TN – IAMWARM PROJECT

SEVALAPERIYAR SUBBASIN

DETAILED PROJECT REPORT
WATER RESOURCE DEPARTMENT

1.1 INTRODUCTION

1. INTRODUCTION

1.1 GENERAL

Agriculture is the dominant sector in the Indian economy. Tamil Nadu, depends largely on the surface water irrigation as well as ground water irrigation. The state has used the surface and ground water potential to the maximum limit and hence the future development and expansion depends only on the efficient and economical use of water potential and resources.

To achieve higher water use efficiency, it is necessary to improve and upgrade the existing conveyance system and also to introduce modern irrigation methods.

With the above objective, a comprehensive programme has been proposed with a Multi Disciplinary Approach.

1.2 DESCRIPTION OF THE VAIPPAR BASIN

The River Vaippar originates at an altitude of 1644m in Vasudevanallur reserve forest on the eastern slopes of Western Ghats in Tirunelveli District and run eastward for a distance of 112 km and finally debouches into Gulf of Mannar near Vembar village, 18 km from Vilathikulam town of Thoothukudi district. The Vaippar river basin is located between latitude 8°59'N to 9°49' N and longitude 77°15'E to 78°23'E, having an area of 5423 Sqkm and is surrounded by Thamirabarani basin on the South, Western ghats and Vaigai basin on the West, Gundar basin on the North and Bay of Bengal on the EastThis basin has been divided into 13 sub-basins namely as follows;

1. Nishabanadhi
2. Kalingalar
3. Deviar
4. Nagariyar
5. **Sevalaperiyar**
6. Kayalkudiar
7. Vallampatti Odai/Uppodai

8 . Sindapalli Uppodai
9. Arjunanadhi
10. Kousiganadhi
11. Uppathurar
12. Sinkottaiyar
13. Vaippar

1.3 DESCRIPTION OF THE SEVALAPERIYAR SUB BASIN:-

Mudangiar starts in the eastern slopes of western ghats in Rajapalayam reserve forest area of Rajapalayam taluk of Virudunagar district at an altitude of about 1500m above M.S.L. The sub basin of Kayalkudiyar lies in the north and the minor sub basins of Manamakiyar and Piravadiyar (Solapuram river) which is a tributary of Deviar lies in the south. The river Mudangiar feeds number of tanks on its way before it confluences with Sevalperiyar. The one anicut across Mudangiyar, called Mudangiyar anicut feeds ten tanks under keelarajakularaman group. There are 17 tanks lying between Mudangiyar anicut and its confluence with Sevalpriyar.

The surplus water of Keelarajakularaman and other small streams combined together foRm one major stream. It traverses near by Alangulam village(Cement Factory) and joins with Sevalperiyar which is also called as Murugal Odai. There is no existing anicut across this river. There are three independent tanks within the catchment area of the river.

Sevelapriyar confluences with Vaippar on its left bank just above Vembakottai reservoir and about 1K.m south west of Kondiyapuram village. Rajapalayam town is situated in this basin.

The total drainage area or basin area of this sub basin is 225 Sq.km of which 49.5sq.km comes under hilly catchment. Srivilliputhur,Sivakasi are the three

infiuential rainfall stations to this basin ,out of which Srivilliputhur has got more influential effect than the other two rainfall stations.

There are 17 tanks in this basin and the total registered ayacut under these tanks under PWD are 1192.35 ha.

CLUSTER WISE / INFRASTRUCTURE WISE / VILLAGE WISE CONVERGENT TABLE

Number & Name of Cluster:I- SCI

Sl No.	Infrastructure/ Tank/ Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities	Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap		Act	No. / Ha	Act	No. / Ha	Act	No. / Ha	Act	No. / Ha	Act	No. / Ha	Act	No. / Ha	Act	No. / Ha
1	**2**	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	Watraperi tank	34.17	14.65	26.13	48.82	74.95	-	St.TB, RE Sluices , RE Weir														
2	Arugapadhikal	40.85	10.21	15.61	51.06	66.67	-	RE Sl														
3	Pudukulam	121.82	13.53	1.12	135.35	136.47	-	St.TB, RC Sluices , RE Sluices RE Weir														
4	Pirandaikulam	30.42	7.61	2.46	38.03	40.49	--	St.TB, RC Sluices , RE Sluices RE Weir														
5	Adhiyoor	76.53	13.50	3.75	90.03	93.78	-	St.TB, RC Sluices ,														
6	Puliankulam	25.03	8.35	12.45	33.38	45.83	-	St.TB RE Sluices RE Weir														
7	Kondaneri	33.30	8.32	6.22	41.62	47.84	-	St.TB RE Sluices RC Weir														
8	**Mudangiyar Anicut**							Repair														
9	**Pudukulam anicut**							Repair														

Number & Name of Cluster:II- SC2

Sl No.	Infrastructure/ Tank/ Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities	Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap		Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha
1	**2**	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	Marungur	22.32	9.56	10.64	31.88	42.52		St.TB, RC Sluices , RE Sluices RE Weir,Ds Ch														
2	Thiruchalur	19.43	12.94	9.11	32.37	41.48		St.TB, RC Sluices , RE Weir														
3	Kadamban kulam	28.84	9.62	9.38	38.46	47.84		St.TB, RC Sluices , RE Sluices RE Weir														
4	Karunkulam	99.04	17.48	3.28	116.52	119.80		St.TB, RC Sluices , RE Weir														
5	Appaneri	27.97	9.32	4.11	37.29	41.40		St.TB, RE Sluices RE Weir														
6	Krishnaperi	26.66	8.89	6.75	35.55	42.30		St.TB, RE Sluices RE Weir														
7	Alappaseri	48.21	14.94	19.67	63.15	82.82		St.TB, RE Sluices														
8	**Mudangiyar** Dividing Dam							Repair														
9	**Krishnaperi Anicut**							Repair														

Number & Name of Cluster:III-SC3

Sl No.	Infrastructure/ Tank/ Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities	Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap		Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha
1	**2**	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	Keela Iluppila Kulam	20.80	6.93	13.67	27.73	41.40		St.TB, RC Sluices , RE Weir														
2	Vagaikulam	17.24	11.49	13.97	28.73	42.70		St.TB, RC Sluice , RE Weir														
3	Peranallur	32.20	10.73	8.20	42.93	51.13		St.TB, RE Sluices RC Weir														
4	Keela Rajakularaman	92.22	23.06	17.65	115.28	132.93		St.TB, RE Sluices														
5	**Appaneri Anicut**																					

CONVERGENT TABLE- ABSTRACT (FOR EACH CLUSTER)

Sl No.	Number & Name of the cluster	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities	Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap		Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha
1	**2**	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	**SC-I**	362.12	76.17	67.74				St.TB, RC Sluices , RE Sluices RE Weir RC Weir														
2	**SC-II**	272.47	82.75	62.94				St.TB, RC Sluices , RE Sluices RE Weir RC Weir														
3	**SC-III**	162.46	52.21	54.49				St.TB, RC Sluices , RE Sluices RE Weir														

a. St. TB - Standardisation of Tank Bund

b. RC Sluices - Reconstruction of Sluices

c. RE Sluices - Repairs to Sluices

d. RC weir - Reconstruction of Weir

e. RE weir - Repairs to weir

1.2 HYDROLOGY

1.2. HYDROLOGY

1. 2.1 GENERAL

Sevalaperiyar is a tributary to Vaippar River .Sevelapriyar confluences with Vaippar on its left bank just above Vembakottai reservoir and about 1K.m south west of Kondiyapuram village. Rajapalayam town is situated in this basin.

The total drainage area or basin area of this sub basin is 225 Sq.km of which 49.5sq.km comes under hilly catchment. Srivilliputhur,Sivakasi are the two influential rainfall stations to this basin ,out of which Srivilliputhur has got more influential effect than the other rainfall station.

1. 2.2 LOCATION

The total catchments area of the Sevalaperiyar river sub basin is 225 Sq.km of which 49.5sq.km comes under hilly catchment. The taluks covered in this sub basin are Rajapalayam and sivakasi of Virudunagar Dist

1. 2.3 CATCHMENT AREA OF SEVALAPERIYAR SUB-BASIN

The Sevalaperiyar Sub Basins has a typical climate, owing to the marginal catchments area in the Western Ghats and extensive major catchments area in plains. Sevalaperiyar enjoys the benefits of mostly North East monsoon and slightly in summer season.

1. 2.4 HYDRO METEOROLOGY

The Hydro Meteorology parameters include rainfall, temperature, humidity, wind velocity, evaporation and duration of sun shine which determine the climate of the basin.

1. 2.5 RAIN FALL

Average annual rainfall of gauging stations influencing this sub basin is as follows

Name of Rain gauge Station	North East Monsoon	Summer	South west monsoon	Annual
Srivilliputhur	**449**	**185**	**148**	**782**

1. 2.6 CLIMATE

The Vaippar basin lies in a low rainfall belt having an annual average rainfall of 722 mm. Southwest monsoon contribute 148 mm (20%), while NE monsoon contributes 414 mm (57%). This basin receives a major share of its rainfall during NE monsoon. For the measurement of Hydro meteorological parameters in the basin area, there is one weather station at Kavalur near Virudhunagar; its data is taken for the study.

