



For official use

Technical Report Series

DISTRICT GROUNDWATER BROCHURE
TIRUCHCHIRAPPALLI DISTRICT, TAMIL
NADU

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Government of India
Ministry of Water Resources
Central Ground Water Board
South Eastern Coastal Region
Chennai

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DISTRICT AT A GLANCE (TIRUCHCHIRAPPALLI DISTRICT)

S.NO	ITEMS	STATISTICS	
1.	GENERAL INFORMATION		
	i. Geographical area (Sq.km)	4403.83	
	ii. Administrative Divisions as on 31-3-2007		
	Number of Tehsils	8	
	Number of Blocks	14	
	Number of Villages	504	
	iii. Population (as on 2001 Census)		
	Total Population	2418366	
	Male	1208534	
	Female	1209832	
	iv. Average Annual Rainfall (mm)	841.9 mm	
2.	GEOMORPHOLOGY		
	i. Major physiographic Units	Peneplain	
	ii. Major Drainages	Cauvery, Coleroon	
3.	LAND USE (Sq. km) during 2005-06		
	i. Forest area	36246	
	ii. Net area sown	191347	
	iii. Cultivable waste	8856	
4.	MAJOR SOIL TYPES		
5.	AREA UNDER PRINCIPAL CROPS (AS ON 2005-2006)	1. Paddy - 78956 Ha – 65% 2. Cereals – 80153 Ha - 65% 3. Fruits & Vegetables – 24236 Ha – 15% 4. Oil Seeds – 27203 Ha – 9% 5. Sugar Cane – 7485 Ha –6% 6. Pulses – 5708 Ha – 0.59%	
6.	IRIGATION BY DIFFERENT SOURCES (During 2005-06)	Number	Area irrigated (Ha)
	i. Dug wells	95349	57883
	ii. Tube wells	8988	10981
	iii. Tanks	1761	8791
	iv. Canals	135	32399
	v. Other Sources	-	-
	vi. Net irrigated area	110054 Ha	
	vii. Gross irrigated area	121852 Ha	

7.	NUMBERS OF GROUND WATER MONITORING WELLS OF CGWB (AS ON 31.03.2007)		
	i. No of dug wells	19	
	ii. No of piezometers	7	
8.	PREDOMINANT GEOLOGICAL FORMATIONS	Alluvium, Sandstone, Limestone, Charnockite, Granite Gneiss	
9.	HYDROGEOLOGY		
	i. Major water bearing formations	Charnockites, Granite Gneisses, Granites, Lime Stones, Sand Stone and Alluvium	
	ii. Pre- monsoon depth to water level (May 2006)	m bgl	
	iii. Post- monsoon depth to water level (Jan'2007)	1.60 – 15.15 m bgl	
	iv. Long term water level trend in 10 years (1998-2007) in m/yr	Annual	
		Rise (m/year)	Fall (m/year)
		Min : 0.0271	Min : 0.0066
		Max : 0.8567	Max : 0.7136
10.	GROUND WATER EXPLORATION BY CGWB (As on 31-03-2007)		
	i. Number of Exploratory wells	19	
	ii. Number of Observation wells	9	
	iii. Number of Piezometers under Hydrology Project.	7	
	iv. Depth range(m)	92 - 200	
	v. Discharge(lps)	<1 to 9	
	vi. Storativity (S)	1.6 X 10 ⁻⁴ to 9.6 X 10 ⁻⁴	
	vii. Transmissivity (m ² /day)	<1 to 45	
11.	GROUND WATER QUALITY AS ON MAY 2006		
	i. Presence of chemical constituents more than permissible limit	NO ₃ & F	
	ii. Type of water	CaHCO ₃ & Mixed Type	
12.	DYNAMIC GROUND WATER RESOURCES (as on 31.03.2004) in MCM		
	i. Annual Replenishable Ground Water Resources	788.55	
	ii. Total Annual Ground Water Draft for all purposes	498.82	
	iii. Projected demand for Domestic and Industrial Uses up to 2025	37.70	
	iv. Stage of Ground Water Development	70	
13.	AWARENESS AND TRAINING ACTIVITY		
	i. Mass Awareness Programmes Organized		
	Year	2005-06	
	Place	Thuraiyur	
	No of Participants	300	
	ii. Water Management Training Organized		
	Year	2005-06	
	Place	Tiruchchirappalli	
	No of Participants	20	

14.	EFFORTS OF ARTIFICIAL RECHARGE & RAINWATER HARVESTING	Technical Guidance were provided as when sought
	i. Projects completed by CGWB Number of structures Amount spent	One - Sub Surface Dyke at Avaravalli Rs 13.0 Lakhs
	ii. Projects under technical guidance of CGWB Number of structures	Nil
15.	GROUND WATER CONTROL AND REGULATION	
	i. Number of OE Blocks	4
	ii. Number of Critical Blocks	1
	iii. Number of Blocks Notified	1
16.	MAJOR GROUND WATER PROBLEMS AND ISSUES.	High level of ground water development in parts of the district and failure of abstraction structures with time

1.0 INTRODUCTION

1.1 Administrative Details

Tiruchchirappalli district is having administrative divisions of 7 taluks, 14 blocks, 539 Panchayats and 341 villages as detailed below:

S.No.	Taluk	No.of Villages	Block	No.of Villages
1	Tiruchchirappalli	46	Thiruverumbur	46
2	Srirangam	66	Manikandam	33
			Andanallur	33
3	Manapparai	96	Manapparai	28
			Vaiyampatti	23
			Marungapuri	45
4	Musiri	64	Musiri	34
			Thathayangarpettai	30
5	Thottiyam	30	Thottiyam	30
6	Thuraiyur	64	Thuraiyur	30
			Uppiliapuram	34
7	Lalgudi	92	Lalgudi	53
			Pullambadi	39
8	Manachanallur	46	Manachanallur	46
	Total	504		504

1.2 Basin and sub-basin

.The entire district forms part of Cauvery river basin.

