pas d'être polluée comme sur les rives et où, d'après les recentes analyses officielles, cette eau est régulièrement plus claire et plus pure que celle qui entre actuellement dans l'aqueduc. Cette conduite aurait également l'avantage d'amener l'eau, à couvert, jusqu'aux pompes et de supprimer les objections souvent élevées contre l'aqueduc à découvert.

Cette combinaison qui répondrait ainsi aux desirs souvent exprimés par le public, permettrait au moins pour de longues années, de laisser de côté le projet très coûteux d'un plant de filtration.

Comme je le disais ci-dessus, l'agrandissement du présent aqueduc au lieu d'entraîner l'expropriation de 250 arpents de terrain nécessiterait qu'une étroite emprise (environ 20 arpents en tout,) dans les endroits où notre terrain serait trop étroit.

Le nouveau projet que je soumets à votre appréciation donne à l'aqueduc les mêmes dimensions et par conséquent la même force motrice que dans les projets antérieurs. L'exécution en coûterait :

Conduite laterale en béton armé d'un debit de
50 millions de gallons ..... $ 660.000.00

rapporte	$ 660,000.00
Puits d'aspiration et d'équilibre à l'extremité de la dite conduite à côté de la maison des roues et des pompes.	20,000.00
Prolongement de la dite conduite au large dans le lac par 2 tuyaux avec caisson de prise d'eau.	75,000.00
Excavations (sections 2 et 3) revêtements en pierre sèche, ponts, portes-vannes, clôtures etc.	617,000.00
Terrains à acheter . Section 3 - 20 Arpents @ $1000.	20,000.00
Elargissement et approfondissement du déversoir.	45,000.00
Nouveaux bâtiments, machinerie etc.	300,000.00

(Le coût des nouvelles conduites de refoulement n'est pas imputable au projet puisque, dans tous les cas, ces conduites seraient nécessaires.)

Dépenses imprévues, expropriations, arpentages, surveillance etc.	100,000.00

A cette dépense il faudrait ajouter, durant la période des travaux évalués à 5 ans, la différence entre le coût du pompage par la vapeur de l'eau actuellement pompée par les turbines, soit environ: 3.618 millions de gallons par jour différentiel de $ 8.75 x 3 = | 95,000.00 |

Le coût total du projet s'élèverait à	$2,132,000.00
et l'intéret à 4% comporterait une dépense annuelle de	$ 85,280.00

Dans ce projet une partie seulement des terres du déblai pourrait être déposée sur les berges de l'aqueduc, le reste pourrait être transporté, partie jusqu'à la rivière St Gabriel où ces déblais serviraient à consolider ou à surélever: partie jusqu'à la jetée à l'entrée de l'aqueduc, qui pourrait être ainsi surélevée et prolongée de façon à augmenter la tête d'eau et, par conséquent, la force motrice du dit aqueduc.

Pour justifier l'adoption du projet que-décrit, vous trouverez ci-dessous énumérées les économies qui pourraient être realisées.-

DES LA MISE EN SERVICE DU DIT AQUEDUC.

Le pompage par vapeur pour l'année 1904 a été de 6.530 millions de gallons; en calculant l'augmentation de la consommation sur les bases fournies durant les 5 dernieres années le pompage, lors de la mise en service du nouvel aqueduc, c'est-à dire dans 3 ans, s'éleverait à 8.710 millions de gallons au coût différentiel de $8.75. Soit en pompant cette eau par turbines une économie réalisable de $ 76,213.00

Le pompage total calculé sur les mêmes bases s'éleverait à 57 millions de gallons par jour, ce qui prendrait en forces effectives. - - - - - - - - - - 1480

Sur les 2000 forces effectives et continues que pourrait fournir en toute saison, le nouvel aqueduc, il resterait donc disponible en forces effectives. 520.

Sur lesquelles environ 400 pourraient être employées à produire la force electrique nécessaire au pompage dans le système du haut niveau, opération pour laquelle le prix actuel du contrat est de - - - - - - - - 8,000.00

Il resterait encore disponible en forces effectives. 120.

Cette force serait suffisante pour fournir le pouvoir éclairant nécessaire à une partie des édifices, ateliers et parc municipaux pour lesquels la cité paye actuellement par an aux contracteurs environ $10,000. - On peut raisonnablement évaluer au quart de ce montant l'économie réalisable en utilisant notre propre force motrice, soit. - - - - - - - - - - - - - - - - - - 2,500.00

En outre la force supplémentaire produite seulement pendant le temps des hautes eaux, soit d'avril à novembre pourrait être employée (même quand la consommation aurait atteint 50 millions de gallons à fournir à prix réduit la lumiere ou la force motrice à des industries ou des corporations qui n'en auraient besoin que durant cette periode

[redacted]

raporté - - - $ 86.513.00

reporté $ 86,513.00

en ne comptant que la moitié de cette force supplémentaire, soit 1500 forces effectives, à la valeur dérisoire de $5.00 par unité, on réaliserait encore la somme de 7,500.00

Total des économies réalisables - - ~~$ 94,000.00~~ $ 94,000.00

2o ECONOMIES REALISABLES QUAND LA CONSOMMATION D'EAU AURAIT ATTEINT LE CHIFFRE DE 50 millions de gallons par jour, C'EST-A-DIRE 40 millions de plus que la CAPACITE MAXIMUM EN FORCE MOTRICE DE L'AQUEDUC ACTUEL.

Faute de l'agrandissement projeté du dit aqueduc, ces 40 millions de gallons devraient être pompés au moyen de la vapeur, dans les conditions suivantes:

Soit ~~Entre~~ 24 millions par les anciennes pompes existant actuellement et au coût différentiel de $3.75 par million de gallon soit pour 365 jours ~~ou 8,760~~ million de gallon, une somme de - $ 76,650.00

Les 16 millions restant pourraient être pompés par de nouvelles pompes à plus haut rendement que les anciennes, au coût différentiel de $4.50 par million de gallon, soit pour 365 jours ou 5,840 millions de gallons, une somme de - 26,280.00

Il resterait toujours disponible, comme dans le cas décrit précédement, 1500 forces évaluées au minimum à - - - 7,500.00

Total des économies réalisables. - - $ 110,000.00

En se basant sur l'augmentation progressive dans la consommation des 5 dernières années, le chiffre de 50 millions de gallons serait atteint dans 11 ans à dater de l'année courante, ou 8 ans après l'achèvement du nouvel aqueduc s'il était commencé présentement.

D'après les chiffres qui précèdent il est facile de se rendre un compte exact que l'économie du projet que je préconise consiste à assurer à la Cité de Montréal, sous son

contrôle absolu et perpétuel, une meilleure source d'approvisionnement d'eau, en quantité suffisante pour l'avenir et au plus bas prix car non seulement l'interêt du capital employé à cette amélioration serait immédiatement couvert par les économies réalisées, mais les dites économies amortiraient aussi progressivement le dit capital et ce en moins de 40 ans.

Pour vous inspirer confiance dans les chiffres du projet que je recommande, je ferai remarquer que les données qui ont servi de base aux calculs du dit projet sont les même que celles qui avaient servi au devis de la 1ère. section ou "inland Cut" (partie achevée du nouvel aqueduc) et que l'exécution des travaux compris dans ce devis en a prouvé l'exactitude car le coût de cette exécution a été sensiblement le même que celui prévu au dit devis.

Une étude plus approfondie et plus détaillée ne pourrait que modifier et même diminuer quelque peu les montants vu que nous avons adopté des chiffres de sécurité comme il est d'usage dans une étude sommaire.

Je me permets de croire qu'il est du plus grand interêt pour la Cité que le Conseil s'intéresse sans retard au projet que je viens de vous exposer sommairement et dont l'exécution donnerait au meilleur marché, l'aqueduc de Montréal en mesure de répondre dans le présent et dans l'avenir à toutes les exigeances de l'hygiène et de la protection contre le feu.

