



केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण

विभाग, जल शक्ति मंत्रालय

भारत सरकार

Central Ground Water Board

Department of Water Resources, River
Development and Ganga Rejuvenation,
Ministry of Jal Shakti
Government of India

AQUIFER MAPPING AND MANAGEMENT OF GROUND WATER RESOURCES

**SUNJALNATHAM FIRKA, DHARMAPURI
DISTRICT, TAMIL NADU**

दक्षिण पूर्वी तटीय क्षेत्र, चेन्नई

South Eastern Coastal Region, Chennai

REPORT ON
AQUIFER DISPOSITION & MANAGEMENT PLAN
SUNJALNATHAM FIRKA, DHARMAPURI DISTRICT, TAMILNADU STATE
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SALIENT FEATURES		
1	Name of the Firka/Area Revenue Division Location (Fig-1)	: SUNJALNATHAM / 225.67 sq.km PENNAGARAM N 77° 40' 34" to 77° 53' 42" E 11° 53' 29" to 12° 06' 47"
2	No. of Revenue villages	: 9
3	District/State	: Dharmapuri / Tamilnadu
4	Population (2011 Census)	: 54663
5	Normal Rainfall (mm)	: 868 Monsoon: 664 Non-Monsoon: 204
6	Agriculture (2012-13)(Ha)	: 1. Gross irrigated area: 990.83 2. Paddy: 25.49 3. Sugar cane: 24.49 4. Banana: 9.80 5. Other crops: 931.06 6. Ground water: 990.83 7. Surface water (Tanks): NIL
7	Existing and future water demands (HaM)	Domestic & Industrial • Existing: 54.37 • Future (year 2025): 61.80 Irrigation • Existing: 862.89
8	Water level behaviour (m bgl)	: Pre-monsoon: 6.02 – 11.32 Post-monsoon: 3.40 – 9.80
AQUIFER DISPOSITION		
9	No of Aquifers	: 2
10	3-D aquifer disposition and basic characteristics of each aquifer Fig.2: 3 D map and 2D - Sections	: Geology – Charockites/Gneiss Aquifer-1 (Weathered Zone): Thickness varies from 9 - 20 m Transmissivity(T): 3 - 45 m ² /day Specific Yield (Sy): 0.01to 0.015 Aquifer-2 (Fractured Zone): Depth of fracturing varies from 20-190 m. Transmissivity (T): 10 -75 m ² /day Specific storage (S): 0.00001- 0.0002 Cumulative yield (Aquifer 1 and Aquifer 2)

			0.1 to 2.5 lps.
11	Ground water Issues	:	Sustainability of wells (1-2 hrs).
12	Ground water resource availability and extraction-2012-13 (MCM)	:	<ul style="list-style-type: none"> • Net GW availability : 11.36 • Gross Ground Water draft for Irrigation: 8.63 • Gross Ground water draft for domestic and industrial supply: 0.54 • Gross GW draft: 9.17 • Stage of ground water development: 81 % • Category: Semi-critical
13	Ground water extraction	:	Ground water extraction structures: 2263 no's <ul style="list-style-type: none"> • Bore wells: 200 no's • Dug wells: 2063 no's
14	Chemical quality of ground water, contamination and its suitability	:	EC ($\mu\text{S}/\text{cm}$) min: 470 and max: 2330 NO ₃ (mg/L): Min: 12 and max 90 F (mg/L): Min 0.46 and Max: 0.92 All chemical constituents are within the permissible limit of BIS drinking water standards (IS: 10500:2012) except Nitrate having High values.
15	Ground Water Recharge Scenario	:	MCM
15.1	Recharge from Rainfall (Monsoon)	:	6.55
15.2	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	1.03
15.3	Recharge from rainfall (Non-Monsoon)	:	2.52
15.4	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	2.53
15.5	Total annual GW Recharge	:	12.63
15.6	Natural Discharge	:	1.26
15.7	Existing Minor Irrigation Tanks (Area in ha)	:	Nil
15.8	Storage from existing tanks (MCM)	:	Nil
16	Storage from existing AR Structures (MCM)	:	7.79