1.3 Drainage

The entire district forms part of Cauvery river basin. Cauvery is the major, and the only perennial river in the district. The northern branch of Cauvery, known as 'Coleroon' is mainly a flood carried, while the southern branch retains the name Cauvery. It has numerous tributaries draining the district, the prominent ones of which are *Ayyar* and *Uppar* in the north and *Koraiyar* in the south. Most of the rivers are structurally controlled. The drainage pattern, in general, is dendritic.

1.4 Irrigation Practices

The nine-fold lands use classification for the district is given below (2005-06).

S.No	Classification	Area (Ha)
1	Forests	36246
2	Barren & Uncultivable Lands	13599
3	Land put to non agricultural uses	84791
4	Cultivable Waste	8856
5	Permanent Pastures & other grazing lands	659
6	Groves not included in the area sown	1931
7	Current Fallows	21142
8	Other Fallow Lands	81812
9	Net Area sown	191347
	Total	440383

(Source: Department of Economics & Statistics, Govt. of Tamil Nadu)

The chief irrigation sources in the area are the canals, followed by tanks, wells and tube wells.

The block wise and source wise net area irrigated in Ha is given below (2005-06).

S.No	Block	Net area irrigated by					Total Net Area irrigated
		Canals	Tanks	Tube wells	Ordinary wells	Other Sources	
1	Andanallur	3700	0	1850	1342	0	6892
2	Manikandam	2913	567	2144	599	0	6223
3	Tiruverumbur	5218	1210	580	535	0	7543
4	Manaparai	0	481	27	4824	0	5332
5	Marungapuri	0	570	36	8214	0	8820
6	Vaiyampatti	59	257	98	4609	0	5023
7	Lalgudi	8228	40	2685	1538	0	12491
8	Pullambadi	3579	888	934	1733	0	7134
9	Manachanallur	2647	350	677	4228	0	7900
10	Musiri	1924	819	173	5073	0	7689
11	T.Pet	0	0	1474	5355	0	6829
12	Thottiam	2960	320	163	4449	0	7892
13	Thuraiyur	430	2009	80	6968	0	9487
14	Uppiliyapuram	741	1280	60	8418	0	10499
	Total	32399	8791	10981	57883	0	110054

(Source: Department of Economics & Statistics, Govt. of Tamil Nadu)

1.5 Studies/Activities carried out by CGWB

Detailed systematic hydrogeological studies were taken up for the first time in the district by during 1959-'60 in the sedimentary tracts of the district. The occurrence of ground water under both phreatic and confined conditions and the existence of potential deep confined aquifers were brought to light for the first time during these studies. Subsequently systematic hydrogeological surveys were carried out in other parts of the district during 1986-'88.

Four boreholes were again drilled by CGWB in Cretaceous sediments during 1984-'85. Nine production wells and one flowing well have been constructed in the district. In order to strengthen groundwater monitoring network under Hydrology Project, 7 piezometers have been constructed for water level and water quality monitoring. In 2004, 28 well have been constructed through outsourcing in the district to assist State Government in drought proofing work.

Monitoring of ground water levels and water quality is being carried out by Central Ground Water Board since 1972 through a network of Hydrograph Stations.

Under Central Sector Scheme, technical and financial assistance were rendered for the execution a sub surface dyke across Siruganur Odai for an estimate of Rs 13.0 Lakhs.

2.0 RAINFALL AND CLIMATE

The normal annual rainfall over the district varies from about 730 mm to about 900 mm. It is the minimum around Musiri (731.9 mm) in the western part. It gradually increases towards north, east and south and reaches a maximum around Manapparai (908.5 mm)

The district enjoys a tropical climate. The period from April to June is generally hot and dry. The weather is pleasant during the period from November to January. Usually mornings are more humid than afternoons. The relative humidity varies between 50 and 85% in the mornings while in the afternoon it varies between 70 and 92%.

3.0 GEOMORPHOLOGY AND SOIL TYPES

3.1 Geomorphology

The entire Tiruchchirappalli district constitutes a peneplain. The Kolli Hills in the north-western part and Pachchamalai Hills in the north-eastern parts of the district constitute the remnants of the denuded Eastern Ghats and rise to a heights of more than 100 m above Mean Sea Level. From these hills, the land slopes gently toward east and forms a vast stretch of plain country. There are numerous small residual hillocks dotting the countryside, the most prominent one of which is the Rock Fort hill in Tiruchchirappalli town. The area northeast of Tiruchchirappalli is in an active stage of erosion and shows typical bad land topography. The master slope of the district is towards east.

The prominent geomorphic units identified in the district through interpretation of Satellite Imagery are 1) Alluvial Plains, 2) Valley Fills, 3) Buried Pediments, 4) shallow Pediments, 5) Pediments and 6) Structural Hills.

The alluvial plains are confined to the northern bank of Cauvery River in the district. Valley fill deposits are seen mainly in the northern part adjoining the hillocks in Uppiliapuram and Thuraiyur blocks. Buried Pediments have been identified in almost all blocks in the district except Marungapuri, Manapparai, Vaiyampatti and Manikandam. Pediments, both shallow and deep, constitute the most prominent geomorphic unit in the district and are evenly distributed in the entire district. Structural hills, on the other hand, are confined to the northern and southwestern borders of the district.

3.2 Soils

The major soil types encountered in the district are black cotton soils, red sandy to loamy soils and alluvial soils. A thin layer of red sandy soils overlies the western and southern parts of the district. Alluvial soils of considerable thickness occur in the central part, particularly in Tiruchchirappalli, Kulithalai, Musiri and Lalgudi taluks. Black cotton soils are observed in the northern part., whereas red loamy soils occur in the hilly regions.

4.0 GROUND WATER SCENARIO

4.1 Hydrogeology

The major part of the district is underlain by Archaean crystalline metamorphic complex. The important aquifer systems encountered in the district are classified into

- i) Fissured, fractured and weathered crystalline formations consisting of charnockites, Granite Gneisses and
- ii) Unconsolidated and semi-consolidated formations.

