3,043

Generic Process

Document

CYPRUS

WATER SUPPLY AND IRRIGATION DEPARTMENT

# ANNUAL REPORT FOR 1952

BY

D. P. MACGREGOR, B.Sc.,

*Assistant Water Engineer*

NICOSIA

PRINTED AT THE CYPRUS GOVERNMENT PRINTING OFFICE

1953

[6/53—300—1300/50/3.]

Price 3 shillings.

## WEIGHTS, MEASURES AND CURRENCY.

| | | | |
|---|---|---|---|
| WEIGHT : | 400 drams | = | 1 oke. |
| | 1 oke | = | 2 4/5 lbs. |
| | 44 okes | = | 1 kantar. |
| | 180 okes | = | 1 Aleppo Kantar (carobs). |
| | 800 okes | = | 1 ton. |
| CAPACITY : | 1 Cyprus litre | = | 2 4/5 quarts. |
| | 1 kile | = | 1 bushel. |
| | 1 kouza | = | 9 quarts } wine. |
| | 16 kouzas | = | 1 load } |
| LENGTH : | 1 pic | = | 2 feet. |
| AREA : | 1 evlek | = | 3,600 sq. feet. |
| | 1 donum | = | 14,400 ,, |
| | 3.025 donums | = | 1 acre. |
| CURRENCY : | 1 piastre | = | 1⅓ penny. |
| | 9 piastres | = | 1 shilling. |
| | 20 shillings | = | 1 pound. |

CYPRUS

WATER SUPPLY AND IRRIGATION DEPARTMENT

# ANNUAL REPORT FOR 1952

BY

D. P. MACGREGOR, B.Sc.,

*Assistant Water Engineer*

NICOSIA

PRINTED AT THE CYPRUS GOVERNMENT PRINTING OFFICE

—

1953

# CONTENTS

# Annual Report of the Water Supply and Irrigation Department for the Year 1952.

During the year 1952 the Water Supply and Irrigation Department has still further increased its activities. The engineering and geological sides of all government water supply works is in the hands of this department and covers the whole range of water supply, including search for new sources and development of these and of existing supplies for irrigation, industrial and domestic purposes. The administrative problems of village Irrigation Divisions and Associations and of Domestic Water Commissions are dealt with by the District Commissioners. Disputes over water rights are handled chiefly by the Commissioners in consultation with the Law Officers, the Department of Land Registration and the Water Supply and Irrigation Department.

2. The main features of the year's work have been a record output of both irrigation and village domestic supply schemes and the considerable progress which has been made on the new town supply schemes at Nicosia, Famagusta and Limassol. The number of boreholes drilled has also exceeded last year's record total. In spite of a year of average rainfall the number of requests from village communities for investigations into, and for the construction of, water works for both domestic and irrigation supplies has continued unabated. This demand is a sure indication of the appreciation of the considerable benefits which are being derived from schemes already completed in other villages.

3. For efficient working the department is divided into four branches (1) Irrigation Section, (2) Village Domestic Water Section, (3) Drilling Section and (4) Town Water Supply Section. There is, however, continuous liaison between these branches so that their work is co-ordinated in the best interests of the over-all water supply problem of the island. Thus where the Domestic Water Section may develop a source of water in excess of the requirements of a particular village, the surplus may be utilized for irrigation or vice versa, or, where gravity water supplies are not available, investigations by the Drilling Section may locate underground sources from which water can be pumped.

4. The work of the Irrigation Section deals chiefly with gravity irrigation from springs, rivers, infiltration galleries ; with storage in artificial reservoirs and, to a lesser extent, with pumping schemes for the distribution of irrigation water for rural communities from boreholes and wells. As in previous years, the policy of the department has been to concentrate mainly on many small schemes rather than on a few large ones. These small schemes have become very popular, particularly in the hill villages and a steady flow of proposals for new irrigation works is coming in. The total number of irrigation schemes completed during the year was 125, providing sufficient water to irrigate 12,853 donums, of which 3,526 donums can be irrigated perennially. Twenty-five more schemes were in hand at the end of the year and a further 113 have been prepared and still remain to be carried out.

5. The Drilling Section is largely occupied in sinking boreholes for irrigation for private individuals. The total number of boreholes drilled during the year was 242, of which a high proportion (70%) were successful. A satisfactory feature of the year's drilling has been the big increase in the number of high-yielding boreholes. This is chiefly due to the demand for drillings for irrigation in areas of known high-yielding aquifers developed in previous years. The benefits of the perennial irrigation thus effected is clearly visible in the marked changes that are taking place in the agricultural development of these areas. Where previously the summer landscape was bare and arid, citrus groves and vegetable gardens are being extended year by year and the agricultural economy of these districts thereby greatly enhanced. These beneficial results are reflected in the continuing demand

for subsidised and full-cost boreholes both in these areas and elsewhere throughout the island. This demand is maintaining a waiting list of applications which seldom falls below 50. A considerable number of boreholes have also been drilled for the domestic supply of villages, towns, industrial concerns and for the War Department, and prospecting drilling has been successful in finding good supplies of water in new areas where lack of water has hitherto retarded economic progress.

6. The rate of progress in irrigation since the commencement of the Ten-Year Programme of Development in 1946 is shown in the following table :—

| | Gravity Irrigation | | Mechanical Irrigation (i.e. Pumped) | Total |
|---|---|---|---|---|
| | Perennial | Seasonal | | |
| | *Donums* | *Donums* | *Donums* | *Donums* |
| 1946 Census.. .. .. .. | 59,409 say 59,500 | 284,977 say 285,000 | 53,131 say 53,000 | 397,517 say 397,000 |
| Estimated at end of 1951 .. | 74,000 | 319,000 | 75,000 | 468,000 |
| New Irrigation, 1952 .. .. | 3,500 | 9,500 | 10,000 | 23,000 |
| Estimated totals at end of 1952 | 77,500 | 328,500 | 85,000 | 491,000 |
| Percentage increase since 1946 census and commencement of Ten-Year Programme of Development .. .. .. | 30% | 15% | 60% | 23.5% |

7. The work of the Village Domestic Water Section is confined to water supplies for villages and rural municipalities. Sources of water are examined, measured and where suitable, developed. Supply and distribution, pipelines are laid and storage tanks and public "fountains" erected. A "fountain" is a combined public standpipe, trough and drainage soak-pit. With the exception of certain of the larger villages no house connections are made. The sources may be springs, infiltration galleries, boreholes or wells.

8. During the year 77 village water supply schemes have been completed. This figure includes 26 schemes for villages which had previously no piped supply and 51 schemes for the improvement of existing inadequate supplies. This raises the total of schemes completed since the census of 1946 to over 270 and it is now estimated that of the total of 627 villages named in that census, the number of villages with piped supplies is 426 or 68%. Of these 283 (45%) may be considered to be satisfactory and 143 (23%) need fundamental repairs or replacements. The 201 villages still without piped supplies are, on the whole, situated far from reliable sources and the cost and difficulty of supplying them with piped water will in most cases be greater than in past schemes. Moreover, a higher standard of living is becoming evident and an increased quantity of water and a greater number of "fountains" per unit of population is now sought.

9. The Town Water Section has been very fully employed during the year with planning and construction work on the new schemes for the Water Boards of Famagusta, Limassol and Nicosia. When completed these schemes, which are being constructed at an estimated cost of £1,250,000, should ensure supplies of water comparable in both quantity and quality to towns of similar size in the United Kingdom.

10. The first stage of the Famagusta scheme is now in successful operation and good quality water from Phrenaros is now used in the town instead of the brackish water from the old boreholes at Stavros. This work included the installation of pumping plant at Phrenaros, the laying of seven miles of 8" main and the construction of a 200,000 gallon masonry storage tank. At Limassol some 14 miles of 6" to 10" steel pipeline has been laid and has now almost reached the town. A covered reservoir, of 800,000 gallons capacity, has also been built. At Nicosia four small pumping stations have been completed, 25.3 miles of main supply pipes, from 4" to 10" in diameter have been laid and a new 800,000 gallon covered masonry storage tank is almost finished. Further details of these works are given in Appendix I.

11. GRAVITY IRRIGATION: The gravity irrigation schemes carried out by the department may be classified into the following groups :—

(*a*) Schemes developing small springs by excavation at their source, by lining channels in masonry or reinforced concrete to prevent loss of water, and by constructing masonry tanks for night storage.

(*b*) Schemes involving the diversion of seasonal or perennial flow from rivers and water courses by means of weirs and channels.

(*c*) Gravity irrigation from infiltration galleries constructed in slow yielding aquifers, in fissured rock, or in river gravels—a means of tapping natural underground reservoirs without the expense of pumping.

(*d*) Water conservation in artificial reservoirs for periods of a few days to several months.

12. The typical small hill scheme which involves works as at (*a*) above remains a firm favourite and a considerable number of these works have been executed during 1952. In Pitsillia (the hill area in the centre of the island) every village has at least one of these irrigation schemes and some may have as many as 20 or more, e.g. Kyperounda 38, Agros 33, Platanistassa 20. Two larger irrigation schemes were completed during the year at Evrykhou and Galata. The works there were carried out as costs of £10,500 and £14,000 respectively. Eight further large schemes are now in hand, viz. Lapithos village (Kephalovrysos) (£18,500), Sphinarkotiko (£14,500), Pano and Kato Dhikomo (£14,000), Psomolophou (£4,750), Phini (£10,620), Marathasa (£7,000), Nata-Kholetria (£8,200), Kalokhorio (£6,600).

13. Two water storage schemes have been completed during 1952. The dam at Kafizes is 70 feet high and the highest in Cyprus and has a capacity of 28,000,000 gallons. It was officially opened by His Excellency the Governor on 11th December, 1952. The Lythrodhonda dam is 35 ft. high. Both these schemes are described in Appendix 2. The usefulness in Cyprus of dams such as these has been proved but as suitable sites are not easily located they are unlikely to have a marked influence on the total area of irrigated land in the island.

14. DOMESTIC WATER SUPPLY: The total of 77 village water supply schemes is a record. This figure compares with 68 completed in 1951 and 52 in 1950. Investigations for new schemes are keeping pace with construction and 71 are ready to be started as soon as financial and other formalities are settled.

15. The village communities have been showing a desire for more facilities for their domestic water supplies and in the case of summer resorts and rural municipalities a house to house service has been installed. This has been done at Agros, Perapedhi, Kakopetria, Galata, Pedhoulas and Lapithos. In each case all the extra cost was provided by the Improvement Board of the village or the Municipal Corporation. In all other villages where no house to house connections were made, more than the usual number of street "fountains" were constructed. On an average one "fountain" has been provided for each ten houses.

16. The Appidhes scheme is the most important of the village water supplies now in progress. Water from the Appidhes spring in the Paphos forest is being conveyed across precipitous country to a group of 10 villages through 62 miles of galvanized pipes from 4" down to 1" in diameter. Work on this scheme was commenced in August, 1952, and water has been conveyed to Panayia and Phiti, from where it will be distributed to the various villages. Four villages, namely Panayia, Asproyia, Simou and Stroumbi have already had their installations completed and are receiving their share of water. Work is continuing for the remaining six villages (Phalia, Lemona, Ayia Marina, Amargeti, Kili and Tsadha) and it is hoped to complete the whole scheme by the end of February, 1953. One-third of the total flow of the Appidhes spring has been reserved to serve more villages in the Paphos District which have applied to join this scheme. So far the following eight villages—Dhrousha, Inia, Dhrinia, Dhrymou, Polemi, Pendalia, Kannaviou and Eledhiou—have asked to be included. The trunk mains laid are large enough to take the total summer discharge of the spring.

17. In the Morphou area, with its rich underground aquifers, pumped domestic water schemes from boreholes have been popular. Four of these schemes have now been completed in this locality and another one will be undertaken during1953.

18. The problem of supplying domestic water to the " dry " villages of the Eastern Messaoria has again been receiving attention. Negotiations are going on in an effort to secure a small proportion (3%) of the flow of the Kythrea spring, the largest in Cyprus. Unfortunately the inhabitants of Kythrea resent the diversion of any of this water, at present being used, not very economically, for irrigation. All other efforts to locate alternative sources of supply, either from springs or by drilling, have so far failed to secure relief for these unfortunate people whose domestic water demands could be so easily satisfied by a little sympathetic consideration from their more fortunate neighbours in Kythrea.

19. A successful borehole has been drilled at Ephtakomi, having a yield of over 100,000 gallons per day. It is hoped to serve several villages of the Karpas peninsula, at present very short of water, from this source.

20. The Kissousa spring, one of the largest springs in the Limassol District, has been excavated and built.

21. The following table gives a statistical picture of the amount of work involved in the scheme completed during the year.

VILLAGE DOMESTIC SUPPLY CONSTRUCTION WORKS, 1952.

| No. of Domestic Water Schemes completed | Storage Tanks No. | Distribution Boxes No. | Fountains No. | Main supply and Distribution Pipelines laid (Miles) | | | |
|---|---|---|---|---|---|---|---|
| | | | | 4" | 3" | 2½" | 2" |
| 77 | 74 | 47 | 529 | 20 | 17 | 24 | 35 |
| | | | | 1½" | 1¼" | 1" | 0½" |
| | | | | 21 | 28 | 25 | 8 |

22. Details regarding the various town water supply schemes are given in Appendix 1.

23. DRILLING FOR WATER: Twelve drilling rigs have been in action continuously throughout the year, except for minor breakdowns. Five of these are on loan from the Army and four are of an old type with which drilling is slow. As the Army rigs may be withdrawn at any time, orders have been placed for five new modern mobile rigs. Two of these should reach Cyprus early in 1953.