Fig-1: Location Map of Sunjalnatham Firka

Fig -

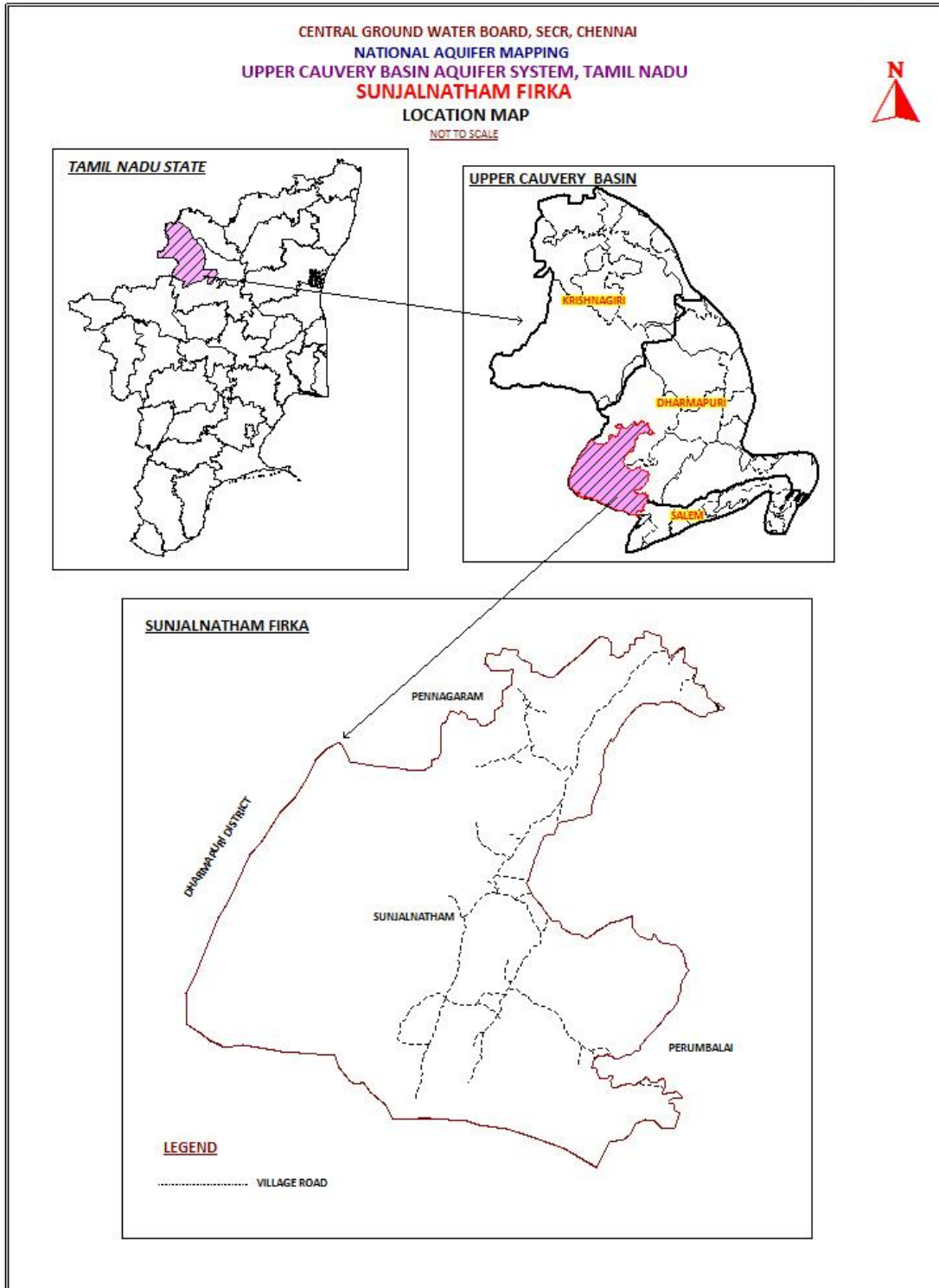
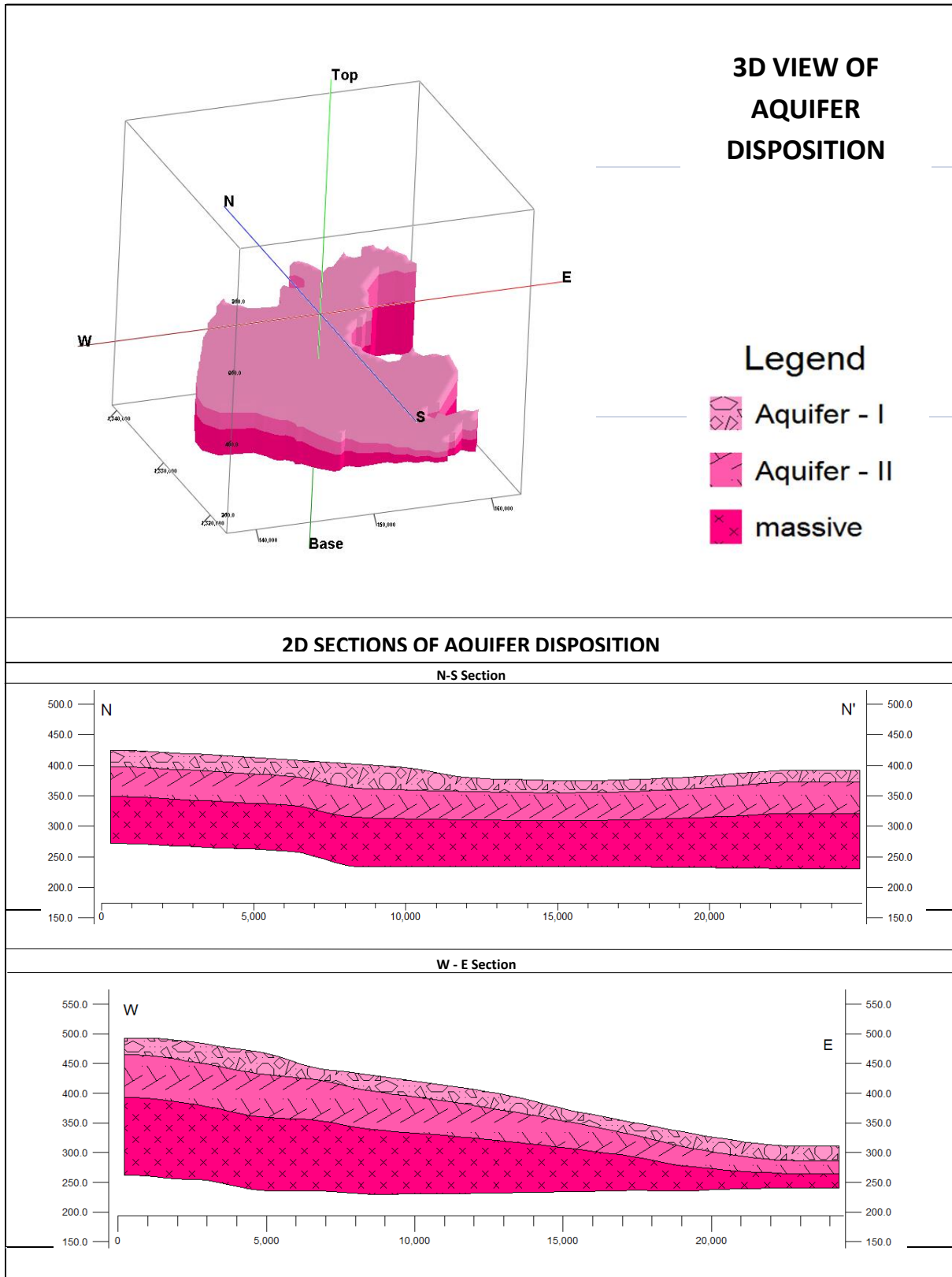


