

1917.
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY :

DRAINAGE OPERATIONS IN HAURAKI PLAINS.

REPORT FOR THE YEAR ENDED 31st MARCH, 1917, TOGETHER WITH STATEMENT
OF ACCOUNTS.

*Presented to both Houses of the General Assembly pursuant to Section 10 of the Hauraki Plains
Act, 1908.*

SIR,—

Department of Lands and Survey, Wellington, 1st June, 1917.

I have the honour to submit herewith the report on the drainage operations in the Hauraki Plains for the past year, in accordance with the provisions of the Hauraki Plains Act, 1908.

No areas have been opened for selection during the last year or two, and the land in occupation is 38,994 acres, subdivided into 294 sections, exclusive of town sections, valued at £243,851. Further areas will be available at an early date.

The total expenditure under the Act has now been as follows :—

			£	s.	d
For the year ended 31st March, 1908	...	...	5,070	0	0
" 1909	...	...	11,672	5	6
" 1910	...	...	22,235	2	11
" 1911	...	...	32,103	14	0
" 1912	...	...	40,084	13	1
" 1913	...	...	26,608	1	3
" 1914	...	...	21,467	18	2
" 1915	...	...	20,399	10	4
" 1916	...	...	18,331	10	10
" 1917	...	...	18,405	17	10
Total	...	...	£216,378	13	11

Drainage and reclamation operations were steadily carried out during the year with the depleted staff under the control of the Chief Drainage Engineer, and satisfactory progress has been made. Unusually heavy rain was experienced, but every effort was made to cope with the consequent flooding.

The detailed report of the Chief Drainage Engineer is attached, together with a statement of accounts.

