

the flow from the walls to the pumping-station. The supply is now drawn from three 8 in. bores in McLean Park, the three new 6 in. bores, and a group of eight smaller bores in Nelson Park. The old wells in Munro Street which formed the original supply are not now being drawn upon.

A new pumping-station has been built at McLean Park, and will shortly replace the old station. It is a small, compact, earthquake-proof building equipped with four electric pumps capable of delivering 270,000 gallons an hour. It is centrally situated as regards the wells, so that a booster pump will no longer be necessary.

The low-pressure reservoir at Cameron Road was badly cracked as a result of the earthquake, and is considered moreover to be unsafe on account of the nature of the ground upon which it rests. It has accordingly been abandoned and the high-pressure reservoir is being trebled in size by the addition of two further chambers. These are circular in shape and heavily reinforced with steel. The capacity of the new reservoir will be two million gallons. The steel water-tower which serves a few houses on the highest levels was rebuilt by May.

Chlorination of the Napier water was continued until all reasonable chance of pollution appeared to be over. With the exclusion of the concrete main between wells and pumping-station, and the maintenance of a constant positive pressure in the reticulation mains, the chances of pollution appeared to have ceased by October. An analysis of water taken from two points on the reticulation system at that time, however, showed the presence of nitrites, and chlorination was continued until the source of the nitrites could be discovered. Up till that time the water had been singularly free from evidence of this nature even immediately following the earthquake. On the 28th January eight samples were taken—one at the pumping-station before chlorination, and the remaining seven at different points on the reticulating mains. These were tested for nitrites at intervals of a few days on eight successive occasions, each sample remaining meanwhile in its container. One sample only was free from nitrites during the whole period of test, and no sample showed nitrites to be present at every time of testing. In some cases the nitrites were first absent, appeared in small quantities, and then disappeared again. Whatever the explanation may be, it is evidently not the effect of sewage pollution, and shows that further chlorination of the water is unnecessary.

Repairs to the sewage system were put in hand at an early date. The main sewage-pumping station was practically undamaged; temporary outfalls were made; and by the 23rd February the sewers draining a considerable proportion of the hills, and most of the flat area east of the railway were again functioning. The repair of the air-mains, and ability to operate the compressed-air ejectors, as well as the relaying of certain main sewers further improved conditions, so that by May the sewage system was again in use over a great part of the borough. The chief exceptions were two large areas in Napier South and Port Ahuriri, and the central business portion of the town which had been completely demolished by earthquake and fire. To serve the two residential areas mentioned above, a nightsoil-collection service was installed in April and operated to a decreasing extent for about nine months.

The alteration in levels and the extensive nature of the damage sustained by the sewers necessitated the abandonment of the old system in Napier South and Port Ahuriri and the designing and laying of a completely new one. The old sewers were able to deal with household waste waters to some extent, and this fact, combined with the institution of the nightsoil service, enabled householders in these areas to reoccupy their houses with a considerably degree of comfort.

The work in connection with the new sewers was let in a number of different contracts, and the work pushed on at a rapid rate. In addition, the Borough Council did a large amount of sewerage work under the No. 5 Unemployment scheme. By the end of July 33,000 ft. of sewer had been relaid; the high-water mark of construction was reached in October with a total for the month of over 26,000 ft.; and by the end of December, 86,000 ft. of new sewer was completed. House connections were made concurrently with work on the sewers, and by the end of December there were few houses left without sewer connections. The work of inspection naturally fell heavily on the Council staff, and great credit is due to them for the long hours they worked to prevent any unnecessary delays. Up to the end of March an additional 17,000 ft. of new sewer was completed—chiefly in the business portion of the town—making a grand total for the year of over 103,000 ft., or nearly twenty miles of sewer. In addition to the relaying of sewers, a number of the compressed-air ejectors have been replaced by electrically operated pumps, a new and improved pumping-station has been built in McLean Park, and a new and much larger receiving-well has been constructed at the main sewage pumping-station. A great deal of work also in connection with storm-water drains is being carried out, both to repair damage and to correct difficulties that have arisen from the alteration in levels.

Although they have operated more or less continuously, the sewers in the hill area have required a great deal of attention, and will continue to do so for some time to come. Owing to the firmer nature of the ground and the greater fall provided, these sewers escaped the shattering forces affecting those in made-up ground, and showed less tendency to block through the entrance of silt. They did not, however, escape damage, and, in addition, have since revealed numerous blockages caused by the entrance of roots through cracks—even those too fine to be detected by examination. The following extract from the drainage inspector's report will illustrate this: "A sewer off Goldsmith Road which was uncovered for inspection, showed roots to have penetrated almost every joint, although not one pipe was cracked throughout the length, only the compo joints being slightly loosened." Fortunately, these defects revealed themselves separately, and can be dealt with in rotation as they arise.

A matter which may cause trouble in the future is that concerning the main sewage outfall at Port Ahuriri. The sewage collects in a large holding-tank near the eastern mole at the entrance to the Inner Harbour. The outlet from this tank is controlled by a valve, and the sewage is discharged