Respectueusement soumis,

Ingénieur en chef

et Surintendant de l'aqueduc.

28 Feb 1905 653

Supt Urquhart re.
enlarging Aqueduct
&c.

Cable.

CITY HALL

MONTREAL, 18th March 1905

To the Chairman and Members of the

Water Committee.

Gentlemen,

Will you kindly allow me to impress upon you the all-importance of arriving at a speedy decision in connection with the contract for the additional pumping plant which your Committee propose to install at the Low Level Pumping Station.

I take the liberty of mentioning the urgency of this matter because I feel that upon speedy action of your Committee and the Council may rest a material reduction in the Insurance rates at present prevailing.

The Underwriters, as you know, feel that during certain months of the year, more especially January and the next 2 or 3 months, the City would be in a quandery to afford adequate fire protection, were an accident to occur to our steam plant.

They point out in this connection that any accident to the steam pumping machinery would cause a shortage in the supply of water and that, in event of a large conflagration occuring, the water reserve would be insufficient for fire fighting purposes. To this is added the rapidly increasing growth of the City and the contention that the Low Level Pumping Station is a building whose liability to be destroyed by fire must be reasonably appreciated.

It is urgent, I think, that no grounds should be left to the Underwriters to maintain the present exhorbitant rates of fire insurance, and I feel that your Committee will consider the importance of a city like Montreal having a reserve power of at least 50% of its daily consumption.

I venture to point out the limit for the delivery of the extra pump is fixed at twelve (12) months by the specifications and that this might be altered to nine (9) months. There is no apparent reason why this pump should not be in running order before the 1st of January next, if the order were given at the earliest possible moment. It is at that time of the

CITY HALL

MONTREAL, 18th March 1905 190

year that the hydraulic power is more or less reduced owing to the aqueduct canal being frozen.

It would be advisable to impose a penalty of, say, $100. per day upon the contractor for non-delivery after that date, and I have reason to presume that the tenderers would not object to this and would willingly agree to have the pump running by the 1st of January next.

I know that your Committee will give all due attention to this very important question.

On my side, I am prepared to lend you what aid I can and, if necessary, to call a special meeting of the City Council, at the earliest possible date, in order that no further delay may occur.

I have the honor to be,

Gentlemen,

Your obedient servant,

H. Laporte
Mayor

HOTEL DE VILLE

MONTRÉAL, 18 mars 1905 190

A M.le président et à MM.les membres

de la Commission de l'Aqueduc.

Messieurs,

Voulez-vous me permettre de vous faire remarquer combien il est important que l'on en arrive à une prompte décision au sujet du contrat pour la pompe additionnelle que votre Commission se propose d'installer à l'usine des pompes du bas niveau.

Je prends la liberté d'attirer votre attention sur cela,car j'ai tout lieu de croire que si votre Commission et le Conseil agissent sans plus deretard,une réduction considérable sera effectuée dans les taux d'assurance qui règnent actuellement.

Les assureurs,comme vous le savez,croient que durant certains mois de l'année,notamment en janvier et pendant les 2 ou 3 mois suivants, la Ville ne serait pas en position de donner une protection suffisante contre l'incendie,si un accident arrivait à notre outillage à vapeur.

Ils font remarquer,à ce sujet,que tout accident aux machines des pompes à vapeur causerait une diminution dans l'approvisionnement d'eau, et que dans le cas où il surviendrait une grande conflagration,la réserve d'eau serait insuffisante pour combattre le feu.A cela il faut ajouter le développement constant de la Ville,et la prétention de ceux qui affirment que l'usine des pompes du bas niveau est un bâtiment qui est exposé à être détruit par le feu mérite d'être prise en sérieuse considération.

Il est important,je crois,qu'aucun prétexte ne soit laissé aux assureurs pour maintenir les taux exorbitants d'assurance contre l'incendie qui existent à l'heure qu'il est,et je suis convaincu que votre Commission considérera l'importance pour une ville comme Montréal d'avoir une force de réserve d'au moins 50% de sa consommation locale.

Je vous ferai aussi remarquer que le délai pour la livraison de la pompe supplémentaire est fixé à 12 mois par le cahier des charges et que ce délai pourrait peut-être être changé à 9 mois.Il n'y a,que je sache,aucune raison apparente pour que cette pompe ne soit pas en état de fonctionner avant le 1er janvier prochain,si la commande est donnée aussitôt que possible.C'est à cette époque de l'année que la force hydraulique est plus ou moins réduite par suite de la congélation du canal de l'aqueduc.

Il serait à propos d'imposer une amende de,disons,$100 par jour à l'entrepreneur pour non-livraison de la pompe après cette date-là,et

HOTEL DE VILLE

MONTRÉAL, ... 190.....

(2)

j'ai tout lieu de croire que les soumissionnaires ne s'opposeront pas à cela et consentiront volontiers à garantir que la pompe sera en état de fonctionner le 1er janvier prochain au plus tard.

Je sais que votre Commission donnera toute l'attention voulue à cette très importante question.

De mon côté, je suis prêt à vous prêter toute l'aide que je pourrai et, au besoin, à convoquer une assemblée spéciale du Conseil de Ville le plus tôt possible, afin qu'il ne survienne pas d'autre retard.

J'ai l'honneur d'être,

Messieurs,

Votre obéissant serviteur,

LE MAIRE DE MONTREAL,

(sig.) N. Laporte

Letter dated 5th May
re Letters for Parry
Sedgwick and Co
Auditor.

27/3/05

Table

604

WATER WORKS OFFICE

No. Mayer

From

Date 18th March 190 5

Subject Mill Letter

Board of Works

17 March

re. order for

supply. & fire

protection at

Lunn Level

Sent to Mr Lyon

Date July 13. 190 5

Remarks

Montreal Mch 20th 1905.

Tothe Chairman & Members

ofthe Water Committee.

Gentlemen,-

The sub-committee appointed at the meeting of the 28th Feb. to consider the tenders for pumps and to hear what the representative of the different Companies who tendered had to say in regard to the merits of the pumps. Beg to report that after holding several meeting the result of which are hereto annexed, and after again meeting on the 18th instant and considering the tables prepared by the Superintendent also hereto annexed, it was : Moved by Ald. Clearihue, that the contract for a steam pump for the Low Level Pumping Station be awarded to the Providence Engineering Co. for the sum of $54,800.00 their tender being the lowest and giving the highest duty.

The votes being taken resulted as follows:

YEAS. - Ald. Clearihue, Bumbray, and Lemay. (under reserve).

NAYS: Ald. Sauvageau.

The motion was carried.

The whole respectfully submitted,

Montréal le 20 mars 1905

A. M. le Président et à M.M. les Membres

de la Commission de l'Aqueduc.

Messieurs,-

Le sous-comité nommé à l'assemblée du 28 Fevrier pour prendre en considération les soumissions pour des pompes et pour entendre les representants des différentes compagnies qui ont soumissionné, a, l'honneur de faire rapport qu'après avoir tenu plusieurs seances les resumés qui sont ci-annexés et après une assemblée tenue le 18 courant où le tableau preparé par le surintendant ci-annexé à été pris enconsiération. Après déliberation il est Proposé par l'echévin Clearihue que le contrat pour une pompe à vapeur soit accordé à la Providence Engineering Co. pour la somme de $54,800.00 leur soumission étant la plus basse et offrant le plus haut rendement.

Le tout respectueusement soumis,

[illegible] WATER WORKS

[illegible] AND PROPOSALS FOR 12 million gallon STEAM PUMP for [illegible] LEVEL PUMPING STATION

[illegible] of Providence, R.I.

Vertical triple expansion fly wheel type pumping engine with single acting pump plungers

Diameter of cylinders 19" 36" 52"

Diameter of pump plunger 20", Stroke 42"

Piston speed 60 rev per min or 420 feet per minute.

