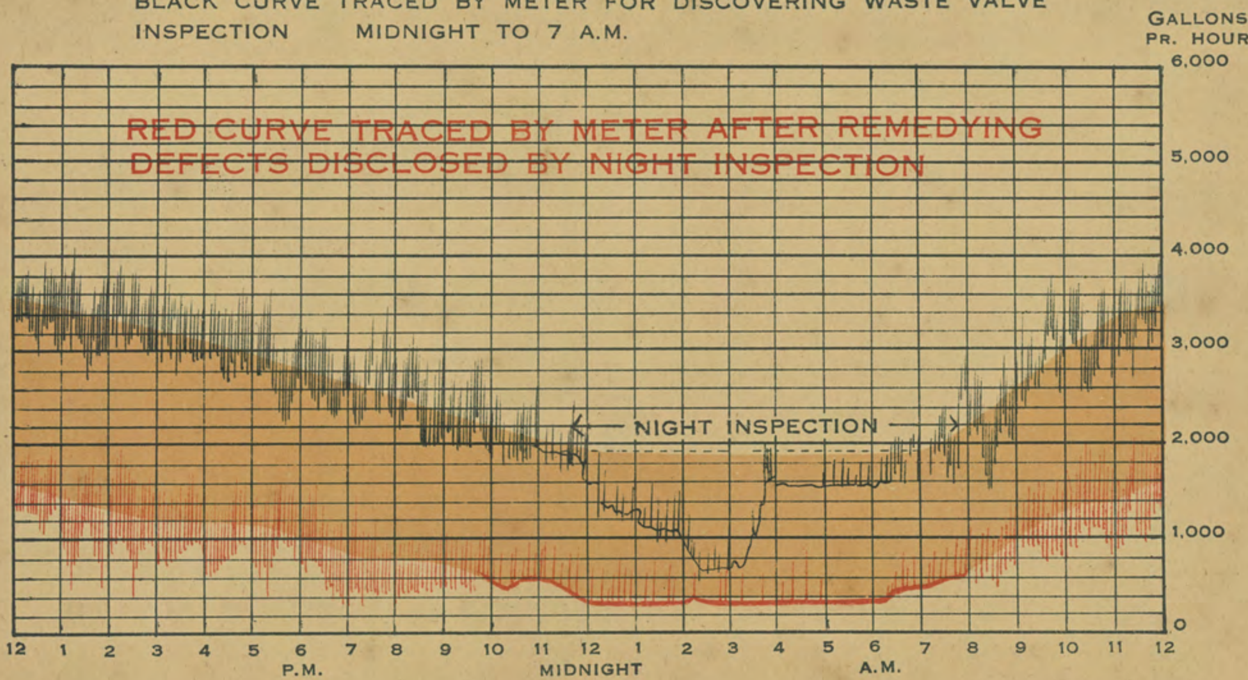
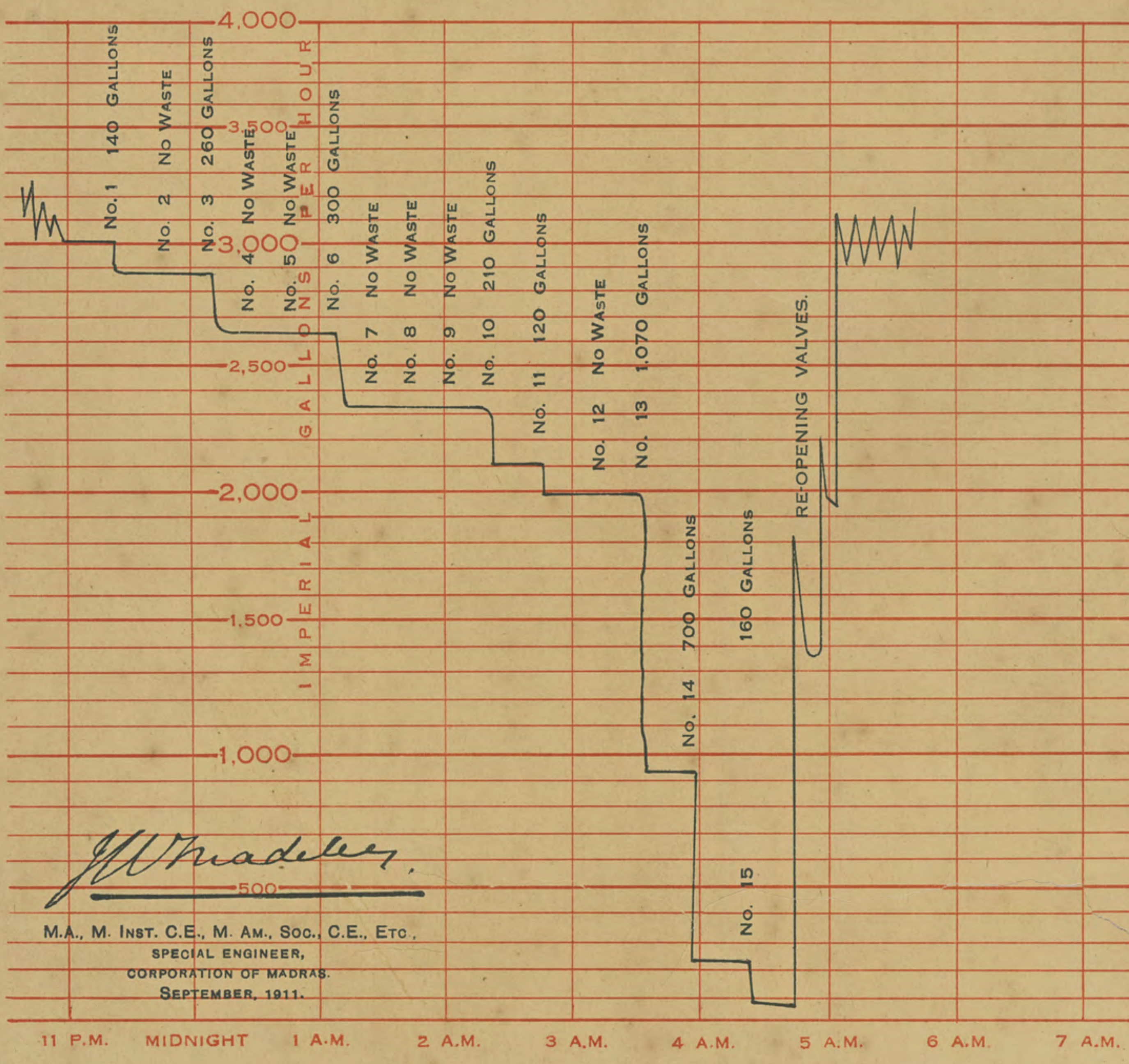
# WASTE WATER METER DIAGRAMS.

