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

KARIAMANGALAM FIRKA, DHARMAPURI DISTRICT, TAMIL NADU

दक्षिण पूर्वी तटीय क्षेत्र, चेन्नई

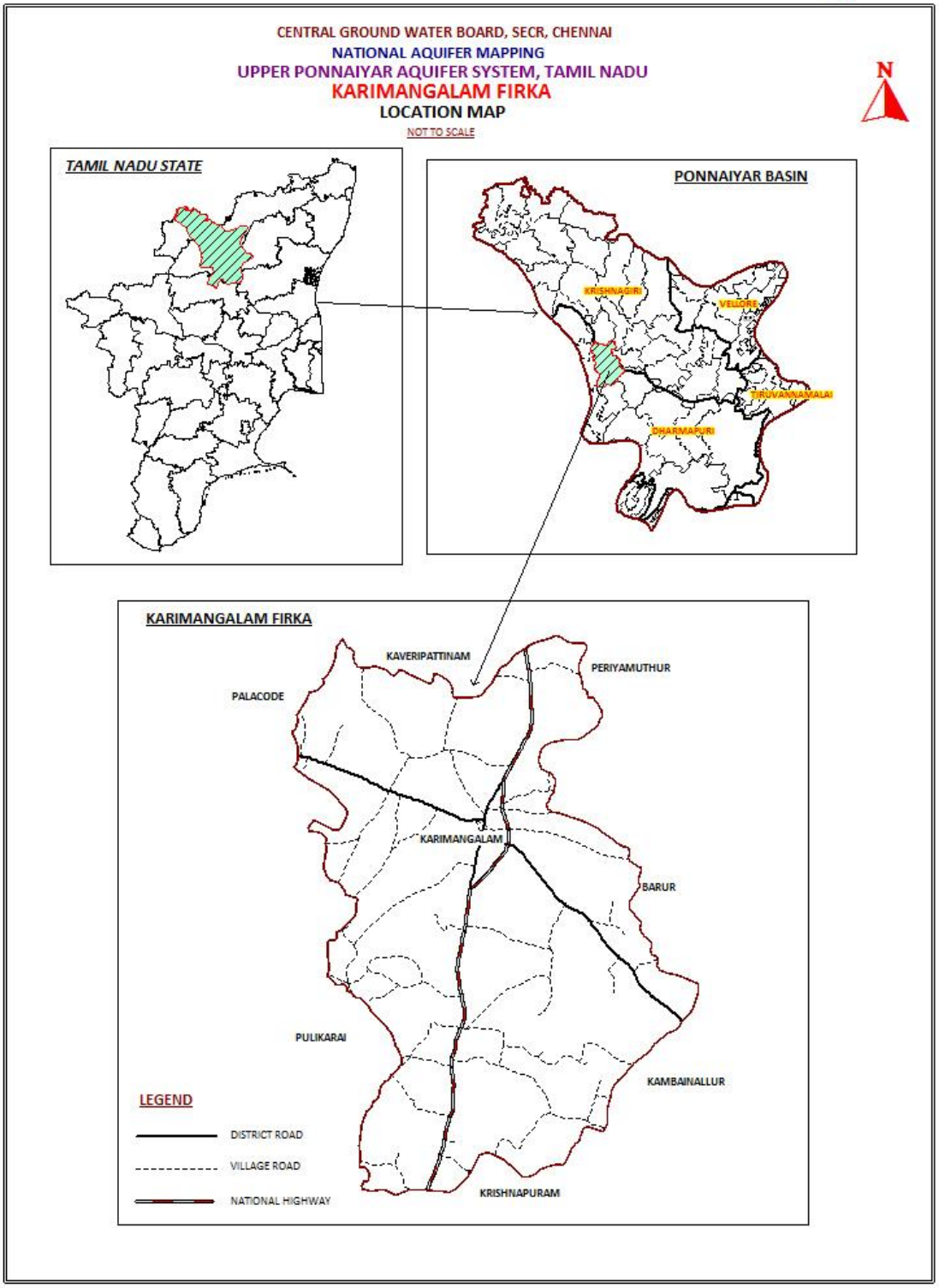
South Eastern Coastal Region, Chennai

REPORT ON
AQUIFER MAPS & MANAGEMENT PLANS
KARIAMANGALAM FIRKA, DHARMAPURI DISTRICT, TAMILNADU STATE

	SALIENT FEATURES		
1	Name of the Firka/Area Revenue Division Location **(Fig-1)**	**:**	**KARIAMANGALAM /** 125.79 (Sq. Km.) **Palacode Taluk** N 78° 09' 07"to 78° 15' 44" & E 12° 12' 23 "to 12° 21' 34"
2	No. of Revenue villages	:	**19**
3	District/State	:	**Dharmapuri / Tamilnadu**
4	Population (2011 Census)	:	63347
5	Normal Rainfall (**mm**) (2013-2014)	:	766.24 Monsoon: 400.20 Non-Monsoon: 199.25
6	Agriculture (2013-14)(Area in Ha)	:	1. Paddy: 679.67 2. Sugarcane: 655.13 3. Banana: 14.32 4. Other crops: 4036 5. Irrigation by Groundwater: 6363 6. Irrigation using Surface water (Tanks): 16.91
7	Existing and future water demands (HaM)		Domestic & Industrial • Existing: 89.36 • Future (year 2025): 101.56 Irrigation (Existing): 3836.10
8	Water level behaviour (m bgl)	:	Ave. Pre-monsoon: 4.8138 Ave. Post-monsoon: 3.4098
	AQUIFER DISPOSITION	:	
9	No of Aquifers	:	2
10	3-D aquifer disposition and basic characteristics of each aquifer **(3D: Fig-2a** **Section Layout:2b** **Sections: 2c & 2d)**	:	**Geology-Granites** **Aqufer-1 (Weathered Zone):** varies from 5.2- 15.4 m Transmissivity(T): 6-141.2 m^2/day Specific Yield (Sy): 0.11 to 2 % **Aquifer-2 (Fractured Zone):** Depth of fracturing varies from 15.5-75 m. Transmissivity (T): 10-107.9 m^2/day Specific storage (S): 0.00001-0.02 Cumulative yield (Aq1 and Aq 2) (lps): 0.2 to 0.8