The unconsolidated and semi consolidated formations in the district include shales, sandstones and clays of Jurassic age (Upper Gondwana), marine sediment of Cretaceous age, sandstones of Tertiary age and Recent alluvial formations. As the Gondwana formations are well compacted and poorly jointed, the movement of ground water in these formations is mostly restricted to shallow levels. Ground water occurs under phreatic to semi confined conditions in the inter-granular pore spaces in sands and sandstones and the bedding planes and thin fractures in shales. In the area underlain by Cretaceous sediments, ground water development is rather poor due to the rugged nature of the terrain and the poor quality of the formation water. Quaternary formations comprising mainly sands, clays and gravels are confined to major drainage courses in the district. The maximum thickness of alluvium is 30 m whereas the average thickness is about 15 m. Ground water in these formations is being developed by means of dug wells and filter points.

The water bearing properties of crystalline formations which lack primary porosity depend on the extent of development of secondary intergranular porosity either through weathered or fracturing. These aquifers are highly heterogeneous in nature due to variations in lithology, texture and structural features even within short distances. Ground water generally occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fissured and fractured zones at deeper levels. The thickness of weathered zone in the district is in the range of 2 to 25 m.

The prominent lineaments trend in E-SW, NNE-SSW, NW-SE and E-W directions. Some of these fracture zones persist to depths and may form potential aquifers in the area. Productive joints have been encountered down to a depth of about 100 m bgl in the wells drilled for rural water supply by the Ground Water Department and Tamil Nadu water Supply and Drainage Board. The yield of these wells at the time of drilling and development ranged from less than 1 to 10 lps.

The depth of drilling in the district through outsourcing for drought proofing work was in the range of 92 to 200 m bgl. The wells encountered three to five fracture zones with two fracture zones down to 50 m and two fracture zones in the depth range of 100 – 150 m and one fracture zone deeper than 150 m. The yield of these wells varied from <1 to 9 lps.

Dug wells are used extract groundwater from weathered formation while deeper fractures are tapped through bore wells and dug cum bore wells.

The yield of large diameter wells in the district, tapping the weathered mantle of crystalline rocks or the unconsolidated formations ranges from 200 to 900 lpm for drawdowns ranging from 0.4 to 2.5 m.

The wells tapping the deep seated fracture system can yield about 1 – 5 lps and can sustain a pumping of 6-8 hrs a day.

The depth to water level during pre monsoon (May 2006) in the district varied from 1.95 to 9.49 m bgl. Out of 17 wells, 6% of wells had depth to water level in the range of 0- 2 m bgl, 47% in the range of 2 – 5 m bgl and 10 – 20 m bgl.

The depth to water level during post monsoon (Jan 2007) varied from 1.6 to 15.15 m bgl and 5% of wells had depth to water level in the range of 0- 2 m bgl and 58% of the wells in the range of 2 – 5 m bgl. 26% of the wells had depth to water level in the range of 5 - 10 m bgl and 10% of the wells had the depth to water level in the range of 10 - 20 m bgl.

4.1.1 Long Term Fluctuation (1998-2007)

Period	Rise (m)		Fall (m)	
	Minimum	Maximum	Minimum	Maximum
Pre monsoon (May 1998 – May 2006)	0.04	8.99	1.53	1.53
Post Monsoon (Jan 1998 – Jan 2007)	0.37	3.48	0.07	8.69

4.1.2 Aquifer Parameters

Formation	Sp.Yield (%)	Transmissivity (m ² /d)	Hy. Conductivity (m/d)	Yield of Wells (lps)	Storativity
Alluvium	7.2	49-216	2-5	10-20	-
Cretaceous	0.3 - 2.56	33-772	10-66	1.1-3.5	-
Gondwana	1.5 – 2.5	43-52	10-20	1-2	-
Crystallines	1.5	32-80	5-10	1-2	1.6 X 10 ⁻⁴ to 9.6 X 10 ⁻⁴

4.2 Ground Water Resources

The ground water resources have been computed jointly by Central Ground Water Board and State Ground & Surface Water Resources and Development Centre (PWD, WRO, Government of Tamil Nadu) as on 31st March 2004. The salient features of the computations are furnished below.

Stage of Groundwater Development of Tiruchchirappalli District, Tamil Nadu as on 31st March 2004 (in Ham)									
S.No	Block	Net Groundwater Availability	Existing Gross Draft for Irrigation	Existing Gross Draft for Domestic and industrial water supply	Existing Gross Draft for all uses	Allocation for Domestic and Industrial Requirement supply up to next 25 years (2029)	Net groundwater Availability for future Irrigation Development	Stage of Groundwater Development	Category of the Block
1	Andanallur	4218.50	1536.50	196.65	1733.15	204.31	2477.69	41	Safe
2	Lalgudi	8580.45	2614.31	304.91	2919.22	316.78	5649.36	34	Safe
3	manachanallur	5374.31	2775.99	333.04	3109.03	346.01	2252.31	58	Safe
4	Manaparai	3563.96	3451.16	190.66	3641.82	198.08	0.00	102	Over Exploited
5	Manikandam	4709.60	1313.98	251.88	1565.86	261.69	3133.93	33	Safe
6	Marungapuri	6691.77	3202.89	198.03	3400.92	205.74	3283.14	51	Safe
7	Musiri	4626.74	4292.72	251.52	4544.24	261.31	72.71	98	Critical
8	Pullambadi	4889.04	2160.43	215.21	2375.65	223.59	2505.02	49	Safe
9	Tattayangarpetai	4420.99	5124.68	206.44	5331.13	214.48	0.00	121	Over Exploited
10	Thiruverumbur	6622.62	305.95	608.10	914.05	631.78	5684.89	14	Safe
11	Thottiam	4562.56	2217.97	277.33	2495.30	288.12	2056.46	55	Safe
12	Thuraiyur	3049.72	6091.13	211.29	6302.42	219.52	0.00	207	Over Exploited
13	Uppiliyapuram	6694.30	9391.09	211.46	9602.55	219.69	0.00	143	Over Exploited
14	Vaiyampatti	2964.87	1774.82	172.29	1947.11	179.00	1011.05	66	Safe
	District Total	70969.43	46253.64	3628.81	49882.44	3770.10	20945.69	70	

* - If the difference between Net Groundwater Availability and sum of existing groundwater draft & allocation for domestic is negative, groundwater availability for future is taken as zero. In Case of district total, the negative availability and positive availability is added up to get the district total and if it is negative, it is taken as zero and if it is positive, the district total is given.