1. 2.7 SOIL CLASSIFICATION

In this sub basin, due to different stages, Weathering & parent material, the soil types are met with in combination of Inceptisol, Alfisol and Vertisol. More prominent type is Inceptisol.

Inceptisol	Red or brown or grey soil with surface horizon more developed than sub surface. They are developing soils, moderately deep, coarse loamy to loam moderately drained to well drained	Suited for commonly grown crops with exceptions

Alfisol	The red or brown soils having accumulation of alleviated clay in sub surface horizon it well drained, poor water and nutrient holding capacity.	Annual crops with shallow roots systems cum up wells
Vertisols	Black soil	Suitable for cotton, Pulses etc

1. 2.8 LAND HOLDINGS

The details of farm holdings and size classes prevalent in Sevalaperiyar Sub basin are given below

FOR SEVALAPERIYAR SUB BASIN:-

Category	Size of holdings	Numbers	Percentage
Marginal	Below 1.00 Ha	5463	78.40 %
Small	1.00 – 2.00 Ha	897	12.90 %
Medium	2.00 – 5.00 Ha	518	7.4 %
Big	5.0 ha & above	93	1.3%
Total		**6971**	

Above table revealed that the marginal farmers alone accounted for 78 percent in the Sub basin followed by small farmers. Developmental initiatives will be establishment in marginal and small farmers

1. 2.9 DEMOGRAPHY

Name Of Sub Basin	Total No. Of Blocks	Total No. Of Villages	Population		
			2004	2010	2025
Sevalaperiyar Sub basin	2	6	41433	46174	60727

1. 2. 10 LIVE STOCK - POPULATION:-

Name of Sub basin	Cattle	Buffalo	Sheep	Goats	Pigs	Dogs	Others	Poultry
Sevalaperiyar Basin	2702	1735	2867	2678	431	---	992	5335
Monthly requirement	0.024 MCum							

1. 2.11 INDUSTERIES & MONTHLY WATER DEMAND

Name of Sub basin	Medium Industries			Small Industries			Water Requirement		
	2004	2010	2025	2004	2010	2025	2004	2010	2025
Sevalaperiyar Sub Basin	0	0	0	407	554	924	0.03	0.04	0.07

A. CROPPING PATTERN OF SEVALAPERIYAR SUB BASIN:-

Sl. No	Season	Name of the crop	Without project				With Project		
			F.I	P.I	Gap	Total	F.I	Gap	Total
1 (a)		Coconut		51.25		51.25	53.42		53.42
		Mango		9.00		9.00	9.00		9.00
	Perennial	Tamerine		17.00		17.00	17.00		17.00
		(a) Sub Total	**0.00**	**77.25**	**0.00**	**77.25**	**79.42**	**0.00**	**79.42**
1 (b)		Sugarcane	156.65			156.65	156.65		156.65
		Banana	19.00			19.00	34.00		34.00
	Annual	**(b) Sub Total**	**175.65**	**0.00**	**0.00**	**175.65**	**190.65**		**190.65**
2	**I Crop**	Paddy	603.40	133.88		737.28	692.28		692.28
		Black gram				0.00	80.00		80.00
		Vegitables							
		Chillies	18.00			18.00	60.00		60.00
		Brinjal	0.00				30.00		30.00
		Bhendi	0.00				30.00		30.00
		Tomoto	0.00				30.00		30.00
		Gap			184.17	184.17	0.00		0.00
	(Sep-Jan)	**(c) Sub Total**	**621.40**	**133.88**	**184.17**	**939.45**	**922.28**	**0**	**922.28**
		Grant Total (a+b+c)	**797.05**	**211.13**	**184.17**	**1192.35**	**1192.35**	**0.00**	**1192.35**
3	**II Crop**	Paddy	387.00			387.00	387.00		387.00
		Pulses		28.87		28.87	200.00		200.00
		Maize		3.80		3.80	150.00		150.00
		Cotton		0.65		0.65	50.00		50.00
		Vegitables							
		Bhendi				0.00	35.00		35.00
		Tomoto				0.00	15.00		15.00
		Total	**387.00**	**33.32**	**0.00**	**420.32**	**837.00**	**0.00**	**837.00**
		Great Grant Total	**1184.05**	**244.45**	**184.17**	**1612.67**	**2029.35**	**0.00**	**2029.35**
		Cropping Intensity in %				**119.81**			**170.20**

1.2.7 CROP WATER REQUIREMENT (without Project

Sl. No.	Name of crop	Extent in Ha.	Crop water requirement		Irrigation water reqmt at n=0..40	Total water requirement in Mcm
			mm	Mcum		
PERENNIAL CROPS						
1	Coconut	51.25	1392	0.713	1.78	1.78
	Mango	9.00	585	0.053	0.13	0.13
	Tamrind	17.00	585	0.099	0.25	0.25
	TOTAL	**77.25**			**2.16**	**2.16**
ANNUAL CROPS						
1	Sugarcane	156.65	1065	1.668	4.17	4.17
2	Banana	19.00	750	0.143	0.36	0.36
	TOTAL	**175.65**			**4.53**	**4.53**
I CROP						
1	Paddy	737.28	856	6.311	15.78	15.78
2	Chilly	18.00	350	0.063	0.16	0.16
	TOTAL	**755.28**			**15.94**	**15.94**
	Fallow/Gap	184.17			0	0
	GRAND TOTAL	**1192.35**			**22.63**	**22.63**
II CROP						
1	Paddy	387.00	570	2.206	5.51	5.51
2	Pulses	28.87	300	0.087	0.22	0.22
3	Maize	3.80	387	0.015	0.04	0.04
4	Cotton	0.65	400	0.003	0.01	0.01
	TOTAL	**420.32**			**5.78**	**5.78**
	GRAND TOTAL	**1865.57**			**28.41**	**28.41**

Water Potential

Surface Water Potential	=	21.51	(Mcm)
Ground Water Potential	=	46.41	(Mcm)
Total Potental	**=**	**67.92**	(Mcm)

Water Demand without Project

Domestic	=	6.19	(Mcm)
Livestock	=	0.68	(Mcm)
Industrial	=	11.88	(Mcm)

Irrigation	WRO	=	28.41	(Mcm)
	PU & GW	=	7.16	(Mcm)
Total Water Demand (Mcm)		**=**	**54.32**	(Mcm)

Water Balance(Mcm)

Surplus	=	**13.60**	(Mcm)

1.2.8. CROP WATER REQUIREMENT (with Project)

Sl.No.	Name of Crop		Extent in Ha.	Crop Water Requirement		Requirement as per Irrigation Water Efficiency			Total MCM
				MM	MCM	Surface water 0.53	Drip 0.8	Sprinkler 0.7	
I	**Perennial Crops**								
		SFI	43.42	1392	0.604	1.140			1.140
1	Coconut	Drip	10.00	1392	0.139		0.174		0.174
2	Mango	SFI	9.00	585	0.053	0.099			0.099
3	Tamarind	SFI	17.00	585	0.099	0.188			0.188
	Total		**79.42**			**1.427**	**0.174**	**0.000**	**1.601**
II	**Annual Crops**								
		SFI	146.65	1065	1.562	2.947			2.947
1	Sugarcane	Drip	10.00	1065	0.107		0.133		0.133
		SFI	24.00	750	0.180	0.340			0.340
2	Banana	Drip	10.00	750	0.075		0.094		0.094
	Total		**190.65**			**3.287**	**0.227**	**0.000**	**3.514**
III	**I Season Crops**								
1		SFI	687.28	856	5.883	11.100			11.100
2	Paddy	SRI	5.00	856	0.043	0.081			0.081
5	Black gram	SFI	80.00	300	0.240	0.453			0.453
3	Vegitables								0.000
4	Chillies		60.00	465	0.279	0.526			0.526
5	Brinjal		30.00	465	0.140	0.263			0.263
5	Bendi		30.00	465	0.140	0.263			0.263
6	Tomoto		30.00	465	0.140	0.263			0.263
	Total		**922.28**			**12.949**	**0.000**	**0.000**	**12.949**
	Gap		**0.00**	**0**		**0**	**0**	**0**	**0**
	Grand Total		**1192.35**			**17.663**	**0.401**	**0.000**	**18.064**
III	**II Season Crops**								
1	Paddy		387.00	570	2.206	4.162			4.162
5	Pulses	SFI	200.00	300	0.600	1.132			1.132
6	Maize	SFI	150.00	550	0.825	1.557			1.557
2	Cotton		50.00	400	0.200	0.377			0.377

5	Bhendi	SFI	15.00	465	0.070	0.132			0.132
		Sprinkler	20.00	465	0.093			0.001	0.001
3	Tomato	SFI	5.00	465	0.023	0.044			0.044
	`	Drip	10.00	465	0.047	0.088	0.058		0.146
	Total		**837.00**			**7.492**	**0.058**	**0.001**	**7.551**
	Grand Total		**2029.35**			**25.155**	**0.459**	**0.001**	**25.62**

Water Potential

Surface Water Potential		=	21.51	(Mcm)
Ground Water Potential		=	46.41	(Mcm)
Total Potental		=	**67.92**	(Mcm)

Water Demand without Project

Domestic		=	6.19	(Mcm)
Livestock		=	0.68	(Mcm)
Industrial		=	11.88	(Mcm)
Irrigation	WRO	=	25.62	(Mcm)
	PU & GW	=	7.16	(Mcm)
Total Water Demand (Mcm)		=	**51.53**	(Mcm)