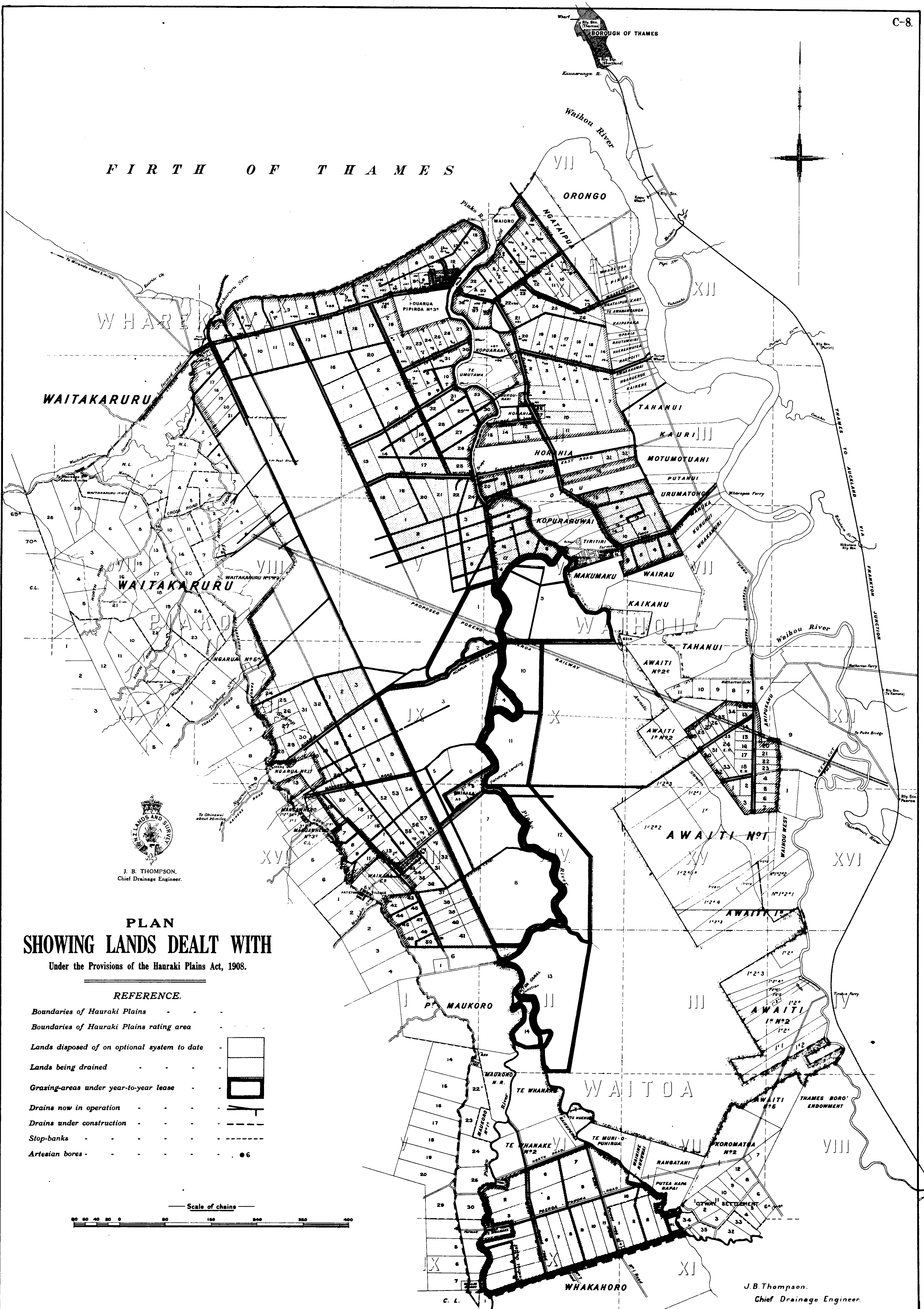
I have, &c.,

The Right Hon. W. F. Massey, P.C.,

T. N. BRODRICK, Under-Secretary.

Minister of Lands.

F I R T H O F T H A M E S



The various works carried out by the dredges are as follows:—

- (1.) Completion of deepening of Puhanga Canal.
- (2.) Completion of Mangawhero Canal.
- (3.) Widening and improving Piako River.
- (4.) Commencement of Patetonga Canal.
- (5.) Commencement of Waitoa Canal.

These works are treated separately under their respective headings.

PUHANGA CANAL.

The deepening of this canal was completed, and has had a very marked effect on the flood-levels in the country up-river, lowering this level about 3 ft. The canal will have to be run over again by the dredge, as some slips have occurred, and probably a certain amount of widening will be required. The distance deepened during the year was 46 chains, while the total length is 140 chains.

MANGAWHERO CANAL.

This canal was completed and the drainage system for the Mangawhero district linked up. The distance dredged during the year was 57 chains, and the total length is 60 chains.

PIAKO RIVER.

No. 2 dredge was placed in this river, and carried out widening and improvement work from Puhanga Canal for about one mile up-stream.

PATETONGA CANAL.

The object of this canal is to give direct and immediate benefit to some twenty sections which were balloted for some time previously. Owing to the flat and difficult nature of this country, an efficient outlet drainage could not be provided without a dredge cut being put in to tap the heart of it. This work has progressed very well and is quickly nearing completion, and much relief will be thereafter experienced. The distance dredged is 95 chains.

WAITOA CANAL.

This canal has been commenced during the year, and starts at the junction of the Piako and Waitoa Rivers. From this point it heads in a southerly direction, cutting off a long winding stretch of the Waitoa River, and also striking at a point half a mile distant from the junction, within 1 chain of the Piako River, and considerably shortening line of flow at this point.

The dredge requires to go on for about another 30 chains before its objective in the Waitoa River is reached. This work will give a certain amount of direct benefit, and will become a very important cut as soon as Piako River is brought up to a state of working-efficiency to this point. The length dredged during the year is 35 chains.

STOP-BANKS.

No new stop-banks have been constructed, but during the year two breaks were repaired and leaky portions attended to. The total length of stop-banks is 28 miles 70 chains.

FORMED ROADS.

Owing to the great scarcity of labour very little new formation has been done, but opportunity has been taken, in connection with drain-works, to improve adjacent road-formation as far as possible. During the year some 9 miles $14\frac{1}{2}$ chains of roads were constructed. The total length to date is 75 miles $52\frac{1}{2}$ chains.

WHARVES.

Two new wharves have been constructed, one at Ngatea and the other at Waitakaruru Canal. This makes a total number of seventeen permanent wharves erected to date. The Patetonga Wharf, which was purchased by the Department some years back from Messrs. Scotcher and Co., will require reconstruction shortly. It is proposed to erect all new wharves as far as practicable in ferro-concrete.

FLOOD-GATES.

A departure has been made from past practice by providing for ferro-concrete flood-gates. Two of these have just been commenced. It will be necessary shortly to replace in concrete the old wooden gates, which are now losing their efficiency, but have done good work in the past. This policy was forecasted in previous reports, and has only been made possible by the consolidation of the country under drainage. Two flood-gates were constructed during the year, making a total of sixty now in operation.

BRIDGES, CULVERTS, ETC.