24. Although the number of boreholes drilled has exceeded last year's total, the actual footage drilled has fallen short of the 1951 figure. This is accounted for by the time spent by the rigs on other work. There has been an increased demand for the use of the rigs for cleaning and relining boreholes drilled in previous years. The number of cleanings this year was 53 compared with 21 in 1951, accounting for a total of 360 drilling days. Much of this work is due to the time lag between the actual drilling of a successful borehole and the delivery and installation of a suitable pump. A special prolonged test pumping of the new boreholes at Phrenaros (North), earmarked for Famagusta water supply, also occupied a further 90 days of non-productive drilling time.

25. Of the 242 boreholes drilled during the year 185 were for irrigation; of these 130 or 70% were successful. A successful borehole is one that on test yields more than 1,000 gallons per hour of usable water. They yielded on test 20.8 million gallons of water per day, sufficient to irrigate 10,400 donums in summer and 31,200 donums in winter, if pumped steadily at half the tested rate. It is estimated that, as a result of the new boreholes and open wells sunk during 1952, the area of summer irrigated land has increased by 11,000 donums.

26. The total number of successful irrigation boreholes drilled since the commencement of the Ten-Year Development Programme in 1946 is now 425, with a total tested output of 69 million gallons per day, sufficient to irrigate 34,500 donums of summer crops. All these boreholes have, however, not yet reached the producing stage and a more accurate figure for the total area of perennial irrigated land, as a result of the boreholes drilled by this department, during the past seven years, is 32,000 donums. At the census of 1946 it was calculated that some 53,000 donums were irrigated perennially by pumped water. The new figure now increases this area by 60% to 85,000 donums.

27. The most successful areas for drilling have been, as in past years, those occupied by the Pliocene/Pleistocene formations. In the Western Mesaoria 57 out of 59 boreholes proved successful, with a total tested yield of 11.8 million gallons per day. In the South-Eastern Mesaoria, between Dhekelia and Famagusta, 34 successful drillings out of a total of 37, produced 4.4 million gallons per day; while a further 3.9 million gallons per day were test-pumped, from 23 successful boreholes out of a total of 28, sunk in the Akrotiri Peninsula west and south of Limassol. Thus of the total water made available in 1952, some 20.1 million gallons, or 80%, have come from these three areas.

28. The chief discovery of the year, resulting from prospecting boreholes, was a new free-yielding water-bearing area five miles to the south-west of Famagusta. This has now been accepted as the source of water for the second stage of the Famagusta town water supply scheme. The tested output, of a total of 9 boreholes sunk in this area (Phrenaros–North), was over 2 million gallons per day of excellent quality water.

29. In the Akrotiri Peninsula, a prospecting borehole, subsequently followed by full-cost drillings, has revealed the extension, northwards to Kolossi, of the excellent water-bearing gravels previously developed at Phassouri. Geological information from these drillings indicate the probability that this aquifer is being continuously recharged by the underground flow of the Kouris River. To the south of the Salt Lake several boreholes have also found good quantities of water but, as the catchment area is small, care must be exercised to prevent over-pumping.

30. In all the above localities water was found in Pliocene/Pleistocene rocks but the possibility of finding good supplies of water in some areas of older rocks has been further proved by the results of prospecting drillings at three widely separated localities. In each case the aquifer, a fine-grained, calcareous sandstone, was located in the Lapithos (Miocene) formation. Two boreholes, sunk at the foot of the escarpment N.N.E. of Ktima, each yielded over 5,000 gallons per hour of

first quality water in a test pumping prolonged for a period of eight days. It is hoped to be able to develop this area by further drillings and to utilize the water for the irrigation and domestic supply of the Paphos coastal " dry " area. At the other end of the island, in the Karpas Peninsula, a prospecting borehole, sunk at Ephtakomi, located a free-yielding aquifer which, tested over a period of eight days, produced 5,000 gallons per hour. This borehole is to be developed for domestic supplies in this area. At a third locality, near Argates, at the edge of the foothill, south of Nicosia, a borehole drilled for village water also discovered an excellent supply in the same formation.

31. Three new observation boreholes were sunk during 1952, all in the Phrenaros-North area, bringing the total of these observational boreholes in Cyprus to 21. Regular monthly measurements of the water levels are taken and these enable a close watch to be kept of seasonal and annual variations, to ensure that any particular area is not being over-pumped. Figures of the average water levels and minimum water levels recorded during the years 1951 and 1952 are given in Appendix 13.

32. These figures show that in both the Kokkini Trimithia–Astromeritis area in the Western Mesaoria (Observ. B.Hs. Nos. 1–4) and around Xylophagou, in the south east of the island (Observ. B.Hs. Nos. 13–16), there has been a general slight lowering of the water table. This is, however, not excessive and may be due to a sub-normal rainfall in the catchment areas affecting the aquifers. The level may recover in a year of slightly abnormal precipitation. In the Morphou coastal area (Observ. B.Hs. Nos. 5–8) the water levels have either remained static or have tended to rise. At Phrenaros, in the area from which water has been pumped to Famagusta continuously since July, 1952, the water table has been lowered during the past five months, by three feet. This is, undoubtedly, partly due to the " drawdown " effect of the nearby pumps and there has not been sufficient rain in that district, since the pumping started, to effect any appreciable recharge. The measurements, however, show that this is an area which must be carefully watched to prevent over-pumping. In general, the results show the necessity of these recordings but the period of observation is, of course, still too short to draw any valid conclusions therefrom.

33. Some experiments on recharge of partly saline wells with fresh water has been carried out at Famagusta. Surplus water from Phrenaros, conveyed to the town as part of the town water supply, is discharged daily into a brackish borehole, formerly used for the town supply. When during October a storm caused a breakdown in the power supply to the Phrenaros pumps, this borehole and two adjacent ones had to be used to maintain the town water supply and were pumped over a period of 55 hours while repairs were being effected. Analyses of water samples, taken periodically during this pumping, show that the freshness of the water was maintained throughout this period. Another experimental recharge scheme, also in the Famagusta area, provides for the discharge of water from Paralimni lake into a specially constructed tunnel, 450 feet long, driven in porous sandstone, immediately above the aquifer, at a depth of 60 feet below ground. Measuring weirs have been constructed in order that volumetric water records may be kept and water levels and samples are being taken in nearby wells and boreholes to ascertain the extent of the beneficial effects of the scheme. The experiment is proceeding.

34. A detailed survey of the Underground Water Resources of Cyprus, by Dr. Burdon, formerly Assistant Water Engineer, is being printed by the Government Printing Office and will be issued shortly. This report assembles the available data about the island's water geology and resources in much greater detail than has hitherto been attempted. It is eminently suitable for use as a handbook on this subject.

35. MISCELLANEOUS : Miscellaneous activities of the Department occupy a considerable proportion of the time of the technical staff. In Nicosia three water supply systems, viz. the Government House—English School Supply, the supply for the Government Offices and Hospital and the supply to the Prison and the houses of Government Officers, are all managed by the Department. Technical advice and assistance is given to the Nicosia, Limassol and Famagusta Water Boards and to the Evcaf Department in respect of Larnaca Water Supply. A number of miscellaneous works, including pump tests at boreholes and wells, has been carried out for the Military, Village Water Commissions and private persons. Automatic water level recorders have now been installed on four rivers in order to obtain measurements of flood discharges. These are on the Pedhias at Nicosia, on the Yialias at Nisou and on the Serakhis and Ovgos at Morphou.

36. LEGISLATION : There have been no notable additions or amendments to the water laws of Cyprus during the year, but, under the provision of the 1951 amendment of the Wells Law of 1945, three new water conservation areas have been declared at Laxia, Phrenaros–North and Larnaca, with the object of protecting the water supplies of Nicosia, Famagusta and Larnaca.

37. FINANCIAL : The following is a summarised statement of the expenditure of the Water Supply and Irrigation Department in 1952 :—

| | Government | | Contributions from Beneficiaries | Totals |
|---|---|---|---|---|
| | Colonial Development and Welfare Grants | Cyprus Funds | | |
| | £ | £ | £ | £ |
| 1. Gravity Irrigation Schemes .. | 96,082 | 32,099 | 43,312 | 171,493 |
| 2. Village Water Supplies .. | 50,377 | 55,448 | 104,199 | 210,024 |
| 3. Subsidised Drilling .. .. | — | 9,871 | 3,705 | 13,576 |
| 4. Prospecting for Water .. .. | — | 5,394 | — | 5,394 |
| 5. Drilling upon Repayment .. | — | — | 5,742 | 5,742 |
| 6. Nicosia Water Supply .. .. | — | — | 38,034 | 38,034 |
| 7. Limassol Water Supply .. | — | — | 41,652 | 41,652 |
| 8. Famagusta Water Supply .. | — | — | 38,440 | 38,440 |
| 9. do. (Drilling) .. | — | — | 780 | 780 |
| 10. Larnaca Water Supply .. | — | — | 575 | 575 |
| 11. Drought, Hail and Rust Damage and Relief Measures .. .. | — | 1,066 | | 1,066 |
| 12. Miscellaneous works upon repayment .. .. .. | — | 11,130 | 3,578 | 14,708 |
| 13. Departmental and Maintenance | — | 43,657 | — | 43,657 |
| | 146,459 | 158,665 | 280,017 | 585,141 |

38. Not included in the above statement is the following expenditure which has been subject to the advice or supervision of the Department :—

| | £ |
|---|---|
| 1. Paphos Water Supply .. .. .. .. | 9,304 |
| 2. Pipes, etc., imported by Nicosia Water Board .. | 56,718 |
| 3. Pipes, etc., imported by Limassol Water Board .. | 81,280 |
| 4. Government Casing Pipes sold to the public for boreholes drilled by the Department .. .. | 3,800 |
| | £151,102 |

39. Included in the first of the above two statements are :—

| | £ |
|---|---|
| 1. Personal Emoluments | 24,840 |
| 2. Wages for Labour | 228,490 |
| 3. Travelling and Subsistence | 5,151 |
| 4. Government controlled Irrigation Works | 7,017 |
| 5. Repairs to Eastern Mesaoria works | 2,466 |
| 6. Purchase of Drilling Plant | 2,960 |
| 7. Total cost of Drilling excluding Item 6, staff salaries and overhead expenses | 22,531 |

40. The average cost of a new borehole has been £93 and the average cost per foot drilled about £0.55. A subsidised borehole has on the average cost £119, a borehole drilled upon full repayment £53.7. A reason for the low cost of boreholes drilled upon repayment is that recipient including the Army, frequently provide their own transport. Prospecting boreholes cost more, because they are usually drilled in remote places. These costs, of course, do not include permanent pumping plant or the borehole casing pipe, and they are also exclusive of depreciation of drilling plant, and the salaries and expenses of supervisory staff. They include the wages of the crews, transport of drilling plant, repairs, and minor replacements of drilling tools and equipment.

41. Village contributions towards the cost of gravity irrigation works vary from one-fifth to one-third according to the type of work, the lower fraction being for flood or spate-water irrigation schemes, and the latter for perennial irrigation. Payment by the villagers is made in cash, in free labour (capitalized in the above statements) or by Government loans at low rates of interest. Village domestic water schemes are paid for, half by Government, and half by the village, the village contribution being either in cash or by Government loan. Boreholes under the Subsidised Drilling Scheme are carried out for private irrigators at a fixed price to them of £32.10.0 per borehole and the balance which, in 1952 has on the average amounted to about £86.10.0. is paid by Government. Private individuals requiring boreholes for purposes other than irrigation are charged the actual cost in full including departmental charges. The Army, Municipal Corporations, Companies, etc., also pay the full cost and departmental charges.

42. STAFF AND LABOUR : There have been two changes in the senior staff during the year. On the 28th July, 1952, Mr. D. P. MacGregor was appointed as Assistant Water Engineer (Temporary) in lieu of Dr. Burdon, who had been on secondment to the United Nations Food and Agriculture Organization, Syria, since 1st January, 1952. On 8th October, 1952, Dr. Burdon resigned from his post with the Cyprus Government. On 1st December, 1952, Mr. V. Toundjian, Senior Inspector of Water Supplies, was appointed to the vacant post of Superintendent of Waterworks. Staff at the end of the year comprised the following :—

| | |
|---|---|
| Water Engineer | 1 |
| Assistant Water Engineer | 1 |
| Senior Engineer | 1 |
| Superintendent of Water Works | 1 |
| Assistant Engineer | 1 |
| Senior Inspector of Water Supplies | 1 |
| Inspector of Water Supplies | 4 |
| Temporary Inspector of Water Supplies | 4 |
| Technical Assistants | 9 |
| Temporary Technical Assistants | 3 |
| Assistant Irrigation Superintendent | 1 |
| Foremen | 85 |
| Accounts, Clerical and Miscellaneous | 30 |

43. The average number of paid labourers employed during the year was 1,630, of whom 15% were skilled. This compares with an average of 1,280 in 1951, of whom 13% were skilled. The approximate monthly averages are as shown :—

| | | | | | |
|---|---|---|---|---|---|
| January.. | 1500 | May.. | 1650 | September .. | 1700 |
| February | 1500 | June.. | 1700 | October .. | 1700 |
| March .. | 1600 | July | 1750 | November .. | 1600 |
| April .. | 1650 | August | 1750 | December .. | 1500 |

In addition an average number of 90 free labourers was employed.