Water Balance(Mcm)

Surplus		=	**16.39**	(Mcm)

1.3 HYDRAULICS OF THE COMPONENTS

HYDRAULIC PARTICULARS

a) ANICUT

Sl.No	Name of Anicut	Village	Ayacut	Length of Anicut(M)	Crest level of Anicut (M)	Front (M)	Free Sq.km	Combined Sq.km	Maximum flood discharge Cusecs	Head sluice Location	Vent(M)	Sill Level sluice (M)	Discharge cumecs	Supply Channel					Remarks
														Length (m)	Bed width (M)	FSD (M)	Bed slope	Sluice	
	Mudangiyar Anicut	N.Venganallur		95.35	174.400	---	2.59	2.59	2575	middle	1.15x 2.00	172.010		3180	8.0	0.9	1 in 1000	-	
	Pudukulam Anicut	N.Venganallur	66.67	12.50	174.180	---	2.59	2.59	2960		-			---	8.0	0.9	1 in1000	-	
	Mudangiyar Dividing Dam	Rajapalayam		26.70	164.090	---	1.56	1.17	2574		-	-		4500	9.0	1.2	I in1400	-	
	Krishnaperi Anicut	Rajapalayam		38.46	158.115	---	0.63	0.63	2350		-	-		500	4.0	0.9	1 in1200	-	
	Appaneri Anicut	Appaneri		54.00	145.160	---	0.72	0.72	1496		-	---		250	5.0	0.6	1 in 1000	-	

b) TANKS (Separate statement for System & Non System Tanks)-Non Systems Tanks

Sl. No	District	Taluk	Name of Tank	Ayacut in Ha	Capacity in Mcft	Number of Fillings	Free catchment in SqKm	Combined Catchment in Sq.Km	Water spread area(Sq.Km)	FTL in M	MWL in M	No.of Sluices	Nos and Length of weir (m)		Discharge in Cusecs	Length of bund (M)	Length of Supply Channel (M)	Upper Tank	Lower Tank
													Nos	Length in m					
1	Virudunagar	Rajapalayam	Adhiyoor tank	93.78	20.65	2.0	4.14	4.14	0.36	166.040	166.500	2	1	30.48	1631	1950	2000		Puliankulam
2			Puliankulam	45.83	11.16	2.0	1.81	18.52	0.37	162.580	163.030	3	2	33.80 +1.50	1520	1615	200	Adhiyoor tank	Kondaneri
3			Watraperi leach tank	74.95	6.17	5.3	0.73	0.73	0.179	169.055	169.355	3	1	14.43	233	2875	2900		Ayan Kollan kondan
4			Pudukulam	136.47	9.90	3.5	2.59	2.59	0.33	165.220	165.630	2	1	8.50	1024	1800	3180		Kondaneri
5			Pirandaikulam	40.49	18.00	2.0	0.46	2.59	0.12	162.600	163.25	2	1	15.00	459	930	300	Pudu kulam	Kadamban kulam
6			Kondaneri	47.84	15.84	2.0	1.81	20.95	0.41	160.420	160.880	3	1	50.00	392	1600	1300	Pulian kulam	Kadamban kulam
7			Marungoor Tank	42.52	8.92	4.4	1.95	1.95	0.19	163.06	163.360	2	1	22.30	993	1130	540		Thiruchalur
8			Thiruchalur	41.48	4.19	1.5	1.74	3.70	0.12	167.900	158.500	3	1	9.5+9.6	622	1160	600	Marungoor Tank	

9	Virudunagar	Rajapalayam	Kadamban kulam	47.84	8.33	2.0	0.259	0.259	0.29	166.360	156.970	4	2	17.6+ 11.3	2100	1762	1600	Thiruchalur Pirandaikulam Kondaneri	Karunkualm
10			Krishnaperi	42.30	5.4	2.5	0.63	0.63	0.15	157.315	157.615	3	1	7.60	449	1160	500		Alappaseri
11			Alappaseri	82.82	13.23	1.8	0.77	1.39	0.36	151.65	152.100	3	1	12.95	1896	1524	2460		
12			Karungulam	119.80	16.76	1.9	1.56	17.17	0.62	151.165	151.765	3	1	123.35	3676	1826	4500		Appaneri Peranallur Keela Rajakularaman
13			Appaneri	41.40	8.95	1.43	0.72	0.72	0.16	144.745	145.075	2	1	3.80	449	2027	250	Karungulam	Peranallur Keela Rajakularaman
14			Keela Iluppilakulam	41.40	30.92	0.53	1.57	15.72	0.55	137.295	137.895	1	2	32.10 + 4.20	1850	1920	300	Karungulam	Vagaikuam
15			Vagaikulam	42.70	18.36	1.0	1.56	18.84	0.46	135.480	135.930	1	1	80.60	1685	1750	300	Keela Iluppilakulam	Alangulam
16			Peranallur	51.13	21.06	0.84	1.81	1.81	0.45	132.31 0	132.910	2	1	25.50	1485	2220	2500 +700	Karungulam	Tabasikulam Tank
17			Keela Rajakularaman	132.93	51.28	1.0	12.17	36.89	1.33	124.210	124.960	1	2	67.35+ 13.25	3850	3090	2000	Karungulam	
													21						

C) SUPPLY CHANNELS HAVING DIRECT AYACUT

Sl. No.	Name of supply channel	Start Point		End Point		Length in metres	Bed width	Bed slope	Side slope	MFD	Depth of flow	Remarks
		Location	Sill level	Location	Sill level							
1	Arugapadhikal	Pudukulam Anicut	172.01	Pudukulam tank	165.630	3180	6m	1 in 2500	1:1	1024	1.05 m	

1.4 PARTICIPATORY IRRIGATION MANAGEMENT (PIM)

1.4. Participatory Irrigation Management (PIM)
Under IAMWARM Project

SALIENT FEATURES OF IMPLEMENTATION OF PIM IN SEVALAPERIYAR SUB BASIN

1. **The Sub Basin**: This is one of the 13 sub-basins of the Vaippar River Basin. Totally 17 irrigation tanks are under the control of Water Resources Organisation (WRO) of Public Works Department (PWD) in this sub basin. The list of tanks covered with more details are furnished in the Annexure-1. These 17 tanks are located within the sub basin's hydraulic spread over 10 villages of Rajapalayam taluks in Virudunagar District. The total command area under these 17 tanks works out to 1192.35 ha (Annexure 1).

2. **Command Area**

   i. Under System Tanks — NIL

   ii. Under Non-System Tanks (17 tanks) — 1192.35 Ha.

3. **An assessment of number of WUAs**

i)	Associations already formed under WRCP	Nil
ii)	Associations proposed to be formed under IAMWARM project covering 17 tanks and 10 villages only	13 Nos. (1192.35 HA)
iii)	The total command area covered by the above WUAs works out to	1192.35 Ha.

4. **An account of "Awareness creation" among the farming community:**

   Activities undertaken and "Walkthrough Surveys" carried out:

   i. There are 17 tanks in the sub basin spread over 10 village, as directed out in Annexure-1. All these villages were visited by the WRO officials and awareness about various activities, contemplated under IAMWARM project has been created.

   ii. Details of villages covered, walkthrough surveys conducted, farmers attended, list of works suggested by the farmers, list of works analysed and finalized by WRO officials, are all furnished in the Annexure – 2

5. **Schedule for completion of delineation and preparation for WUA documents, comprising of :**

    i. Form-I : Details to be notified by District Collectors (End of May – 09)

    ii. Form – II: WUA document to be notified by District Collectors (End of June – 09).

    iii. Completion of preparatory works for the conduct of Elections for WUAs (End of July - 09).

6. Schedule for conduct of elections in the sub basin for forming Management Committees (End of Jan, 2010).

7. **Support Organisation (Sos)**

    i. Initiating and completing the process of publishing EOI to hire support organisation at sub basin level (End of June 2009).

    ii. Short listing and providing request for proposals (RFPs) to all the short listed agencies, and obtaining Technical and Cost proposals (middle of Aug, 2009)

    iii. Selection and deployment of support organization to the Sub-basin (End of Sep, 2009).

8. **Appointment and the role of competent Authorities:**

    i. Section 26 of the Tamil Nadu Farmers' Management of Irrigation Systems (TNFMIS) Act provides for the appointment of "Competent Authorities" to assist the respective farmers orginsation (WUA), Distributory Committee and Project Committee), in the implementation and execution of all decisions taken by such farmers organization. Similarly, every farmer's organization shall extend such co-operation or assistance, as may be required by the Competent Authority, for carrying out all the tasks related to implementation of TNFMIS Act.

    ii. Appoinment of competent Authorities for the the WUAs formed under IAMWARM, project is based on the ' WRO Section officer wise ' distribution as listed below:

Sl. No.	Details of Competent Authorities	Details of WUAs in Code
1.	Section Officer, WRO, Irrigation Section-II, Rajapalayam	WUAs 1, 2, 3, 4, 5
2.	Section Officer, WRO, Irrigation Section-I, Rajapalayam	WUAs 6,7,8,9,10
3.	Section Officer, WRO, Irrigation Section-II, Srivilliputhur	WUAs 11,12 &13

:

Name of the WRO Sub Divisional Officers working in the Sevalaperiyar Sub Basin:

.