## FIG. 1. ADAPTED FROM MINS. INST. C. E. VOL. XLII.

WASTE WATER METER DIAGRAM FOR LIVERPOOL DISTRICT OF LOW CLASS DWELLING HOUSES ABOUT ONE NINTH FULL SIZE.
BLACK CURVE TRACED BY METER FOR DISCOVERING WASTE VALVE INSPECTION MIDNIGHT TO 7 A.M.




## FIG. 2. PART OF IMAGINARY DIAGRAM—FULL SIZE—SHEWING RECORD OF A NIGHT INSPECTION AND THE EFFECT OF CLOSING DIFFERENT VALVES.

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# MADRAS CITY

## PLAN SHEWING EIGHT CENSUS DIVISIONS

SMALL BLACK FIGURES DENOTE POPULATION OF 1911 CENSUS
DO. RED DO. DO. DO. 1961 (AS ESTIMATED)

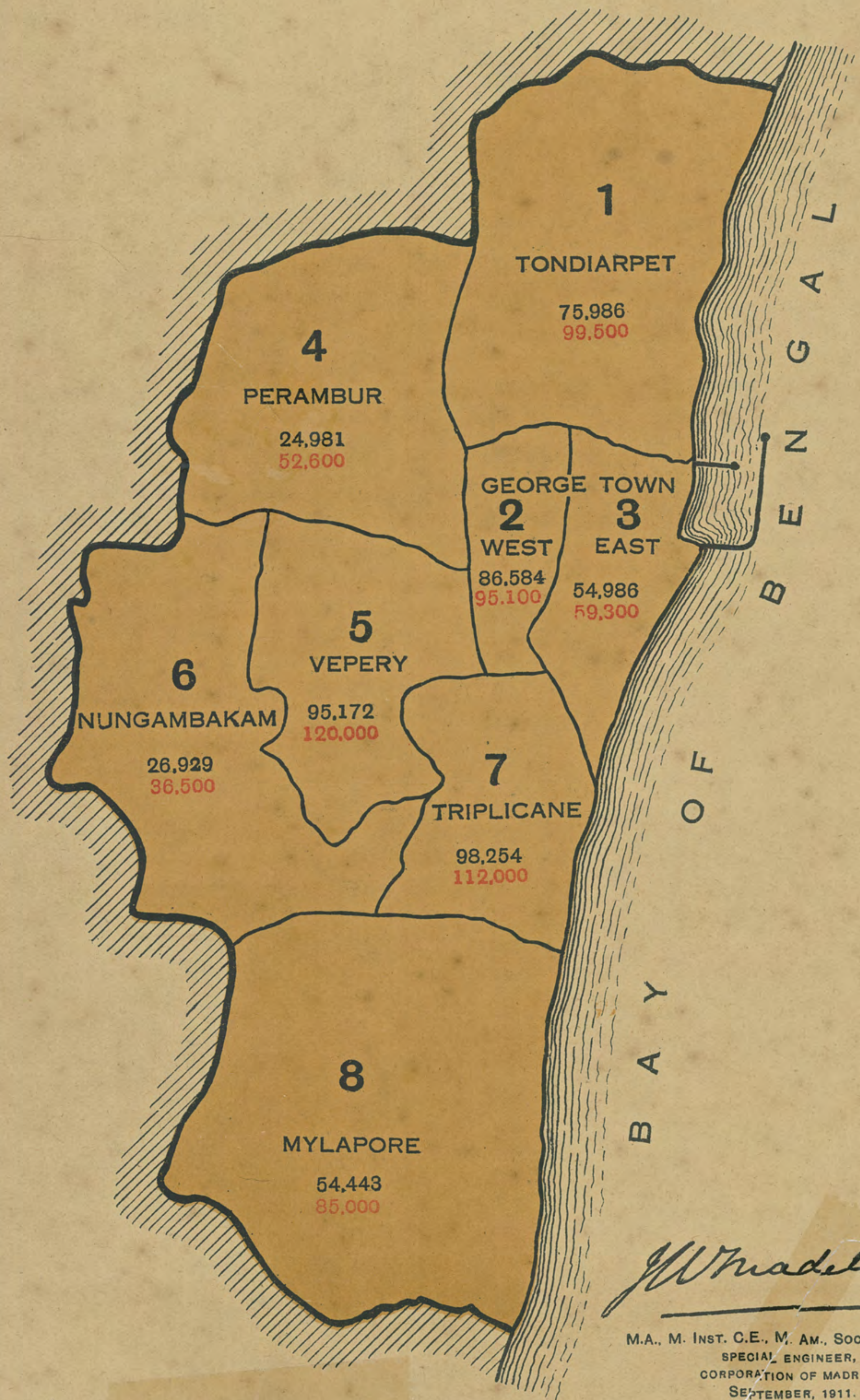


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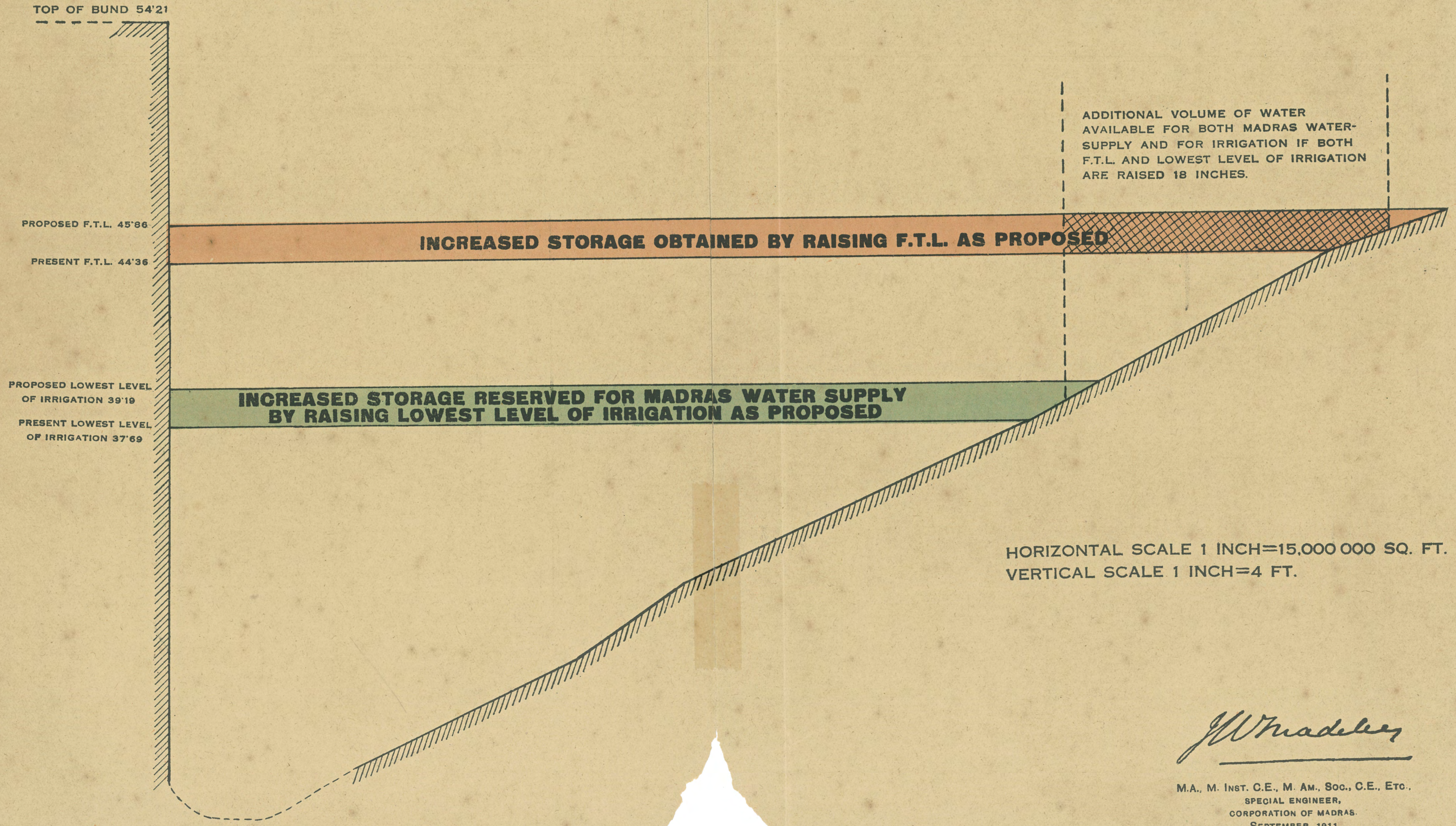
DIAGRAM SHEWING BENEFITS OBTAINED IN NORMAL YEARS BY RAISING BOTH F.T.L. AND LOWEST LEVEL OF IRRIGATION BY 18 INCHES AS PROPOSED.