44. As in other Government Departments a 44-hour week is observed by all labour. From Monday to Friday the working day is 8 hours, but on Saturday 4 hours only. The 4 hours on Saturday is considered a full day, and wages are paid for 8 hours. In drilling for water a bonus system is used, whereby a drilling crew, if it exceeds a certain prescribed monthly output, receives an addition to its normal weekly wages.

45. DEMAND FOR SCHEMES : Keen interest in all kinds of water supply work continues. In 1952 a big effort has been made to cope with the demand for village water supplies but there is still a long waiting list of applications which can only be attended to as staff becomes available. The construction work on the large town water supply schemes at Nicosia, Famagusta and Limassol has necessitated the transfer of staff from other sections, particularly from the Village Domestic Water Section, to provide the necessary supervision of these works. Requests for gravity irrigation works were on the whole met but the demand for more persists. Applications for borings continue at a steady rate and, with the help of the new modern rigs due shortly, the present satisfactory drilling rate can be maintained. In general it may be said that the demand for irrigation works is being satisfied with the existing staff and machinery but the rate at which the domestic water problems can be attended to is limited by the availability of suitable technical staff.

D. P. MACGREGOR,
*Acting Water Engineer.*

*January, 1953.*

---

*Note by Water Engineer :*—This annual report was prepared by Mr. MacGregor during my absence on leave. It has been checked by me upon my return.

I. L. WARD,
*Water Engineer.*

*June, 1953.*

## APPENDIX 1.

### TOWN WATER SUPPLIES.

NICOSIA : In brief, the Nicosia Water Supply Scheme entails the conveyance of water through pipelines, from different sources within a ten-mile radius of Nicosia, to a main reservoir now being constructed near the Strovolos by-pass road.

These sources are :—

(i) Ayii Trimithia borehole No. 13/40.
(ii) Kokkini Trimithia boreholes Nos. 70/38 and 10/39.
(iii) Laxia boreholes Nos. 62/51 and 145/51.
(iv) Athalassa boreholes Nos. WD/20, WD/26 and 4/42.
(v) The Arab Ahmet chain-of-wells.
(vi) The Makedhonitissa chain-of-wells.

Four masonry pump houses, complete with turbine pumps and diesel engines, were erected over the boreholes at (i), (ii) and (iii) above. Reinforced cement concrete collecting tanks were built at (i) and (iii), adjacent to the pump houses.

Water from the Laxia boreholes was put to use, during the summer shortage, to augment the depleted supplies of Platy (a private water undertaking supplying a part of Nicosia), and also that of the Government supply system.

The construction work on the pipelines from (i), (ii), (iii), (v) and (vi) above was well in hand by the end of the year. In all 20.3 miles of asbestos-cement pipes, 6" to 10" diameter and galvanised iron and steel pipes, 4" to 10" diameter were laid and tested. A further 2 miles of pipeline trenches had been excavated.

The construction of the masonry main reservoir, capacity 800,000 gallons, including reinforced cement concrete floor and columns was completed, except for the roof. The foundations of the building to house the water meters, measuring weirs, reception tank, chlorination plant and pumps were filled in concrete. The construction of the 30 foot high masonry and reinforced cement concrete tower tank, capacity 20,000 gallons, at the reservoir site, was well in hand. The whole of the reservoir area has been fenced in.

At the head well of the Arab Ahmet chain-of-wells 208 feet of tunnelling was driven and lined for additional underground storage for use with the electro-submersible pump to the installed.

At Makedhonitissa chain-of-wells 4,700 feet of tunnel was cleaned at the upper end. The invert of the tunnel was partly regraded prior to lining with pre-cast concrete pipes. This work was well advanced by the end of 1952. The excavations to foundation level for the underground tank (capacity 20,000 gallons) and pump house, to be constructed at the outlet of the tunnel, were completed.

The first stage of the distribution system was commenced before the end of the year with the excavation of trenches for the ring main. Four consignments of " Everite " asbestos-cement pipes and cast iron fittings have been received from the United Kingdom for this section of the work.

The cost of the work now in hand is estimated at £475,000 (May, 1952).

LIMASSOL : The sources of water supply for the Limassol Scheme are three springs, namely Kephalovrysos, Krya Pighadhia and Mavrommata. Their waters are collected and then gravitated to the main reservoir outside Limassol.

Construction work at the source was started in 1951 and completed in 1952. During the year under review, a 6" diameter steel pipeline (19,200 feet) was laid from Kephalovrysos to the collecting tank at Krya Pighadhia, along an unavoidable rough and difficult route. From the collecting tank the combined flow is conveyed, through an 8" diameter steel pipeline (10,000 feet), to the twin tanks at Khalassa, where the Mavrommata 8" diameter steel pipeline (2,000 feet) converges. The flow thus accumulated gravitates from the Khalassa twin tanks, through a 10"

diameter steel pipeline, to the main reservoir (800,000 gallons capacity) on the Ayia Phyla road outside Limassol. Some 42,000 feet of this 10" pipeline was laid during the year and has reached a point near Ypsonas junction, while excavation of trenches was 15,000 feet further ahead at Polymedhia, by the end of the year.

Following the acquisition by the Water Board of the above springs and in order to satisfy the requirements of the inhabitants and flocks of the neighbouring villages six public " fountains " with troughs were constructed at various convenient sites near the sources.

The main reservoir, which is of a similar type and capacity to that at Nicosia, was almost completed, except for one-third of the reinforced cement concrete roof. A chlorinator room, above the main reservoir, was constructed for the purpose of sterilizing the water.

Work on the distribution system was commenced and 11,800 feet of 10" diameter asbestos-cement pipes were laid as part of the ring main, while excavation of the trenches was 3,100 feet further ahead by the end of the year.

Various consignments have been received from the United Kingdom, representing a portion of the materials placed on order, such as water meters, hydrants, chlorinator, valves, pipes, fittings, etc., which should enable further work on the distribution system to be put in hand without delay.

The cost of the scheme is estimated at £380,000 (February, 1952).

FAMAGUSTA : Work on Stage 1 of the Famagusta Water Supply Scheme commenced late in 1951, was almost completed by the end of 1952. This phase of the scheme entailed the construction work necessary to provide the town with water from the four boreholes, specially drilled for this purpose, west of Phrenaros.

Electro-submersible pumps were installed at these boreholes and a bungalow built, incorporating a switch-board room and pump attendant's quarters. A twin reinforced cement concrete collecting tank was constructed and 2,500 feet of 6" diameter asbestos and 3,300 feet of 4" diameter galvanised iron rising mains were laid between the pumps and the tank. The 8" diameter asbestos-cement pipeline (6.4 miles in length) from Phrenaros to the Stavros pumping station at Famagusta was completed by the end of July, despite the difficult rocky country traversed, necessitating the use of compressors and blasting. The town started to receive a steady daily flow of about 400,000 gallons of good quality water at the end of July, at a time of year when a marked deterioration of the old supply, due to increasing salinity, becomes apparent.

The main storage tank (200,000 gallons) at Stavros pumping station was completed except for part of the R.C.C. roof. The adjoining pump house was also built but the machinery has not yet been installed.

Repairs were carried out to the Panayia spring, which is another source of supply for Famagusta, both at the source and at Kana chain-of-wells. These included the cleaning and lining of the old tunnels.

As stated elsewhere in this report a number of new boreholes for Stage II of the scheme were sunk in the newly discovered water-bearing area north-west of Phrenaros (about 2 miles north of the above mentioned boreholes). Four of these are very successful and will be used to deliver a further 500,000 gallons a day to Famagusta.

The estimated cost of the works under construction in 1952 is £53,700 (July, 1952).

Plans have been prepared for second and third stages of the scheme, comprising the conveyance of water from the new boreholes to the town and a new pipe distribution system within the town. These works are estimated to cost £330,000 (July, 1952).

LARNACA : In the town of Larnaca, which get its domestic supply from the Abu Bekir Pasha chain-of-wells, no shortage of water was experienced during the summer of 1952, except in the high quarter around Ayios Yeorghios (Contos) Monastery which is outside the area of the water supply system. A branch main, to supply this district, should be laid but so far the money required for this purpose has not been made available by the local Evcaf Department, which, in this case, is the controlling authority.

The excavation of 1,250 feet of new tunnel, parallel to the Abu Bekir Pasha chain-of-wells which was seriously damaged during the winter of 1949, was continued and completed during 1952. The water is now being diverted through this new tunnel and the dangerous part of the old tunnel has been filled in. Other parts of the tunnel are in poor condition and require strengthening. It is hoped to carry out repairs to the most needy sections of the chain-of-wells each year, as and when sufficient funds can be provided.

PAPHOS : Paphos town water supply which is under the control of the Municipality, is derived from several springs and a chain-of-wells in the vicinity of Mesoyi and Tsadha. From these sources the water is piped to the town. In 1951 the Municipality, with the help of a £24,000 loan from the Government, commenced work on a new town distribution system. This work has been carried out under the supervision of the Water Supply and Irrigation Department.

The new distribution system, including a new service reservoir, at the locality " Dhasoudhi ", has now been completed. This work involved the laying of 57,600 feet of 6", 4" and 3" diameter asbestos-cement pipes, with connections to all houses previously supplied by the old system. The storage tank was built in masonry and has a capacity of 70,000 gallons. A room, alongside, houses a chlorinator for sterilization of the influent. The installation of this apparatus was carried out by the staff of this Department.

APPENDIX 2.

## DESCRIPTION OF CERTAIN IRRIGATION SCHEMES.

(*A*) *Lapithos* :—This village, in the Kyrenia District, is where one of the major irrigation schemes at present being undertaken by this Department is being executed. It is aimed to canalize the water of eleven springs, the largest two of which are known as " Kephalovrysos " and " Sphinarkotikon ". Reinforced concrete channels are being constructed to prevent the loss of water. The works were started on 11.7.52 and are being pushed forward to have them completed by mid March, so that the villagers may start irrigating their crops in proper time.

Some $6\frac{3}{4}$ miles of new concrete channels will replace the old street gutters and earth channels in order to convey the irrigation water from the springs to the fields. Proper controlled outlets are being constructed to prevent leakage to branch channels and fields, and culverts and gulleys made to convey water under streets. Three of the smaller springs are being excavated and built in order to augment the flow.

The original schemes and estimates were prepared in 1942 but Lapithos people were reluctant to have any improvement works carried out to their irrigation system. Having, however, seen the appreciable benefits derived from the works constructed nearby at Karavas, they changed their minds and approached the Government with a view to having their channels, etc., constructed.

When the irrigation channels are completed an area of 4,000 donums under various seasonal crops will be brought under irrigation, of which 1,600 donums were irrigated before the works were put in hand. The sum of £32,235 will be expended for the execution of the scheme, towards which the beneficiaries have contributed the sum of £11,200.

(*B*) *Nata-Kholetria* :—The village of Nata, on the right bank of the Xeros river, used to take water for irrigation of summer and winter crops from the river's flow and a source of marshy land in the river bed. The water was diverted by a temporary brushwood weir and taken to the fields by means of 16,000 feet of earth channels. At a distance of 3,500 feet upstream from the Nata intake weir and on the left bank of the Xeros River, Kholetria irrigators also had a temporary brushwood intake weir similar to that of Nata, from where the water was taken and conveyed by 8,000 feet of earth channels to their lands for irrigation purposes.

The old irrigation systems have now been abandoned. The marshy land on the right bank of the river was excavated, a cutting, 1,100 feet long by 7.5 feet average depth, was made and 1,100 feet of 15" diameter precast perforated cement piping were laid, with a view to tapping the subsurface water. The exploratory works proved to be very successful. In previous years the flow, in the old channels, was at the rate of only 50,000 gallons per day in summer months, whereas now the flow has increased to 1,000,000 gallons per day. At the outlet of the cutting a groyne intake weir, $50' \times 8' \times 2\frac{1}{2}'$, was constructed. The water from this weir is conveyed to a distribution tank by 1,270 feet of $26'' \times 21'' \times 15''$ masonry channels. The flow at the distribution tank is equally distributed to the two villages, the portion for Kholetria being conveyed across to the left bank of the river by 1,100 feet of 8" diameter piping and thence into channels lined in lime-cement concrete to a total length of 4,000 feet. The Nata village channels on the right bank of the river are also lined in lime-cement concrete for a distance of 4,000 lineal feet.

An extent of 400 donums (200 donums of Nata and 200 of Kholetria) will be brought under irrigation for summer crops. The area irrigated before the works were put in hand was 40 donums of perennial irrigation and 360 of winter crops for both villages.

The scheme was started on 10.4.52 and is nearing completion. The cost will be £8,200 of which the Irrigation Divisions have paid the sum of £2,884. The villagers are so pleased with this stage of the scheme that they have asked for the lining of another length of 8,000 lineal feet of channels, which will serve both villages. This is estimated to cost a further £4,000 towards which the beneficiaries will have to pay £1,333. This part of the project is expected to be carried out in 1953.

(*C*) *Evrykhou* :—This is a village which possesses some of the best lands in the Solea valley. The irrigators of the village take their water from the Karyotis River. The main irrigation channels and some secondary ones, totalling in all 14,000 lineal feet, have been lined with reinforced concrete and some incidental works have been carried out, viz. controlled divisions, small aqueducts, and several outlets. The maximum size of the channel is 21″ × 21″ designed to take 5 cusecs.