4.3 Ground Water Quality

Ground water in phreatic aquifers in Tiruchchirappalli district, in general, is colourless, odourless and slightly alkaline in nature. The electrical conductivity of ground water in phreatic zone (in Microsiemens at 25° C) during May 2006 was in the range of 570 to 4550 $\mu\text{S}/\text{cm}$ and major parts of the district are having the electrical conductivity above 1700 $\mu\text{S}/\text{cm}$.

It is observed that in general the ground water is suitable for drinking and domestic uses in respect of all the constituents except Fluoride of higher concentration at Siruganallur (1.85 mg/L) and at few places are having higher concentration of NO_3 than BIS permissible limit.

4.4 Status of Ground Water Development

The estimation of groundwater resources for the district has shown that out of 14 blocks, 4 blocks are categorized as over exploited and 1 block as Critical and rest is Safe.

Dug wells are the most common ground water abstraction structures used for irrigation in the district. The yield of dug wells range from less than 50 to 200 m^3/day in weathered crystalline rocks, 20 to 100 m^3/day in Gondwana formations and up to 400 m^3/day in recent alluvial formations along major drainage courses. The yields of dug wells in crystalline and Gondwana formations are improved at favourable locations by construction of extension bores which are 20 to 40 m deep. In recent years, a few bore wells have also been drilled by farmers for irrigation purposes. The bore wells down to a

depth 150 m may encounter 3 -4 fracture zones and may yield between <1 to 9 lps may sustain the pumping of 8 – 10 hrs a day.

Based on the data on ground water abstraction structures and area under irrigation from ground water, the average unit draft of dug wells and bore wells have been computed as 0.47 ha.m and 0.86 ha.m respectively

5.0 GROUNDWATER MANAGEMENT STRATEGY

5.1 Groundwater Development

In view of the heterogeneity of the crystalline formation and poor yield prospects in the Gondwana sediments, scientific source finding methods may be employed to site wells for planning further development of available ground water resources in the district.

The map showing the development prospects for the district is shown in Plate VI.

5.2 Water Conservation and Artificial Recharge

On the basis of experimental studies, it has been found that desilting of existing tanks followed by percolation pond with recharge wells//recharge shafts are economical. Accordingly, computations have been made for Drought Prone Area Programme (DPAP), over exploited and critical blocks in the districts warranting immediate attention. A summary giving the availability of surface run off, number of structures feasible and cost estimates for the schemes is provided in the table.

Details of computation of the number and cost estimates of artificial recharge structures proposed											
S.No	Block	Area Suitable for Groundwater Development (sq.km)	Categorization of Block as on March 2004	*Harnessable surface water (M.Cu.m)	**Capacity of existing Tanks (MCM)	Committed Supply for existing Tanks (MCM) (2 Fillings)	Surplus available for AR (MCM)	Available Subsurface storage (MCM)	Number of Structures	Cost of Structures (Lakhs)	Whether Number of Structures are Feasible as per SW Availability
									PP (1 in 15 sq.km). Capacity - 0.1 M.Cu.m	PP (Unit Cost - Rs 20 Lakhs)	
1	Manaparai	272.07	OE / DPAP	24.96	9.53	19.060	5.90	57.95	18	360	Yes
2	Musiri	338.69	Critical / DPAP	37.38	10.88	21.760	15.62	0.76	23	460	Yes
3	Tattayangarpettai	310.98	OE / DPAP	14.24	9.53	19.060	0.00	26.35	0	0	No
4	Thuraiyur	464.57	OE / DPAP	33.07	7.17	14.340	18.73	16.31	31	620	Yes
5	Uppiliyapuram	331.7	OE / DPAP	21.99	6.84	13.680	8.31	11.65	22	440	Yes
	Total			131.63	43.95	87.90	48.55	113.02	94	1880	
* Data Source : Institute of Remote Sensing, Anna University, Chennai											
** Capacity of existing surface water structures computed from data available with SG&SWRDC, Govt. of Tamil Nadu on waterspread area, assuming average depth of 1.0 m.											
# Considering 4mm/day recharge for 120 days filling up of tank in a year.											
* It is learned from the earlier executed projects that 50% of Percolation Ponds in Tamil Nadu should be provided with Recharge Shaft/Bore Well/Tube Well as per the local terrain condition for effective recharge.											

6.0 GROUNDWATER RELATED ISSUES & PROBLEMS

Based on the high level of ground water development in 5 blocks, it is inferred that in these parts of the district could be considered vulnerable to water level depletion.

The heterogeneity of the crystalline formation and poor yield prospects in Gondwana sediments make the availability groundwater for further development site specific and scientific methods may employed for siting of wells.

7.0 AWARENESS & TRAINING ACTIVITY

Mass Awareness Campaign (MAP) & Water Management Training Programme (WMTP) by CGWB

One Mass Awareness Campaign on “Ground Water Management, Regulation & Conservation” was organized at Thuraiyur during 2005-2006. The findings of exploration carried out by CGWB, the results of Geophysical investigations for source finding and their limitations, Ground water resource potential of Tiruchchirappalli district, Techniques on Ground water resource management and need for regulation and water conservation were explained to the gathering of 200 people.

8.0 AREA NOTIFIED BY CGWA/SGWA

Central Ground Water Authority has notified Thuraiyur Block in the district for registration of groundwater abstraction structures. Government of Tamil Nadu vide G.O.No. 53 has banned groundwater development for irrigation in the over exploited blocks of Tamil Nadu. The over exploited blocks in this district are as follow.