11	Ground water Issues	:	• Geogenic contamination by Fluoride. • Sustainability of wells (1-2.5 hrs).
12	Ground water resource availability and extraction (MCM)	:	• Net GW availability : 19.00 • Gross Ground Water draft for Irrigation: 38.36 • Gross Ground water draft for domestic and industrial supply: 0.893 • Gross GW draft: 39.25 • Stage of ground water development: 215 % • Category: Over Exploited
13	Ground water extraction	:	Ground water extraction structures: 5370 no's • Bore wells: 746 no's • Dug wells: 6973 no's
14	Chemical quality of ground water, contamination and its suitability	:	EC (µS/cm) min: 700 and max:1680 NO_3 (mg/L): Min:30 and max 125 F (mg/L): Min 0.25 and Max:1.75
15	**Ground Water Recharge Scenario**	:	**MCM**
15.1	Recharge from Rainfall (Monsoon)	:	9.25
15.2	Recharge from Other sources (Tanks and applied irrigation) (Monsoon)	:	6.99
15.3	Recharge from rainfall (Non-Monsoon)	:	2.00
15.4	Recharge from Other sources (Tanks and applied irrigation) (Non-Monsoon)	:	2.88
15.5	Total annual GW Recharge	:	21.11
15.6	Natural Discharge	:	2.11
15.7	Improving Water Efficiency /Saving (Micro irrigation system for 100 ha)		0.7 MCM
15.8	Excepted groundwater recharge		1.217 MCM
15.9	Excepted total groundwater recharge/saving		1.917 MCM
16.0	Expected raise in water level by recharging/saving		0.307m

Fig-1: Location Map of Kariamangalam Firka.