Work commenced on 6.11.51 and was completed on 7.6.52. The sum of £10,500 was spent, of which the Irrigation Division contributed £3,500. About 450 donums benefit by these works, 350 donums of which are perennially irrigated. As soon as the works were completed the beneficiaries were able to test the project, which was found to be very satisfactory. Consequently they have asked that the concreting of the channels be extended by a further 5,600 feet, including the construction of some culverts.

The additional work will cost £4,800 of which the Irrigation Division will pay £1,631. It is hoped to carry out this additional work in 1953.

(*D*) *Phini* :—This is one of the hill villages which sustained severe losses by reason of hail storms during 1952, and where an estimated total value of some £2,150 of crop was lost. As a relief measure it was decided to execute some very necessary irrigation works at a cost of £10,620.

A contribution of £800 was provided from the " Hail and Rust Damage Fund " and £2,650 from the village. Under normal conditions the beneficiaries would have had to pay the total contribution of £3,450.

The works were put in hand on 14.11.52. They consist of the construction of 2 masonry weirs each 30 feet long by ten feet high and some 13,700 lineal feet of reinforced concrete channels, culverts and proper outlets. A total area of 290 donums under various seasonal crops will be irrigated.

(*E*) *Lefka " Kafizes "* (*Stage* **2**) :—The scheme consists of a dam and reservoir on the Xeros River and some minor works at Lefka.

Work was carried out in two stages, the first in the summer of 1951 and the second in the summer of this year. This latter stage included all the masonry work on the dam above river-bed level and other auxiliary works and repairs to the Lefka pipeline.

The total height of the dam, including foundations under river-bed, is 70 feet and the length of the dam, at crest level, is 100 feet. The foundation section of the dam, up to a height of 24 feet above bed rock was built in cement concrete in 1951. Work on the remaining part of the structure was put in hand in May, 1952, and about 3,500 cub. yards of masonry was built at an average rate of 40 cub. yards per day.

The masonry work was divided into three vertical sections of which the middle section was built after the completion of the other two. Stones were quarried from the igneous rocks forming the banks of the river at the site of the works. All faces of the walls were built in stone set in cement mortar of proportion 1 : 3 and the core in lime-cement mortar of proportion 1 : 2 : 9 up to a height of 30 feet below the crest of the dam, and proportion 1 : 3 : 12 for the remaining 30 feet. Two mechanical lifts were employed during construction, one of which was erected on the downstream stepped face of the dam.

A net-work of perforated 3″ diameter pipes was placed in the masonry work of the dam for drainage, with outlets on the roof of the inspection galleries at the base, and inspection ends on the top, of the dam. Weep pipes of 2″ diameter were also placed at 8 feet vertical and 15 feet horizontal staggerred intervals. Bitumen expansion joints between the vertical sections of the masonry work were provided with copper-plate up to a height of 15 feet. The penstock tower was completed and the penstock installed. The parapet wall of the dam, which rises to 4 feet above the crest, extends as far as the penstock wall to provide an access to the head of the penstock from the top of the dam.

The draw off pipes, 6" in diameter were installed with 40 feet of perforated intake length fixed to the face of the penstock wall. These pipes extend through the diversion gallery and terminate in a valve-box and balancing tank constructed on the downstream side of the dam. This tank was provided with a stilling compartment and measuring weirs and forms the intake of the Lefka pipeline.

All pipes, which are draining the foundations of the dam and rise up to the floor of the central inspection gallery, have been fitted with cock-valves and pressure gauges and extend along the river-bed to discharge into the balancing tank. Pressure gaugings and measurements of the flow were taken at regular intervals whilst the reservoir was filling up. Minor seepages through the rock abutments on either side of the dam, which appeared when water was storing up in the reservoir, were also piped and led to the balancing tank. The upper face of the dam was given 3 coats of cement plaster mixed with " Cementone " waterproof powder.

The whole scheme, including repairs and improvements to the Lefka pipeline was completed on 1st December, 1952. The dam was closed for storage on 13th October, 1952. The storage capacity is estimated at 28 million gallons. The total expenditure on the works was £20,000. It is expected that the scheme will make possible new perennial irrigation of 500 donums and seasonal irrigation of 200 donums.

The reservoir was full on 9.12.52 and was officially opened by His Excellency the Governor on 11.12.52.

(*F*) *Lythrodhonda* :—Following a petition from the villagers a new dam was constructed at Lythrodhonda, at a suitable site on the river, about one mile above the old reservoir. This new scheme also included lining and repairs to one mile length of distribution channels.

The dam is a masonry structure of the gravity over-flow type, rising to 34 feet high above the river bed-rock. Foundations and cut off trenches at the toe and heel of the dam were filled in cement concrete of proportion 1 : 3 : 6 and 1 : 2 : 4. The masonry work above foundation level was in rubble stone quarried at the site, set in lime-cement mortar, 1 : 2 : 9 in the lower section, and 1 : 3 : 12 in the upper section. A system of perforated pipes was laid in the foundation and the masonry work for drainage purposes, and these were extended to discharge below the dam.

A penstock, size 2′ × 2′ has been installed on the upper face of the dam. This can be operated from the top of the spillway, and can be opened for the purpose of emptying the reservoir. The normal practice will be to open the penstock in the late summer, when water will be needed in the irrigation system down below.

Work on this scheme was started in January and completed in August, 1952. The cost of the dam was £3,500 and lining of channels £1,300. The storage capacity of the reservoir is 7½ million gallons, which will enable the Division to irrigate an extent of about 100 donums in late summer in addition to the spring and early summer crops.

## APPENDIX 3.

### DESCRIPTION OF CERTAIN VILLAGE WATER SUPPLY SCHEMES.

(*A*) *Perapedhi* :—The water supply of Perapedhi comes from the Vromonera spring which is one of the sources feeding the Moniatis river. The sum of £1,440 was paid as compensation for the loss of the water rights of the Moniatis irrigators. The flow from the spring, which varies between 18,000 and 50,000 g.p.d., is piped to the village through a 14,400 feet of 3 inch main, designed to take the maximum flow.

The water is distributed in the village by means of one standard R.C. Storage tank and twelve "fountains". The distribution system consists of 3″ to 1″ galvanized pipes, 8,160 feet in length.

Perapedhi is a summer resort and so a house-to-house service has been installed. The flow is controlled by the saccoraphi system, which allows water to pass through an opening at the rate of 1/3 of a gallon per minute..

The total cost of the work was £7,100 or £17 per person (population 422 in 1946). The village paid £3,600 and Government £3,500.

(*B*) *Kato Zodhia* :—This village is supplied with a piped water supply by means of a pumping plant and it is no longer necessary for the householders to draw water from the very deep private wells in the village.

The plant is installed on a borehole sunk on the outskirts of the village and consists of a deep-well reciprocating pump, driven by a 12 H.P. diesel engine. The water is pumped into an 8,000 gallon storage tank near the pump-house and is distributed to 27 " fountains " in the village by 12,000 feet of piping, from 3″—1″ in diameter.

The cost of the scheme was £4,260 or £2.5 *per capita* (1,712 as per the 1946 census). Work on the scheme was commenced in November, 1951, and completed in March, 1952.

The output of the pump is 2,000 g.p.h. and is operated for 12–14 hours per day during the summer. The average consumption per day per head is about 12 gallons.

(*C*) *Kakopetria and Galata* :—Both these villages lie close together in the picturesque Solea Valley and attract a large number of summer visitors. A common scheme has been designed and executed, by tapping a spring at the locality Livadhi-tou-Papaphilippou, within the main State Forest of Troodos, at an altitude of about 4,500 feet above sea level.

The water of the spring, averaging 55,000 gallons per day, has been conveyed, through a 3-inch main 14,500 feet long, to a distribution box, built at the locality Stassinou, at Kakopetria, where it is divided between Kakopetria and Galata. The average share per day per head of the population is 30 gallons. A house-to-house service has been installed at Kakopetria and an equal share of water is given to every consumer, effected by means of eight R.C. Distribution Boxes, built for this purpose. Three R.C. " fountains " were built for public use.

A 2-inch main, 4,600 feet long, conveys the share of Galata from the distribution box at Kakopetria to two R.C. Tanks at Galata, whence it is distributed in the village by means of 26 " fountains ", connected by 9,270 feet of pipelines, varying from 1½ inch to 1 inch in diameter.

The cost of the scheme was £8,300 or £8 per person of the permanent population (1,003 in 1946). Kakopetria contributed £3,340 and Galata £2,000. Kakopetria paid more than the usual share for standard village schemes because of the construction of the distribution boxes for a house-to-house service. Work was commenced in January, 1952, and completed in July, 1952.

(*D*) *Polis* (*Khrysokhou*) *and Prodhromi* :—Both these villages, which form a rural municipality, had an old water supply which decreased to 10,000 gallons per day in summer, allowing a share of only 6 gallons per day per head of the population (1,603 in the census of 1946), which was inadequate.

An additional supply of 55,000 gallons per day was conveyed from the Kastrappi infiltration gallery through a 4-inch main, 12,700 feet long, to a storage tank of 13,000 gallons capacity, built at Polis. The average supply per day per head of the population has thus been raised to 30 gallons.

From the storage tank the water is distributed to 17 public " fountains " at Polis, and to one storage tank (1,500 gallons capacity) and seven public " fountains " built at Prodhromi. In all 20,800 feet of pipe lines were laid, varying from 2" to 1" in diameter. An old house-to-house service exists at Polis, which is now supplied by the water conveyed from Kastrappi.

The cost of the scheme was £6,700, contributed on a fifty-fifty basis by the rural municipality and the Government. The cost *per capita* was £4.17. Work was commenced in June, 1951, and completed in July, 1952.

(*E*) *Kinousa* :—This village is situated on a dry plateau near the Limni Mines of Polis. To provide water to this small village there was no alternative than to tap the Lokhos spring, situated within the Paphos Forest, 5 miles away from the village. The scheme was an expensive one, beyond the financial means of the village with a population of only 193 persons, but the Cyprus Sulphur and Copper Co. Ltd., Limni, also agreed to join in and contributed half the cost.

A $2\frac{1}{2}$ inch main, 27,000 feet long was laid from the spring to the distribution box at Kinousa through very precipitous country over which the pipes had to be transported by animals and men. The laying of the main was commenced on the 7th July, 1952, and by the 9th of August the water was flowing at Kinousa. A quantity of 38,000 gallons per day has been conveyed. From the distribution box at Kinousa half the water is taken by the Limni Mines, and the other half is distributed by means of a storage tank and five " fountains " within the village.

The scheme was started in June, 1952, and completed in September, 1952. The total cost was £6,800. The Cyprus Sulphur and Copper Co. Ltd. (Limni) contributed £3,400, and the village £1,700. The cost per head of the 1946 population (193) was £17.6 for a supply of 100 gallons per day per head.

An irrigation scheme has been designed to use the surplus water which will irrigate about 25 donums all through the year. The estimated cost of the irrigation scheme is £1,050, and involves the construction of an irrigation tank and irrigation pipelines.

(*F*) *Stavrokono* :—The only spring with adequate flow for the domestic needs of the village was the Koumeri spring situated in the area of Trakhypedhoula.

Two-thirds of the flow of the spring, averaging 19,000 gallons per day, was purchased for £750 and conveyed to the village through a $2\frac{1}{2}$ inch main, 14,000 feet long. An irrigation tank of size $12' \times 9' \times 4'$ was built near the spring to receive the 1/3rd of the flow remaining at the source and is now used for irrigation by the owners of the spring.

The distribution system of the village consists of one standard R.C. storage tank and 10 " fountains ", all connected by 3,500 feet of pipelines varying from $2\frac{1}{2}$" to $\frac{3}{4}$" in diameter.

The total cost of the scheme was £4,690 or an average cost of £10.7 per head of the population (437 persons in 1946). The minimum supply per head of the population is 20 gallons per day.

The work was commenced in December, 1951, and completed in June, 1952.

(*G*) *Argaki* :—This is one of the several villages in the Morphou area, where pumped water supplies have been installed.

The water is pumped by means of a reciprocating deep-well pump installed in a 8″ borehole drilled at the outskirts of the village. It is worked by a 6 H.P. Diesel Engine, and the delivery is 2,000 gallons per hour. A masonry room was built to house the pumping plant.

From an 8,000 gallons masonry storage tank, built near the pumphouse, the water is conveyed to 17 " fountains " erected in the village, by a series of trunk and subsidiary mains 7,200 feet long, from 3″ to 1″ in diameter. The pump will work for about 7 hours to give a share of 15 gallons per day per head of the population.

The cost of the scheme was £3,680 or £3.78 per head of the population (976 persons as per the 1946 census). Work on the scheme was commenced in October, 1952, and completed at the end of December, 1952.

(*H*) *Milikouri* :—This village had a small spring in the village, the water of which was inadequate for its domestic needs. As an additional supply the one-half of the flow of the Kaminoudhi spring was purchased from the Kykko Monastery for the sum of £250. The one-half flow of this spring averages 10,000 gallons per day and together with the old village spring, which has a minimum discharge of 5,000 gallons per day, gives a supply of over 20 gallons per head per day of the population (448 persons as per the 1946 census).

The water was conveyed to the village through 5,600 feet of 2 inch main. The distribution of water in the village is effected by means of one (1,500 gallons) storage tank and 18 " fountains ", served by a system of 8,550 feet of pipelines of 2″ to 1″ diameter.