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SPECIAL WORKS DEPARTMENT

# WATER SUPPLY DISTRIBUTION SCHEME OF 1911

## PLAN SHOWING PRINCIPAL MAINS IN COMPLETED SCHEME AND THE AREAS THAT THEY WILL SUPPLY.

SCALE 1 INCH = 1 MILE

*NOTE:—Existing Mains that will be utilised shown by Blue Lines thus*

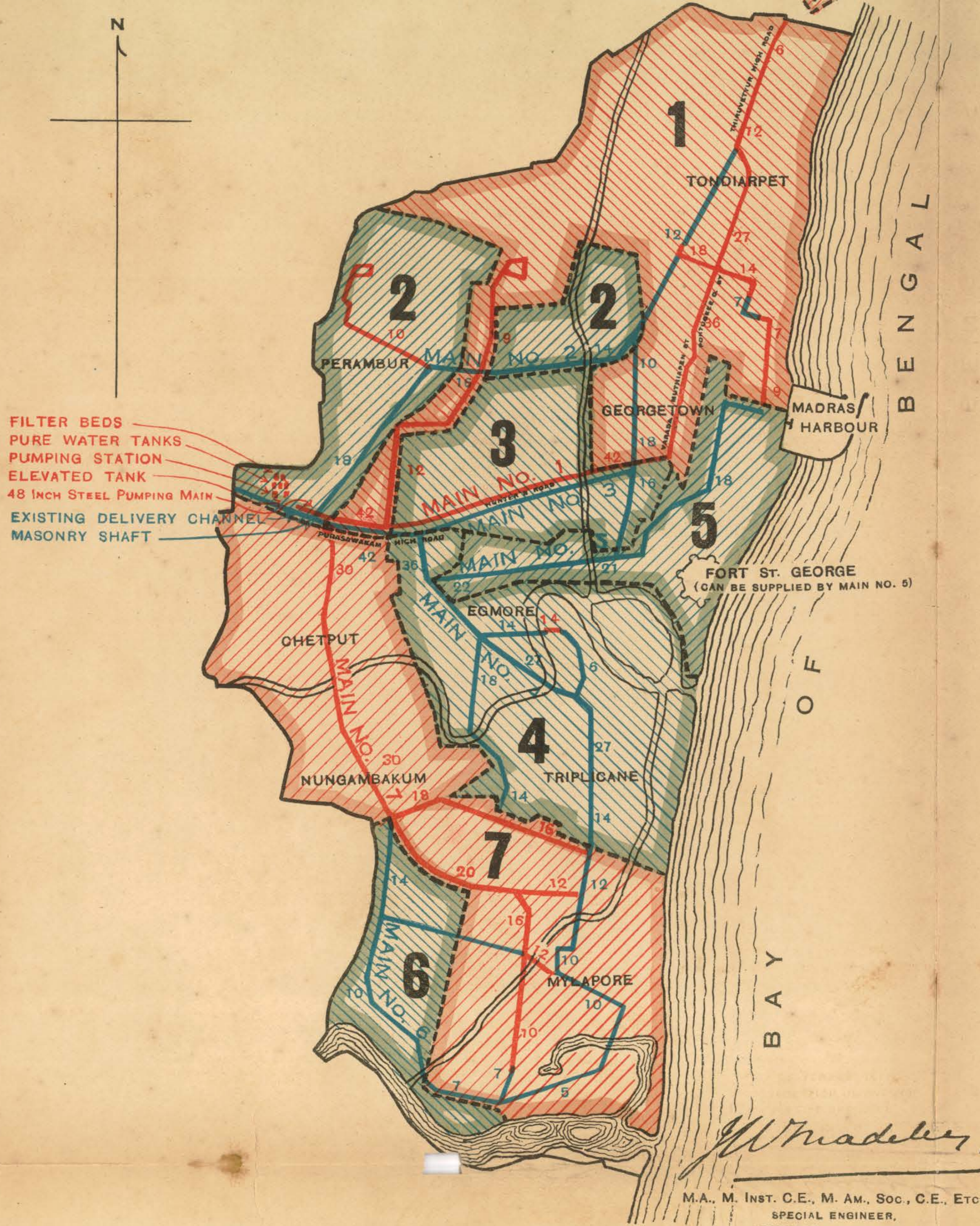
*Proposed new Mains shown by Red Lines thus*

*Figures beside Mains denote the diameter of Pipes in inches*

*Boundaries of Areas supplied by each Main are shown by Broken Black Lines thus*

*Areas supplied by existing Mains hatched Blue thus*

*Areas supplied by new Mains hatched Red thus*

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# PLAN OF MADRAS SHEWING LEADING MAINS AND THE AREAS SUPPLIED BY THEM