1. Tattayangarpettai, 2. Thuraiyur, 3. Uppiliyapuram and 4. Manaparai

9.0 RECOMMENDATIONS

Based on the high level of ground water development in the above mentioned overexploited blocks, further groundwater development is not envisaged in these blocks and in Musiri, where the groundwater development has Critical stage, the block could be considered vulnerable to water level depletion.

The heterogeneity of the crystalline formation and poor yield prospects in Gondwana sediments make the availability groundwater for further development site specific and scientific methods may employed for siting of wells.

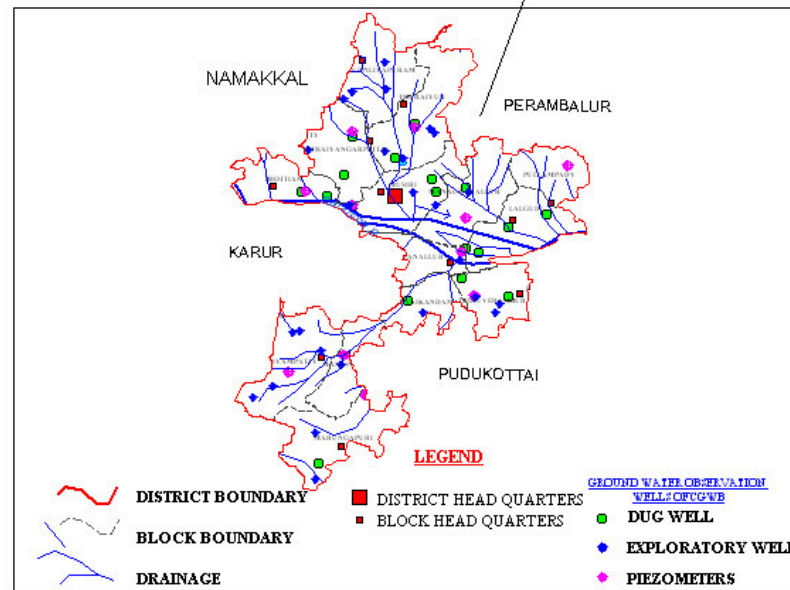
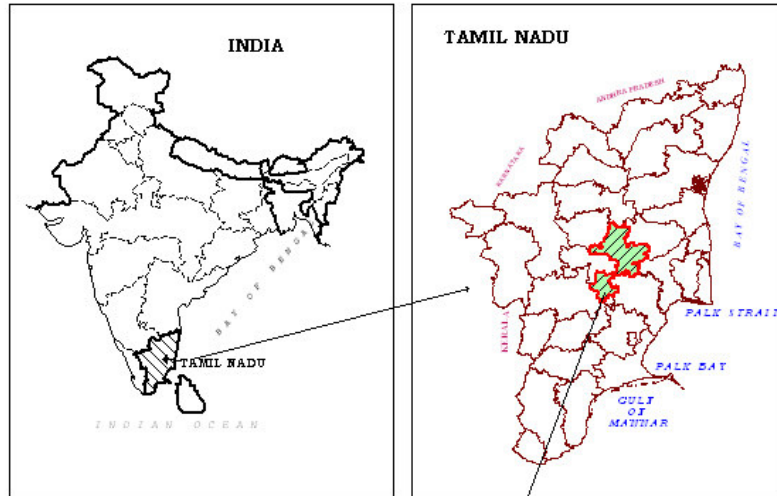
On the basis of the experiences in execution of Central Sector Scheme and Demonstrative Projects on artificial recharge, the desilting of existing

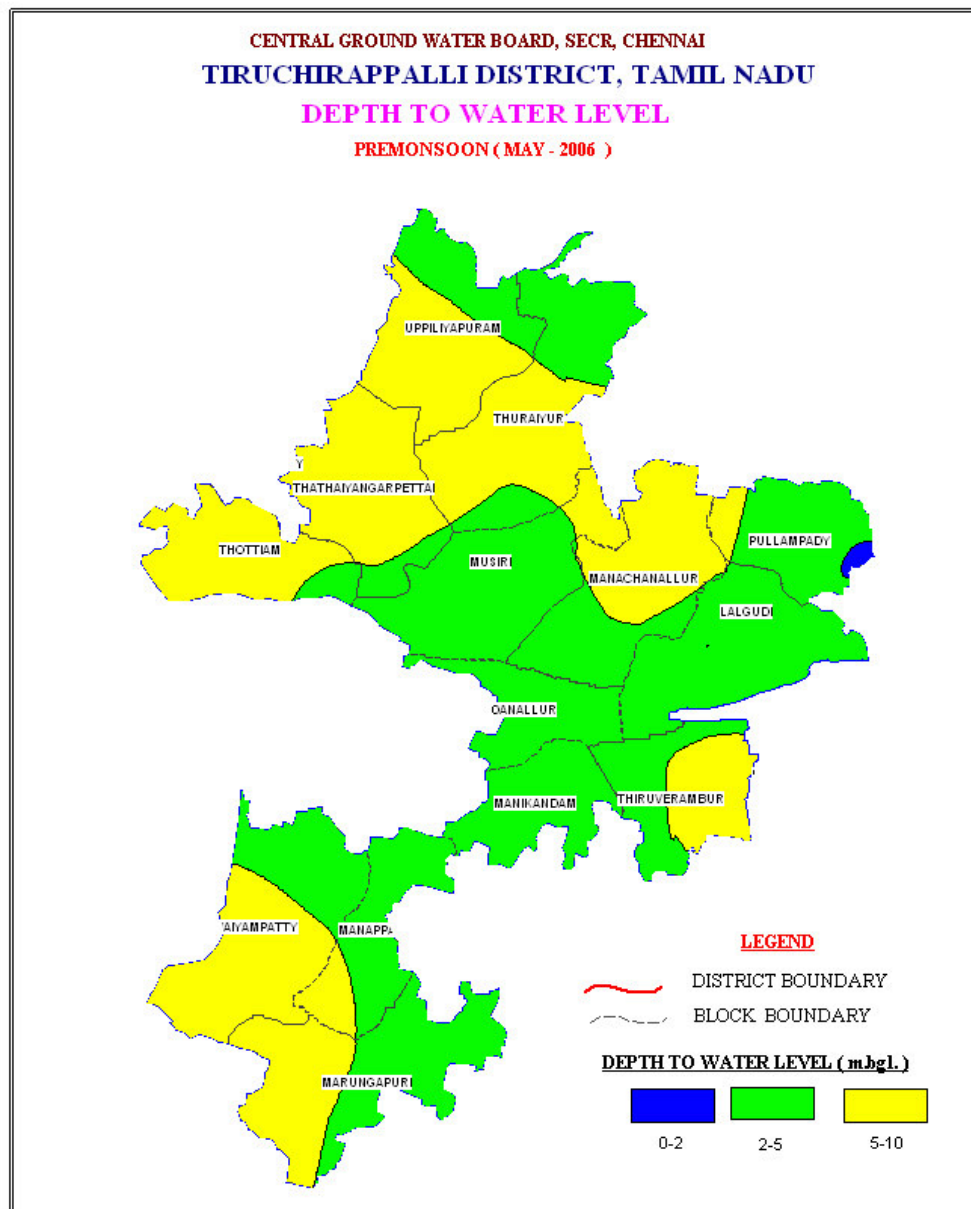
ponds/tanks will be the most cost effective structures. The provision of recharge wells/shafts in percolation ponds/ check dams will enhance the efficacy of these structures.