Assistant. Executive Engineer,
Upper Vaippar Basin Sub Division,
Rajapalayam — WUAs 1 to 10

. Assistant. Executive Engineer,
Upper Vaippar Basin Sub Division,
Rajapalayam — WUAs 11 to 13

9. Involvement of farmers in the preparation "Scheme Modernisation Plans"

i. Based on the outcome of the "Awareness Creation Programme" and Walkthrough survey carried out with the involvement of farmers, a list of tasks proposed to be taken up for "Modernisation" under IAMWARM project was discussed with 126 No. of farmers from 6 villages. The final list of tasks was also prepared and exhibited in the Notice Board of the Village Administrative Officers Office and Panchayat Office. These details were also discussed with farmers and the tasks to be taken up under scheme modernisation finalised.

ii. During the meeting, the farmers present were also informed that soon after finalization of contract for carrying out “Modernization of Irrigation Systems” a “Notice Board” with the details about the nature of works, its cost, period of contract and name of the contractor will all be fixed at the site of the work, as well as in the panchayat office of the villages concerned for information of the farmers. They have also been informed that they are free to supervise the work by the contractor and any lapse in the quality of work may be reported to the field officers of WRO, as well as the Executive Engineer of WRO, who has been designated as the Nodal Officer for the sub basin concerned.

iii. The field officers of WRO are all aware of the problems in handing over the operation and maintenance responsibilities to the farmers concerned, if the tasks as desired by the farmers in the command area are not included in the modernisation of the system and also in case, some of the tasks already included and planned are not implemented due to some reasons or other.

iv. The WRO officers were also informed that they are personally responsible for handing over the irrgiation systems after completion the tanks related to modernization of irrigation systems, under IAMWARM project.

10. Current status of Recovery of Water charges

i. An enquiry conducted with the “Village Administrative Officers’ (VAOs) of randomly selected villages (9 numbers out of 10 villages) located win in the sub basin the normal water charges recovery as informed by the VAO, works out to 50 – 60% only about the expected percentage of 80 - 90%.

ii. With the proposal to form new WUAs under IAMWARM in “Sevalaperiyar” the Managing Committees will be trained to take up the responsibility of improving the water charges recovery percentage. These will be followed up, after completion the modernisation tasks and handing over of the O & M responsibilities to WUAs.

11. “**Capacity Building” of the WUA farmers**

i. The “Support Organisation Group” will prepare “Training Modules” required for building the capacity of the WUA farmers, based on a “Training Needs”

Analysis. They will also organise various “Capacity building” programmes at suitable locations within the sub basin command are, to benefit the farmers of the WUAs in the sub – basin.

ii. The Support Organisation will also arrange for organising the “Study Tours” both within and outside the state to enhance their knowledge and experiences which will help tem to improve the crop productivity and there by the farmer’s income.

iii. The support organisation will also conduct necessary “awareness programme” and impart training to educate the farmers of the WUAs in all aspects of the TNFMIS Act, TNFMS Rules and Election procedures for constituting the “Managing Committee” of the WUAs.

12. The “Competent Authorities” appointed for the sub basin will also be trained to effectively to interact with WUA farmers and maintaining good rapport and relationship with the farming community in the sub basin.

Annexture-2

Detailes of Walk through Surveys

Sl. No	Date of Visit	Name of Tank Visited	Awareness Programe((No of Formers attended)	Walk through survey (No of Formers attended)
1	30.12.08	Pudukulam	8	8
2	30.12.08	Pirandaikulam	14	14
3	30.12.08	Marungoor	12	8
4	30.12.08	Keela Iluppilakulam	16	12
5	30.12.08	Peranallur	16	11
6	31.12.08	Watraperi leach tank	10	10
7	31.12.08	Alappaseri	20	20
8	31.12.08	Karunkulam	35	24
9	31.12.08	Appaneri	4	4
10	02.01.09	Krishnaperi	18	17
11	02.01.09	Kondaneri	20	18
12	02.01.09	Thirchalur	10	8
13	02.01.09	Kadambankulam	10	8
14	02.01.09	Vagaikulam	15	12
15	03.01.09	Adhiyoor tank	10	8
16	03.01.09	Puliankulam	10	7
17	05.01.09	Keela Rajakularaman	20	11

Annexure-I

An Assesment of command Area and WUAs under the control of WRD in Sevalaperiyar Subbasin

Sl. No	Name of Irrigation System and Tank	Ayacut Area in Ha	Location of comand area			Coverage of Command area Under Different Projects		Status of formation of WUA in the subbasin
			Village	Taluk	District	WRCP	IAMWARM	To be formed Under IAMWARM
1	Watraperi leach tank	74.95	Kollankondan	Rajapalayam	Virudunagar	NIL	74.95	SR-1
2	Pudukulam	136.47	N.Venganallur			NIL	136.47	
3	Pirandaikulam	40.49	N.Venganallur			NIL	40.49	SR-2
4	Kondaneri	47.84	Rajapalayam			NIL	47.84	SR-3
5	Marungoor	42.52	Rajapalayam			NIL	42.52	
6	Thirchalur	41.48	Rajapalayam			NIL	41.48	SR-4
7	Kadambankulam	47.84	Rajapalayam			NIL	47.84	SR-5
8	Krishnaperi	42.3	Rajapalayam			NIL	42.3	SR-6
9	Alappaseri	82.82	Rajapalayam			NIL	82.82	SR-7
10	Karunkulam	119.8	Pudupalayam			NIL	119.8	
11	Appaneri	41.4	Appaneri			NIL	41.4	SR-8
12	Keela Iluppilakulam	41.4				NIL	41.4	
14	Peranallur	51.13	Ramalingapuram			NIL	51.13	SR-9
13	Vagaikulam	42.7	Melarajakularaman			NIL	42.7	SR-10
15	Adhiyoor tank	93.78	Melapattam Karisal kulam			NIL	93.78	SR-11
16	Puliankulam	45.83	Samanthapuram			NIL	45.83	SR-12
17	Keela Rajakularaman	132.93				NIL	132.93	SR-13

ABSTRACT		
1	Commend area already covered under WRCP and other Projects/Schemes	Nil
2	Commend area proposed to be covered under IAMWARM Project (Total of column 8) -	1192.35
3	Total Command area controlled by WRO of PWD in the Sub basin	1192.35
4	Total No. of WUAs already formed under WRCP	NIL
5	Total No.of WUAs proposed to be formed under IAMWARM	13
	Total No. of WUAs that will cover the entire sub-basin	13

ANNEXURE- III
DETAILS OF MODERNISATION WORKS AS SUGGESTED BY THE FARMERS AND AN FINALISED BY THE OFFICIALS OF WRO

Sl. No.	Date of visit	Name of the Village visited	Out come of walk through survey and discussion with the farmers		Remarks
			Works Suggested by the farmers	Work Finalized by WRO officials	
1	30.12.2008	Rajapalayam, S. Ramalingapuram	1.Repairs to the Mudangiyar Anicut 2.Rehabilitation of tank surplus, weir, sluices 3.Strengthening tank bund 4.Desilting the supply channel 5.Construction of Dividing dam at Marungoor open offtake and Peranallur open offtake	Demands raised by the farmers and Paticipats are analysed and the essential components for Rehabilitation are included in the project proposal.	
2	31.12.2008	Rajapalayam, Pudupalayam	1.Repairs to the Anicut 2.Rehabilation of surplus, weir & sluices 3. .Strengthening tank bunds 4.Desilting thesupplychannels 5. Construction of dividing Dam	Demands raised by the farmers and Paticipats are analysed and the essential components for Rehabilitation are included in the project proposal.	
3	02.01.2008	Rajapalayam Samsikapuram,	1.Repairs to the surplus weir & sluices 2.Strengthening tank bunds 3.Desilting the supplychannels	Demands raised by the farmers and Paticipats are analysed and the essential components for Rehabilitation are included in the project proposal.	
4	03.01.2008	Melapattam Karisalkulam Samanthapuram,	1.Repairs to the weir & sluices 2.Strengthening the tank bund	Demands raised by the farmers and Paticipats are analysed and the essential components for Rehabilitation are included in the project proposal.	
5	05.01.2009	Keelarajakularaman	1.Repairs to the sluices 2.Strengthening tank bund 3.Desilting the supplychannel	Demands raised by the farmers and Paticipats are analysed and the essential components for Rehabilitation are included in the project proposal.	