SCALE 1 INCH = ⅓ MILE


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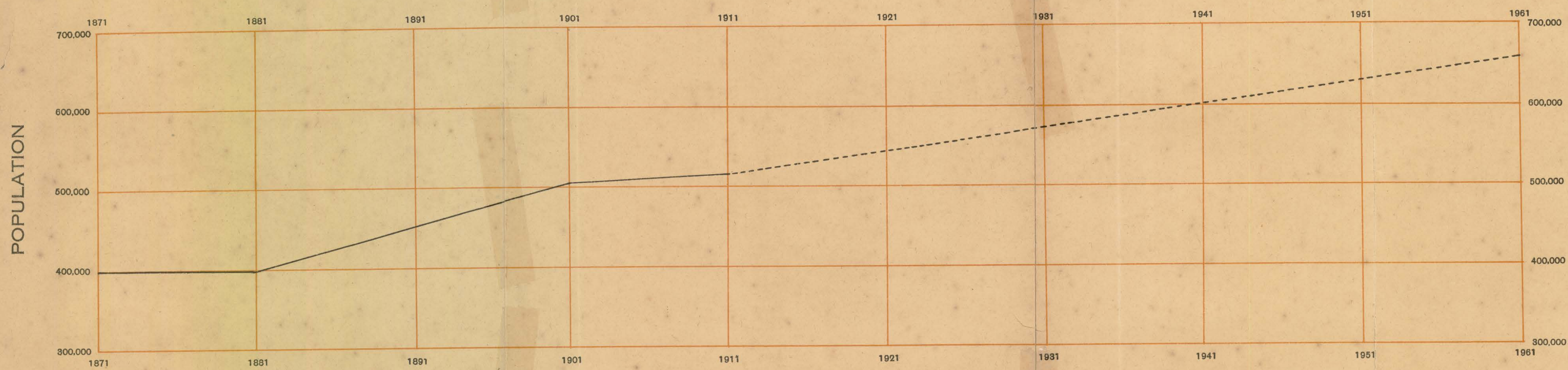
# CURVES SHEWING PAST AND PROBABLE FUTURE POPULATION OF MADRAS, (WHOLE CITY.)

**NOTE.**—FULL LINE IS PLOTTED FROM PAST CENSUS FIGURES, DOTTED LINE SHEWS PROBABLE FUTURE POPULATION.




TIME: 1 INCH = 5 YEARS

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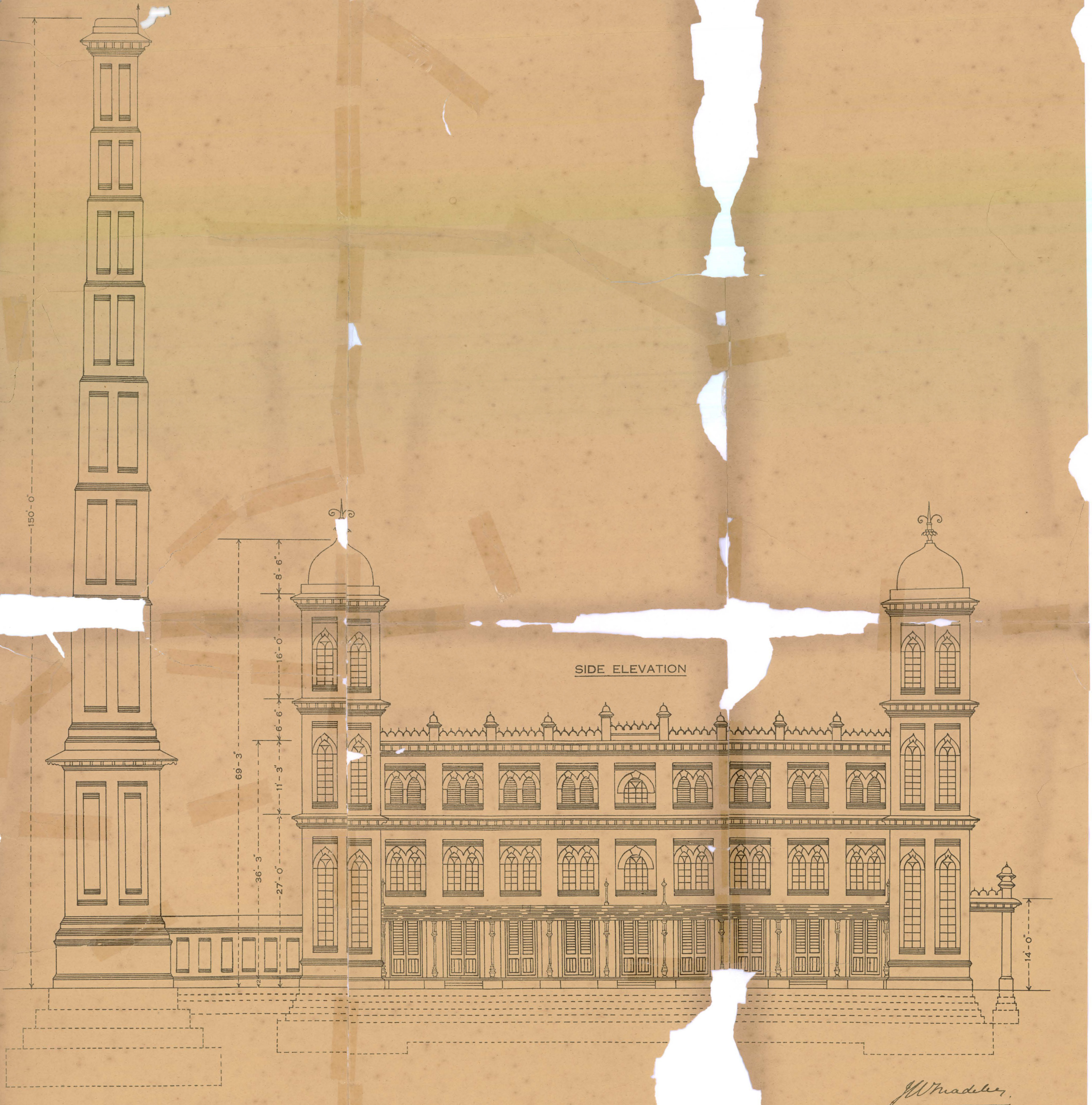
## SIDE ELEVATION

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# DIAGRAM SHEWING TOTAL YIELD, AVAILABLE YIELD AND SUPPLY REQUIRED UNDER VARIOUS ASSUMPTIONS

YIELD CURVES SHEWN IN BLACK
SUPPLY CURVES SHEWN IN RED

SCALES { HORIZONTAL 1 INCH = 10 MONTHS
VERTICAL 1 INCH = 10,000 MILLION CU. FT.