The cost of the work was £3,390 and the cost per person is £7.57. Work was commenced in May, 1952, and completed in September, 1952.

(*I*) *Hamid Mandres* :—Three-quarters of the flow from the Panayias-tis-Apsidiotissa spring was purchased from the Chrysostomos Monastery for the sum of £520.

The flow of this spring fluctuates from 11,000 to 2,200 gallons per day, and the 3/4ths of the total flow are conveyed to the village through 23,000 feet of 1¼″ main, designed to take the maximum water available.

The water is distributed in the village by means of one standard R.C. Storage tank (1,500 gallons capacity) and 7 " fountains ". The trunk main feeding the " fountains " is 11,300 feet long and is from 1½″ to ¾″ in diameter.

The total cost of the work was £4,100 and the cost of the scheme per head of the population (361 persons as per the 1946 Census) is £11.36. Work was commenced in April, 1952, and completed in September, 1952.

(*J*) *Erimi and Kolossi* :—Both these villages are very near the Kouris River, the water of which is used for irrigation. All previous attempts to convey water to these villages from springs in the Kandou area had been unsuccessful due to strong opposition from the inhabitants of Kandou, and had to be rejected in order to avoid the creation of ill feeling between these neighbouring villages.

In 1951 a combined scheme was prepared, using the Koundouros spring which has an average discharge of 7,000 gallons per day. An additional supply of about 30,000 gallons per day from Diplopotamos spring near Khalassa was also piped to these two villages.

The water is conveyed from the two sources to a distribution box near Erimi by means of 9,500 feet of 2½ inch, 18,000 feet of 2 inch and 10,900 feet of 1½ inch mains. At the distribution box the water is divided between Erimi and Kolossi, in the proportion of 4/9ths and 5/9ths respectively.

The share of water of Erimi is distributed within the village by means of one storage tank and 10 " fountains " all connected by a network of mains 9,600 feet long, from 2″ to ¾″ in diameter.

From the distribution box at Erimi the 5/9ths of the water is conveyed through an 8,500 feet main to a storage tank at Kolossi, and thence it is distributed to 14 " fountains ", all connected by a trunk and subsidiary mains varying from 3" to 1" diameter 8,300 feet long.

The total cost of the scheme was £10,840. The cost of the scheme for Erimi was £4,195 and for Kolossi £6,645 and the cost per head of the population was £10.4 and £12 respectively. (The population of Erimi according to the 1946 Census was 403 persons and of Kolossi 546.)

Work on the scheme was commenced in January, 1952, and completed in November, 1952.

(*K*) *Lapithos* :—This is a rural municipality and is privileged by having above it the second largest spring in Cyprus, known as " Kephalovryso tis Lapithou ", with an average discharge of over one million gallons per day. In spite of this the inhabitants could not pipe even part of the Kephalovryso for their domestic needs, as about 200 irrigators hold ab-antiquo irrigation rights. In 1952, however, the Municipal Council of Lapithos secured the consent of most of the irrigators to utilize 5% of the flow for the domestic needs of this village.

This portion of the flow of the spring is first discharged into a masonry storage tank of 22,000 gallons capacity and thence it is distributed to 67 " fountains ", all served by two independent trunk mains with a network of subsidiary mains 44,000 feet long. Fifteen R.C. distribution boxes were constructed at the expense of the Municipal Corporation, for a house to house service.

The total cost of the scheme was £10,000 or £3 per head of the population (3,327 in 1946). The Government paid £4,500 and the Municipality £5,500. Work on the scheme was commenced in August, 1952 and completed in December, 1952.

(*L*) *Appidhes Scheme* :—This is the largest village water supply scheme of its kind in Cyprus. 62 miles of galvanized pipe convey water from the Appidhes spring in the Paphos Forest across some of the most difficult hill country in Cyprus to a group of 10 dry villages. The combined population served is 4,910 (1946 census) ; the main pipes are big enough to take the full summer discharge of the spring and to provide water for a further 2,600 persons. Each person will receive water at the rate of 20 gallons per day.

2. The ten villages participating at present are Pano Panayia, Asproyia, Phalia, Lemona, Amargeti, Ayia Marina, Simou, Stroumbi, Tsadha and Kili. A further 8 villages have applied for inclusion in a second stage. These are Dhrousha, Inia, Pano Arodhes, Dherinia, Dhrymou, Eledhiou, Pendalia and Kannaviou.

3. The spring was excavated and built mostly in the summer of 1951. Pipe laying commenced in August, 1952, and by the middle of November water was flowing to Phiti and Panayia. By the end of the year the distribution systems were complete in Panayia, Asproyia, Simou and Stroumbi and work was proceeding in the remaining six villages.

4. One of the chief construction problems was the transport of pipes in the mountains. Some 3 miles of motor track and 10 miles of mule track had to be formed. Another problem was caused by a high ridge running across the direct route of the main pipeline from the spring to Panayia. Here a tunnel 280 feet long through hard igneous rock was driven in order to shorten the pipeline by 8,000 feet and to permit a satisfactory gradient.

5. The cost of the scheme under construction is estimated at £90,900 of which £20,900 represents the cost of providing the reserve supply for the second stage. The £20,900 is at present being paid by Government but part will be recovered when the additional work is undertaken. The remaining £70,000 is being paid half by Government and half by the villagers and represents an average cost of £14.2 per person of the 1946 population (4,910).

APPENDIX 4.

IRRIGATION SCHEMES COMPLETED IN 1952.

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| | Ayios Theodhoros (Ll.) | | | | |
| 1 | Piphanis | Masonry channels | — | 25 | 25 |
| 2 | Kato Mehmeti | Spring | — | 6 | 6 |
| 3 | School garden | Masonry channels | — | 2 | 2 |
| 4 | Pano Mehmeti | Spring | — | 6 | 6 |
| 5 | Mehmeti Lazmarka | Weir, channels & irrig. tank | — | 20 | 20 |
| 6 | Serghis | Spring | — | 9 | 9 |
| 7 | Ayios Georghios | Retaining walls | — | — | — |
| 8 | Kramberadhes | Masonry channels & piping | — | 6 | 6 |
| 9 | Ay. Ioannis (Malounda) | Spring, tunnels, masonry channels | 480 | 80 | 560 |
| | Agros. | | | | |
| 10 | Kato-Kaoukkaris | Weir, masonry channels and irrigation tank | — | 16 | 16 |
| 11 | Eleny | Spring | — | 5 | 5 |
| 12 | Mesi-Kaoukkaris | Irrigation tank | — | 8 | 8 |
| 13 | Perdhikousa-Yeradja | Repairs to tank | — | 5 | 5 |
| 14 | Kaoukkaris-Kokkinos | Channels and piping | — | 6 | 6 |
| 15 | Mesi-Kokkinos | Spring and piping | — | 14 | 14 |
| | Arakapas. | | | | |
| 16 | Koutis | Lining of channels | — | 20 | 20 |
| 17 | Arghakia | Weir, channels & irrig. tank | — | 30 | 30 |
| 18 | Angoulos | Groyne-intake, masonry channels | — | 26 | 26 |
| 19 | Ay. Pavlos | Weir and masonry channels | — | 18 | 18 |
| | Ay. Ioannis (Ll.) | | | | |
| 20 | Kapsalia | Masonry channels and irrig. tank | — | 18 | 18 |
| 21 | Agros | Masonry channels and irrig. tank | — | 40 | 40 |
| 22 | Macheras | Masonry channels and piping | — | 28 | 28 |
| 23 | Kato-Acros | Masonry channels and retaining wall | — | 30 | 30 |
| 24 | Spilios-Kouforos | Repairs to channels | — | — | — |
| | Alithinou. | | | | |
| 25 | Roun | Excavation of springs | — | 12 | 12 |
| 26 | Kapsalia | do. | — | 13 | 13 |
| 27 | Petrides | Weir and piping | — | 4 | 4 |
| 28 | Ay. Konstantinos (P. Vavatsinia) | Weir, masonry channels, retaining walls | — | — | — |
| 29 | Ay. Amvrosios (Platanos) | Weirs, spring, R.C.C. channels and piping | 30 | 60 | 90 |
| 30 | Ay. Therapon | Irrigation tank and piping | — | 25 | 25 |
| 31 | Ay. Yeoryios (Kafkallou) | Masonry channels | 100 | 40 | 140 |
| 32 | Angastina (Louria and Ay. Yeoryios) | Spillway, retaining walls and repairs | — | — | — |
| 33 | Apsiou | Masonry channels | — | 80 | 80 |
| 34 | Chakistra | Piping and channels | — | 10 | 10 |
| | Dhymes | | | | |
| 35 | Kambos | Masonry channels and irrig. tank | — | 20 | 20 |
| 36 | Sykamieri | Masonry channels | — | 20 | 20 |
| 37 | Dhiorios (Djipos) | Spring, masonry channels | 100 | 40 | 140 |
| 38 | Evrykhou | R.C.C. channels | 100 | 350 | 450 |
| 39 | Eylenja | Spillway retaining walls and bank | 400 | — | 400 |
| 40 | Elea (K) | Piping, construction of a trough | — | — | — |
| | | Carried forward | 1,210 | 1,092 | 2,302 |

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| | | Brought forward .. | 1,210 | 1,092 | 2,302 |
| | Exometokhi. | | | | |
| 41 | Trianta-skales .. | Weir .. .. .. .. | 300 | — | 300 |
| 42 | Yerondas .. .. | Spillway, channels .. .. | 500 | — | 500 |
| 43 | Gaidhouras .. .. | Screw-wheel control gates .. | — | — | — |
| 44 | Galata (Sinaorkotis) .. | R.C.C. channels, outlets, pipes | — | 365 | 365 |
| 45 | Geunyeli .. .. | Repairs to apron and wing-walls .. .. .. | — | — | — |
| | Kalokhorio (Ll.). | | | | |
| 46 | Pano-Marammenos .. | Masonry channels .. .. | — | 9 | 9 |
| 47 | Kato-Marammenos .. | do. .. .. .. | — | 10 | 10 |
| | Kalopanayiotis. | | | | |
| 48 | Agni .. .. .. | Small weir, irrigation tank, piping .. .. .. | — | 49 | 49 |
| 49 | Gnoudhias .. .. | Piping .. .. .. | — | 9 | 9 |
| 50 | Kato Ay. Yeorghios .. | Weir, masonry channels, tank | — | 20 | 20 |
| 51 | Kato-Moni (Vayianis) | Tunnels, lining of channels .. | 120 | 90 | 210 |
| 52 | Kalokhorio (Kapouti) | Spring, channels, repairs to tank .. .. .. | — | 76 | 76 |
| | Kaminaria. | | | | |
| 53 | Potamia .. .. | Masonry channels .. .. | — | 10 | 10 |
| 54 | Livadhia .. .. | do. .. .. .. | — | 12 | 12 |
| | Kyperounda. | | | | |
| 55 | Stremmata (Koutsina) | Weir, masonry channels, irrigation tank .. .. | — | 57 | 57 |
| 56 | Khardhama .. .. | Spring, piping and tank .. | — | 10 | 10 |
| 57 | Dhyo-Potami .. | Masonry channels .. .. | — | 6 | 6 |
| 58 | Vrysi-tou-Mangouri | Masonry channels and irrigation tank .. .. .. | — | 15 | 15 |
| 59 | Kaloritis .. .. | Weir, spring, channels, irrigation tank .. .. .. | — | 20 | 20 |
| 60 | Kalonaris .. .. | Spring .. .. .. | — | 6 | 6 |
| 61 | Theodokos .. .. | Weir, masonry channels and pipes .. .. .. | — | 40 | 40 |
| 62 | Pano-Lania .. .. | Weir, channel, tank .. .. | — | 10 | 10 |
| 63 | Pano-Kontomersina .. | Spring, masonry channels and tank .. .. .. | — | 14 | 14 |
| 64 | Pezoules .. .. | Spring .. .. .. | — | 8 | 8 |
| 65 | Kato-Kontomersina .. | Spring, piping, irrigation tank | — | 6 | 6 |
| 66 | Kambos (Frouyia) .. | Retaining walls and channels | — | 5 | 5 |
| 67 | Kambi Pharmakas .. | Weir, channel, tank .. .. | — | 38 | 38 |
| | Khandria. | | | | |
| 68 | Markettou .. .. | Weir, channel, irrigation tank | — | 16 | 16 |
| 69 | Dhialos .. .. | Spring, masonry channels .. | — | 16 | 16 |
| 70 | Kato-Koutraphas .. | Groyne-intake, masonry channels and earth channels .. | 157 | — | 157 |
| 71 | Knodhara (Latchi) .. | Retaining wall, channels, irrigation port .. .. | 500 | — | 500 |
| 72 | Kritou-Marottou .. | Piping .. .. .. | — | 5 | 5 |
| 73 | Korakou-Tembria .. | Minor repairs .. .. | — | — | — |
| 74 | Kouklia E.M.I.W. .. | Repairs to river main embankment .. .. .. | — | — | — |
| 75 | Lefkoniko .. .. | Repairs to channels and spillway .. .. .. .. | — | — | — |
| | Louvaras. | | | | |
| 76 | Paralona .. .. | Weir, piping and tank .. | — | 25 | 25 |
| 77 | Kato-Pervolia .. | Weir, masonry channels .. | — | 20 | 20 |
| 78 | Linou .. .. .. | Weir, retaining walls .. | — | 20 | 20 |
| 79 | Lythrodhonda .. | Dam, lining of channels .. | 300 | 100 | 400 |
| 80 | Lefka (Kafizes) .. .. | Masonry dam, piping, channels .. .. .. | 200 | 500 | 700 |
| 81 | Mallia (Maletti) .. | Weir, lining of channels .. | 80 | 160 | 240 |
| | | Carried forward .. | 3,367 | 2,839 | 6,206 |