Steam pressure 140 lbs

Duty in feet per 1000 lbs. dry steam 165,000,000

Overall dimensions 24' x 13' : 20 1/4 ft above floor; 10' below

Price of pumping Engine $54,000.00; estimated cost of buildings and foundations $ 9,445.00

This pump of all the pumps offered has the fastest pump piston speed that is 60 revolutions or 420 lineal feet per minute. It also offers the highest pumping efficiency or duty, being 165 millions foot lbs per 1000 lbs steam. It also has the smallest floor space.

Mr Fuller, Superintendent of the Providence Company, appeared before the sub-committee and stated that for steam engine practice, the best results for high efficiencies lay in higher speeds and the present practice for pumps was to increase the speed so as to take advantage of the steam engine efficiency. The pumps could be made to work faster if the valves are suitable and large enough in area. The speed of 420 feet per minute was not excessive as many Reidler pumps are running satisfactorily at 500 and 600 feet per minute.

The Providence Engineering Works do built large Water Works engines for the City of Providence about 20 years ago they have not built any large Water Works pumping engines in recent years. They

build large steam engines of high efficiency for Rolling Mills Electric plants etc.

Mr. Foster, pump expert for the same Company said the best practice within ten years was the vertical type of pumping engine.

Steam engine speeds had increased much, and the usual traction and electric power installations, the engines worked at speeds of about 300 feet per minute; this seems to be the regular pactice. The service on this class of machinery is very exacting and the engines at this speed have done well and are regularly installed all over. The application of this speed to pumps is only a question of valve design. The Frazer-Allis Co. have built some 400 Reidler pumps at 400 feet per minute working satisfactorily.

Examples of fast moving Water Works Pumps are :

The pumps built by the Worthingtons for the Worlds Fair and purchased and installed in Brooklyn, 400 feet per minute.

Also a pump for the Queen's Water Company on Long Island, near Brooklyn 500 feet per minute.

The Leavitt engine at Chesnut Hill, Boston, Mass. 600 feet per minute.

At Syracuse-15 million gallon engine - 500 feet per minute.

Chicago, - over 600 feet per minute.

The duty of 165 million foot lbs is guaranteed if on the test the duty falls below the Company will pay $250.00 for each 1 million foot lbs. that the duty is less.

If this Company will guarantee the duty to be between 160 and 170 millions foot lbs if above 170 millions the City is to pay a bonus of $500.00 for each million foot lbs. above, and if the duty test falls below 160 millions, the City will deduct from the contract price $500.00 for each million foot lbs

NORDBERG MANUFACTURING COMPANY, OF MILWAUKEE, Wis.

Horizontal triple expansion pumping engine of the crank and fly wheel type.

Diameter of cylinders 22 1/2" + 41" + 58".

Diameter of pump plunger 18 7/8". Stroke 52".

Piston speed 34 1/2 rev per minute; or 300 feet per minute.

Steam pressure 140 lbs.

Duty in feet lbs. per 1000 lbs. dry steam, 150 millions

Overall dimensions 61' x 33'; 15 ft. above floor; 10 ft below

Price of pumping engine $53,000.00, Estimated cost of buildings and foundations $17,808.00.

This pump of all the pumps offered requires the largest floor space. It has also the largest stroke 52" and being of the horizontal type, the longitudinal overall dimensions are therefore the greatest and the estimated cost for buildings and foundations is also the greatest $17,808.00.

Mr. O'Neil, Mechanical Engineer, and agent for the Nordberg Company, appeared before the sub-committee and stated his tender price was the lowest. He also drew attention to the long length of stroke of His pumps as conducive to showing best working of pumps by indicator diagrams. His Company have built many large pumps as follows :-

- 20 million gall. pumps for the Illinois Steel Co. Chicago
- " " " " " Osceola Mine, Mich.
- large pump for the Tamarack Mining Co
- 20 million gall. pumps for the Lackawanna Steel Co.

Water Works as follows :

1 - 5 million gall triple expansion for Washington D.C. Water Works.
- 6 " " " Laporte Ind.
- 6 " " " for the Pensylvania Water Co. Pittsburg. One of these at 600 feet head was cited at the time by Prof. Thurston as an example of the highest steam efficiency from tests of Prof Carpenter
- 5 million gall pumps for Chatanooga City Water Works
1 - 8 " " " " " Cheboygan Michigan Water Works.

1 - 5 million gallon pump for St Joseph Michigan Water Works.

1 - 1 1/2 " " " " " Liconier Ind. Water Works

1 - 4 " " " " " Tucson Arizona Water Works.

In the copper mining country Michigan, they have repeated orders, ... have built 10 pumps of 20 million gallons capacity each. As reference he cited the names of Mr Hamilton, Chief Engineer, and Mr. ... ice, General Manager, Gill of the Lackawanna Steel Co Chicago.

... million gallon pumps now being built for Buffalo, to pump ... ainst about 100 feet head.

... guarantees friction of his pumping engine to be not more than 6 ... the Customs duty on his pump about $8,000.00 duty and the Nordberg ... company offer the pump for $ 32,000.00 F.O.B. Milwaukee.

The guaranteed duty is 150 millions ft. lbs per 1000 lbs dry ... stated should the pump not come up to that duty on a trial test ... his Company agree to pay as liquidated damages $200.00 for each ... million foot lbs which his pump shall fall short of the stipulated duty.

(Section 2)

Worthington horizontal high duty triple expansion plunger and ring pattern compensating cylinder type pumping engine.

Diameter of cylinders 21" + 33" + 60".

Diameter of pump plunger 29 1/2". Stroke 36".

Piston speed 23 1/2 double strokes or 141 lineal feet per minute.

Steam pressure 140 lbs.

Duty in ft lbs. per 1000 lbs. dry steam 145 millions.

Overall dimensions 26' x 14' ; 19 feet above 4feet below floor.

Price of pumping engine $59,107.00; estimated cost of buildings and foundations $8,585.00.

This pump of all the pumps offered has the slowest piston speed 141 feet per min ; the stroke is also the shortest 36". For a horizontal pump it occupies the least floor space and the cost of building and foundations as estimated is also the lowest, viz. $8585.00

Another representative of the Canadian Co. appeared before the sub-committee and stated the pump his firm was offering was the Worthington pump, well and favorably known the World over. He drew attention to the low piston speed and claimed their pumping engines to have 40% less moving parts than the fly wheel type of pumping engine and therefore less wearing parts, enabling their pump to maintain its duty better.

As instances of Worthington pump installations he cited;

4-9 ½ million galls. pumps with 18" stroke for Rotterdam, Holland

2 12 " " " " 24" " " " "

2 12 " " " " 24" " " Bordeaux, France

2 30 " " " " 24" " " Lambeth, England

2 15 " " " " 24" " " Brooklyn, N.Y.

2 12 " " " " 36" " " New York City.

The above examples were cited from among many others to show that the length of stroke of 36" is not unusual in these types of pumps.

The firm also agrees to pay as liquidated damages $200.00 for each million foot lbs. the pump shall be less than the guaranteed duty

HATHORN DAVEY & Co, Ltd LEEDS ENG

Triple expansion inverted vertical Corliss, surface condensing fly wheel type pumping engine with single acting pump plungers.

Diameter of cylinders 24" 43" & 4"

Diameter of pump plungers 27" Stroke 48"

Piston speed 23 rev per minute or 224 lineal feet per minute

Steam pressure 140 lbs

Duty in foot lbs per 1000 lbs dry steam 150 millions

Overall dimensions 29 x 14 : 22ft above floor, 22 ft below

Price of pumping engine £ 53,497 00, Estimated cost of buildings and foundations £ 11,729.00

This pump of the vertical type differs from all the other pumps of record in the large amount of vertical space required for installation, being 22 feet in height above the floor level and 22 feet in depth below floor level.

The stroke of 48 inches is the longest of any vertical pump ever made and is the reason for the great vertical length.