It is intended shortly to replace a number of sill bridges by concrete pipes. A new bridge was constructed in ferro-concrete where the stream crosses the Patetonga access to Wharf Road. This is the first completed concrete structure on the Hauraki Plains. The timber bridge across the Puhanga Canal was re-erected and several bridges redecked. The number of sill bridges is now 99; bridges on piles, 10; three-span bridges, 2; two-span bridges, 2; ferro-concrete bridge, 1; culverts, 18.

DRAINS IN OPERATION.

The total length of drains now in operation is 339 miles 14 chains, which total includes all classes of drains constructed by the Department. Some of these drains, however, have been practically discarded; especially is this so in the deep peat country, where the peat has subsided and the drains are for all purposes non-existent. The total length of new drains completed during the year was 11 miles 15 chains.

BUILDINGS.

It has been necessary to go in for extensive hut-building during the year. Sixteen huts, in pairs, have been erected at Rawerawe for the Department's employees. The workmen are mostly Maoris in this locality, and these huts take the place of their old whares, which were past living in and most insanitary. A small rental per week is paid for each pair of huts, which will reimburse the Department for expenditure made. The supply of labour in this locality is now on a solid footing, and the living-conditions of the Natives vastly improved.

A hut has also been built for the new foreman at Awaiti, and repair work done to existing huts and buildings. New buildings have also been erected at Hopai for a permanent depot and for manufacture of reinforced-concrete pipes. The total number of buildings is now fifty-six.

FLOATING PLANT.

The floating plant is the same as formerly—viz., two Priestman grab dredges, one steamer, four oil-launches, four large and two small pontoons.

ARTESIAN BORING PLANT.

The total number of bores sunk by the Department is now 136, the year's operations accounting for thirteen. The total cost for the year was £323 0s. 5d., bringing the total spent to date to £3,339 19s. 7d., which is all recoverable.

A schedule of bores sunk is attached.

WORKS PERFORMED DURING THE YEAR.

The following works were carried out under either the piecework or co-operative contract systems:—

	M.	ch.
Double drain and road formation	0	18½
New drain and road formation	1	46
Deepening and widening road-drains and spreading spoil ...	1	34
Clearing and grubbing roads	0	31
Cleaning road-drains	16	16
Outlets	1	19
Deepening and widening outlets	8	66
Cleaning outlets	5	33
Road-formation	0	33
Shelling roads	0	40

Distance covered 36 16½

Supply of sleepers for metalling—Truck-line, 1,250; Patetonga line, 650. Supply of fascines for roads, 1,800 bundles; piles for wharves, 70.

The following works were carried out by day-labour:—

	M.	ch.
Deepening and widening road-drains and spreading spoil ...	1	70
Road-formation	1	77
Widening road-formation	1	40
Sanding roads	0	40
Metalling roads	4	33
Cleaning road-drains	63	45
Outlets	1	46
Deepening and widening outlets	12	0
Cleaning outlets	30	0
Disking roads	4	0
Shelling roads	0	52

Distance covered 122 3

Spoil removed by dredges, 161,674 cubic yards; artesian bores sunk, 13; construction of bridge, 1; construction of wharves, 2; construction of flood-gates, 2. There were also numerous minor services performed too numerous to schedule.

FLOODS.

A record rainfall was recorded on the gauge at Kerepeehi for the past year, 55·37 in. being registered. In consequence of this exceptional rainfall numerous floods were experienced outside the central area, in the Awaiti and Waitakaruru portions of the plains; also a certain amount of flooding occurred on the Shelly Beach area.

Dealing with the central area itself, it speaks volumes for the efficiency of the drains when they could comfortably cope with this rainfall. A few small portions of this area, although not troubled with floods, were wetter than usual. This was owing to shortage of labour, which prevented the drains in the locality from receiving proper cleaning. The drain-cleaning is now, however, well in hand.

FLAX AREAS.

During the year £65 4s. 10d. was received for flax-cutting rights. An area of flax in Blocks V, VI, IX, and X, Waihou Survey District, was disposed of by tender during the year for £805.

At present there are four mills on the plains, situated at Patetonga, Waitakaruru, Ngarua, and Waitoa. The future revenue from this source should be very appreciable.

SURVEYS.

Owing to lack of sufficiently drained land suitable for settlement, no areas were surveyed during the past year. Engineering-works only, for the prosecution of the drainage-works of the plains, were undertaken.

WORKS EXPENDITURE FOR THE YEAR.

The total works expenditure for the year, including supplies, repairs, &c., amounts to £13,803 7s. 11d. Piecework contracts amounting to £3,251 11s. 5d., and day-labour works amounting to £6,312 19s. 11d., were paid from local imprest out of the Hauraki Plains Settlement Account. The totals given may not agree with Head Office figures, as in some cases the expenditure may not have been brought to charge.