**Note.**—*The Supply required is calculated from the following data :—*

| | | |
|---|---|---|
| Present Water Supply to Madras City ... ... ... | | 583 million cu. ft. per year. |
| Future Water Supply to Madras City at 25 gallons per head per day for a Population of 660,000 ... ... ... ... | | 1,000 „ „ „ |
| Future Water Supply to Madras City at 75 gallons per head per day | | 3,000 „ „ „ |
| Evaporation and Percolation at 9 feet vertically per year, | | |
| Red Hills Tank | ... 1,260 | |
| ... ... ... Cholavaram Tank | ... 378 | |
| Total ... | | 1,638 „ „ „ |
| Irrigation— | | |
| First crop 7,500 acres at 200,000 cu. ft. per acre... | ... 1,500 | |
| Second crop 3,200 acres at 170,000 cu. ft. per acre | ... 544 | |
| Total ... | | 2,044 „ |

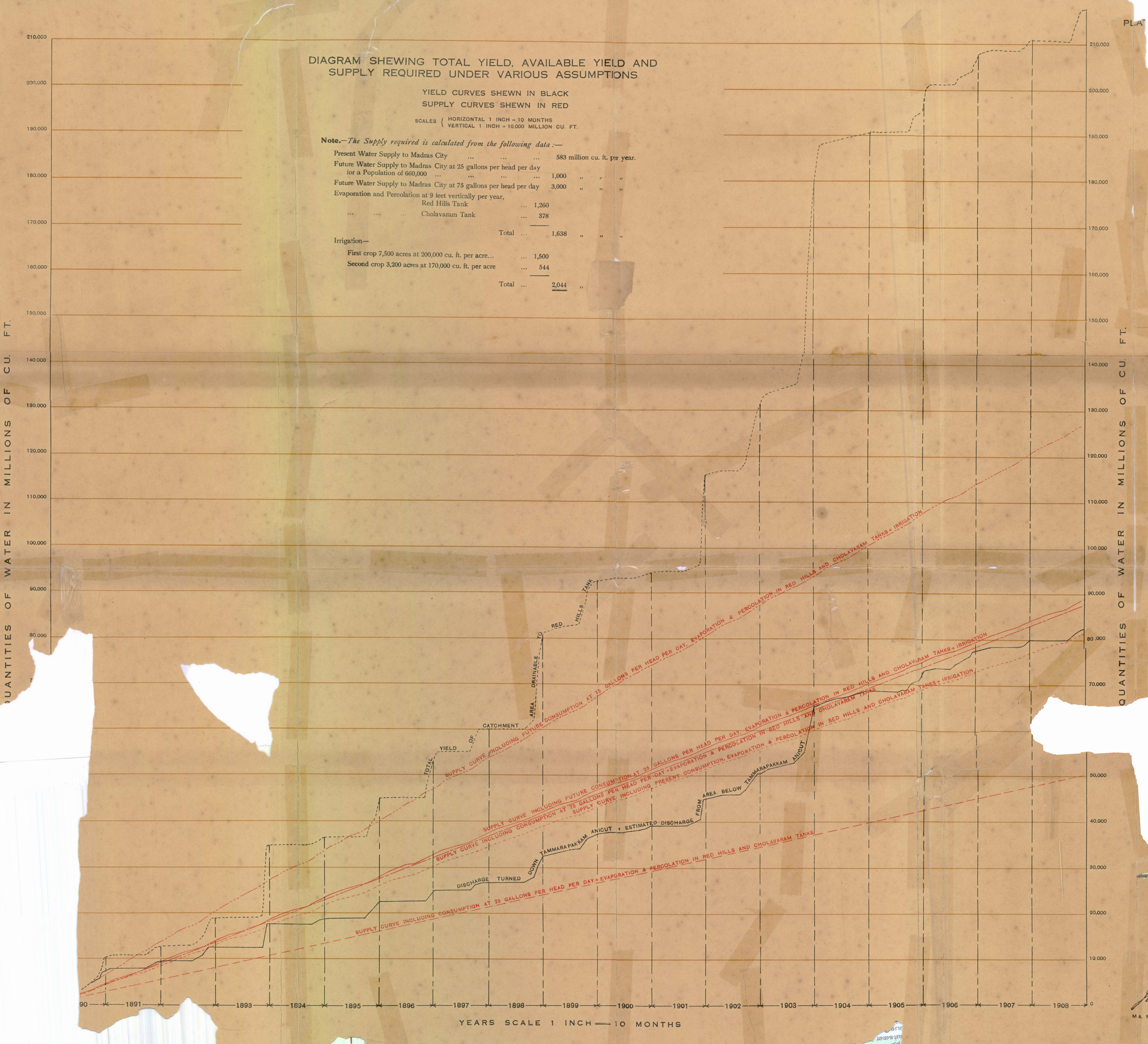


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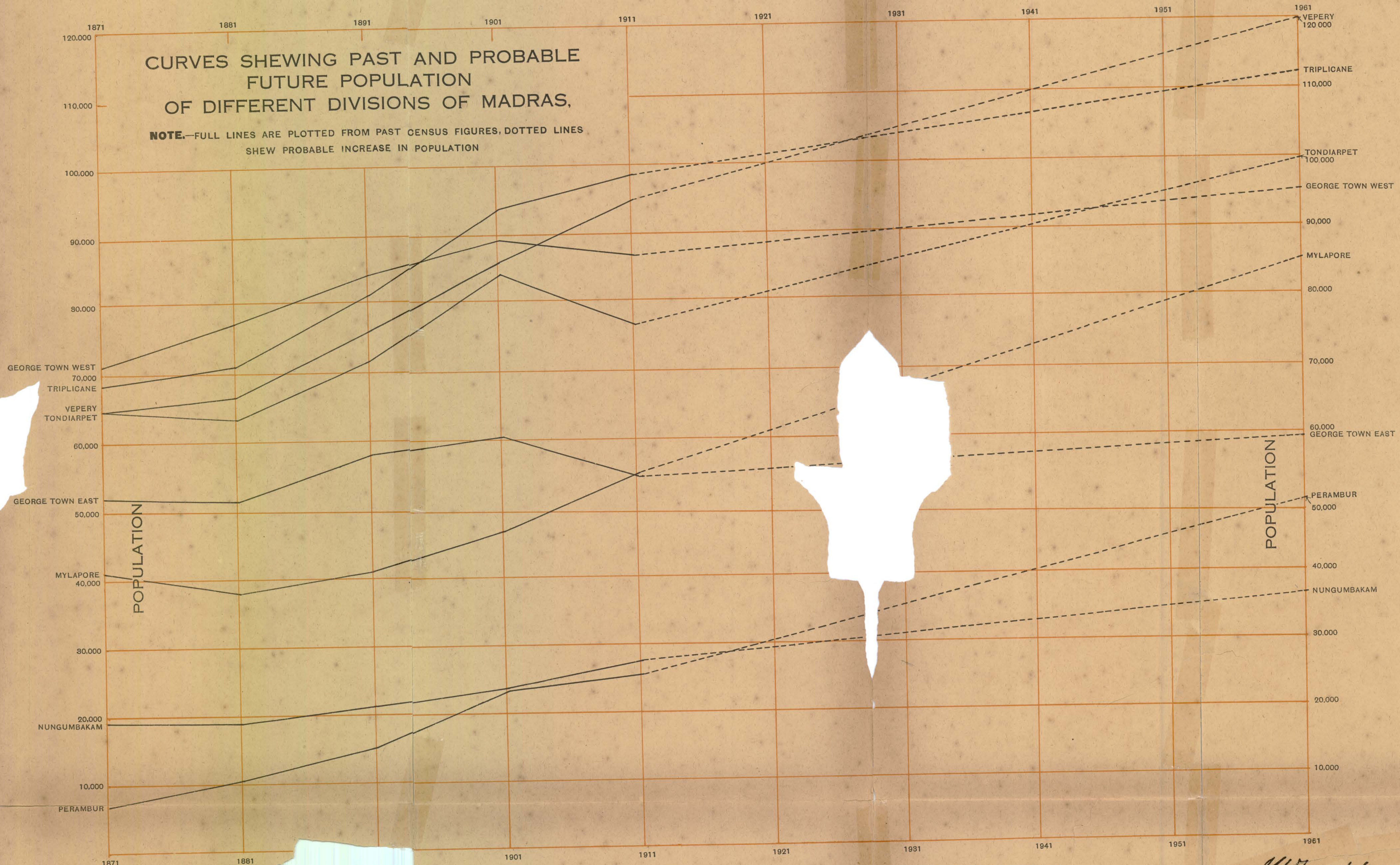
PLATE No 12