This makes the cost of building and foundations required much greater viz £14,729.00

Mr Hopkinson, Managing Director of the firm of Hathorn Davey & Co Leeds Eng. appeared before the sub-committee and stated his firm had built the well known vertical fly wheel type, first introduced and built by Prof Reynolds at Milwaukee in 1886

The firm of Hathorn Davey & Co have built Water Works engines as follows.

2 - pumps of 3 million (U S) galls for Leeds City Water Wks. 1892.

" " 6½ " " " " Odessa Russia " " 1900.

" " 4 " " " " Rosario South America 1904.

This last pump on trial showed a duty of 160 million foot lbs per 1000 lbs steam

They are building 3 similar engines for Birmingham Eng.

Their pumping engines are designed for great economy of steam and are supplied with complete system of reheaters The weight of their engine is 582 400 lbs which he thought was very much heavier than most of the other pumping engines offered.

The guaranteed duty is 150 millions ft lbs per 1000 lbs dry steam and should the pump not come up to that duty on a trial test, the company agree to pay as liquidated damages $200.00 for each million foot lbs which his pump shall fall short of the stipulated duty.

Sec. Cabinet de
Mr. Beaubien re. Lessee
for Steam Pump
for the Lachine Locks
Jan 27th 1905

Wm. Currie,
Clothier.

Montreal, 5th April 05

The Baker Committee
City

Gentlemen

In reply to the request of your esteemed secretary we beg to submit the following numbers of Serge & the accompanying samples for the Suits required by this Committee

No 604 Indigo dyed Blue Serge @ $1.25
This is the same serge which we supplied to you in 1903 ——
No 679 —— @ $1.00
Equal to Sample ——

Awaiting your esteemed favours we are Gentlemen

Yours truly
Wm Currie

Mrs Currie
Order for
Uniforms
14 Apr 1905

Contract
17.50.

J. NORMANDIN

MEMORANDUM.

A. NORMANDIN

Maison Normandin

GRAND MAGASIN DEPARTEMENTAL

1531 et 1533, RUE NOTRE-DAME

Téléphone Bell (Main) 3307

Montréal, 10 Avril 1905

Mr le président et les membres du Comité de l'Aqueduc

Messieurs

Nous avons l'honneur de soumissionner pour la fourniture des uniformes des inspecteurs de notre département au prix de $12.50 chacun

Vos dévoués serviteurs

J. & A. Normandin

Normandeau
Vendeur des
Uniformes
4 ap 1905.

Montréal 10 août 1905—

Messieurs le président

et les Membres du comté de l'eau

J'ai l'honneur de vous soumettre une soumission pour des habillements pour votre département. Je m'engage de faire les habit-tel que fait sur les échantillons pour le prix de $ 13.00 chaque habillement

Votre tout dévoué

Camille L'Heureux

Marchand tailleur 1511 Notre Dame

Montréal

6: L'Heureux
Tender for
Uniforms.

14th April, 1905.

41 YEARS EXPERIENCE

BELL TEL. MAIN 1146

ARMAND DOIN

MANUFACTURER OF

Hats and Furs

1584 NOTRE DAME ST.

Opposite Court House

Montreal, April 10th 1905

The Chairman

and Members of the Committee

of the Montreal Water Department.

Gentlemen;

I the undersigned, hereby agree to furnish the following articles of caps, for the Montreal Water Works, at the price mentioned below; viz

10 Caps complete, at $2.25 each.

Yours very truly,

Armand Doin

A. Dain
Tender for cops
14 april 1905

OFFICE OF
HARRY K. MARTIN
IMPORTER AND
MANUFACTURER

TELEPHONES: {OFFICE, MAIN 4129
RESIDENCE, UP 369

ROOM 44 STREET RAILWAY CHAMBERS

Montreal, April 10th 1905

To The Chairman and Members
Water Committee
Montreal

Gentlemen - Herewith I beg to tender for the supplying of 10 Uniform Caps required by your department - as follows -

Indigo Blue cloth Cap with waterproof Cover - same pattern and trimming as sample shown me but with the gold Rub^d letters M.W.W. on Band at $2.15 each - complete -

Trusting to be favored with your esteemed order

Yours very truly
Harry K Martin

N. K. Martin
Sundry Jan copy
14 Ap. 1905.

Telephone Main 1392.

Trudel & Graham,

107 Bleury Street

Hatters and Manufacturing Furriers

Montreal APR - 6 1905 190

To

The Chairman & Members
of The Montreal Water Committee.

Gentlemen

We beg to tender for the contract of supplying ten caps -- shellac body -- as per sample. for the water Dept at $2.50 Two dollars & fifty cents each

Yours very respectfully

TRUDEL & GRAHAM,

per. cs.

Trudel & Gratton
Inventaire
14 Apl 1905

City Hall

Montreal April...3rd, 1905.

AQUEDUC DE MONTREAL
REÇU
AVR 3
1905
BUREAU
SURINTENDANT

F. Dowd Esq,
Secretary,
Water Committee.

Dear Sir.-

Mr Janin made a request, before leaving Friday, for an advance of $150, for his travelling expenses.

By the resolution of your Committee, it is intended to pay ~~to pay~~ these expenses out of the money voted for the pumps.

As there arise doubts as to the legality of paying travelling expenses out of loan money, and after conferring with Mr Ethier I authorized the advance from your contingent fund.

Will you be good enough to have your minutes altered in this sense at your next meeting.

Yours truly,

L Lavallée
Cor

R. Sup. 657
expulses.
of Supt. asst
14 Apr. 1905.

Montreal April 17th, 1905.

To the Chairman and Members

of the Water Committee

Gentlemen,

In order that your Committee may conform to the resolution of Council of the 27th March 1905, and to conform with it myself, I have the honor to submit to you the following report.

Upon our specifications the Montreal Light Heat & Power Co'y has submitted a tender for furnishing electric power for pumping water at the Low Level Pumping Station; this tender which I received on the 14th instant, was submitted to you at your last meeting on the 14th inst., and with the short delay at my disposal I have studied it with my assistant and prepared the annexed statements, in order to arrive at a comparison as careful and impartial as possible of the pumping by electric power and by steam, to enable me to enlighten you on the merits of the two systems as regards their use in our service.

I must draw your attention to the fact, that in the preparation of these comparative statements annexed, we have based our coal expenses for a steam pump not of the guaranteed trial duty of the tenderers (165 millions foot lbs.) but on a duty over 30% less (110 millions foot lbs.) We have also taken into a careful consideration, based on the data furnished by the working of our present plant, of all the charges which might affect the working of the two systems, such as labor, repairs, supplies, depreciation of boilers and pumping plant etc. Although in view of the offers reducing the price of coal made by the firm of J.O. Labrecque & Co. and confirmed since by the Dominion Coal Co. for a period of five years, we might have diminished the price of coal in our calculations, we have notwithstanding maintained our former price as a factor of safety in favor of our figures.

I feel convinced that the comparative statements prepared may advantageously be submitted to all disinterested and competent examination, and they will be found to justify the conclusions which I herein submit to you.

t the outset I wish to remark that the tender of the Montreal Light Heat & Power Company contains prices on two different bases, the one for the furnishing of power at a price per Horse power, the other to furnish power at a stated price per million gallons of water pumped. We have thought fit to consider this latter basis preferable which would permit us by the use of a Venturi water meter to control as exactly as possible the use of the power furnished.

The price per Horse power is however slightly and apparently more advantageous, but in spite of the best opinions which I gathered on my recent trip to the United States of the working of the high lift centrifugal pumps, I do not believe their efficiency to be sufficiently firmly established to advise taking the risk of a contract based on reports I received of the power consumed per quantity of water pumped.

For the rate per million gallons pumped the Montreal Light Heat & Power Co. submits two different prices, one for a 20 hour service and the other for 24 hour service; if I properly understand the tender prices these two prices are exclusive and separate one from the other, that is the City would have to choose and make a contract for one or the other of these two offers, and if the 20 hour service is chosen it will happen that during the low water period when our water wheels have been stopped the City will have no recourse to choose the 24 hour service.