WALK THROUGH SURVEY

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								Remarks
	Date	Location		WRO	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRO	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	31.12.2008	Watraperi tank	• Tank bund Improvement • Sluice Improvement • SG Shutter to Sand vent • SC Improvements. • Encroachment Eviction • Thrashing floor	St.TB, RE Sluices , RE Weir								St.TB, RE Sluices, RE Weir								
2	30.12.2008	Pudukulam & Arugupadhikal	• Tank bund Improvement • Sluice reconstruction • Weir Improvements. • Supply channel & Anicut Improvement • Thrashing floor & Godown • Fish Culture in tank • SRI	St.TB, RC Sluices, RE Sluices, RE Weir								St.TB, RC Sluices, RE Sluices, RE Weir								

3	30.12.2008	Pirandaikulam	• Tank bund Improvement • Sluice reconstruction • Weir Improvements. • Thrashing floor & Godown • Fish Culture in tank • SRI	St.TB, RC Sluices, RE Sluices, RE Weir								St.TB, RC Sluices, RE Sluices, RE Weir								
4	03.01.2008	Adhiyoor	• Tank bund Improvement • Sluice reconstruction • Weir Improvements. • Supply channel Improvement • Thrashing floor & Godown • SRI	St.TB, RE Sluices								St.TB, RE Sluices								
5	03.01.2008	Puliankulam	• Tank bund Improvement • Sluice reconstruction • Weir Improvements. • Thrashing floor & Godown • Fish Culture in tank • SRI	St.TB, RE Sluices RE weir								St.TB, RE Sluices RE weir								
6	02.01.2008	Kondaneri	• Encroachment Eviction • Tank bund Improvement • Weir Reconstruction • Culvert • Thrashing floor • SRI	St.TB, RE Sluices,RC Weir								St.TB, RE Sluices ,RC Weir								

7	30.12.2008	Marungoor	• Construction of Anicut • Tank bund Improvement • Sluice reconstruction • Weir Improvements. • Supply channel Improvement • Thrashing floor • SRI	St.TB, RC Sluices, RE Sluices, RE Weir, DS chl								St.TB, RC Sluices, RE Sluices, RE Weir, DS chl								
8	02.01.2008	Thiruchalur	• Tank bund Improvement • Sluice reconstruction • Weir Improvements. • Supply channel Improvement	St.TB, RC Sluices, RE Weir								St.TB, RC Sluices, RE Weir								
9	02.01.2008	Kadamban kulam	• Encroachment Eviction • Tank bund Improvement • Weir Reconstruction • Sluice reconstruction • Thrashing floor • SRI	St.TB, RC Sluices, RE Sluices, RC Weir, RE Weir								St.TB, RC Sluices, RE Sluices, RC Weir, RE Weir								
10	02.01.2008	Krishnaperi	• Tankbund &SC Improvement • Weir Improvement • Sluice reconstruction • Thrashing floor	St.TB, RE Sluices, RE Weir ,DS chl								St.TB, RE Sluices, RE Weir ,DS chl								
11	31.12.2008	Alappaseri	• Tank bund Improvement • S.G.Shutter to Weir& Sluice • SC Improvement • Thrashing floor • Retaining wall SC	St.TB, RE Sluices, RE Weir								St.TB, RE Sluices ,RE Weir								

12	31.12.2008	Karunkulam	• Encroachment Eviction • Bund &SC Improvement • Weir Improvement • Sluice reconstruction • Fish culture in tank • Thrashing floor & Godown • SRI	St.TB, RE Sluices, RE Weir								St.TB, RE Sluices, RE Weir								
13	31.12.2008	Appaneri tank	• Bund &SC Improvement • Weir Reconstruction • Sluice reconstruction • Thrashing floor &Godown • SRI	St.TB, RE Sluices, RE Weir								St.TB, RE Sluices RE Weir								
14	30.12.2008	Keela Iluppila Kulam	• Bund & Weir Improvement • Sluice reconstruction • Thrashing floor • Retaining wall in SC	RC Sluices, RE Weir, St.TB								RC Sluices, RE Weir, St.TB,								
15	02.01.2008	Vagaikulam	• Encroachment Eviction • Bund & Weir Improvement • Sluice reconstruction • SC Improvement • Thrashing floor • Retaining wall in SC	St.TB, RC Sluices, RE Weir, DS chl								St.TB, RC Sluices, RE Weir, DS chl								
16	30.12.2008	Peranallur tank	• Construction of Bed Dam • Reconstruction of Weir • Bund & SC Improvement • Thrashing floor • Retaining wall in SC • Horticulture	St.TB, RC Sluices, RC Weir,								St.TB, RC Sluices ,RC Weir,								

17	05.01.2008	Keela Rajakularaman	• Tank bund Improvement • Sluice Improvement • Supply channel Improvement	St.TB, RE Sluice								St.TB, RE Sluice								

a. St. TB - Standardisation of Tank Bund

b. RC Sluices - Reconstruction of Sluices

c. RE Sluices - Repairs to Sluices

d. RC weir - Reconstruction of Weir

e. RE weir - Repairs to weir

f. DS chl - Desilting of Supply Channels

1.5 IRRIGATION INFRASTRUCTURE

LIST OF ANICUTS

Sl. No	Anicuts	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity in Mcft
1	Mudangiyar Anicut	North Venganallur	Rajapalayam	Rajapalayam	Virudunagar	---	
2	Pudukulam Anicut	North Venganallur	Rajapalayam	Rajapalayam	Virudunagar	66.67	
3	Mudangiyar Dividing dam	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	---	
4	Krishnaperi Anicut	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	---	
5	Appaneri Anicut	Appaneri	Rajapalayam	Rajapalayam	Virudunagar		---

LIST OF TANKS (Separate statement for System and Non System tanks)- Non System Tank

Sl. No	Tank	Village	Block	Taluk	District	Ayacut Area in Ha	Capacity in Mcft
1	Adhiyoor tank	Melapattam Karisal kulam	Rajapalyam	Rajapalayam	Virudunagar	93.78	20.65
2	Puliankulam	Samanthapuram	Rajapalyam	Rajapalayam	Virudunagar	45.83	11.16
3	Watraperi leach tank	Kollankondan	Rajapalyam	Rajapalayam	Virudunagar	74.95	15.36
4	Pudukulam	N.Venganallur	Rajapalyam	Rajapalayam	Virudunagar	136.47	9.90
5	Pirandaikulam	N.Venganallur	Rajapalyam	Rajapalayam	Virudunagar	40.49	18.00
6	Kondaneri	Rajapalayam	Rajapalyam	Rajapalayam	Virudunagar	47.84	15.84
7	Marungoor	Rajapalayam	Rajapalyam	Rajapalayam	Virudunagar	42.52	6.90
8	Thirchalur	Rajapalayam	Rajapalyam	Rajapalayam	Virudunagar	41.48	4.19
9	Kadambankulam	Rajapalayam	Rajapalyam	Rajapalayam	Virudunagar	47.84	8.33
10	Krishnaperi	Rajapalayam	Rajapalyam	Rajapalayam	Virudunagar	42.30	5.40

11	Alappaseri	Rajapalayam	Rajapalyam	Rajapalayam	Virudunagar	82.82	13.23
12	Karunkulam	Pudupalayam	Rajapalyam	Rajapalayam	Virudunagar	119.80	16.76
13	Appaneri	Appaneri	Rajapalyam	Rajapalayam	Virudunagar	41.40	8.95
14	Keela Iluppilakulam	Samsikapuram	Rajapalyam	Rajapalayam	Virudunagar	41.40	30.92
15	Vagaikulam	Melarajakularaman	Rajapalyam	Rajapalayam	Virudunagar	42.70	18.36
16	Peranallur	Ramalingapuram	Rajapalyam	Rajapalayam	Virudunagar	51.13	21.06
17	Keela Rajakularaman	Keela Rajakularaman	Srivilliputhur	Rajapalayam	Virudunagar	132.93	51.28

List of Supply Channel

Sl.No.	Name of Supply Channel	Off take point	Length in Km	Village	Block	Taluk	District	Direct Ayacut in Ha
1	Adhiyoor S/C		2.00	Karisalkulam	Rajapalayam	Rajapalayam	Virudunagar	
2	Puliankulam S/C		0.20	Samanthapuram	Rajapalayam	Rajapalayam	Virudunagar	
3	Watraperi S/C	Mudangiyar Anicut	2.90	Kollankondan	Rajapalayam	Rajapalayam	Virudunagar	
4	Pudukulam S/C	Mudangiyar Anicut	3.18	N.Venganallur	Rajapalayam	Rajapalayam	Virudunagar	**66.67**
5	Pirandaikulam S/C	Pudukulam	0.30	N.Venganallur	Rajapalayam	Rajapalayam	Virudunagar	
6	Kondaneri S/C	Puliankulam	1.30	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	
7	Kadambankulam S/C-1	Kondaneri tank	0.25	Rajapalaym	Rajapalayam	Rajapalayam	Virudunagar	
8	Kadambankulam S/C-2	Pirandaikulam	0.50	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	

9	Kadambankulam S/C-3	Thirchalur tank	0.85	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	
10	Marungoor S/C	Mudangiyar Open offtake	0.54	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	
11	Thiruchalur S/C	Marungoor	0.60	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	
12	Krishnaperi S/C	Krishnaperi Anicut	0.50	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	
13	Alappase/C	Krishnaperi Anicut	2.46	Rajapalayam	Rajapalayam	Rajapalayam	Virudunagar	
14	Karunkulam S/C	Mudangiyar Dividing Dam	4.50	Rajapalayam/ Pudupalayam	Rajapalayam	Rajapalayam	Virudunagar	
15	Appaneri S/C	Karunkulam	0.25	Pudupalayam	Rajapalayam	Rajapalayam	Virudunagar	
16	Keela Iluppilakulam S/C	Achankulam	0.30	Mela Rajakularaman	Rajapalayam	Rajapalayam	Virudunagar	
17	Vagaikulm S/C	Keela Ilupila kulam	0.30	Samsikapuram	Rajapalayam	Rajapalayam	Virudunagar	
18	Peranallur S/C	Karunkulam	2.50+0.70	Pudupalayam/ Ramalingapuram	Rajapalayam	Rajapalayam	Virudunagar	
19	Keela Rajakularaman S/C	From Peranallur S/C	2.00	Keela Rajakularaman	Rajapalayam	Rajapalayam	Virudunagar	

List of tanks/Anicuts executed under various schemes (Viz, Part II Scheme, NABARD, WRCP I etc.,) since 2003.