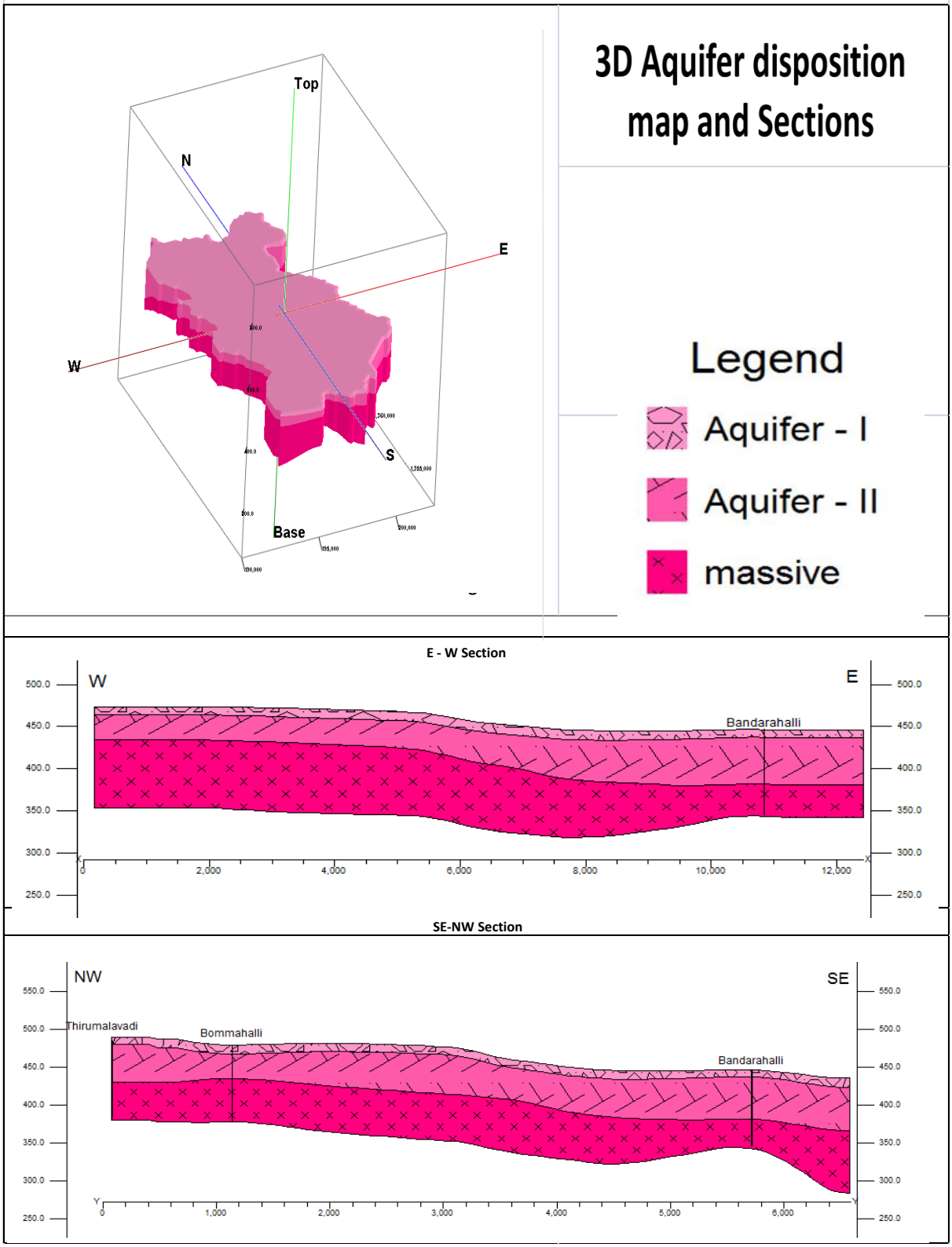


Fig-2(a-d): 3 D map and Sections.

GW MANAGEMENT STRATAGIES KARIAMANGALAM FIRKA, DHARMAPURI DISTRICT, TAMILNADU STATE

A	**WATER RESOURCE AVAILABILITY**		
	• Ground water (as per GEC 2011)	:	23.45 MCM
	• Surface Water (as per 2013-14 irrigation data)	:	2.50 MCM
	• Total water availability	:	25.95 MCM
(a)	**Ground Water Resource Enhancement (Table-1)**		
	Supply side Interventions		
1	Uncommitted surface runoff available for the Firka	:	16.80 MCM
2	Total volume of weathered zone	:	1190 MCM
3	Total volume of aquifer available for recharge. Considering 5m depths.		744 MCM
ARTIFICAIL RECHARGE/CONSERVATION MEASURES			
6	No. of Structures Proposed (tentative) Masonry Check dam Percolation Pond with recharge shaft Revival, repair of pond, tanks with recharge shaft Recharge shaft	:	 05 07 07 08
7	Improving Water Efficiency /Saving (Micro irrigation system for 100 ha)	:	0.7 MCM
8	Excepted groundwater recharge	:	1.217MCM
9	Excepted total groundwater recharge/saving	:	1.917 MCM
	Tentative total cost of the project		Rs. 5.34 Cr
	Expected raise in water level by recharging/saving		0.307m
(b)	**DEMAND SIDE INTERVENTION**		
16	Existing total Groundwater Draft	:	38.36
17	Proposed Micro Irrigation	:	100 ha
18	Cost for micro-irrigation	:	60 lakhs @ 0.60 lakhs per ha.
19	Expected ground water saving from micro-irrigation	:	0.7 MCM of water is expected to be conserved.
(c)	**REGULATION & COMMUNITY INTERVENTIONS**		
20	Regulation and control	:	Periodical reassessments of groundwater potential on a scientific basis, considering quality of water available Regulation of exploitation of groundwater sources so that extraction does not exceed recharge.

Table 1: location of proposed 60 Check dam in the firka

S. No.	LONGITUDE	LATITUDE	STRUCTURES
1	78.16	12.32	Check dam
2	78.17	12.29	Check dam
3	78.19	12.28	Check dam
4	78.19	12.26	Check dam
5	78.22	12.26	Check dam

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

S. No.	Longitude	Latitude	Structure	Action
1	78.17	12.31	Tank / Reservoir	De-siltation And Recharge Shaft
2	78.18	12.32	Tank / Reservoir	De-siltation And Recharge Shaft
3	78.21	12.31	Tank / Reservoir	De-siltation And Recharge Shaft
4	78.19	12.24	Tank / Reservoir	De-siltation And Recharge Shaft
5	78.19	12.22	Tank / Reservoir	De-siltation And Recharge Shaft
6	78.21	12.23	Tank / Reservoir	De-siltation And Recharge Shaft
7	78.22	12.22	Tank / Reservoir	De-siltation And Recharge Shaft
8	78.23	12.25	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	78.24	12.27	Tank / Reservoir	Percolation Tank With Shaft
2	78.24	12.25	Tank / Reservoir	Percolation Tank With Shaft
3	78.24	12.24	Tank / Reservoir	Percolation Tank With Shaft
4	78.20	12.21	Tank / Reservoir	Percolation Tank With Shaft
5	78.21	12.27	Tank / Reservoir	Percolation Tank With Shaft
6	78.17	12.30	Tank / Reservoir	Percolation Tank With Shaft
7	78.23	12.23	Tank / Reservoir	Percolation Tank With Shaft