In order that the situation may be clearly established I would remind you that at the present time the Water consumption for the City varies from 27 to 30 million gallons daily that this water is pumped by three steam pumps of 11 and 10 and 9 millions equal to 30 millions nominal by steam power, and by 4 turbine pumps of 4, 4 1/2, 2 1/2 and 2 millions nominally, or 13 millions in all for the water wheels. For the two or three months each winter the scarcity of water in the Aqueduct is the cause that the Water Wheels are liable to be stopped completely and the total water required must be pumped by steam power, that is during this period the steam pumps must work the whole 24 hours to keep up the supply

It is especially in order to face this situation that I have requested the purchase of a new pump, and it is precisely during the same period that, from information of the representatives of the Company, the electric power is restricted and must therefore be paid for at a higher rate.

These considerations and a careful examination of the annexed statement No. 3, which shows the comparative cost of pumping by electricity and steam power for 20 and 24 hour services, will show that even in taking into consideration, with all its disadvantages, the cheaper rate of 20 hours, there is still a slight margin in favor of the addition to our present plant of a high duty steam pump and for these reasons I would recommend the adoption of it.

I have not understood that the resolution of council contained instructions for the study of a complete transformation of the pumping, changing our present Low Level pumping plant into electric pumping, but if such a study were made, it should take into account the consideration of the project of widening and enlarging the aqueduct, which I recently reported upon preliminarily, for I feel convinced that by the use of the water power available under our own devellopment, we could do our pumping much cheaper, than by any other means, and the carrying out of this project would be more in conformity in all points, with the interests of the City of Montreal.

As regards the purchase of a steam pump, if the Council should decide to choose this system, the comparative statement of the steam pumps hereto attached giving the cost of installation and operation of the different pumps offered, it is shown therein that according to the quotations of the original tenders, the pump offered by the Providence Eng.Wks, stands first. But although a careful and impartial enquiry was made by visiting different plants in the United States, some doubt still exists whether the application of high speed to pumps is entirely beyond the experimental stage, and in recommending this pump, there remains a risk that the Council should not be advised to take. Therefore the two tenders deserving of consideration by reason of the normal type pumps offered, are those of the firm Hathorn Davey & Co. of Leeds, Eng. and of the John McDougall Caledonian Iron Works, Co. of Montreal.

As the tenders were submitted when they were opened the Hathorn

Hathorn Davey pump showed an advantage over the John McDougall pump of $564.00 annually in costs of operation and interest on cost of installation, for which reason the Hathorn Davey pump was classed ahead of the McDougall pump and it was recommended to Council by a majority of the Water Committee. If the Committee and Council intend taking into account the subsequent offers of high duty made by the tenderers in question, which new offers are calculated on the annexed statement, the theoretical difference shows favorable to the pump of the John McDougall Caledonian Iron Works Co. for the sum of $61.00 yearly.

I must remark to you that these new high duty offers are guaranteed by each tenderer as follows :-

Messrs. Hathorn Davey & Co. for $200.00 per million foot lb. penalty.

Messrs The John McDougall Caledonian Iron Works Company for $1,000.00 per million foot lbs. penalty. with bonus in his favor for the same amount.

Consequently if the modified offers are to be accepted and Council obliges me to pronounce on the merits of the tenders, I can do nothing but recommend the Worthington pump furnished by the firm of John McDougall Caledonian Iron Works Co.

Respectfully submitted,

Geo. Janin

Superintendent M. & W.

MONTREAL WATER WORKS

COMPARATIVE COST OF RUNNING BY ELECTRIC POWER OR STEAM THE PROPOSED 12 MILLION GALLON PUMPS FOR HIGH DISTRICT

RECEIVED

In comparing pumping by electricity with steam pumps it must be borne in mind that pumping by electricity is under a contract for power of at least $14,600.00 per year or $40.00 per day. The protracted stoppage of the pumping for repairs, etc., would entail a loss of that amount each day, and it is therefore imperative to install a duplicate electric pump to ensure the utilization of the full advantages of the plant.

	ELECTRIC	STEAM
PLANT'S COST -		
Price of pumps { 2 x $15,000 - Electric; 1 x $54,000 - Steam	$ 32,000.00	$ 54,000.00
Price of buildings and foundations	7,500.00	12,000.00
Venturi meter for electric pump	2,500.00	
Total cost of installation	$ 42,000.00	$ 66,000.00
COSTS EXCLUSIVE of ELECTRIC POWER or COAL		
Running 2 engineers & oilers @ $1000 & $500	$ 3,000.00	$ 3,000.00
Supplies, oils &c.	150.00	450.00
Repairs at 2%	840.00	1,320.00
Depreciation on Machinery 4%	1,380.00	2,160.00
Interest charges on cost of installation 4%	1,680.00	2,640.00
Annual charges exclusive of power or coal.	$ 7,050.00	$ 9,570.00
Cost per day of 365	$ 1,931	$ 2,608
	19.31	26.08
Cost per million gallons if pumps worked	1.61	2.18
24 hours	0.161	0.218
Cost per million gallons for electric pump working 20 hours.	1.93	
	0.193	
Cost of electric power per million gallons for 20 hours pumping.	$ 5.00	
Cost of electric power per million gallons for 24 hours pumping	$ 7.00	

Cost of power for coal for operating. The quantity of coal required is based on a station duty of 110 million ft. lb. per 1,000 lbs. of steam which is over 30 % less than the guaranteed duty of the pumps offered, and the boiler efficiency is rated on an 8 to 1 evaporative basis; this will give 1.18 tons coal per million gallons pumped which at the price of $4.50 per ton delivered on the grate bars and including all charges of handling, removing ashes, depreciation and repair of boilers, as set forth in annexed statement will amount to per million gallons $ 5.31

Cost of coal delivered on grate bars for operating new 12 million gallons high duty pumping engine.

The stated duty of 110 millions ft lbs. per 1000 lbs. steam and an ordinary boiler evaporative efficiency of 8 lbs. of water per pound of coal, there will be required to pump 1 million gallons 1 18 tons of coal or 14 16 tons per day, equal to 5,168 tons per year.- (See III)

Coal delivered in shed costs $3 65 per ton.

DAILY COST -

14 16 tons at $ 3.65 =		$ 51.69
Two firemen (one by day and one by night with a helper 6 hours each shift, can easily handle 15 tons of coal daily, and 20 hours of a coal passer daily is ample to take this quantity of coal out of the shed every day, besides attending to the removal of the ashes as usual.		
3 Firemen 12 hours ea. at .17¢ =	$ 6.12	
Coal passer 20 hours " .17¢ =	3.40	9.52
Depreciation and repair of boilers 5% of $15,000.- = $900.00 per year = per day		2.47
Total cost per day		$ 63.68

Cost of coal per ton delivered on grate bars $\frac{63.68}{14\ 16}$ = $4.50

ELECTRIC PUMPING

To pump 30 millions gallons per day - with electric pump of 12 million

24 HOUR SERVICE

1 -	12 mill. galls	electric	$ 7.17	$ 86.04
2 -	18 "	" Steam	9.00	162.00
	30			$ 248.04

$\frac{248.04}{30}$ = $ 8.27 per million

24 HOUR SERVICE

1 -	10 mill. galls.	electric	$ 5.20	$ 52.00
1 -	20 "	" Steam	9.00	180.00
	30			$ 232.00

$\frac{232}{30}$ = $ 7.74 per million

STEAM PUMPING

To pump 30 million gallons per day with new high duty 12 million gallon pump.

24 HOUR SERVICE

1 -	12 mill. galls	high duty steam	$ 5.53	$ 66.36
2 -	18 "	" present plant	9.00	162.00
	30			$ 228.36

$\frac{228.36}{30}$ = $ 7.62 per million

POMPAGE ELECTRIQUE.

Pour pomper 30 millions de gallons per jour avec une pompe électrique de 12 millions de gallons.

SERVICE DE 24 HEURES.