TIME: 1 INCH = 5 YEARS

*NOTE.—To obtain the populations for plotting these curves the 1901 areas have been taken for every case, and multiplied by the density as calculated from the Census returns. This was the only possible method of comparing the populations for different years because the boundaries of the divisions have been altered every Census, and therefore the population given for a division in one Census cannot be compared with the population of the same division as given in another Census, because the areas are different.*

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PLATE No. 7.

PERIOD DURING WHICH THERE WAS PUMPING SHEWN CROSS-HATCHED THUS

NUMBER OF DEATHS PER MONTH FROM CHOLERA SHEWN THUS

# DIAGRAM SHEWING LEVEL OF WATER IN RED HILLS LAKE, DAYS ON WHICH THERE WAS PUMPING AND DEATHS FROM CHOLERA FROM 1891 TO 1910.


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PLATE No. 6.

BLUE CURVE GIVES THE LEVEL OF THE WATER SURFACE

BLACK CURVE GIVES THE CONTENTS OF THE TANK

# DIAGRAM SHEWING A CONTINUOUS RECORD OF THE LEVEL OF WATER AND CONTENTS OF RED HILLS TANK FROM 1891 TO 1910


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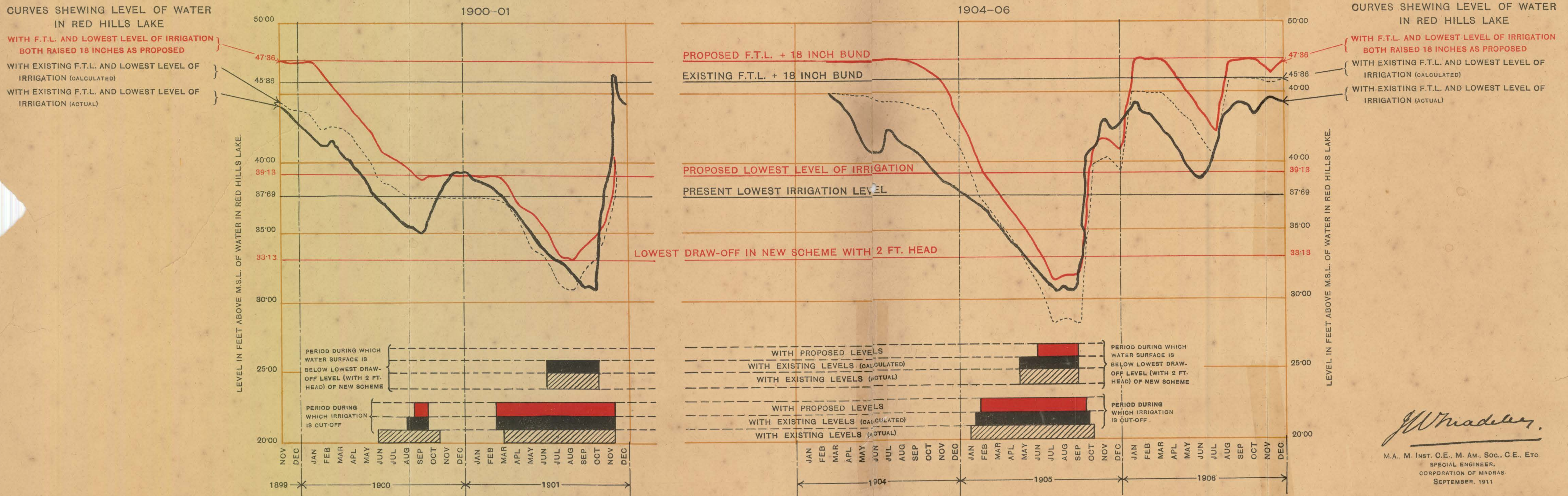
# DIAGRAM TO SHEW EFFECT OF PROPOSED RAISING OF BOTH F.T.L. AND LOWEST LEVEL OF IRRIGATION BY 18 INCHES DURING YEARS 1900-1 AND 1904-6 WHEN MONSOON FAILED

ON

(1) PERIODS OF PUMPING FOR MADRAS CITY WATER-SUPPLY
(2) PERIODS OF CUT-OFF OF IRRIGATION SUPPLY

(FOR FIGURES FROM WHICH THIS DIAGRAM WAS PRINTED, SEE APPENDIX No. 4.)

