[Report 1954] / Sewage Works Manager, Motherwell & Wishaw Burgh.

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BURGH OF MOTHERWELL AND WISHAW

ANNUAL REPORT

OF THE

SEWAGE WORKS MANAGER

FOR THE

Year ended December 31st, 1954

DONALD H. BARRACLOUGH,
F.I.S.E., M.Inst.S.P., M.R.San.I.

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STREETS AND DRAINAGE COMMITTEE
(1954/55)

Provost C. Donnelly

Police Judge T. Wilson (Convener)

Bailie D. Wilson (Vice-Convener)

Bailie D.C. Cross

Bailie P. Duffy

o Police Judge T. Tennant

ß Councillor S. Rice

Councillor A. Crichton

Councillor J. Haig

Councillor F. McCluskey

x Councillor T. Train

* Bailie A. Howson

o Died August 24th, 1954.

ß To May, 1954.

x From October, 1954.

* From May, 1954.

SEWAGE WORKS DEPARTMENT,
CLYDE PARK SEWAGE WORKS,
MOTHERWELL.

March, 1955.

Mr. Chairman and Gentlemen,

I have the honour to submit my Annual Report for the year ended December 31st, 1954.

The year has been one of the wettest for some time and the total rainfall recorded at Clyde Park Works was 42.04 inches. In consequence of the prolonged wet weather the flow of sewage to the three sewage treatment works has been high and storm overflows have operated for considerable periods. High sewage flows, caused by heavy rainfall, produced difficulties in removing suspended matters due to the high velocity of flow through the plant, especially where the plant is overloaded as is the case at Carbarns Works.

The total volume of sewage reaching the various works is not recorded, but as the overflows have operated for long periods the total volume must have been a record quantity. The volumes passed through the treatment plants for full treatment are measured, and the aggregate for the year amounted to just over 2,490 million gallons, or an average of 6,824,000 gallons a day.

CARBARNS WORKS

Total volume of sewage treated - 1,264,996,000 gallons
Average per day - 3,465,742 "

The Carbarns Works is the largest of the three sewage works serving the Burgh, and generally serves the Wishaw and Craigneuk areas. The sewage is treated by screening, grit removal, primary sedimentation, diffused air activated sludge treatment, and final settlement, before being discharged to the River Clyde which, in this part, is a Trout fishing river and it is, therefore, essential to produce a good standard of effluent. Provision is made for the treatment of storm water by sedimentation, and sludge is subjected to heated digestion followed by air drying on beds, or in lagoons, the gas produced in the digestion process being utilised in duel fuel engines for the generation of electricity for works power purposes.

This works is already overloaded and to meet the continued development within the drainage area a long term programme of extension of the works has been prepared. During the year under review, progress has been made with the early stages of the extension of the works, the re-diffusion of the aeration tanks being completed. Plans were completed and the contract awarded for the construction of a new sludge digestor, and progress was made in the planning of new sludge drying beds.

As the result of an unusually heavy rainfall on the 14th August, 1954, a large quantity of grit and stones was received at the works in the raw sewage. The quantity was sufficient to cause breakdown of the grit removal mechanism, which had to be dismantled and repaired by our works staff, being put back into service in six days.

Digestion of the sludge has been rather erratic and the gas yields have been rather low, although some improvement took place towards the end of the year. The provision of a new digestor should give a higher yield of gas for use in the engines and thus reduce the quantity of oil fuel used. Like most sewage works which depend on open air drying of the digested sludge, the wet season has caused serious trouble and only the availability of lagoon area provided the means of disposal of the digested sludge. Even so, the lagoons were taxed to capacity and great care was necessary to make available the capacity required, and some extension of the area had to be carried out.

CLYDE PARK WORKS

Total volume of sewage treated - 911,173,000 gallons.
Average per day - 2,496,000 "

The Clyde Park Sewage Works serves the area of Motherwell which is situated in the watershed of the River Clyde, the treatment processes being screening, grit removal, pre-aeration, sedimentation, diffused air activated sludge followed by final settlement before discharge to the River Clyde. Stormwater tanks are provided to give settlement of stormwater, and the sludge is treated in a heated digestor and then dried on open, underdrained beds.