12 millions gall. par électricité		$8.61	$ 103.32
18 do do do Vapeur.		9.00	162.00
30			$ 265.32

$$\frac{265.32}{30} = \$\ 8.85 \text{ par mill. de gall.}$$

SERVICE DE 25 HEURES.

10 millions gall. par électricité		$6.93	$ 69.30
20 do do do Vapeur.		9.00	180.00
30			$ 249.30

$$\frac{249.30}{30} = \$\ 8.31 \text{ par mill. de gall.}$$

POMPAGE PAR VAPEUR.

Pour pomper 30 millions de gallons par jour avec l'addition d'une nouvelle pompe à haut rendement, de 12 millions de gallons.

SERVICE DE 24 HEURES.

12 millions de gallons haut rendement		$7.49	$ 89.88
18 do do do ancien plant		9.00	162.00
30			$ 251.88

$$\frac{251.88}{30} = \$\ 8.40 \text{ par mill. de gall.}$$

Montréal, le 17 avril, 1905.

A M. le Président et à MM. les Membres
de la Commission de l'Aqueduc.

Messieurs,

Pour vous permettre de vous conformer autant que possible, et de me conformer moi-même, à la résolution du conseil en date du 27 mars 1905, j'ai l'honneur de vous soumettre le rapport suivant:-

D'après un cahier de charges dressé par nous, la Cie Montreal Light, Heat and power a fait une soumission pour la fourniture de la force motrice destinée au pompage de l'eau à la station du bas niveau; cette soumission que j'ai reçue le 13 courant vous a été communiquée lors de votre dernière séance en date du 14 courant et pour me conformer à vos ordres, en dépit du court délai qui m'était accordé, j'ai étudié, de concert avec mon assistant, cette soumission; et nous avons dressé différents tableaux ci-annexés à l'effet d'établir aussi soigneusement et impartialement que possible la comparaison entre le pompage par force électrique et par vapeur de sorte qu'il me fut possible de vous éclairer sur le mérite des deux systèmes en ce qui concerne leur usage pour notre service. Je crois devoir vous faire remarquer que dans l'établissement de ces tableaux comparatifs, nous avons basé la dépense de charbon pour une pompe à vapeur non pas sur le rendement d'épreuve garanti par les soumissionnaires (160 Millions de livres pieds) mais

sur un rendement de 30% moindre (110 millions). Nous avons également tenu compte de toutes les charges qui peuvent incomber au fonctionnement des deux systèmes, telles que main-d'oeuvre, réparations, fournitures, dépréciation des chaudières aussi bien que des pompes etc. Bien que d'après l'offre de J. O. Labrecque et Cie confirmé depuis, pour 5 années, par la Cie Dominion Coal, le prix du charbon eut pu être diminué dans nos calculs, nous avons conservé l'ancien prix, comme mesure de sûreté en faveur de nos chiffres.

Je suis convaincu que nos états comparatifs peuvent subir avantageusement tout examen désintéressé et compétent et qu'ils justifieront les conclusions que je vais vous soumettre. Au préalable, je vous ferai remarquer que la soumission de la Cie nouveau Light, Heat and Power comporte deux différentes bases de prix, l'une pour la fourniture du pouvoir à un taux fixe par force, l'autre à un taux fixe par millions de gallons pompés.

Nous avons cru devoir considérer de préférence cette dernière base qui pourrait permettre, par l'usage d'un compteur approuvé, de contrôler aussi exactement que possible l'emploi du pouvoir fourni.

Le taux par force est, en apparence un peu plus bas, mais malgré la meilleure opinion que, dans ma récente visite aux Etats-Unis, je me suis faite sur le fonctionnement des nouvelles pompes centrifuges à haute pression; je ne crois pas la preuve de leur efficacité constante assez établie encore pour conseiller le risque de faire un contrat basé sur le rapport de leur dite efficacité avec la quantité de pouvoir fourni.

Pour le taux par millions de gallons, la Cie Montreal Light, Heat and Power soumet deux prix différents: l'un pour un service de 20 heures et l'autre pour un service de 24 heures; si j'ai bien compris la soumission en question, ces deux offres sont exclusives l'une de l'autre, c'est-à-dire que la cité devra faire un contrat pour l'une ou l'autre de ces deux offres et que, si elle choisit le service de 20 heures, il arrivera que durant la période où nos pompes actionnées par la force hydraulique de notre aqueduc cessent de fonctionner, elle n'aura pas le choix d'un service de 24 heures.

Pour que le situation soit clairement établie, je vous rappelle que la consommation de l'eau varie actuellement entre 27 et 30 millions par 24 heures, que cette eau est pompée par 3 pompes à vapeur de 11, 10 et 9 millions de gallons de capacité, soit, nominalement 30 millions par vapeur, et par 4 pompes actionnées par la force hydraulique (turbines) de 4, 4 1/2, 2 1/2 et 2 millions de gallons de capacité soit nominalement 13 millions par force hydraulique. Durant 2 ou 3 mois, chaque hiver, le défaut d'eau dans l'aqueduc expose nos turbines à s'arrêter successivement et même totalement; alors toute l'eau doit être pompée par vapeur, c'est-à-dire que durant cette période, il faut pouvoir disposer de toutes nos pompes à vapeur et ce, durant les pleines 24 heures. C'est du reste, surtout pour faire amplement face à cette période que j'ai demandé l'achat d'une nouvelle pompe et c'est précisément à cette même époque que, d'après les propres informations du représentant de la Cie, la force électrique est restreinte et doit par conséquent être payée plus cher.

Ces considérations et l'examen particulier du tableau ci-annexé qui résume le coût comparatif du pompage par force électrique et par vapeur pour le service de 20 et 24 heures, établissent avec ses désavantages, le taux le plus réduit (celui de 20 heures) il reste encore une petite marge en faveur de l'addition, au "plant" actuel d'une pompe à vapeur à haut rendement et que, pour ces raisons, je crois l'adoption de cette mesure, recommandable.

Je n'ai pas critiqué la résolution du conseil comportant d'instructions pour l'étude d'une transformation complète de l'électricité du "plant" actuel du bas niveau, mais si telle étude devait être faite elle devrait comporter la considération du projet d'agrandissement de l'aqueduc dont je vous ai soumis présentement les grandes lignes, car je reste convaincu que l'utilisation de la force hydraulique disponible par nos propres moyens coûterait meilleur marché que l'emploi de la force électrique et que l'exécution de ce projet serait plus conforme à tous points aux intérêts de la cité de Montréal, et à ce qui concerne l'achat d'une pompe mue par la vapeur, si le conseil décide de choisir ce système, le tableau comparatif ci-joint du coût d'installation et d'opération des différentes pompes offertes montre que suivant les quotations reçues que déduites des commissions primitives, la pompe offerte par la Providence Engineering Works occupe le premier rang. Mais malgré l'enquête soigneuse et impartiale faite en visitant différentes "plants" aux Etats-Unis, il ne ressort pas clairement que l'application d'une notion très rapide aux pompes est entièrement sortie de la période expérimentale et il reste,

pour recommander cette pompe, un risque que le conseil ne devrait pas être avisé de prendre. En conséquence, les deux soumissions qui méritent considération en raison du type normal de pompes qu'elles offrent sont celles de la maison Davie, de Leeds Angleterre et de la maison J. McDougall, Caledonian Iron Works de Mont

Telles que les soumissions se lisaient lors de leur ouverture, la pompe Hathorn Davie, présentant un avantage sur la pompe J. McDougall de $564. pour les charges annuelles de son fonctionnement et de l'intérêt du capital engagé.

Sur cette base Hath. D. était classée avant celle de la Cie J. McD. C. I. W. et c'est ce qui a du la faire recommander par la majorité de la commission de l'aqueduc.

Si la commission et le conseil entendent prendre en considération les offres subséquentes de plus haut rendement faites par les deux soumissionnaires précités, lesquelles offres nouvelles sont calculées dans les tableaux ci-jointe, la différence revient en faveur de la pompe J. McDougall, pour un montant duquel $61.