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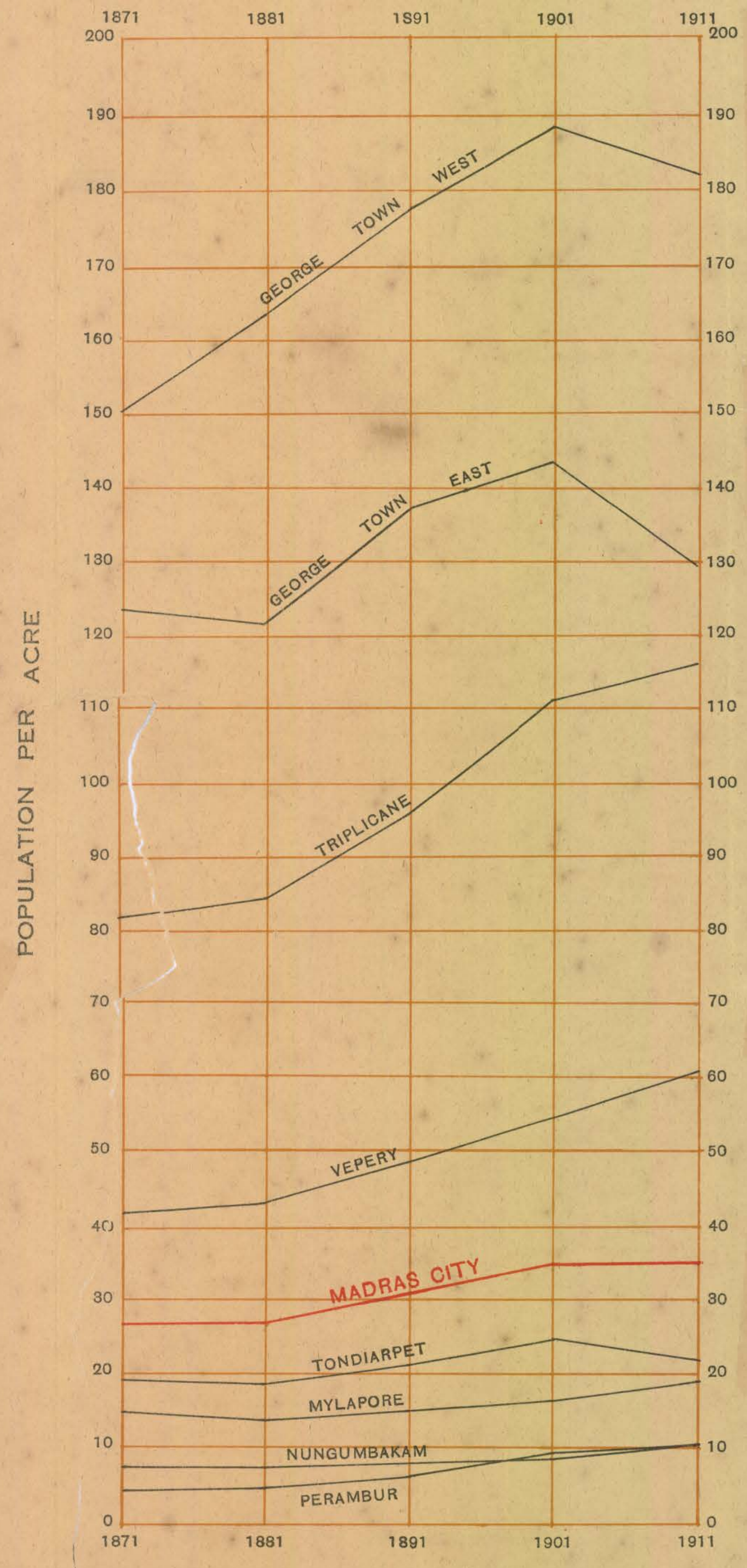
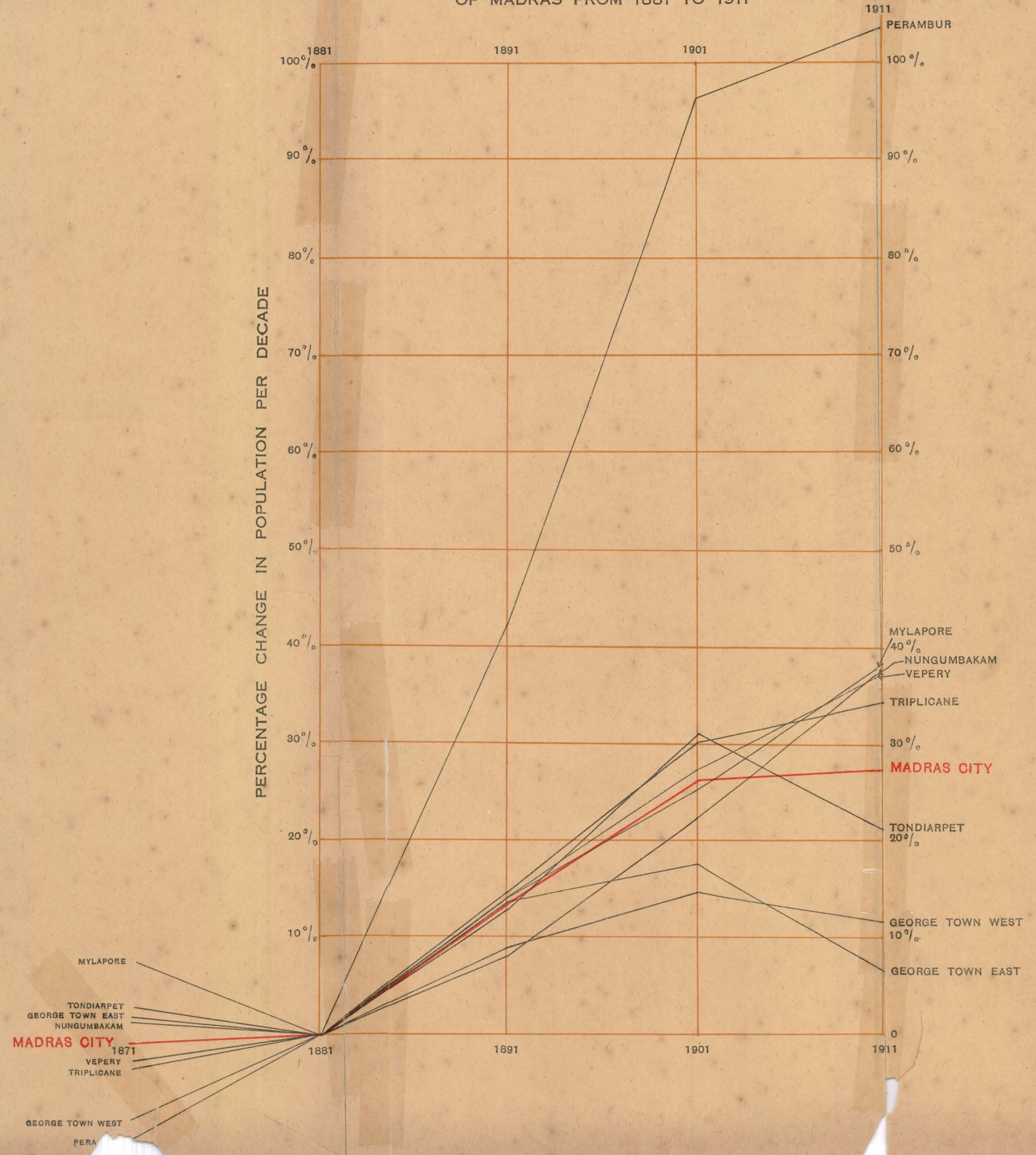
# GROWTH OF POPULATION IN MADRAS.