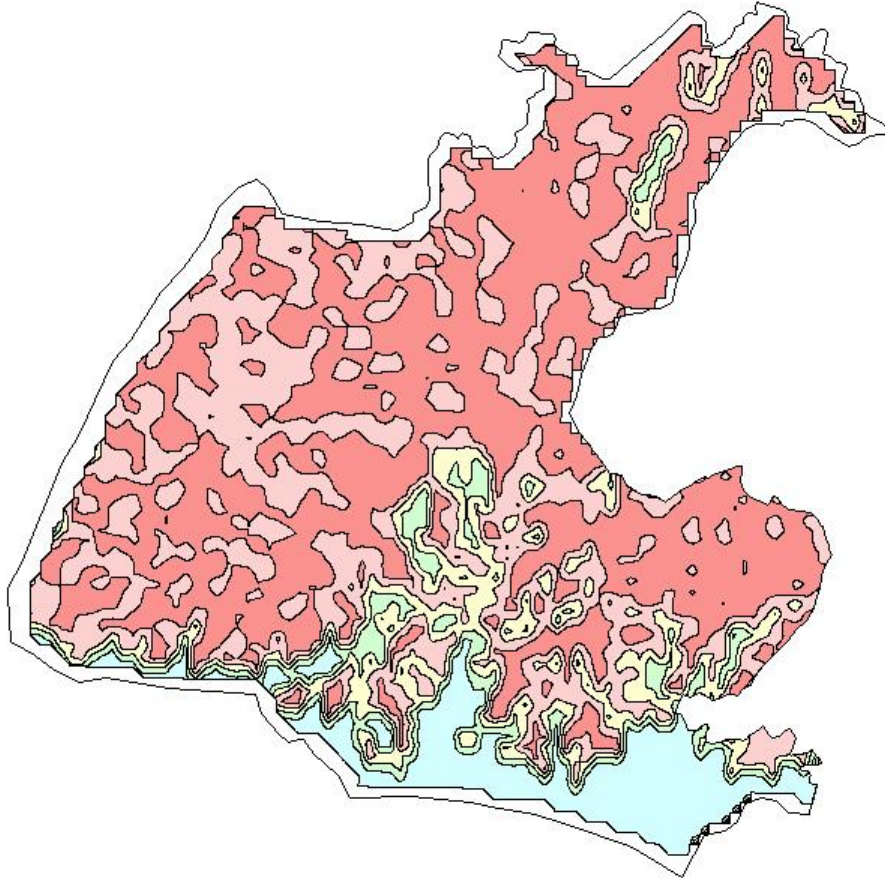
Fig:2 3D and 2D View of Aquifer Disposition, Sunjalnatham Firka, Dharmapuri District