Rainwater Harvesting has already been made mandatory by the Govt. of Tamil Nadu and people have already made provision for roof top rain water harvesting. However, the efficacy of these structures may be conformed and if any corrections needed may be applied to make these structures effective. Further, artificial recharge structures need to be maintained periodically and it may be given priority for making these structures effective. A concerted effort involving various Government agencies and NGOs can create the necessary awareness among the rural masses. Action plan in this direction with participation of state and central agencies and industrial establishments is recommended.

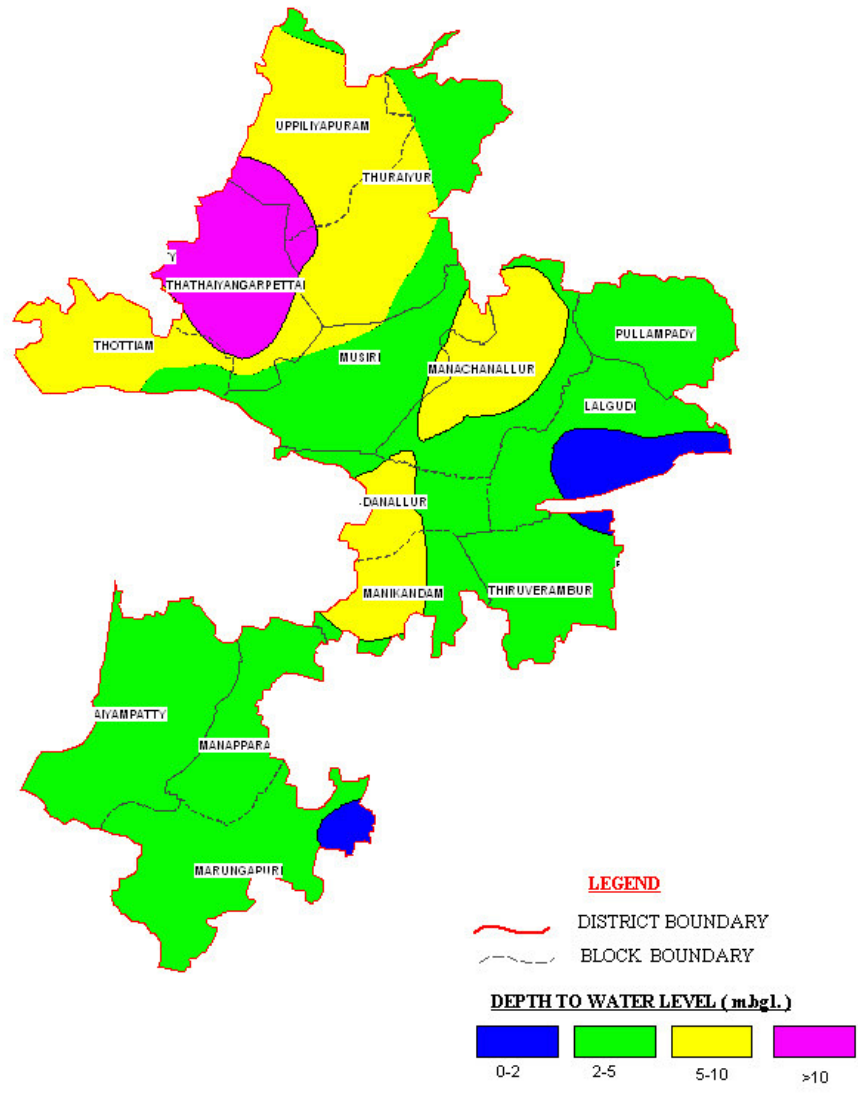
CENTRAL GROUND WATER BOARD, SECR, CHENNAI
TIRUCHCHIRAPPALLI DISTRICT, TAMIL NADU