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| | | Brought forward .. | 3,367 | 2,839 | 6,206 |
| 82 | Mora .. .. .. | Retaining wall, screw gates, channels, repairs .. .. | — | — | — |
| 83 | Marathovounos (Kontovelis) .. .. | Retaining wall, earth bank and repairs .. .. | — | — | — |
| 84 | Meniko (Neron Kalokerinon) .. .. | Lining of channels, pipe crossing .. .. .. .. | — | 200 | 200 |
| 85 | Odhou (Makriadhomi) | Weir, masonry channels, piping .. .. .. | 100 | 50 | 150 |
| 86 | Patriki (Frangolakkos) | Retaining walls, channels, repairs .. .. .. | — | — | — |
| 87 | Paralimni (F.) .. | Recharge scheme 1st stage channels and well .. .. | — | — | — |
| | Prodhromos. | | | | |
| 88 | Near Leptos house .. | R.C.C. channels .. .. | — | 8 | 8 |
| 89 | Kyparisi .. .. | Springs .. .. .. | — | 11 | 11 |
| 90 | Palekhori .. .. | Repairs to channels .. .. | — | — | — |
| | Potami. | | | | |
| 91 | Sykamies .. .. | Construction of channels .. | — | 7 | 7 |
| 92 | Kashanos .. .. | Extension of tunnels .. | — | 58 | 58 |
| 93 | Plousha .. .. | Weir, masonry and earth channels .. .. .. | 160 | — | 160 |
| | Potamitissa. | | | | |
| 94 | Kaourou-Yeradjia .. | Weir, masonry channels and tank .. .. .. | — | 19 | 19 |
| 95 | Potamous .. .. | Weir, masonry channels .. | — | 35 | 35 |
| 96 | Palekhori (Orinis) .. | Weir, masonry channels and syphons .. .. | 800 | 20 | 820 |
| | Pelendria. | | | | |
| 97 | Kalamionas .. .. | Channels and piping .. | — | 7 | 7 |
| 98 | Livadhia .. .. | Weir and masonry channels .. | — | 13 | 13 |
| 99 | Kato-Kountlos .. | Masonry channels and pipes | — | 15 | 15 |
| 100 | Pano-Kountlos .. | Piping .. .. .. | — | 7 | 7 |
| 101 | Psillatos .. .. .. | Irrigation-ports, channels and tank .. .. .. | 500 | — | 500 |
| 102 | Peristeronopiyi .. | Spillway, channels .. .. | 450 | — | 450 |
| 103 | Prastion (Kenouryia) | Repairs to channels .. .. | — | — | — |
| 104 | Pharmakas (Deksameni) | Masonry channels, irrigation tank .. .. .. | — | 12 | 12 |
| 105 | Piyi (Koundouros) .. | Spillway, retaining wall .. | 250 | — | 250 |
| | Sykopetra. | | | | |
| 106 | Agridhia .. .. | Additional channels and piping .. .. .. | — | 2 | 2 |
| 107 | Konomidhes .. .. | Additional channels .. .. | — | 2 | 2 |
| 108 | Kountouria .. .. | do. .. .. .. | — | 10 | 10 |
| 109 | Sisklipos (Neron tis Vryses) .. .. | Masonry channels and repairs to tank .. .. .. | — | 12 | 12 |
| 110 | Statos (Kato Pighadhia) | Additional piping .. .. | — | — | — |
| 111 | Sarandi (Yironas) .. | Spring and masonry channels | — | 40 | 40 |
| 112 | Sinda (Kouchouk Dere) | Spillways and earth banks .. | 2,000 | — | 2,000 |
| 113 | Tris Elies (Kaminoudhia) .. .. .. | Masonry channels .. .. | — | 36 | 36 |
| 114 | Fountana .. .. | Masonry channels & retaining walls .. .. .. | — | 18 | 18 |
| 115 | Tersephanou .. .. | Repairs to retaining walls and culverts .. .. .. | — | — | — |
| 116 | Vasilia (Ouvala) .. | Masonry channels and repairs to tank .. .. | — | 46 | 46 |
| 117 | Vitsadha (Kouchouk Dere) .. .. | Masonry weir (Soil conservation) .. .. .. .. | — | — | — |
| 118 | Voni .. .. .. | Control-gates, channels, ports | 1,200 | — | 1,200 |
| 119 | Vassilia .. .. .. | Additional channel .. .. | — | — | — |
| | | Carried forward .. | 8,827 | 3,467 | 12,294 |

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| | | Brought forward .. | 8,827 | 3,467 | 12,294 |
| 120 | Yenagra.. .. .. Zoopiyi. | Masonry spillway, channelling | 500 | — | 500 |
| 121 | Meshakos-Pano .. | Small weir and piping .. | — | 6 | 6 |
| 122 | Meshakos-Kato .. | Small weir and masonry channels .. .. .. | — | 5 | 5 |
| 123 | Kato-Karkas .. | Spring, irrigation tank .. | — | 8 | 8 |
| 124 | Vrysi-tou-Rotsou .. | Springs .. .. .. | — | 30 | 30 |
| 125 | Pano-Karkas.. .. | Spring and tank .. .. | — | 10 | 10 |
| | | | 9,327 | 3,526 | 12,853 |

APPENDIX 5.

IRRIGATION SCHEMES IN HAND AT THE END OF 1951.

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| 1 | Ay. Yeorghios (Silikou) | Weir and piping .. .. | — | 12 | 12 |
| 2 | Arsos (Ay. Yeorghios) | Weir and masonry channels.. | — | 25 | 25 |
| 3 | Ay. Ioannis (Yerambelia) .. | Masonry channels .. .. | — | 40 | 40 |
| 4 | Akhelia (Nursery Garden) | Irrigation tank and distribution system .. .. | — | 40 | 40 |
| 5 | Ayios Memnon (F).. | Re-charge scheme (wells and tunnelling) .. .. .. | — | — | — |
| 6 | Ay. Vavatsinia (Mylos) | Masonry channels, irrig. tank | — | 20 | 20 |
| 7 | Dhikomo Pano & Kato | R.C.C. channels, outlets .. | 700 | 200 | 900 |
| 8 | Dhymes (Klimatoudhia) | Masonry channels and irrigation tank .. .. .. | — | 10 | 10 |
| 9 | Famagusta (Harangas) | Re-charge scheme (weir and well) .. .. .. | — | — | — |
| 10 | Kholetria Nata .. | Groyne intake, lining of channels .. .. .. | — | 400 | 400 |
| 11 | Kandou (Batsouni) .. | Weir, channels, river crossing (1st stage) .. .. .. | 420 | 180 | 600 |
| 12 | Kouklia (Chiftlik) .. | Lining of channels .. .. | — | — | — |
| 13 | Kalokhorio (Klirou).. | Lining of channels .. .. | — | 164 | 164 |
| 14 | Kazaphani (Bellapais) | Spring, weir, R.C.C. channels | — | 90 | 90 |
| 15 | Kyperounda (Kountourka) .. .. | Spring, piping and irrigation tank .. .. .. | — | 25 | 25 |
| 16 | Lapithos (Kephalovryso) .. | R.C.C. channels and outlets.. | — | 1,000 | 1,000 |
| 17 | Lapithos (Sphinarkotiko) | do. .. | — | 300 | 300 |
| 18 | Meniko (Kourkousa) | Lining of tunnels & channels | 100 | 50 | 150 |
| 19 | Marathasa .. .. | Groyne intake, lining of channels .. .. .. | — | 500 | 500 |
| 20 | Moutoullas .. .. | Weir, masonry channels, repairs to tank .. .. | — | 113 | 113 |
| 21 | Paleomylos .. .. | Masonry channels and retaining walls .. .. | — | 207 | 207 |
| 22 | Psomolophou .. | Lining of channels .. .. | 500 | 120 | 620 |
| 23 | Phini (Xerokolymbos) | Weirs and R.C.C. channels .. | — | 290 | 290 |
| 24 | Theletra .. .. | R.C.C. channels .. .. | — | 40 | 40 |
| 25 | Yerasa (Lithosoura).. | Masonry channels .. .. | — | 46 | 46 |
| 26 | Yeri .. .. .. | Weirs, channels and irrigation tank .. .. .. | 1,000 | 20 | 1,020 |
| | | Totals .. .. | 2,720 | 3,892 | 6,612 |

APPENDIX 6.

## IRRIGATION SCHEMES READY FOR CONSTRUCTION AT THE END OF 1952 BUT NOT YET STARTED.

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| | Ay. Theodhoros (Ll.). | | | | |
| 1 | Koufes-Platanos .. | Weir, channels, river crossing | — | 400 | 400 |
| 2 | Plati-Kato .. .. | Irrigation tank .. .. | — | 11 | 11 |
| 3 | Plati-Pano .. .. | Weir and irrigation tank .. | — | 8 | 8 |
| 4 | Mia-Vrysi .. .. | do. | — | 8 | 8 |
| 5 | Vassiliki–Pinakas .. | Spring, irrig. tank, masonry channels .. .. | — | 180 | 180 |
| 6 | Aghirda .. .. | Springs .. .. .. | — | 10 | 10 |
| | Agridhia. | | | | |
| 7 | Pano–Leftina .. | Weir, channels, irrig. tank .. | — | 30 | 30 |
| 8 | Kato–Leftina .. | Masonry channels, irrigation tank .. .. .. | — | 30 | 30 |
| 9 | Stremmata .. .. | do. .. .. .. | — | 3 | 3 |
| 10 | Kapsidhia .. .. | Springs and piping .. .. | — | 3 | 3 |
| 11 | Laxia .. .. .. | Spring tank .. .. .. | — | 6 | 6 |
| 12 | Ayia Marinoudhia .. | Spring, tank, channels and piping .. .. .. | — | 30 | 30 |
| 13 | Anoyira .. .. | Irrigation tank and piping .. | — | 20 | 20 |
| 14 | Athienou .. .. | Piping and irrigation tank .. | — | 150 | 150 |
| | Athrakos. | | | | |
| 15 | Pano Ipotamia .. | Masonry channels .. .. | — | 6 | 6 |
| 16 | Mavrosykiotis .. | Masonry channels and irrigation tank .. .. .. | — | 29 | 29 |
| | Ay. Konstantinos. | | | | |
| 17 | Petranes .. .. | Additional masonry channels | — | 5 | 5 |
| 18 | Vrysakia .. .. | do. | — | 4 | 4 |
| 19 | Ay. Theodhoros (Tylliria) .. | Intake and piping .. .. | 80 | — | 80 |
| 20 | Ay. Epiphanios .. | Masonry channels and irrigation tank .. .. .. | — | 12 | 12 |
| 21 | Arghaka–Magounda | Dam and channels .. .. | 600 | 200 | 800 |
| 22 | Akapnou (Livadhia) | Spring, repairs to tank, channels .. .. .. | — | 15 | 15 |
| 23 | Ay. Therapon .. | Groyne intake, channels, pipe crossings .. .. .. | — | 20 | 20 |
| 24 | Amargeti .. .. | Groyne intake, masonry channels .. .. .. | — | 175 | 175 |
| 25 | Asomatos .. .. | Irrigation tank .. .. | — | 8 | 8 |
| 26 | Aredhiou .. .. | Lining of channels .. .. | 1,000 | — | 1,000 |
| 27 | Aloa .. .. .. | Weir and channels .. .. | 1,500 | — | 1,500 |
| 28 | Agros (Lefka) .. | Masonry channels .. .. | — | 8 | 8 |
| 29 | Chatos (Zeytun Kolu) | Weir and channels .. .. | 500 | — | 500 |
| 30 | ,, (Injirli Dere) | Spillway and intake .. .. | 365 | — | 365 |
| 31 | Dhora .. .. | Weirs, channels, repairs to irrigation tank .. .. | — | 16 | 16 |
| 32 | Exometokhi .. .. | Masonry spillway, channels.. | 300 | — | 300 |
| 33 | Evrykhou .. .. | Additional R.C.C. channels | — | 72 | 72 |
| 34 | Ephtagonia (Koumenis) | Lining of channels .. .. | 200 | — | 200 |
| 35 | Evretou .. .. | Weirs, masonry channels .. | — | 180 | 180 |
| 36 | Geunyeli (Jinnar Dere) | Lining of channels in masonry | 100 | — | 100 |
| 37 | Ghourri .. .. | Lining of channels .. .. | 200 | — | 200 |
| 38 | Ghaziveran .. .. | Pumping, scheme channels .. | — | 100 | 100 |
| 39 | Kato Mylos .. .. | Channels, irrigation tanks .. | — | 52 | 52 |
| 40 | Kato Amiandos .. | Weir, masonry channels, tank | — | 22 | 22 |
| 41 | Kaliana .. .. | R.C.C. channels .. .. | — | 35 | 35 |
| | | Carried forward .. | 4,845 | 1,848 | 6,693 |