**AQUIFER MANAGEMENT PLAN
SUNJALNATHAM FIRKA,
DHARMAPURI DISTRICT, TAMILNADU STATE**

	WATER RESOURCE AVAILABILITY (MCM)		
1	Ground water (as per GEC 2013)	:	11.36
2	Surface Water (as per 2012-13irrigation data)	:	7.79
3	Total water availability	:	19.15
	Ground Water Resource Enhancement (MCM)		
4	Uncommitted surface runoff available for the Firka	:	
5	Total volume of weathered zone	:	
6	Total volume of aquifer available for recharge, considering 3m below Ground Level.		
(a)	Supply side Interventions		
ARTIFICAIL RECHARGE/CONSERVATION MEASURES			
7	Structures Proposed (nos)	:	
	Masonry Check dam	:	15 (Table -1)
	Revival, repair of pond, tanks with recharge haft	:	(Table -2)
	Percolation Pond with Recharge Shaft	:	(Table -3)
	Recharge Pond:		units
8	Excepted total groundwater recharge (MCM)	:	
9	Tentative total cost of the project (Rs. In Cr)		
10	Expected raise in water level by recharging/saving (m)		
(b)	Demand side Interventions		
11	Existing total Groundwater Draft (MCM)	:	
12	Proposed Micro Irrigation in Ha	:	
13	Cost for micro-irrigation (Rs in Lakhs)	:	
14	Expected ground water saving from micro-irrigation (MCM)	:	
	REGULATION & COMMUNITY INTERVENTIONS		
15	Regulation and control	:	<p>Systematic monitoring in groundwater contaminated area particularly Fluoride. Planning of alternate source for drinking water purposes.</p> <p>The systematic development of groundwater is suggested to sustain the available and recharged groundwater.</p>