This works has produced consistently good effluents throughout the year, and no serious operational difficulties have occurred. There has however been a continuance of the nuisance caused by the production of foam on the surface of the aeration tanks, due to the presence in the sewage of the synthetic detergents. This foam creates an unsightly appearance on the walls and paths surrounding the plant, and, on occasions, it has been carried by the wind outside the works. Sprays have been erected on the aeration plant to break down the foam as quickly as possible, but at times these have been inadequate.

Sludge digestion has been satisfactory throughout the year, and gas yields have been good, with quite a surplus being burnt in the open. Drying of the digested sludge on the open beds was delayed by the wet weather conditions, but it was possible to keep sufficient beds in hand to meet requirements.

COURSINGTON WORKS

Total volume of sewage treated - 314,708,000 gallons.
Average per day - 862,000 "

The oldest and smallest of the Burgh's Sewage Works at Coursington serves the area of Motherwell which lies in the watershed draining to the

South Calder Water. The treatment provided is a hand cleaned bar screen, two detritus or grit chambers followed by sedimentation tanks, and percol-:ating filters. There are no final settling tanks and the effluent is discharged to the South Calder Water, downstream of the weir at Motherwell Mill.

The effluents produced at this works are unsatisfactory due partly to the age of the plant but mainly to the presence in the sewage of a high proportion of crude gas liquor. On a few occasions small discharges of tar and tar oils have been received at the works, but these have been much less in quantity and frequency than formerly.

Sludge disposal facilities are crude and limited to a small irregular undrained area on to which the raw sludge is pumped and allowed to dry. Owing to the lack of space it has not been possible to completely clean out the sedimentation tanks and, in order to increase the area for sludge drying, a breeze bed was constructed on top of the covered sedimentation tanks. This provided useful extra area and it was then possible to thoroughly clean out the two sedimentation tanks. The dried sludge from this plant is transported to the coup adjacent to the Clyde Park Works, there being no space available at the Coursington Works.

As this works is to be reconstructed in the near future, only the minimum of maintenance work and plant renewal has been undertaken.

The use of gamhexane for control of flies has been continued during the summer period and no serious nuisance has occurred. One complaint was received from a resident in the vicinity and the fly "anisopus fenestralis" was responsible for this complaint, but the number emerging from the filters at the time was low, and the flies may have come from some other source.

LABORATORY AND EXPERIMENTAL WORK

The work in the laboratory continues to expand, and there are many problems which require investigation with a view to improving works efficiency and operation.

In connection with synthetic detergents and the foam which is produced on the aeration tanks, observations have been kept throughout the year on the quantity in the sewage and effluents. Excessive foaming occurred on several occasions and tests were made to see if the carrying of a high solids content in the aeration tanks would reduce the foaming, as had been reported from America. Although some difficulty was experienced in attaining the desired solids content in the mixed sewage due to design of the plant, sufficient evidence was obtained to show that the reduction of the quantity of foam produced was small, and that, therefore, this method could not be applied to the Clyde Park Works. This work was carried out at the request of the Synthetic Detergents Committee set up by the Ministry of Housing and Local Government and the results have been reported to the Committee.

Tests have been made on aids to sludge de-watering and the effects of a new chemical de-watering agent on sludge digestion have been studied.

In addition, the necessary routine analyses of sewages, effluents, sludges and trade wastes have been carried out and a system of progressive routine sampling has been put into operation.

STAFF

During the first three months of the year covered by this report, your sewage works were under the control of Mr. James McNicholas, B.Sc., F.R.I.C., M.I.S.P., who resigned on March, 27th, 1954, to take up the appointment of General Manager of the Manchester Corporation Rivers Department. It was my privilege to succeed him as your Sewage Works Manager and I would like to record my appreciation of the assistance which I have received from Mr. McNicholas, the Officers of the Burgh Council and particularly the Staff of the Sewage Works Department.