LOCATION

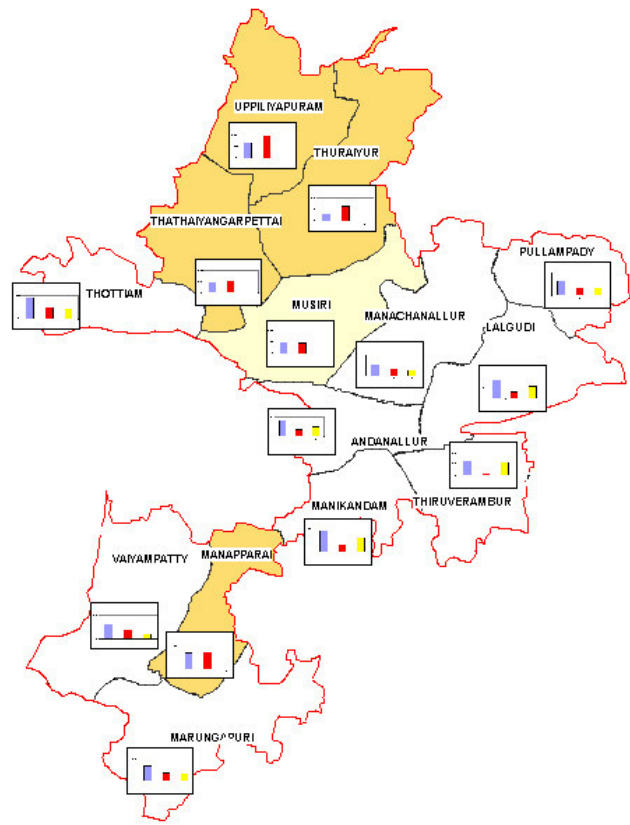








CENTRAL GROUND WATER BOARD, SECR, CHENNAI
TIRUCHCHIRAPPALLI DISTRICT, TAMIL NADU
DEPTH TO WATER LEVEL
POSTMONSOON (JANUARY -2007)



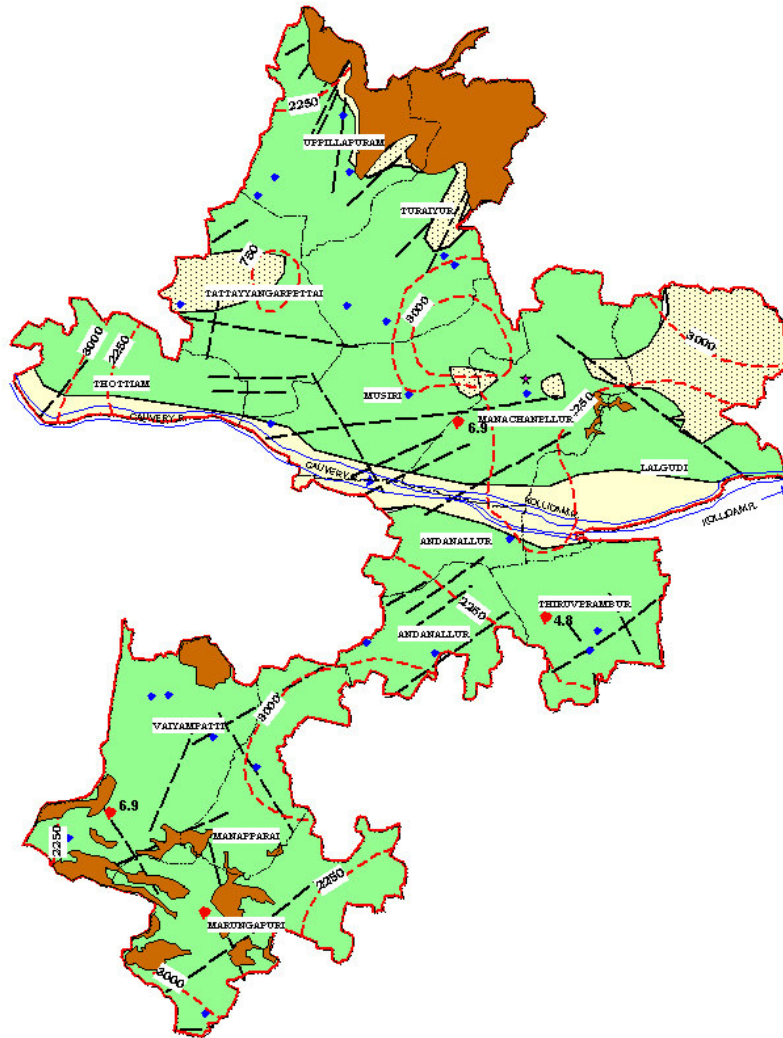
CENTRAL GROUND WATER BOARD, SECR, CHENNAI
TIRUCHCHIRAPPALLI DISTRICT, TAMIL NADU
CATEGORISATION OF BLOCKS
 (MARCH-2004)



LEGEND






- | | | | | | |
|---|-------------------|---|----------------|--|---|
|  | DISTRICT BOUNDARY |  | SAFE |  | Net Groundwater Availability |
|  | BLOCK BOUNDARY |  | CRITICAL |  | Existing Groundwater draft for all purposes |
| | |  | OVER EXPLOITED |  | Balance Groundwater available for future irrigation |

CENTRAL GROUND WATER BOARD, SECR, CHENNAI
TIRUCHCHIRAPPALLI DISTRICT, TAMIL NADU
HYDROGEOLOGY





LEGEND FOR PLATE V

ADMINISTRATIVE SETUP

-  DISTRICT BOUNDARY
-  BLOCK BOUNDARY
-  HILLY AREA
-  TRIANGULATION HEIGHT
[elevation in m.amsl]
-  CREEK


GROUND WATER HYDROLOGY

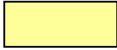
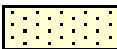

-  EXPLORATORY BORE WELL [CGWB]
-  HIGH YIELDING BORE WELL [CGWB]