Je me crois obligé de faire remarquer qu'ces nouvelles offres sont garanties par chaque soumissionnaires de la façon suivante:

Hathorn Davey and Co. $200. unités

J. McDougall Caledonian Iron Works $1000. do

avec bonus en sa faveur de même sens.

En conséquence si les nouvelles offres étaient acceptées le conseil m'obligeant à me prononcer sur le mérite des soumissions, je ne pourais que recommander l'achat de la pompe Worthington fournie par la maison J. McDougall. C.I.W. Cal. Iron Wks. Co.

Respectueusement soumis.

AQUEDUC DE MONTREAL

Prix comparatif du pompage par force électrique et par vapeur, avec des pompes telles que proposées, de douze millions de gallons par 24 heures

NOTA: - En comparant le pompage par électricité avec les pompes à vapeur, il faut tenir compte que le pompage par électricité se ferait d'après un contrat pour une force motrice coûtant pas moins de $14,600. par an ou $40. par jour. Un arrêt prolongé du pompage pour réparations etc, entraînerait la perte de ce montant chaque jour, en conséquence il serait indispensable de pourvoir à l'installation d'un "plant" électrique en duplicata pour assurer l'utilisation continue des avantages du dit "plant".

COUT D'ETABLISSEMENT	Electrique	à Vapeur
Prix des pompes 2 x $16,000.- Electriques, 1 x $54,000.- Vapeur	$32,000.00	$ 54,000.00
Prix des bâtiments et des fondations:-	7,500.00	12,000.00
Compteur Venturi pour pompes électriques	2,500.00	----------
Coût total de l'installation:	$42,00.00	$ 66,000.00
Fonctionnement des pompes:		
2 mécaniciens et huileurs (1 jour et une nuit chaque) à $1000. et $500	3,000.00	$ 3,000.00
Fourniture, huile etc.	150.00	400.00
Reparations à 2%.	840.00	1,320.00
Dépréciation sur la machinerie 4%	1,380.00	2,160.00
Intéret sur le cout de l'installation à 4%	1,680.00	2,640.00
Charges annuelles à l'exclusion de la force motrice, électrique ou à vapeur.	$ 7,050.00	$ 9,520.00

Coût par jour : 365 jours	$ 1 931.00	$ 2.603.00
	19.31	26.08
Coût par million de gallons si la pompe travaille pendant 24 heures	0,161	2,18
	1.61	
Coût par million de gallons si la pompe travaille pendant 20 heures	0,193	
	1.93	

Prix de la force électrique par million de gallons par

20 heures — 6.00

do do do 24 heures — 7.00

Coût de la force motrice à vapeur

La quantité nécessaire de charbon pour faire fonctionner la nouvelle pompe à vapeur est basée sur un rendement pratique de 110 millions de livres pieds de vapeur, lequel rendement est à peu près de 30% au-dessous du rendement garanti par les soumissionnaires des pompes; l'efficacité des chaudières est basée à 8 pour un d'évaporation, ce qui donne 1.16 tonne de charbon par million de gallons pompés qu au prix de $4.50 par tonne livrée sur les grils, compris toutes les charges de main-d'oeuvre, sortie des cendres, dépréciation et réparation des chaudières comme il est établi dans le tableau ci-annexé, revient par million de gallons pompés au prix de — 1.32

PRIX DU CHARBON LIVRE SUR LES GRILS POUR LE FONCTIONNEMENT DE LA NOUVELLE POMPE A HAUT RENDEMENT DE 12 MILLIONS DE GALLONS.

Au rendement de 110 millions de livres-pieds par 1,000 livres de charbon et avec une évaporation ordinaire de 8 livres d'eau par livre de charbon, il faudra, pour pomper 1 million de gallons d'eau 1.18 tonne de charbon ou 14.16 tonnes par jour, soit 5168 tonnes par an. (voir tableau III.)

Prix par tonne de charbon livré dans le hangar $ 3.65

C O U T Q U O T I D I E N

14.16 tonnes à $3.65			$ 51.69
2 chauffeurs (un de jour et un de nuit) avec un aide pendant 6 heures à chaque équipe peut aisément manier 15 tonnes de charbon, et 20 heures de passeur de charbon par jour sont amplement suffisantes pour sortir cette quantité du hangar et sortir aussi les cendres, comme cela a lieu actuellement à la station du bas niveau:			
3 chauffeurs, 12 heures chaque	@	17¢	$ 6.12	
Passeur de charbon, 20 heures	@	17¢	3.40	9.52
Dépréciation et réparation des chaudières:				
6% de $15,000 $900.00 par an, soit par jour				2.47
Coût total par jour				$ 63.68

Coût du charbon par tonne $\frac{63.68}{14.16}$ $ 4.50

POMPAGE ELECTRIQUE.

Pour pomper 30 millions de gallons par jour avec une pompe électrique de 12 millions de gallons: -----

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SERVICE DE 24 HEURES.

12 millions gall. par électricité	$ 7.17	$ 86.04
18 do do do vapeur	9.00	162.00
30		$ 248.04

$$\frac{248.04}{30} = \$8.27 \text{ par mill. de gall.}$$

SERVICE DE 20 HEURES.

10 millions gall. par électricité	$ 5.20	52.00
20 do do vapeur	9.00	180.00
30		$ 232.00

$$\frac{232}{30} = 7.74 \text{ par mill. de gall.}$$

POMPAGE PAR VAPEUR.

Pour pomper 30 millions de gallons par jour avec l'addition d'une nouvelle pompe à haut rendement, de 12 millions de gallons.

SERVICE DE 24 HEURES.

12 millions de gallons haut rendement	$5.53.	$ 66.36
18 do do ancien plant	9.00	162.00
30		$ 228.36

$$\frac{228.36}{30} = \$ 7.62 \text{ par mill. de gall.}$$

Montreal April 17th 1905.

The Chairman and Members

of the Water Committee

In order that your Commission may conform to the resolution of the 27th March 1905, and to conform with it myself, I have the honor to submit to you the following report.

Upon our specifications the Montreal Light Heat & Power Co. submitted a tender for furnishing electric power for pumping water at the low level Pumping Station, this tender which I received on the 4th instant, was submitted to you at your last meeting on the 14th inst. In the short delay at my disposal I have studied it with my assistants and prepared the annexed statements, in order to arrive at a conclusion as careful and impartial as possible of the pumping by electric power as regards their use in our service.

I must draw your attention to the fact, that in the preparation of these comparative statements annexed, we have based our coal expenses on the duty of the pumps not on the guaranteed trial duty of the tenderers (150 millions foot lbs.) but on a duty over 30% less (110 millions foot lbs.). We have also taken into a careful consideration, based on the data resulting from the working of our present plant, of all the charges which enter into the working of the two systems, such as labor, repairs, supplies, renewal of boilers and pumping plant etc. Although in view of the fact of the reduction in the price of coal made by the firm of J. O. Labrecque & Co. confirmed since by the Dominion Coal Co. for a period of five years we might have diminished the price of coal in our calculations, we have not done so, intending maintained our former price as a factor of safety in favor of your figures.

We feel convinced that the comparative statements prepared may advantageously be submitted to all disinterested and competent examinations and will be found to justify the conclusions which I herein submit to you.

At the outset I wish to remark that the tender of the Montreal Light Heat & Power Company contains prices on two different bases, the one for the furnishing of power at a price per horse power, the other to furnish power at a stated price per million gallons of water pumped. We have thought fit to consider this latter basis preferable which would permit us by the use of a Venturi water meter to control as exactly as possible the use of the power furnished.

The price per horse power is however slightly and apparently more advantageous, but in spite of the best opinions which I gather on my recent trip to the United States on the working of the high lift centrifugal pumps, I do not believe their efficiency to be sufficiently firmly established to advise taking the risk of a contract based on reports received of the power consumed per quantity of water pumped.