Sl.No.	Name of Anicut / Tank	Ayacut in Ha	Scheme in which executed	Amount	Details of components executed	Remarks
1	Adhiyoor tank	93.78	NABARD	20.00 LAKHS	Bund Weir Sluice Supply channel	---

Work taken up under NABARD but also takenup in IAMWARM Project

Sl No	Name of tank	Work done under NABARD Programme	Work Now proposed in IAMWARM	Remarks
1	Adhiyoor Tank	Sluice No-2 Reconstruction,TankBund Improvement only up to 1.00 m above MWL,Supply channel Improvement,Weir Repair,Field channel Improvement	Sluice No-1 Repair work, StandarditionTank Bund Improvement up toStandard	

ABSTRACT ON THE DETAILS OF IRRIGATION INFRASTRUCTURE AVAILABLE AND WORKS TAKEUP UNDER IAMWARM PROJECT

NAME OF SUB BASIN: SEVALAPERIYAR

SL. NO.	DETAILS	ANICUT			SYSTEM TANK			NON- SYSTEM TANK			ANY OTHER SUPPLY CHANNEL		REMARKS
		NOS	SUPPLY CHANNEL IN KM	DIRECT AYACUT	NOS	SUPPLY CHANNEL IN KM	AYACUT	NOS	SUPPLY CHANNEL IN KM	AYACUT	LENGTH	DIRECT AYACUT	
1	Available Infrastructure in sub basin	5	14.08	66.67	-	-	-	17	12.05	1125.68	-	-	-
2	Infrastructure excluded in iamwarm project since works carried out under various schemes from 2003	-	-	-	-	-	-		-	-	-	-	-
3	Infrastructures that does not require any rehabilitation works	2	9.56	-	-	-	-	-	12.05	-	-	-	-
4	Works taken up in Iamwarm project	3	4.52	66.67				17	-	1125.68	-	-	-
	a)Work executedunder NABARD But also proposed in IAMWARM	-	-	-	-	-	-	1	-	93.78	-	-	Componentsthat are not executed Under NABARD are only proposed in IAMWARM
	a)Work proposed in IAMWARM alone	3	4.52	66.67	-	-	-	16	-	1031.90	-		-

1. Certified that the Panchayat Union Tanks are not considered in this project.
2. Certified that the items executed under various schemes (Viz, WRCP I, NABARD, PART II schemes etc.,) since 2003 were not proposed in this project.

1.6 Rehabilitation of IRRIGATION Infrastructure

REHABILITATION OF IRRIGATION INFRASTRUCTURE OF THE SUB-BASIN

STRUCTURAL STATUS & DEFICIENCIES IN THE SYSTEM

The following are the present structural condition of the Sevalaperiyar Sub Basin

1. This systems are old systems existing for more than 100 Years as such requires Rehabilitation.
2. Heavy accumulation of silt due to hilly region and contour nature of Channel system
3. Lack of adequate control of regulating structures like Anicuts, Head Sluices, Sand/ scour vents etc.,
4. The damaged (or) dilapidated condition of the existing anicuts, diversion head works etc. and supply channels causes to poor standard of the entire conveyor system.
5. The Non system tanks are to be rehabilitated.

In order to improve the conveyance and Operational Efficiency in Irrigation, it is now proposed to improve and modernize the Irrigation Infrastructures in Sevalaperiyar Sub basin.

1. Repairs to the damaged Anicuts
2. Desilting the supply channels by earthwork excavation using machineries
3. Providing Retaining walls in selective area of the supply channels .
4. Providing Wooden blanks to Anicut / Weir Dam stones
5. Repairing, Restoring the traditional water bodies (i.e. tanks)
   a. Restoring the capacity of the tanks, supply channels by desilting
   b. Strengthening the bunds of the tanks and channels wherever necessary for effectively storing the water and conveying it to the entire command area and also for conveying agriculture inputs to the field.
   c. Reconstruction of Collapsed weirs
   d. Repairs to the damaged weirs
   e. Reconstruction of Collapsed Sluices
   f. Repairs to the damaged Sluices
   g. Providing Retaining walls in selective area of the tanks
   h. Providing S.G. Shutter / Plug arrangements to Sluices, Head sluices, Scour vents etc.,
   i. Removing, Repairing and refixing in position of the existing S.G. shuttering arrangements and providing locking arrangements etc.,

Outcome of the Project

1. Increase in conveyance efficiency from 40% to 53%
2. The present Gap area of 184.17 ha. is to be converted as a fully irrigated area
3. The following irrigation infrastructure development works are proposed in the sub basins

Rehabilitation of 3 Anicuts.and 17 tanks and selected Supply Channel in Sevalaperiyar sub basin.

SALIENT FEATURES OF PROPOSED WORKS

Standerdisation of tank bund :-

In Sevalaperiyar Sub basin there are 17 nos. of tanks having an Ayacut of 1192.35 Ha. in most of the Tanks the tank bunds are below standards. The tank bund for a length of 30339 m has to be standardized.This will also increase the capacity of tank.

In the tank bund retaining walls for a length of 50 m has to be proposed in weaker and breached portions for strengthening the tank bund limited to damaged portion only.

In this sub basin the most of the tank sluices and weirs are in damaged conditions and also without shutter arrangements. Hence reconstruction of sluices, weirs and repairs to the sluices and weirs and shutter arrangements wherever necessary to be proposed. Due to this repair and reconstruction to the sluices and weirs the wastage of water is sustain ably reduced and proper water regulation for irrigation has to be maintained.

Desilting the Supply Channel:-

The earthen supply channel feeding to 17 tanks having an Ayacut of 1192.35 ha.and length of 26130 m The supply channel are at present reduced from the original section which results adequate quantum of water is not carried out through this channel to the tanks and finds its way to adjacent fields and lesser quantum of water flows to the tanks and balance water over flank and flows in to agriculture land.

By restoring the supply channel to the original section to carry adequate discharge to the tanks without outflanking. Hence the desilting of selected supply channel proposed in this project. This ensures adequate storage in the tanks during normal rainfall seasons.

Anicut Improvement :-

In the sub basin out of 5 Anicuts 3 Numbers of anicuts has been proposed to be repaired. In Mudangiyar Dividing dam flood damaged portion of apron has been proposed to be repaired.The remaining two anicuts are in good condition Due to this Commandability up to tail end reaches will be restored.

Details of Proposal in Each Infrastructure of the Sevelaperiyar SubBasin

Sl No	Tank / Anicut Name	Tank Bund and Model Section			Sluice							Weir							Supply Channel		Measuring Device		Anicut		Total
		Total Length in M	Proposed Length in M	Amount in lakhs	Total No of Sluice	No of Sluice Reconst	Amount in lakhs	No of Sluice To be repaired	Amount in lakhs	S.G.Shutter for Sluice.	Amount in lakhs	Total No of Weir	No of Weir Reconst	Amount in lakhs	No of Weir To be repaired	Amount in lakhs	S.G.Shutter for Weir.	Amount in lakhs	Length in M	Amount	Nos	Amount in lakhs	To be repaired	Amount in lakhs	
	Package No-I																								
A	**MudangiyarAnicut**																						1	3.42	3.42
1	Watraperi Leach tank	2875	2875	13.02	3	1	4.23			2	0.40	2			1	1.00	1	0.52			3	0.43			19.60
2	N.V. Pudukulam	1800	1800	4.42	2			1	1.50	2	0.40	1			1	2.70	3	1.46	3180	3.52	2	0.30			14.30
	N.V. Anicut																						1	0.80	0.80
3	Pirandaikulam	930	930	8.07	2	1	3.60	1	1.50	2	0.40	1			1	2.10					2	0.30			15.97
4	Kondaneri	1600	1600	6.62	3			2	3.01	3	0.60	1	1	8.5							3	0.45			19.18
B	**Marungur Offtake**																								
5	Marungur	1130	1130	4.86	2	2	7.36	1		2	0.40	1			1	2.60	3	1.38	540	0.51	2	0.28			17.39
6	Thiruchalur	1160	1160	4.82	3	2	7.30	1	0.16	3	0.60	2			1	3.80	4	1.68			3	0.43			18.79
7	Kadambankulam	1762	1762	7.78	4	2	7.90	1	1.20	4	0.80	2	1	8							4	0.60			26.28
C	**Mudangiyar DD**																						1	5.74	5.74
8	Karunkulam	1826	1826	10.87	3	3	10.50			3	0.60	1			1	1.80	2	1.20			3	0.45			25.42
9	Appaneri	2027	2027	7.02	2			2	2.50	2	0.40	1	1	4.95							2	0.30			15.17
10	Peranallur	2220	2220	8.73	2	1	3.25	1	0.20	2	0.40	1	1	1.8							2	0.30			14.68
11	Keela Rajakularaman	3090	3090	13.57	1			1	1.37			1			1	0.40	2	0.10			1	0.15			15.59
12	KeelaIluppilakulam	1920	1920	7.80	1	1	3.60			1	0.20	1			1	2.36	2	0.90			1	0.15			15.01
13	Vagaikulam	1750	1750	7.90	1	1	3.32			1	0.20	1			1	0.70	2	0.10	300	2.65	1	0.15			15.02
D	**Krishnaperi Anicut**																			0					
14	Krishnaperi Tank	1160	1160	4.37	3			2	0.25	2	0.40	1			1	1.30	3	1.20	500	0.5	3	0.43			8.45
15	Alappaseri	1524	1524	9.02	3			1	1.80	1	0.20	1			1	4.63	5	2.68			3	0.43			18.76
16	Adhiyur	1950	1950	5.45	1							1									1	0.15			5.60
17	Puliangulam	1615	1615	6.07	1							1			1	3.35					1	0.15			9.57
	Total	30339	30339	130.39	37	14	51.1	14	13.49	30	6.00	20	4	23.25	12	26.74	27	11.22	4520	7.18	37	5.45	3	9.96	284.74