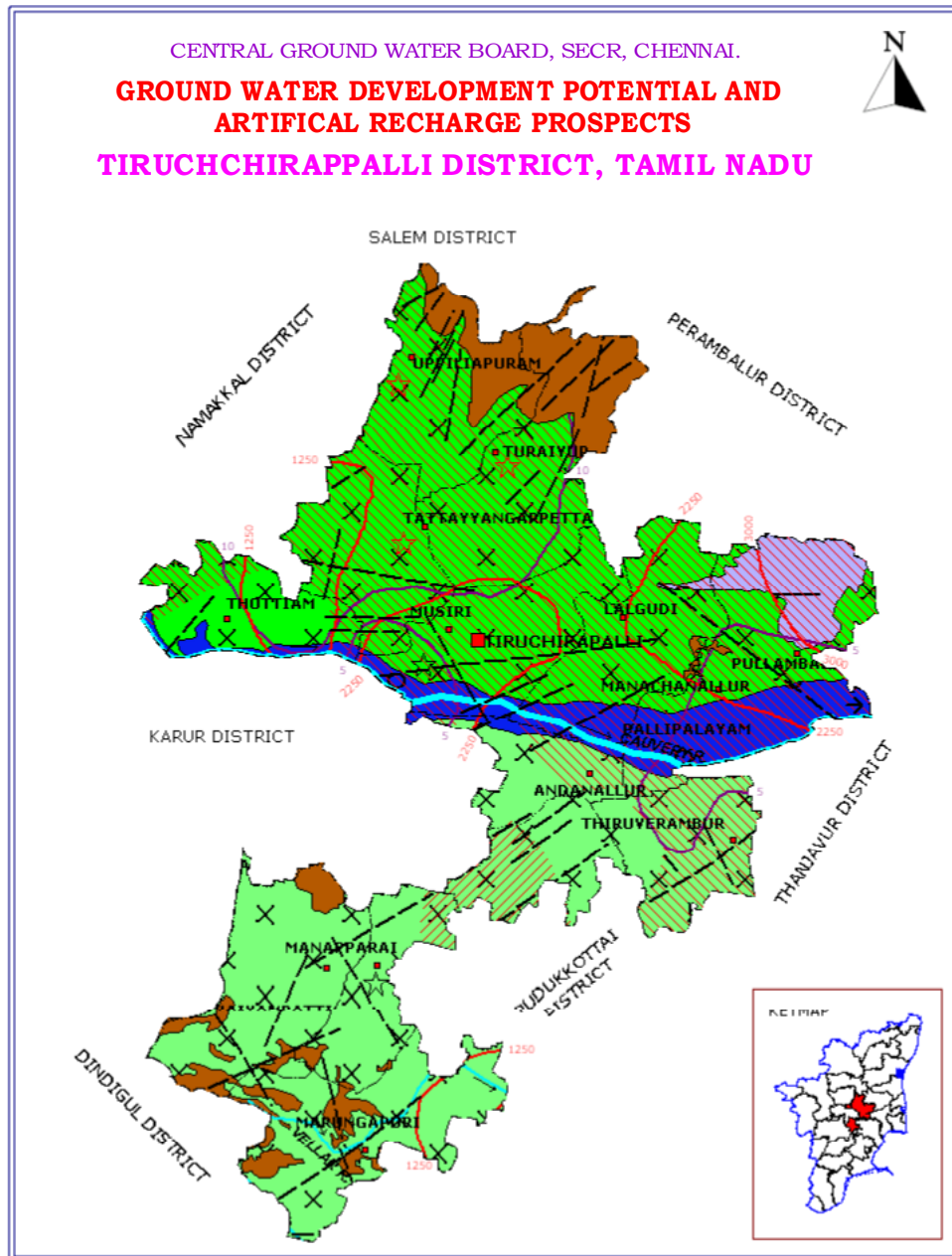
HYDROCHEMISTRY

-  ISOCONS [Sp ELECTRICAL CONDUCTANCE [$\mu\text{s} / \text{Cm}$ at 25° C]

STRUCTURE

-  TRACE OF LINEAMENT
Fluoride > 1.5 mg/L
















Aquifer	Age	Lithology	Groundwater Condition	Yield Prospects (Cu.m/day)	Groundwater Development Strategies
	Recent	Alluvium	Discontinuous, thin, unconfined to semi confined	<200	Development through dug well, shallow tube well
	Cretaceous to Miocene	Sandstone, Shale	Discontinuous, unconfined to semi confined	<100	Development of shallow aquifer through dug well
	Archaean	Granite Gneiss, Granites & Charnockites	Discontinuous, unconfined to semi confined, restricted to weathered residuum and fractures	<75	Development of weathered residuum through dug well & fractures through bore well



LEGEND OVER LEAF

LEGEND FOR PLATE -VI

DISTRICT – TIRUCHIRAPALLI

	Wells Feasible	Rigs Suitable	Depth Of Well (M)	Discharge (LPM)	Suitable Artificial
 Soft Rock Aquifer	Dug Well Tube Well	Manual Direct Rotary	10 – 20 40 – 100	100 – 300	Percolation Pond/Recharge Shaft
 Soft Rock Aquifer	Dug Well Tube Well	Manual Direct Rotary	10 – 20 60 – 150	60 – 300 400 – 1000	Recharge Shaft
 Hard Rock Aquifer	Dug Well Bore Well	Manual DTH	12 – 20 60 – 120	10 – 60	Percolation Pond/Recharge Wells
 Hard Rock	Dug Well Bore Well	Manual DTH	10 – 15 60 – 150	60 To 180	Check Dams/ Percolation Ponds
	District Boundary			Block Boundary	
	District Headquarter			Block Headquarters	
	Water Level-Pre-Monsoon (Decadal Mean 1993-2002) MbgL			EC In Microsiemens / Cm At 25°C	
	River			Lineament	
	Fluoride Greater Than Maximum Permissible Limit (1.5mg/L)			Nitrate Greater Than Maximum Permissible Limit (45mg/L)	
	Hilly Area				

OTHER INFORMATION

Geographical Area	4403.83 Sq.Km
Number Of Blocks	14
Major Drainage	Cauvery, Coleroon
Population (2001)	24,18,366
Average Annual Rainfall	841.9 Mm
Annual Range Of Temperature	26 – 44°C
Regional Geology	Soft Rocks: Alluvium and Shale Hard Rocks: Gneisses and Granites
Net Ground Water Availability For Future Irrigation	209.46 MCM/Yr
Stage Of Ground Water Development As On January 2003	70 %
Names Of Blocks Showing Intensive Ground Water Development	☆ Over Exploited: Tattayangarpetai, Turaiyur & Uppiliapuram, Manaparai ☆ Critical: Musiri,

SAVE WATER
AND
CONSERVE WATER

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