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| | | Brought forward .. | 4,845 | 1,848 | 6,693 |
| 42 | Kato Platres .. .. | Groyne intake, masonry channels .. .. .. | — | 90 | 90 |
| 43 | Livadhi .. .. | Weir, channels & irrig. tank | — | 10 | 10 |
| 44 | Kato Paschali .. | do. .. | — | 26 | 26 |
| 45 | Pano Paschali .. | do. .. | — | 36 | 36 |
| 46 | Patsouliaris .. .. | Spring, channels, irrig. tank.. | — | 20 | 20 |
| 47 | Kaimakli .. .. | Repairs to weirs, channels, etc. | — | — | — |
| 48 | Kourou-Monastir (Traolakkos) .. | Weir and channels .. .. | 600 | — | 600 |
| 49 | Knodhara (Yeni Dere) Kyperounda. | Control gate, channels .. | 500 | — | 500 |
| 50 | Alidjiotis .. .. | Masonry channels and irrigation tank .. .. .. | — | 19 | 19 |
| 51 | Deisis .. .. | do. .. .. | — | 30 | 30 |
| 52 | Zonismenos .. .. | Weir .. .. .. .. | — | 3 | 3 |
| 53 | Kastania .. .. | Spring, channels and tank .. | — | 15 | 15 |
| 54 | Livadhia .. .. | Retaining walls .. .. | — | 4 | 4 |
| 55 | Pano Yerambela .. | Weir, channels and irrigation tank .. .. .. | — | 15 | 15 |
| 56 | Vassilikou .. .. | Weir, channels, irrigation tank .. .. .. | — | 30 | 30 |
| 57 | Kardhama .. .. | Masonry channels .. .. | — | 25 | 25 |
| 58 | Defteron Arghaki (Katashi) .. .. | Spring .. .. .. | — | 6 | 6 |
| 59 | Klirou (Mega Pervolia) | Repairs to tunnels, channelling | 45 | 11 | 56 |
| 60 | Kinousa .. .. | Piping and irrigation tank .. | — | 25 | 25 |
| 61 | Kholetria-Nata-II .. Lagoudhera. | Lining of channels .. .. | — | 150 | 150 |
| 62 | Potamous-Koumenes | Spring, channelling & piping | — | 17 | 17 |
| 63 | Ay. Georghios .. | Spring, masonry channels & tank .. .. .. | — | 7 | 7 |
| 64 | Arghadjia .. .. | Weir, piping & irrig. tank .. | — | 10 | 10 |
| 65 | Pedhaoulia .. .. Limnatis. | Necessary channels, irrig. tank | — | 14 | 14 |
| 66 | Avlakas .. .. | Irrigation tank .. .. | — | 12 | 12 |
| 67 | Trypes .. .. Louvaras. | Spring, masonry channels .. | — | 35 | 35 |
| 68 | Pano Pervolia .. | Spring, weir, channels, piping | — | 38 | 38 |
| 69 | Ramia or Hoglakia .. | Masonry channels .. .. | — | 5 | 5 |
| 70 | Tsoukallos .. .. | Weir, masonry channels .. | — | 12 | 12 |
| 71 | Arodafnidhia .. | Spring, channels, irrig. tank | — | 16 | 16 |
| 72 | Kyra .. .. .. | Spring, masonry channels .. | — | 10 | 10 |
| 73 | Limnitis .. .. | Masonry channels .. .. | 270 | — | 270 |
| 74 | Moniatis .. .. | Weirs, lining of channels, river crossing .. .. | — | 150 | 150 |
| 75 | Mandria(Ll)(Lofandis) Melini. | Weir and piping .. .. | — | 7 | 7 |
| 76 | Pervoles .. .. | Masonry, channels, irrig. tank | — | 24 | 24 |
| 77 | Kannoura .. .. | Weir, piping, irrigation tank | — | 7 | 7 |
| 78 | Mallouri .. .. | Irrigation ports, piping .. | — | 3 | 3 |
| 79 | Milea (F.) Yefira .. | Masonry intake and channelling .. .. .. | 800 | — | 800 |
| 80 | Meniko (Neon Kalokerinon) .. .. | Lining of channels .. .. | 1,000 | 250 | 1,250 |
| 81 | Mathikoloni .. .. Milikouri. | Springs, piping, irrigation tank | — | 20 | 20 |
| 82 | Vrysi-tou-Khoriou .. | Weirs, masonry channels and piping .. .. .. | — | 14 | 14 |
| 83 | Pateritsa .. .. | Spring, masonry channels and piping .. .. .. | — | 14 | 14 |
| | | Carried forward .. | 8,060 | 3,028 | 11,088 |

| Ser. No. | Location | Nature of Construction | Donums Commanded New Irrigation | | |
|---|---|---|---|---|---|
| | | | Winter or spring | Summer | Total |
| | | Brought forward .. | 8,060 | 3,028 | 11,088 |
| 84 | Potamos–Katsoura .. | Masonry channels and piping | — | 44 | 44 |
| 85 | Nikitari (Neron-ton-Nomadhon) .. | Weir and masonry channels | — | 100 | 100 |
| 86 | Oekos (Ay. Lazarus) | Spring, irrigation tanks and piping .. .. .. | — | 50 | 50 |
| 87 | Orounda (Maoutchou) | Tunnelling, channelling .. | 1,500 | 60 | 1,560 |
| 88 | Pharmakas (Koshinas) | Spring, masonry channels .. | — | 40 | 40 |
| 89 | Pano and Kato Yialias | Irrigation tank and piping .. | 60 | 12 | 72 |
| 90 | Pissouri .. .. | Irrigation tank and piping .. | — | 55 | 55 |
| 91 | Phasli .. .. | Repairs to irrigation tank, stone pavement .. .. .. | — | 5 | 5 |
| 92 | Peristeronopiyi .. | Spillway and retaining wall .. | 500 | — | 500 |
| 93 | Potamitissa (Platanos) | Spring channels, irrigation tank .. .. .. | — | 22 | 22 |
| 94 | Kato Themelios .. | Additional tunnelling .. | — | 3 | 3 |
| 95 | Pedhoulas .. .. | Spring, weirs, R.C.C. channels and piping .. .. .. | — | 248 | 248 |
| | Pelendria. | | | | |
| 96 | Kamaroudhes .. | Weir, tank and channels .. | — | 9 | 9 |
| 97 | Kardhama–Haji Ktori | Springs .. .. .. | — | 9 | 9 |
| 98 | Kato Potamoudhia .. | Weir and channels .. .. | — | 10 | 10 |
| 99 | Pyrgos (Katouris) .. | Weir and channels .. .. | 2,000 | — | 2,000 |
| 100 | Polis (Chiftlik water) | Lining of channels .. .. | — | 600 | 600 |
| 101 | Palekythro .. .. | Weir and channels .. | 1,400 | — | 1,400 |
| 102 | Pedhias (Mousoulita) | Diversion-gates .. .. | — | — | — |
| 103 | Phyti .. .. | Irrigation tank and piping .. | — | 7 | 7 |
| 104 | Potamiou–Kissousa .. | Intakes, springs, channels, piping .. .. .. | — | 20 | 20 |
| 105 | Phterikoudhi (Kato Kalamythasa) .. | Masonry channels, irrigation tank .. .. .. | — | 16 | 16 |
| 106 | Sykhari .. .. | Spring, repairs to irrig. tank | — | 11 | 11 |
| 107 | Sarandi .. .. | Masonry channels and tank .. | — | 10 | 10 |
| 108 | Tseri .. .. .. | Repairs to apron and wing walls .. .. .. | — | — | — |
| 109 | Tymbou .. .. | Groyne, intake and channels | 800 | — | 800 |
| 110 | Yerolakkos .. .. | Lining of channels in masonry | — | 60 | 60 |
| 111 | Vretcha (Zanti) .. | Spring, masonry channels and tank .. .. .. | 500 | 250 | 750 |
| 112 | Vavatsinia .. .. | Weir, masonry channels, irrig. tank .. .. .. | — | 40 | 40 |
| 113 | Zoopiyi (Vrysi-tou Khoriou) .. .. | Spring, tunnels .. .. | — | 15 | 15 |
| | | Totals .. .. | 14,820 | 4,724 | 19,544 |

APPENDIX 7.

## VILLAGES WITH PIPED WATER SUPPLY.

*31st December, 1952.*

| District | Number of villages with satisfactory water supply | Number of villages requiring new schemes or improvements | Number of villages with piped water supplies | Villages with no piped water | Total villages |
|---|---|---|---|---|---|
| Nicosia .. .. | 77 | 35 | 112 | 65 | 177 |
| Larnaca .. | 30 | 10 | 40 | 19 | 59 |
| Limassol .. | 69 | 19 | 88 | 25 | 113 |
| Famagusta .. | 32 | 15 | 47 | 50 | 97 |
| Paphos .. .. | 55 | 47 | 102 | 32 | 134 |
| Kyrenia .. | 20 | 17 | 37 | 10 | 47 |
| Totals .. | 283 | 143 | 426 | 201 | 627 |
| % | 45 | 23 | 68 | 32 | 100 |

APPENDIX 8.

VILLAGE WATER SUPPLY SCHEMES COMPLETED IN 1952.

| No. | Village | District | Nature of Work | Date of Completion |
|---|---|---|---|---|
| 1 | Ovgoros | Famagusta | * | 5th January |
| 2 | Kandou | Limassol | * | 17th ,, |
| 3 | Argaki | Nicosia | * | 21st ,, |
| 4 | Klirou | ,, | * | 22nd ,, |
| 5 | Prastio | Limassol | * | 25th ,, |
| 6 | Akaki | Nicosia | * | 25th ,, |
| 7 | Lapithiou | Paphos | * | 25th ,, |
| 8 | Neokhorio | Nicosia | * | 25th February |
| 9 | Perapedhi | Limassol | † | 26th ,, |
| 10 | Milia | Paphos | † | 26th ,, |
| 11 | Kallepia | ,, | † | 28th ,, |
| 12 | Moronero | ,, | * | 28th ,, |
| 13 | Pharmakas | Nicosia | † | 29th ,, |
| 14 | Ay. Theodhoros | Famagusta | * | 6th March |
| 15 | Kato Zodhia | Nicosia | † | 15th ,, |
| 16 | Alethriko | Larnaca | * | 19th ,, |
| 17 | Yiolou | Paphos | * | 19th ,, |
| 18 | Agros | Limassol | * | 8th April |
| 19 | Mazotos | Larnaca | * | 15th ,, |
| 20 | Mamoundali | Paphos | * | 15th ,, |
| 21 | Sophtadhes | Larnaca | † | 16th ,, |
| 22 | Phlamoudhi | Famagusta | * | 26th ,, |
| 23 | Kivisil | Larnaca | * | 29th ,, |
| 24 | Phasoula | Limassol | * | 19th May |
| 25 | Geunyeli | Nicosia | † | 24th ,, |
| 26 | Asgata | Limassol | * | 24th ,, |
| 27 | Ay. Nikolaos | Famagusta | * | 27th ,, |
| 28 | Kakopetria | Nicosia | * | 31st ,, |
| 29 | Kondemenos | Kyrenia | * | 31st ,, |
| 30 | Stavrokono | Paphos | † | 11th June |
| 31 | Trimithi | Kyrenia | * | 14th ,, |
| 32 | Ay. Ioannis (Agros) | Limassol | * | 28th ,, |
| 33 | Statos | Paphos | * | 28th ,, |
| 34 | Agridhia | Limassol | * | 28th ,, |
| 35 | Komi Kebir | Famagusta | * | 30th ,, |
| 36 | Polis | Paphos | * | 8th July |
| 37 | Phinikas | ,, | † | 10th ,, |
| 38 | Galata | Nicosia | * | 16th ,, |
| 39 | Kridhia | Famagusta | * | 17th ,, |
| 40 | Kilinia | Paphos | * | 18th ,, |
| 41 | Anarita | ,, | * | 2nd August |
| 42 | Mamonia | ,, | † | 8th ,, |
| 43 | Ay. Dhometios | Nicosia | * | 22nd ,, |
| 44 | Mari | Larnaca | * | 22nd ,, |
| 45 | Potami | Nicosia | † | 22nd ,, |
| 46 | Nikitari | ,, | * | 25th ,, |
| 47 | Lania (Lania Police) | Limassol | * | 25th ,, |
| 48 | Elea | Nicosia | * | 27th ,, |
| 49 | Hamid Mandres | ,, | † | 3rd September |
| 50 | Milikouri | ,, | † | 6th ,, |
| 51 | Paleomylos | Limassol | † | 7th ,, |
| 52 | Kinousa | Paphos | * | 18th ,, |
| 53 | Pedhoulas | Nicosia | * | 23rd ,, |
| 54 | Eylenja | ,, | * | 24th ,, |
| 55 | Melandra | Paphos | † | 6th October |
| 56 | Kato Pyrgos | Nicosia | † | 27th ,, |
| 57 | Nikoklia | Paphos | † | 30th ,, |
| 58 | Khoulou | ,, | * | 30th ,, |
| 59 | Kourtakas | ,, | † | 30th ,, |

NOTE: * Replacement or improvement of an old supply.

