

supplied from
s are enlarged,
than 1,000
to erect pump-
St. Andrew's
A on the plan,
and near where
off. The level
166 feet. The
Shaffroth's Hill
elevated 249 feet
that the high
made 255 feet
t, and the ca-
gallons, requir-
5 feet depth of

ervoir to pump
of the head of
including the
miles of rising
come will not
feet in height.
n, is to raise
twelve hours.
t gallons per
0 lbs. is equal
foot high per
d one-fifth for
ery, making
foot high per
0 pounds, the
ives 304 horse
or the engine,
for contingen-

Engine," so
preferred for
ubtly, the
quantity has
superiority is
all scale. In
is out off at
red to expand
ers, cylinders
ed to prevent
from the in-
ing the fount
an ordinary
mes that of a
land some of
ly 1,000,000
by the con-
l, but their
exceed two-

the duty of se-
water, reduced
by the con-

	Pounds of water raised 1 foot by 1 lb. of coal.
East London water works single acting Cornish engine,	944,000
Do. do. Boulton and Watt condensing,	416,000
Average duty of Cornish engines, Brown's Reporter, 1855,	622,000
Belleville engine, Jersey City Water Works, Cornish,	628,233
Brooklyn engine, N Y.,	601,407
Hartford, Crank,	614,426
Cambridge, double cylinder,	675,746
Spring Garden, Philadelphia, Cornish,	589,953
Pittsburg water works, 1852, high pressure,	178,000
Detroit, high pressure,	155,000

In the following estimate I have allowed
for a condensing engine of 35 horse power to
do the regular work, and also allowed for an
auxiliary high pressure engine of the same
power to be in readiness in case of repairs
being necessary on the other. As the same
amount of duty cannot be performed by the
small engine required for the Halifax works,
as with those of larger power, I will assume
it at 400,000 lbs. raised one foot high per lb.
of coal, equal to 600,000 gallons of 10 lbs.
raised 100 feet with 1500 pounds of coal.

ESTIMATE OF COST

of Pumping by Steam Power into a Reservoir on Shaffroth's Hill.

Engine House and Coal Shed,	\$6000 00
Dwelling House for Engine men,	1500 00
Engine and Pumps, 35 horse- power, condensing,	8500 00
Do 35 do do high-pressure,	4500 00
Inlet pipe, and reservoir tank,	1000 00
7920 feet of rising main, at \$3 00	23,760 00
2000 do of return service main at \$2 50	5,000 00
Six Stop Cocks, at \$100	600 00
Reservoir on Shaffroth's Hill, including land, capacity three million gallons,	10,000 00
	\$60,860 00

Cost of Working Engine.

One Engine Worker, 365 days, at \$1 75,	\$638 75
One Fireman, 365 days, at \$1.,	365 00
Oil, Tallow, and Cot- ton waste,	150 00

Wear and tear of ma- chinery and build- ings,	400 00
Coal, 1500 pounds per day will amount in 365 days, to 245 tons, but as the full power of the Engine will not be required for many years, I will allow 2-3 or 163 1-3 tons, (equal to rais- ing 400,000 gallons per day) at \$4 50 per ton,	735 00
	\$2288 75

And \$2288 75 is equal to the interest at six per cent. on a capital of	38,146 00
	99,006 00
Add distribution, as per esti- mate, for Ragged Lake,	17,850 00
	\$116,856 00

Another plan has suggested itself since I ex-
amined the ground. It is to take advantage
of the stream running from the Chain Lakes
to supply Hosterman's Mills, and pump up
water into a stand pipe, from which, by gra-
vitation, it would be discharged into a Reser-
voir on Shaffroth's Hill. At the time I ex-
amined the Chain Lakes there were from 400
to 500 cubic feet per minute of water running
from them. This, with an over-shot pitch
back water wheel of 24 feet diameter and 6
feet bucket, would be sufficient to raise 5 to
600,000 gallons per day to the height of 100
feet, about 74 gallons being required on the
wheel to raise one-gallon to the top of the
stand pipe.

It is probable, however, that there would
be a scarcity of water during the summer
months, but which, possibly, could be sup-
plied by raising the Long Lake. For every
foot Long Lake is raised it will store about
100 million of gallons, which is sufficient to
raise 36,500 gallons per day, 100 feet high,
for twelve months.

The first cost of the works on this plan
would not probably vary much from pumping
by steam, but the annual expenditure would
be considerably reduced, and there would be
no question as to the quality of the water.
The practicability of the plan depends on the
amount of water running from the Chain
Lakes in a dry time, which I have not suffi-
cient data to determine.