...WING POPULATION
PER ACR... ...HE EIGHT DIVISIONS
OF MADRAS FROM 1871–1911.




*Note:—In calculating the population per acre, large uninhabited areas have been excluded for example in Georgetown West the area of "The Island" is not included, though on the maps it is shown as part of this division.*

CURVES SHOWING PERCENTAGE CHANGE
IN POPULATION PER DECADE OF THE EIGHT DIVISIONS
OF MADRAS FROM 1881 TO 1911

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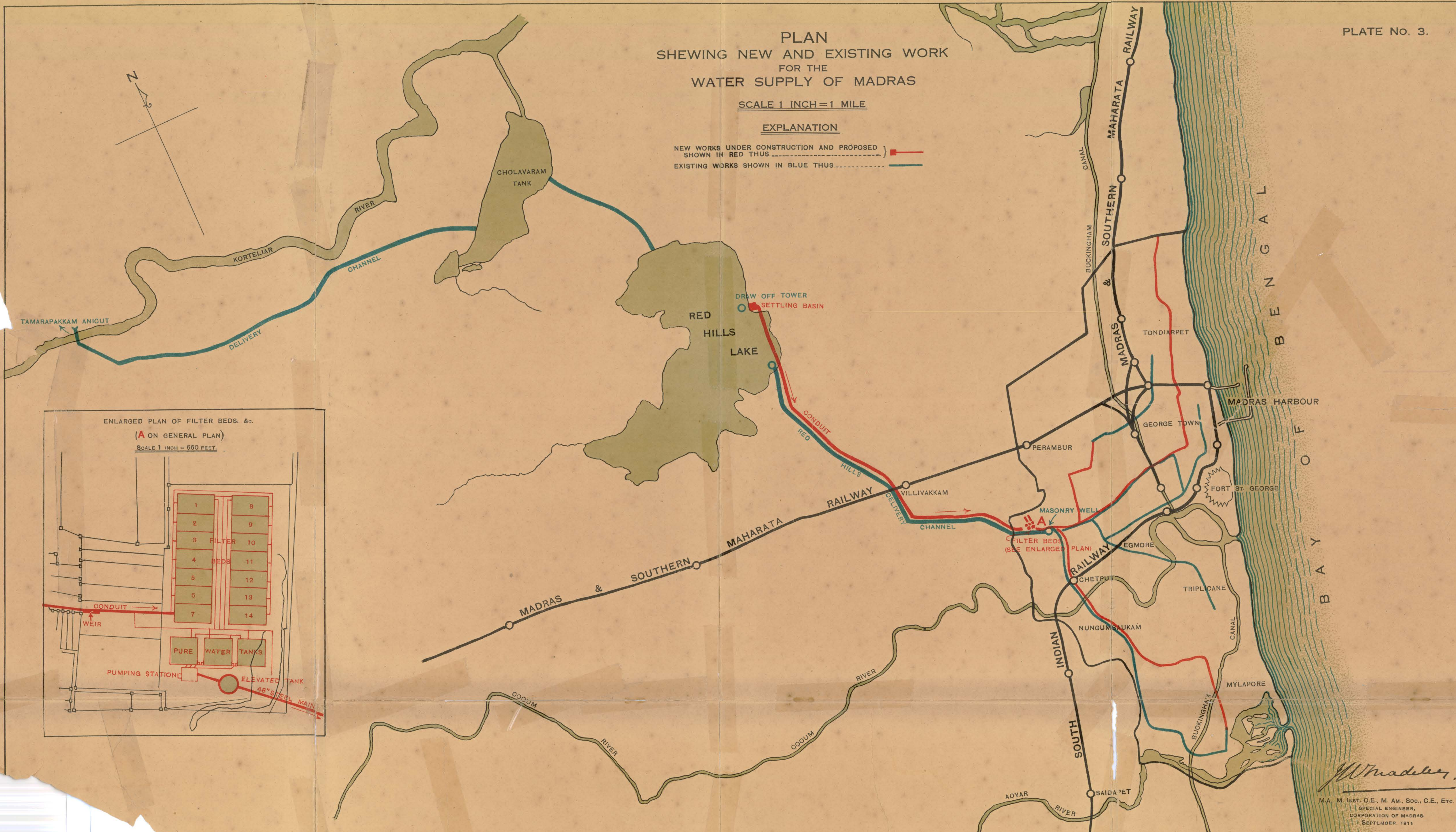

PLATE No. 3.
PLAN
SHEWING NEW AND EXISTING WORK
FOR THE
WATER SUPPLY OF MADRAS
SCALE 1 INCH = 1 MILE
EXPLANATION
NEW WORKS UNDER CONSTRUCTION AND PROPOSED SHOWN IN RED THUS
EXISTING WORKS SHOWN IN BLUE THUS
CHOLAVARAM TANK
KORTELIAR RIVER
DELIVERY CHANNEL
TAMARAPAKKAM ANICUT
RED HILLS LAKE
DRAW OFF TOWER
SETTLING BASIN
CONDUIT
RED HILLS DELIVERY CHANNEL
VILLIVAKKAM
PERAMBUR
MASONRY WELL
FILTER BEDS (SEE ENLARGED PLAN)
MADRAS & SOUTHERN MAHARATA RAILWAY
SOUTH INDIAN RAILWAY
BUCKINGHAM CANAL
TONDIARPET
MADRAS HARBOUR
GEORGE TOWN
FORT ST. GEORGE
EGMORE
CHETPUT
TRIPLICANE
NUNGUMBAUKAM
MYLAPORE
SAIDAPET
COOUM RIVER
ADYAR RIVER
BAY OF BENGAL
ENLARGED PLAN OF FILTER BEDS, &c.
(A ON GENERAL PLAN)
SCALE 1 INCH = 660 FEET.
FILTER BEDS
CONDUIT
WEIR
PURE WATER TANKS
PUMPING STATION
ELEVATED TANK
48" STEEL MAIN
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# PLAN SHEWING CATCHMENT AREAS FROM WHICH RED HILLS TANK IS SUPPLIED

SCALE 1 INCH = 4 MILES

PLATE No. 4.

# DIAGRAM SHEWING IMPORTANT LEVELS OF THE NEW WATER SUPPLY.

SCALES { HORIZONTAL 1"=200' VERTICAL 1"=10'

Note:—NEW WORK SHEWN IN RED


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