For the rate per million gallons pumped the Montreal Light Heat & Power Co submits two different prices, one for a 20 hour service and the other for 24 hour service; if I properly understand the tender prices these two prices are exclusive and separate one from the other, that is the City would have to choose and make a contract for one or the other of these two offers, and if the 20 hour service is chosen it will happen that during the low water period when our water wheels have been stopped the City will have no recourse to choose the 24 hour service.

In order that the situation may be clearly established I would remind you that at the present time the water consumption for the City varies from 27 to 30 million gallons daily, but this water is pumped by three steam pumps of 11 and 10 and 9 millions equal to 30 millions nominal by steam power, and by 4 turbine pumps of 4, 4, 2 1/2 and 2 millions nominally, or 13 millions in all for the water wheels. For the two or three months each winter the scarcity of water in the Aqueduct is the cause that the Water Wheels are liable to be stopped completely and the total water required must be pumped by steam power, that is during this period the steam pumps must run the whole 24 hours to keep up the supply.

It is especially in order to face this situation that I have recommended the purchase of a new pump, and it is precisely during the same period that, from information of the representatives of the Company, the electric power is restricted and must therefore be paid for at a higher rate.

These considerations and a careful examination of the annexed statement No. 3, which shows the comparative cost of pumping by electricity and steam power for 20 and 24 hour services, will show that even in taking into consideration with all its disadvantages the cheaper rate of 20 hours, there is still a slight margin in favor of the addition to our present plant of a high duty steam pump and for these reasons I would recommend the adoption of it.

I have not understood that the resolution of council contained instructions for the study of a complete transformation of the pumping, changing our present Low Level pumping plant into electric pumping, but if such a study were made, it should take into account the consideration of the project of widening and enlarging the aqueduct, which I recently reported upon preliminarily, for I feel convinced that by the use of the water power available under our own development, we could do our pumping much cheaper, than by any other means, and the carrying out of this project would be more in conformity in all points, with the interests of the City of Montreal.

As regards the purchase of a steam pump, if the Council should decide to choose this system, the comparative statement of the steam pumps hereto attached giving the cost of installation and operation of the different pumps offered, it is shown therein that according to the quotations of the original tenders, the pump offered by the Providence Eng. Wks. appears first. But although a careful and impartial enquiry was made by visiting different plants in the United States, some doubt still exists whether the application of high speed to pumps is entirely beyond the experimental stage, and in recommending this pump, there remains a risk that the Council should not be advised to take. Therefore the two tenders deserving of consideration by reason of the normal type pumps offered, are those of the firm Hathorn Davey & Co. of Leeds, Eng. and of the John McDougall Caledonian Iron Works, Co. of Montreal.

As the tenders were submitted when they were opened the Hathorn

...p showed an advantage over the John McDougall pump of $564.00 ...ly in costs of operation and interest on cost of installation, for ...reason the Hathorn Davey pump was classed ahead of the McDougall ... and it was recommended to Council by a majority of the Water Com... ...ee. If the Committee and Council intend taking into account the ...bsequent offers of high duty made by the tenderers in question, which new offers are calculated on the annexed statement, the theoretical difference shows favorable to the pump of the John McDougall Caledonian Iron Works Co. for ... or $61.00 yearly.

I must remark to you that these new high duty offers are guaranteed ... each tenderer as follows :-

...sers Hathorn Davey & Co. for $200.00 per million foot lb. ...ally

...sers The John McDougall Caledonian Iron Works Company for $1,000.00 ...million foot lbs penalty with bonus in his favor for the same

Consequently if the modified offers are to be accepted and Council obliges me to pronounce on the merits of the tenders, I can do nothing but recommend the Worthington pump furnished by the firm of John McDougall Caledonian Iron Works Co

Respectfully submitted,

Geo. Janin

Superintendent W & W ...

[illegible] WATER WORKS

COMPARATIVE COST OF PUMPING BY ELECTRIC POWER OR STEAM [illegible]

PROPOSED 12 MILLION GALLON PUMP THIS WORK FOR DAILY [illegible]

In comparing pumping by electricity with steam pumps it must be borne in mind that pumping by electricity is under a contract for power of at least $14,600.00 per year or $40.00 per day. The protracted stoppage of the pumping for repairs, etc., would entail a loss of that amount each day, and it is therefore imperative to install a duplicate electric pump to ensure the utilization of the full advantages of the plant.

	ELECTRIC	STEAM
COST		
Price of pumps { 2 x $16,000 - Electric; 1 x $54,000 - Steam	$ 32,000.00	$ 54,000
Cost of buildings and foundations	7,500.00	12,000
Cost of meter for electric pump	2,500.00	
Total cost of installation	$ 42,000.00	$ 66,000
COSTS EXCLUSIVE of ELECTRIC POWER or COAL		
Running 2 engineers @ $1000 & $500	$ 3,000.00	$ 3,500
Supplies, oils &c	150.00	200
Repairs at 2%	840.00	1,320
Depreciation on Machinery 4%	1,380.00	2,160
Interest charges on cost of installation 4%	1,680.00	2,640
Annual charges exclusive of power or coal.	$ 7,050.00	$ 9,820
Cost per day ÷ 365	$ 19.31	26.08
Cost per million gallons if pumps worked 24 hours.	1.61	2.18
Cost per million gallons for electric pump working 20 hours.	1.93	
Cost of electric power per million gallons for 20 hours pumping.	$ 5.00	
Cost of electric power per million gallons for 24 hours pumping.	$ 6.00	

Pour pomper 24 millions de gallons par jour avec une pompe électrique de 12 millions de gallons

[illegible] millions gall. par électricité [illegible] $ 103.50

[illegible] de valeur 9.00 162.00

$ 265.50

[illegible] = $ 8.85 par mill. de gall.

Pour pomper 24 millions de gallons par jour avec une pompe à vapeur de 12 millions de gallons

[illegible] millions gall. par vapeur [illegible] $ 69.30

[illegible] de valeur 9.00 180.00

$ 249.30

[illegible] = $ 8.30 par mill. de gall.

Pour pomper 24 millions de gallons par jour avec l'addition d'une nouvelle pompe à haut rendement de 12 millions de gallons

12 millions de gallons haut rendement 37.49 $ 89.88

12 [illegible] de valeur 9.00 162.00

251.88

251.88 = $ 8.40 par mill. de gall.

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Supts. Repair.

re. Sinder of the
Maurice Light
Near Dance Co.
re. Three Rivers Comp.
1905

[illegible] for operating [illegible]

[illegible] lbs. per 1000 lbs. steam and [illegible] evaporative efficiency of 8 lbs. of water per pound of [illegible] will be required to pump 1 million gallons 1.15 tons of coal [illegible] 15 tons per day, equal to [illegible] tons per year. (Sec II)

Coal delivered in shed costs $3.65 per ton

D A I L Y C O S T

14.15 tons at $ 3.65 = $ 51.69

[illegible] firemen (one by day and one by night with [illegible] per 8 hours each shift) can easily handle [illegible] tons of coal daily, and 20 hours of a coal passer daily is ample to take this quantity of coal out of the shed every day, besides attending to the removal of the ashes as usual.

3 Firemen 12 hours each at 17¢ = $ 6.12

1 coal passer 20 hours " 17¢ = 3.40 9.52

Depreciation and repair of boilers

per cent $15,000. = $900.00 per year = 2.47 per day

Total cost per day $ 63.68

Cost of coal per ton delivered on grate bars $\frac{63.68}{14.15} = 4.50$

Cost of power for coal fired operating. The quantity of coal required is based on a station duty of [illegible] million ft lb per 1,000 lbs of steam which is over 30 % less than the guaranteed duty of the pumps ordered, and the boiler efficiency is rated on an 8 to 1 evaporation basis; this will give 1.16 tons coal per million gallons pumped which at the price of $2.50 per ton delivered on the [illegible] bars and including all charges of handling, removing ashes, depreciation and repair of boilers, as set forth in annexed statement will amount to per million gallons $2.91