Other changes during the year were the appointment of Mr. W. Templeton, A.M.I.S.P., as Assistant Chemist on completion of his apprenticeship period and passing the examination of the Institute of Sewage Purification. The vacancy thus created in the post of apprentice chemist was subsequently filled by the appointment of Mr. Eric R. Napier of Bothwell.

TRADE EFFLUENTS

The surveillance of trade effluents discharged to the Burgh sewers was continued, particular attention being paid to those premises where cyanides are used for metal plating processes. A total of 303 samples were taken for analyses and of these 174 were of effluents being discharged to the sewers. 6 were found to be unsatisfactory, the remainder being within approved limits.

TABLE 1

Total volume of sewage given full treatment

Month	Carbarns Works	Clyde Park Works	Coursington Works
1954	(Millions of Gallons)		
January	113.891	81.017	30.568
February	110.219	75.810	24.710
March	111.795	74.170	22.980
April	91.574	59.220	23.980
May	94.927	67.785	23.028
June	86.641	59.715	24.824
July	84.909	58.785	21.332
August	101.825	69.905	25.590
September	111.756	79.227	30.190
October	121.419	94.865	33.016
November	115.168	90.878	19.870
December	120.872	99.796	34.620
Total	1,264.996	911.173	314.708
Daily average	3.466	2.496	0.862

Note - Stormwater flows are not metered.

At Coursington Works screened sewage was by-passed during tank cleaning operations because of structural difficulties.

TABLE 2

Average daily volumes given full treatment

Month	Carbarns Works	Clyde Park Works	Coursington Works
1954		(Gallons per day)	
January	3,674,000	2,613,000	1,092,000
February	3,938,000	2,708,000	1,074,000
March	3,612,000	2,393,000	918,000
April	3,052,000	1,990,000	799,000
May	3,062,000	2,186,000	744,000
June	2,888,000	1,991,000	828,000
July	2,741,000	1,897,000	853,000
August	3,282,000	2,255,000	1,218,000
September	3,725,000	2,640,000	1,289,000
October	3,920,000	3,060,000	1,069,000
November	3,840,000	3,029,000	1,104,000
December	3,898,000	3,219,000	1,117,000
Average for year	3,466,000	2,496,000	862,000

Note - Figures to the nearest 1,000 gallons.

TABLE 3

Gas produced from Sewage Sludge

1954 Month	Carbarns Works Total cu/ft.	Carbarns Works Daily Average cu/ft.	Clyde Park Works Total cu/ft.	Clyde Park Works Daily Average cu/ft.
January	497,000	16,000	538,000	17,360
February	462,560	16,520	575,120	20,600
March	533,250	17,200	603,870	19,500
April	478,880	16,000	646,378	21,500
May	534,465	17,300	570,336	18,400
June	508,379	16,900	519,897	17,300
July	497,271	16,000	555,455	17,900
August	604,076	19,500	496,515	16,000
September	685,212	22,800	478,515	15,900
October	590,690	19,100	505,415	16,300
November	635,807	21,200	503,600	16,800
December	479,417	15,500	465,458	15,015
Total	6,507,007		6,458,569	
Daily average		17,827		17,695

STAFF

Chief Charge Engineer - T. Scott

Assistant Chemist - W. Templeton, A.M.I.S.P.

Apprentice Chemist - E.R. Napier

CARBARNS WORKS

Maintenance Engineer/Foreman - G. Preston

Shift Engineers - T. Brown
R. Gartshore
H. Paterson
R. Preston

Outdoor Staff - P. Cullen
P. Kearney
A. Wyper

CLYDE PARK WORKS

Maintenance Engineer/Foreman - J.F. Taylor

Outdoor Staff - W. Black
R. Douglas
M. Ramsay
J. Smith
A. Wysker
J. Young
J. Braken (Driver)

COURSINGTON WORKS

Attendant - J. Felvus