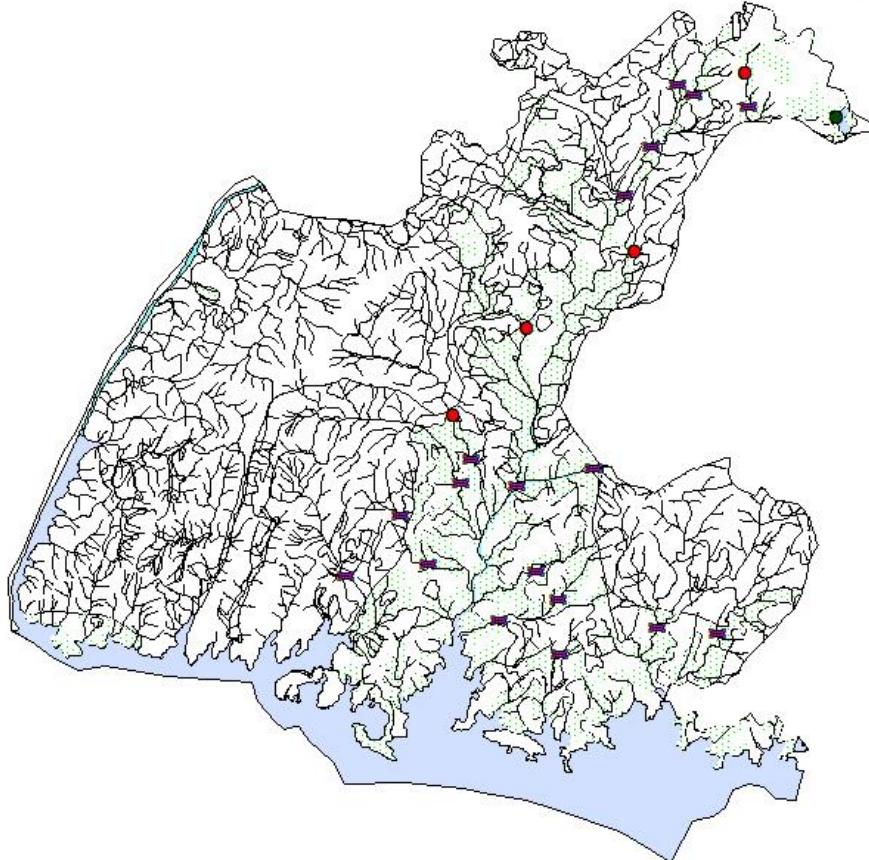
AREA SUITABLE FOR ARTIFICIAL RECHARGE ZONES
SUNJALNATHAM FIRKA, PENNAGARAM TALUK
DHARMAPURI DISTRICT, TAMIL NADU



Legend

-  High
-  Moderate
-  Poor
-  Very High
-  Very Poor

**ARTIFICIAL RECHARGE STRUCTURE
SUNJALNATHAM FIRKA, PENNAGARAM TALUK
DHARMAPURI DISTRICT, TAMIL NADU**



LEGEND





-  Check Dam
-  Percolation Pond with recharge shaft
-  Desiltation of Tank with recharge shaft
-  Area suitable for recharge pond

Table-1 Location of proposed Check dam

S. No.	Longitude	Latitude	Structures
1	77.85	12.09	Check Dam
2	77.84	12.09	Check Dam
3	77.84	12.08	Check Dam
4	77.83	12.06	Check Dam
o5	77.86	12.09	Check Dam
6	77.80	11.99	Check Dam
7	77.79	12.00	Check Dam
8	77.79	11.99	Check Dam
9	77.77	11.98	Check Dam
10	77.78	11.97	Check Dam
11	77.80	11.96	Check Dam
12	77.82	11.96	Check Dam
13	77.81	11.97	Check Dam
14	77.76	11.97	Check Dam
15	77.82	11.99	Check Dam

Table-2 Location of proposed de-siltation of pond/tanks with recharge shaft

S. No.	Longitude	Latitude	Structure	Action
1	12.09	77.86	Tank / Reservoir	De-siltation And Recharge Shaft
2	12.05	77.83	Tank / Reservoir	De-siltation And Recharge Shaft
3	12.03	77.81	Tank / Reservoir	De-siltation And Recharge Shaft
4	12.01	77.79	Tank / Reservoir	De-siltation And Recharge Shaft

Table-3 location of proposed Percolation pond/tanks with recharge shaft

S.No.	Longitude	Latitude	Structure	Action
1	12.08	77.89	Tank / Reservoir	Percolation Tank With Shaft