TANK DETAILS WITH FREE BOARD PROVIDED

Sl. No.	Name of the Tank	Maximum Height of Bund	Free Board		Length of Bund
			Provided previously	Provided now	
1	Adhiyoor tank	4.84	1.00	1.50	1950
2	Puliankulam	2.18	1.00	1.50	1615
3	Watraperi leach tank	2.925	1.00	1.50	2875
4	Pudukulam	3.920	1.25	1.50	1800
5	Pirandaikulam	3.46	1.00	1.50	930
6	Kondaneri	3.245	1.25	1.50	1600
7	Marungoor	3.80	1.25	1.50	1130
8	Thirchalur	3.00	1.00	1.50	1160
9	Kadambankulam	3.505	1.25	1.50	1762
10	Krishnaperi	3.025	1.25	1.50	1160
11	Alappaseri	3.545	1.25	1.50	1524
12	Karunkulam	4.765	1.25	1.50	1826
13	Appaneri	3.20	1.25	1.50	2227
14	Keela Iluppilakulam	3.92	1.25	1.50	1920
15	Vagaikulam	2.755	1.00	1.50	1750
16	Peranallur	3.36	1.00	1.50	2220
17	Keela Rajakularaman	3.22	1.25	1.50	3090

Note:-

1) For height of bund up to 3.0 m – Free board is 1.25m

2) For height of bund more than 3.0m – Free board is 1.50 m

A. WRO COST TABLE

Sl. No	Description of work	Quantity	Amount in Lakhs	Remarks
I. Tank Component				
1	Improvement of tank Bund			
	Earthwork of bund	30339 M	130.39	
2	Improvement of Sluice			
	Reconstruction	14	51.06	
	Repairing	14	19.50	
3	Improvement of weir			
	Reconstruction	4	23.25	
	Repair	12	37.95	
4	Supply channel improvement			
	Earthwork	4520 M	7.18	
5	Measuring Devices	37 Nos	5.45	
	SubTotal		**274.78**	
II. Non Tank Component				
1	Anicut improvement			
	Construction			
	Repair	3	9.96	
	SubTotal		**9.96**	

1). Tank component = 274.78 lakhs

2). Non-Tank component = 9.96 lakhs

Total = 284.74 lakhs

Environmental Cell = 2.50 lakhs

Total = 287.24 lakhs

Total = 287.24 lakhs

B. (PHYSICAL AND FINANCIAL PROGRAM)

Sl. No.		Description	I Year		II Year				
			Qty	Amt in Lakhs	Qty	Amt in Lakhs	Qty		Amt in Lakhs
		TANK COMPONENTS							
I		**Tank Bund Improvements**							
	a	Earthwork for Bund	12000	52.84	18339	77.55	30339	M	130.39
II		**Improvement of sluices**							
1		Reconstruction	7	25.53	7	25.53	14	Nos	51.06
2		Repair	7	9.75	7	9.75	14	Nos	19.50
III		**Improvement of Weir**							
1		Reconstruction	2	11.63	2	11.62	4	Nos	23.25
2		Repair	6	31.50	6	31.50	12	Nos	63.00
V		**Supply Channel Improvement**							
1		Earthwork	4520	7.18			4520	M	7.18
2		Culvert							
3		Head Sluice	-	-	-	-	-	-	-
-		Canal Sluice	-	-	-	-	-	-	-
VI		**Measuring Devices**							
1		Divices			37	5.45	37	Nos	5.45
		Total							**274.78**
VI		**NON TANK COMPONENTS**							
1.	a. b. c.	**Anicut improvement** Construction Repair River Training Earthwork	1	3.36	2	6	3	Nos	9.96
		Total							**9.96**
		Environmental cell							**2.50**
		TOTAL							**287.24**

Package Details

Package – 1

Sl. No.	Name of Tank / Anicut	Amount in Lakhs
1	Rehabilitation of Mudangiyar Anicut,,Marungoor Offtake , Mudangiyar Dividing dam, Krishnaperi Anicut and its tanks and supply channels , Adhiyoor tank and Puliankulam tank in Sevalaperiyar Sub Basin in Rajapalayam ans srivilliputhur Block / Rajapalayam Taluk of Virudunagar District	284.74
	Sub Total	**284.74**

PACKAGE 1

Calculation of machineries Requirement

Hydraulic excavator &
4 Tippers / 6 Hours / Day

(4 No x 2 loads/ hour x 6 Hr x 4 m^3/ trip) 192 m^3 /Day

For 1 month (20 Working days)	20 x 192 m^3	3840 m^3/ month
Total quantity of earth work	242712 m^3	
Working period for earth work	8 months + 4 Months rainy season	

Machineries required for earth work:

1. Hydraulic excavator - 5 nos
2. Tippers / Lorries - 20 nos
3. Power roller - 3 nos
4. Vibrated compactor - 3 nos
5. Water lorries - 3 nos

Mixer machine	2 m^3 / hour	For 6 hours / day	12 m^3 / day
Total quantity of concrete		4409 m^3	
Mixer machine required		**5 Nos** for 10 days / month -- 9 months	
Material conveyence		**Tippers / Lorries**	
Cement	10 mt / Trip	1 trip / day	10 mt / day
Sand	5.66 m^3 / Trip	2 trips / day	11.32m^3 /day
Metal / stone	5.60 m^3 / Trip	3 trips / day	16.80 m^3 /day
Total quantity of cement		879 mt	
Tipper required for conveyence		879/10	178 Lorries
Total quantity of sand		1989m^3	
Tipper required for conveyence		1989/11.20	27 Lorries
Total quantity of metal		3969 m^3	
Tipper required for conveyence		598 /16.80	36 Lorries

Tipper / Lorries for conveyance of materials — **4 Nos** for 15 days for 9 months

PACKAGE NO 1

REQUIREMENT OF EQUIPMENTS AND MATERIALS														
PACKAGE NUMBER	EQUIPMENTS REQUIRED IN NUMBERS							MATERIAL REQUIRED						
	HYDRAULIC EXCAVATOR	POWER ROLLER	VIBRATED COMPACTOR	TIPPER / LORRY	WATER LORRY	CONCRETE MIXER MACHINE	CONCRETE VIBRATOR	CEMENT IN M.T.	SAND IN m^3	STEEL IN M.T.	METAL 40MM IN m^3	METAL 20MM IN m^3	RR IN m^3	FUEL
Package No:1	5	5	3	24	3	5	5	879	1989	6	688	3281	---	

PACKAGE-I

Construction methodology

Sl No	Description of Item	Working Months														Rainy season			Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	Earth work excavation																			
1	Bund	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250	20250	19962							242712
2	Channel		9000	9000	9120															27120
3	Foundation		462	462	462	462	462													2310
	Concrete																			
4	M 7.5 grade			150	150	150	150	154												754
5	M 10 grade				360	360	360	360	360	385										2185
6	M 15 grade					240	240	240	240	240	250									1450
7	M 20 grade					20	5	5	5	5	5	7								52
8	Plastering											90	90	90	90	90				450

1.7. ENVIRONMENTAL COMPONENT

INDEX

Environmental Monitoring on water and soil quality and creating awareness & updating of "Environmental and Social Assessment report" for SEVALAPERIYAR SUB BASIN

IAMWARM PROJECT

(ENVIRONMENT COMPONENT IN SUB BASINS)

Name of River Basin:	**VAIPPAR BASIN**
Name of Sub Basin:	**SEVALAPERIYAR**
Name of WUA:	
Name of Division:	**Execurive Engineer, Upper Vaippar Basin division, Rajapalayam**
Name of Sub Division:	**Assitant Executive Engineer, Upper Vaippar Basin division, Rajapalayam**
District:	**Virudhunagar**
Taluk:	**Watrap,Rajapalayam ,Srivilliputhur, Vembakottai.**
Block:	**Watrap,Rajapalayam ,Srivilliputhur, Vembakottai.**
I. Name of the Tank Severly affected by Aquatic weeds	Annexure- I
II. Domestic Sewage:	Annexure -II
III.Municipal Solid Waste:	Annexure -III
III. Industreies:	Annexure -IV
IV. Water Quality Status:	
i. Surface water:	So for No water sampling points
II. Ground water:	Annexure -VI