VALUATION.

The total area of land subdivided and thrown open for selection to date is 38,994 acres, which was valued at £243,851. The next few years will see a considerable addition to these figures.

METALLING ROADS.

The total distance of roads metalled or shelled, commencing from year 1913, is now 22 miles 5 chains. Of this, 4 miles 33 chains of metal and 52 chains of shelled road were completed during the year. The supply from the Kauaeranga River was again kept going. This was obtained, as previously, by means of the Department's steamer, punts, &c., and is the best grade of metal received on the plains. In addition, Messrs. McCallum Bros. supplied metal by scow, but owing to labour troubles their supply has been very scanty.

Owing to shortage of punts the supply of Kauaeranga metal was limited, and also further shortened owing to many freshes in the river stopping the towing-work. The timber for one new punt for metal-carrying purposes is on the ground, and a start is being made immediately in building same. This will mean a considerable saving by increasing the Kauaeranga supply, this being the cheapest source of metal-supply.

Owing to shortage of trucks it has been practicable to metal in only one place at a time. Fifteen new wooden trucks have just been built on the works, and these will be put into use immediately. All metalling done during this year has been put down 13 ft. wide instead of 9 ft., as previously done.

The following is a schedule showing the roads metalled or shelled during the year:—

	M.	ch.
Kerepeehi-Kopuarahi	1	46
Orchard East	0	40
Te Hopai	1	40
Patetonga access road	0	61
Orchard Wharf approach	0	6
Pipiroa-Waitakaruru	0	47
Access to wharf, Waitakaruru	0	5
Distance covered	5	5

The total quantity of metal received on the plains was 5,820 cubic yards; of this McCallum Bros. supplied 2,892 yards, and Kauaeranga River 2,928 yards.

All road-metalling has been done out of special grants, as shown in branch report.

PRINCIPAL WORKS PROPOSED.

The principal works proposed to be carried out during the next financial year are as follows:—

- (1.) Metalling Pipiroa-Waitakaruru Road (uncompleted portion).
- (2.) Metalling Orchard-Waitakaruru Road.
- (3.) Metalling Awaiti Road.
- (4.) Metalling Kerepeehi-Kopuarahi Road (uncompleted portion).
- (5.) Metalling Hopai Road.
- (6.) Continuation Waitoa Canal.
- (7.) New dredge canal, Waitakaruru Stream.
- (8.) Concrete outlets and tide-gates at Kopuarahi, Shelly Beach, Duck Creek, &c.
- (9.) Supply ferro-concrete pipes for culverts, &c.
- (10.) Maintenance of existing works, &c.
- (11.) General development-work.

LANDS PROPOSED TO BE OPENED.

As already referred to, it was not possible to place any land on the market during the year under review. The exceptionally wet year and lack of labour to develop drainage-works

were the chief factors. It is anticipated, however, that some 3,000 acres will be available during the forthcoming year. Much important development-work had to be postponed owing to war exigencies.

The policy of grazing areas of partly developed land has been successful, and returns some £732 per annum, not to mention the advantages gained by consolidation of the peat land.

GENERAL.

Field, office, and draughting staff have been very fully engaged during the past year. Mr. R. G. Macmorran, Land Drainage Engineer, is now on active service, and his position is being ably filled by Mr. R. S. Logan. Mr. H. A. Joyce, Chief Clerk, is now in camp, and Mr. G. I. Beeson is very capably filling his place.

The services during the year have been carried on by a much depleted staff, consequent on war exigencies, and I wish to record my appreciation of the manner in which the officers have acquitted themselves.

The attached plan shows the position of works to date.

I have, &c.,

The Under-Secretary for Lands, Wellington.

J. B. THOMPSON,
Chief Drainage Engineer.

SCHEDULE OF ARTESIAN BORES SUNK DURING THE YEAR 1916-17.

Artesian Bore Number.	Section.	Block.	Survey District.	Total Depth, in Feet.	Running Flow. Gallons per Day.
124	9	X	Thames	382	17,280
125	9	X	"	409	6,000
126	9A	X	"	401	34,560
127	7	X	"	459	8,640
128	5	X	"	427	8,400
129	8	X	"	236	12,960
130	3	X	"	199	6,000
131	57	XIII	Waihou	400	Nil.
132	32	XIII	"	209	Pumping.
133	56	XIII	"	356	"
134	31	XIII	"	215	Nil.
135	55	XIII	"	412	"
136	31	XIII	"	125	"

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