† New scheme where previously there was no piped supply.

| No. | Village | District | Nature of Work | Date of Completion |
|---|---|---|---|---|
| 60 | Sisklipos .. .. | Kyrenia .. | † | 30th October |
| 61 | Erimi .. .. | Limassol .. | † | 13th November |
| 62 | Knodhara .. .. | Nicosia .. | * | 17th ,, |
| 63 | Kolossi .. .. | Limassol .. | † | 23rd ,, |
| 64 | Tris Elies .. .. | ,, .. | * | 29th ,, |
| 65 | Galatia .. .. | Famagusta .. | † | 4th December |
| 66 | Psathi .. .. | Paphos .. | † | 4th ,, |
| 67 | Simou .. .. | ,, .. | * | 8th ,, |
| 68 | Asproyia .. .. | ,, .. | * | 8th ,, |
| 69 | Pendakomo .. | Limassol .. | * | 15th ,, |
| 70 | Photta .. .. | Kyrenia .. | * | 18th ,, |
| 71 | Stroumbi .. .. | Paphos .. | * | 18th ,, |
| 72 | Galinoporni .. | Famagusta .. | * | 23rd ,, |
| 73 | Trapeza .. .. | Kyrenia .. | † | 23rd ,, |
| 74 | Argaki .. .. | Nicosia .. | † | 29th ,, |
| 75 | Lapithos .. .. | Kyrenia .. | * | 31st ,, |
| 76 | Spillia .. .. | Nicosia .. | * | 31st ,, |
| 77 | Panayia .. .. | Paphos .. | * | 31st ,, |

NOTE : * Replacement or improvement of an old supply.
† New scheme where previously there was no piped supply.

## APPENDIX 9.

### VILLAGE WATER SUPPLIES IN HAND AT THE END OF 1952.

1. Pano Kividhes
2. Kato Kividhes
3. Prastio (Evdhimou)
4. Prastio (Paphos)
5. Kyperounda
6. Vouno
7. Ayia Marina (Paphos)
8. Tsadha
9. Silikou
10. Omodhos
11. Kato Arkhimandrita
12. Kili
13. Yialousa
14. Mathiatis
15. Lemona
16. Phalia
17. Amargeti
18. Voroklini
19. Pyla
20. Livadhia
21. Ora
22. Vasilia
23. Yialia
24. Psevdhas
25. Alona

APPENDIX 10.

VILLAGE WATER SUPPLY SCHEMES READY FOR CONSTRUCTION AT THE END OF 1952, BUT NOT YET STARTED.

1. Agridhaki
2. Lophos
3. Pakhna
4. Phrenaros
5. Xyliatos
6. Ayia Marina
7. Komi Kebir
8. Khirokitia
9. Vroisha
10. Kithasi
11. Ayios Nikolaos (P.)
12. Meladhia
13. Kalopsidha
14. Ayios Iakovos
15. Ayios Epiphanios (N.)
16. Karavostasi
17. Kridhia
18. Kithasi
19. Arsos
20. Kouklia (F.)
21. Koma-tou-Yialou
22. Kalopanayiotis
23. Kokkina
24. Episkopi (P.)
25. Akhelia
26. Aradhippou
27. Ayii Vavatsinias
28. Ayios Photios
29. Akanthou
30. Pano Akourdhalia
31. Kato Akourdhalia
32. Khalassa
33. Arakapas
34. Aredhiou
35. Asha
36. Askas
37. Ayia Phylaxis
38. Bellapais
39. Boghaz
40. Dhavlos
41. Emba
42. Evdhimou
43. Kalavasos
44. Karavas
45. Kato Drys
46. Kato Platres
47. Katokopia
48. Khlorakas
49. Kilani
50. Kissousa
51. Kornos
52. Lemithou
53. Lemba
54. Lyso
55. Lymbia
56. Palekhori (Orinis)

Nos. 1 – 19 have already provided their share in the cost of the work.
Nos. 19 – 28 have applied for loan to cover their share in the cost of the work.

57. Paramytha
58. Spitali
59. Palodhia
60. Pendayia
61. Phini
62. Sha
63. Skarinou
64. Spitali
65. Vatili
66. Xylophagou
67. Yermasoyia
68. Yeroskipou
69. Yiolou
70. Akhna
71. Armenokhori
72. Ayios Konstantinos
73. Ayios Theodhoros (Larnaca)
74. Ayios Tykhonas
75. Dhrousha
76. Kambia
77. Kokkina
78. Lefkoniko
79. Mandres (F.)
80. Moutayiaka
81. Pakhyammos
82. Plataniskia
83. Vroisha
84. Galini
85. Loutros
86. Yerolakkos.

Nos. 29 – 86 : Schemes submitted for approval and on which work is expected to be carried out during 1953.

APPENDIX 11.

## NUMBER OF BOREHOLES DRILLED.

1946 – 1952.

| Purpose | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 |
|---|---|---|---|---|---|---|---|
| For private Individuals and Companies .. | 61 | 35 | 92 | 135 | 132 | 157 | 198 |
| For Government | 3 | 17 | 25 | 46 | 32 | 41 | 21 |
| For War Dept. .. | 19 | 15 | — | — | 27 | 32 | 26 |
| Totals .. | 83 | 67 | 117 | 181 | 191 | 230 | 245 |
| Aggregate Footage Drilled .. | 11,686 | 12,171 | 21,397 | 33,610 | 40,751 | 47,766 | 41,022 |
| Average Depth .. | 141 | 182 | 182 | 186 | 213 | 208 | 170 |

## BOREHOLES DRILLED IN 1952.

| Purpose | No. | Footage Drilled | Percentage Successful * | Total Tested Yield gallons per day |
|---|---|---|---|---|
| Irrigation .. .. .. | 185 | 31,373 | 69.2% | 20,838,720 |
| Domestic Water Supply .. | 15 | 2,967 | 86.7% | 2,519,280 |
| Prospecting .. .. | 9 | 2,056 | 55.6% | 641,280 |
| War Department .. .. | 14 | 2,658 | 78.6% | 1,166,880 |
| Industrial .. .. .. | 1 | 58 | 100.0% | 103,480 |
| Total for water .. | 224 | 39,112 | 70.8% | 25,269,840 |
| Observation B.H. (Not tested) .. .. .. | 3 | 530 | — | — |
| Engineering B.Hs. .. | 15 † | 1,380 | — | — |
| Total Drilled .. | 242 | 41,022 | — | — |
| Old Boreholes Cleaned .. | 53 | | | |

* A successful borehole is one that yields on test more than 1,000 gallons per hour of usable water.

† 13 of these boreholes were drilled for the Army.

APPENDIX 12.

## BOREHOLES DRILLED FOR WATER IN 1952.

### SUMMARY OF RESULTS.

| District | Locality | No. of B.Hs. drilled | Successful * | Percentage successful * | Total tested output. Gallons per day | Average yield per successful B.H. gallons per day |
|---|---|---|---|---|---|---|
| Nicosia .. | Western Messaoria | 59 | 57 | 96.6% | 11,885,520 | 208,000 |
| ,, .. | Lakatamia, Peralaxia .. .. | 12 | 8 | 66.6% | 605,760 | 76,000 |
| ,, .. | Dhali-Lymbia .. | 2 | 1 | 50.0% | 174,960 | 175,000 |
| ,, .. | Nicosia .. .. | 5 | 1 | 20.0% | 103,680 | 104,000 |
| ,, .. | Karavostasi .. | 5 | 2 | 40.0% | 421,200 | 211,000 |
| Famagusta .. | Pergamos-Xylophagou-Liopetri-Avgorou | 27 | 24 | 89.0% | 2,278,800 | 95,000 |
| ,, .. | Phrenaros North | 10 | 10 | 100.0% | 2,118,960 | 212,000 |
| ,, .. | Trikomo-Ephtakomi .. | 13 | 4 | 30.8% | 635,040 | 159,000 |
| Limassol .. | Phassouri-Kolossi-Limassol .. | 19 | 16 | 84.2% | 3,013,920 | 188,000 |
| ,, .. | Akrotiri Peninsula (South of salt lake) .. .. | 9 | 7 | 77.8% | 920,160 | 131,000 |
| ,, .. | Symvoulos .. | 4 | 2 | 50.0% | 192,000 | 96,000 |
| ,, .. | Pareklisha .. | 1 | — | — | — | — |
| Paphos .. | Mandria .. .. | 13 | 8 | 61.5% | 1,244,160 | 155,000 |
| ,, .. | Yeroskipos-Ktima-Khlorakas .. .. | 10 | 2 | 20.0% | 110,160 | 55,000 |
| ,, .. | Mesoyi-Tsadha .. | 3 | 3 | 100.0% | 336,960 | 112,000 |
| ,, .. | Lyso .. .. | 1 | 1 | 100.0% | 162,000 | 162,000 |
| Larnaca .. | Larnaca .. .. | 3 | — | zero | — | — |
| ,, .. | Lefkara .. .. | 2 | 2 | 100.0% | 168,480 | 84,000 |
| ,, .. | Zyyi .. .. | 1 | 1 | 100.0% | 174,960 | 174,960 |
| Kyrenia .. | Karavas-Lapithos | 14 | 9 | 64.2% | 690,720 | 77,000 |
| ,, .. | Kyrenia-Trimithi | 9 | 1 | 11.1% | 32,400 | 32,000 |
| ,, .. | Kyrenia Range .. | 2 | — | zero | — | — |
| | Totals .. | 224 | 159 | 70.8% | 25,269,840 | 159,000 |

* A successful borehole is one that yields on test more than 1,000 gallons per hour of usable water.

APPENDIX 13.

## CONTROL BOREHOLES.

### WATER LEVEL FEET ABOVE SEA LEVEL.

| Location | Average W.L. | | Difference | Minimum W.L. | | Difference | Remarks |
|---|---|---|---|---|---|---|---|
| | 1951 | 1952 | + or — | 1951 | 1952 | + or — | |
| 1. Kokkini Trimithia 90/50 (Police Station) | 682.9 | 681.2 | — 1.7 | Nov. 680.1 | Nov. 678.4 | — 1.8 | |
| 2. Kokkini Trimithia 160/50 (N. side) | 681.1 | 680.2 | — 0.9 | Nov. & Dec. 679.4 | Oct. 677.1 | — 2.3 | |
| 3. Kokkini Trimithia 161/50 (Near culvert 9/2 on Nicosia–Morphou Road) .. .. .. .. | 682.5 | 680.7 | — 1.8 | Nov. 679.4 | Oct. 676.2 | — 3.2 | |
| 4. Astromeritis 91/50 (Katokopia Road) | 366.0 | 363.4 | — 2.6 | Dec. 363.9 | Sept.362.2 | — 1.7 | |
| 5. Morphou 168/50 (between M.P. 28–29 Myrtou Road) .. .. | 86.2 | 88.7 | + 2.5 | Oct.–Dec. 83.5 | Jan. 84.9 | + 1.4 | |
| 6. Morphou 92/50 (Government Experimental Farm) .. .. | 77.0 | 76.9 | — 0.1 | Sept. 69.9 | Oct. 70.8 | +0.9 | |
| 7. Prastio (Morphou) 93/50 (M.P. 27) | 25.4 | 25.3 | — 0.1 | Aug. 22.1 | Oct. 23.4 | + 1.3 | |
| 8. Ghaziveran 94/50 (between M.P. 29–30 Morphou–Xeros Road) .. | 17.0 | 17.9 | + 0.9 | Dec. 15.5. | Jan. 16.1 | + 0.6 | |
| 9. Pendayia 95/50 (On Road to Peristeronari) .. .. .. .. | 8.7 | 10.8 | + 2.1 | Dec. 6.8 | Jan. 6.8 | — | |
| 10. Phrenaros 52/51 .. .. .. | 85.5 | 84.5 | — 1.0 | Oct. 85.3 | Dec. 81.6 | — 3.7 | Near B.Hs now being used for Famagusta Water Supply. |
| 11. Phrenaros 51/51 .. .. .. | 86.7 | 85.6 | — 1.1 | Nov. 86.5 | Dec. 82.4 | — 4.1 | |
| 12. Phrenaros 53/51 .. .. .. | 84.9 | 84.0 | — 0.9 | Nov. 84.8 | Nov. 81.7 | — 3.1 | |
| 13. Xylophagou 70/51 (west of village) | 23.6 | 22.6 | — 1.0 | Dec. 23.1 | Nov. 19.7 | — 3.4 | |
| 14. Xylophagu 71/51 (west of village) | 17.8 | 17.0 | — 0.8 | Dec. 16.9 | Nov. 14.2 | — 2.7 | |
| 15. Xylophagou 72/51 (west of village) | 22.2 | 22.3 | + 0.1 | Dec. 21.0 | Jan. 20.7 | — 0.3 | |
| 16. Xylophagou 73/51 (east of village) | 10.9 | 9.5 | — 1.4 | July 10.3 | Oct. & Nov. 8.9 | — 1.4<br>— 1.4 | |
| 17. Xylophagou 74/51 (east of village) | 11.0 | 11.4 | + 0.4 | Oct. 10.9 | Oct. & Nov. 10.4 | — 0.5<br>— 0.5 | |
| 18. Pergamos 86/51 .. .. .. | 255.1 | 257.3 | + 2.2 | Oct. 254.3 | Oct. 255.8 | + 1.5 | |
| 19. Phrenaros North 108/52 .. .. | — | 72.3 | — | — | Sept. & Oct. 71.9 | — | Drilled during 1952. |
| 20. Phrenaros North 109/52 .. .. | — | 71.6 | — | — | Oct. 71.2 | — | |
| 21. Phrenaros North 110/52 .. .. | — | 71.2 | — | — | Oct. 70.7 | — | |