ANNEXURE-I

SEVALAPERIYAR SUB-BASIN --WEED DETAILS

Sl.No	District	Taluk	Block	Name of Village	System Tank		Type of Water Weeds
					Name of Tank	Ayacut(ha)	
1	Virudhunagar	Rajapalayam	Rajapalayam	Athiyur	Athiyur Tank	93.8	Prosopis Juliflora
2				Puliyankulam	Puliyankulam Tank	56.08	Prosopis Juliflora
3				Marungoor	Marungoor Tank	62.92	Prosopis Juliflora
4				Thiruchalur	Thiruchalur Tank	41.48	Prosopis Juliflora
5				Karunkulam	Karunkulam Tank	119.08	Prosopis Juliflora
6				Kondaneri	Kondaneri Tank	47.84	Juliflora/Ipomea
7				North Venganallur	North Venganallur Tank	129.42	Prosopis Juliflora
8				Pirandaikulam	Pirandaikulam Tank	39.685	Prosopis Juliflora
9				Kadambankulam	Kadambankulam Tank	44.755	Prosopis Juliflora
10				Krishnaperi	Krishnaperi Tank	30.56	Prosopis Juliflora
11				Appeneri	Appeneri Tank	40.4	Juliflora/Ipomea
12				Keelaillupilakulam	Keelaillupilakulam Tank	41.05	Prosopis Juliflora
13				Peranallur	Peranallur Tank	51.125	Prosopis Juliflora
14				Vagaikulam	Vagaikulam Tank	42.815	Juliflora/Ipomea
15				Keelarajakularaman	Keelarajakularaman Tank	328.06	Prosopis Juliflora

ANNEXURE - II
SEVALAPERIYAR SUB BASIN

DOMESTIC SEWAGE

Sl. No.	Name of Town	Water body into which Sewage is discharged
1	Melarajakularaman	Vagaikulam Tank
2	Rajapalayam	Alapecheri Tank
3	Rajapalayam	Kondaneri Tank
4	Rajapalayam	Pirandaikulam Tank
5	Rajapalayam	Pethaiyarkulam Tank
6	Rajapalayam	Kadambankulam Tank

ANNEXURE- III

SEVALAPERIYAR SUB BASIN

MUNICIPAL SOLID WASTE

Sl No.	Location of Solid waste disposal	Disposal of solid waste in Land	Qty.in M.T.	Disposal of solid waste into water body		
				River	Tank	Odai
1	Watrap	Compost yard	5	—	—	—
2	Rajapalayam	Compost yard	45.75	—	—	—
3	Srivillipthur	Compost yard	24	—	—	—
4	Vembakottai	Compost yard		—	—	—
5	Alangulam	-		River	—	—
6	Keelanmarainadu			River	—	—

ANNEXURE -I V				
LIST OF INDUSTRIES IN SEVALAPERIYAR SUB BASIN				
Sl. No	**Name of Industry & Address**	**Taluk**	**Category**	**Type**
INDUSTRIES IN VIRUDHUNAGAR DISTRICT				
SIVAKASI TALUK				
1	Tamilnadu Cement Corporation Ltd.,Alangulam Sivakasi	Sivakasi	Cement	R/L
2	Tamilnadu Cement Corporation Ltd., Alangulam Lime Stone Mines, Alangulam	Sivakasi	Mines/Lime Stone	R/L
3	Meenakshi Match CO,733/12, Valayapatti, Alangulam	Sivakasi	Match	R/S
RAJAPALAYAM TALUK				
1	Meena Chemical, 46/D North Car Street, Chathrapatti	Rajapalayam	Bleech Liquor	R/S
2	Srinivasa Product, Muthuramalingapuram, Chathrapatti	Rajapalayam	Bleech Liquor	R/S
3	Om Shri Varu Chemicals (P) Ltd.,144, Post office Road, Rajapalayam	Rajapalayam	Chemical	R/S
4	Gomathiram Chemical, Iyyan Kollamkondan, Rajapalayam	Rajapalayam	Chemical	R/S
5	JP Labaratories S.Ramalingapuram, Rajapalayam	Rajapalayam	Chemical	R/S
6	RAMCO Industries 119/D,PSK Nagar, Rajapalayam	Rajapalayam	Chemical	R/S
7	Standard Match Industries Ltd.,K-Unit 167-C, Sammandapuram	Rajapalayam	Match	R/S
8	The Sivakasi Match Industries	Rajapalayam	Match	R/S
9	Alphari Plaster, Malayadipatti	Rajapalayam	Match	R/S
10	Asok Industries, Malayadipatti	Rajapalayam	POP	R/S
11	Sri Venkateshwara Products, North Venganallur	Rajapalayam	POP	R/S
12	Sri Balaji Plasters, S.Ramalingapuram	Rajapalayam	POP	R/S
13	Sri Bharath Ramachand Products,533/3, North Venganallur	Rajapalayam	POP	R/S
14	Ashirvatham Industries, M-19, Thiruvalluvar Road	Rajapalayam	POP	R/S
15	Gowri House Metal Works,Malayadipatti	Rajapalayam	Electroplating	R/S
16	Sri Jayajothi and Co Ltd,'B' Unit, Keelarajakularaman,	Rajapalayam	Spinning	O/L

17	Rajapalyam Mills Ltd.,Rajapalayam	Rajapalayam	Spinning	O/L
18	Sundardasan Spinning Mills, Rajapalayam	Rajapalayam	Spinning	O/L
19	SriRAMCO Spinners, Rajapalayam	Rajapalayam	Spinning	O/L
20	Jai Ranga Mills (P) Ltd.,Ayyankollankondan	Rajapalayam	Spinning	O/L
21	Arumuga Fabrics Pvt.Ltd.,Chathrapatti	Rajapalayam	Sizing	O/L
22	Ramraj Surgical Cotton Mills,Samsigapuram Road, Rajapalayam	Rajapalayam	Bleaching	O/M
23	Limenaph Chemicals, Sankarankoil Road, Rajapalayam	Rajapalayam	Lime Kiln	O/M
24	Dig Vijay Poly Tex, 61,Kumarasamy Nagar, Rajapalayam	Rajapalayam	Poly Sacks	O/M
25	New Tex Paper and Board Mills (p) Ltd., Sammandapuram village, Rajapalayam	Rajapalayam	Pulp & Paper	O/M
26	Alagappa Cotton Mills,Rajapalayam	Rajapalayam	Spinning	O/M
27	Amaravathi Spinning Mills, 130, Middla Street, Samsigapuram	Rajapalayam	Spinning	O/M
28	Arumugam Spinning Mills (P) Ltd., Chathrapatti	Rajapalayam	Spinning	O/M
29	Jai Bharath Textiles (P) Ltd	Rajapalayam	Spinning	O/M
30	R.S. Spinning Mills Rajapalayam (P) Ltd, Rajapalayam	Rajapalayam	Spinning	O/M
31	Sri Bharath Cotton Mills, 117, T.B. Road, Rajapalayam	Rajapalayam	Spinning	O/M
32	SriRajalakshmi Spinners, 1110-A, Cotton Market, Rajapalyam	Rajapalayam	Spinning	O/M
33	SriRajasekar Spinning Mills, 79-P/15, Rajapalayam Road, Rajapalayam	Rajapalayam	Spinning	O/M
34	SriPadmavathi Cotton Mills, Illyangudi, Rajapalayam	Rajapalayam	Spinning	O/M
35	Shri T.P. Textiles Pvt.Ltd,Unit-II, Rajapalayam	Rajapalayam	Spinning	O/M
36	Orthofix India Ltd., Samsugapuram, Rajapalayam	Rajapalayam	Bandage	O/S
37	Arumuga Textiles Exports, Tenkasi Road, Rajapalayam	Rajapalayam	Bleaching	O/S
38	Sri Meenal Surgical Cotton, Rajapalayam	Rajapalayam	Bleaching	O/S
39	Sri Ram Products, 216, Sri Ram Nagar, Rajapalayam	Rajapalayam	Bleaching	O/S
40	The Premier Products, 79-D/15, Rajapalayam Road, Chathrapatti, Rajapalayam	Rajapalayam	Bleaching	O/S
41	Sri Durga Clays 497/2A, Thombakulam Village, Keelarajakularaman, Rajapalayam	Rajapalayam	Clay	O/S

42	Aravind Herbal Lab Pvt.Ltd., 140, Mudangiar Road, Rajapalayam	Rajapalayam	Herbal	O/S
43	SriBalaram Industries	Rajapalayam	Insulation Tap	O/S
44	Devi Chemicals, Nallamangalam, RajapalayamTown	Rajapalayam	Lime Kiln	O/S
45	Sri Kasiram Chemicals Industries, Rajapalayam	Rajapalayam	Lime Kiln	O/S
46	Sun Indusrties, North Venganallur, Rajapalayam	Rajapalayam	Lime Kiln	O/S
47	Janatha Industries, Sankarankoil Road, Rajapalayam	Rajapalayam	Lime Powder	O/S
48	Siva Oil Mills, 62,Cotton Market, Rajapalayam	Rajapalayam	Oil Mill	O/S
49	Fulfill Pack Pvt.Ltd,295,Pudupalayam, Rajapalayam	Rajapalayam	Poly Sacks	O/S
50	Anandaraman Handmade Paper mills,keelarajakularaman village	Rajapalayam	Pulp & Paper	O/S
51	Maharaja Paper Board Pvt.Ltd.,5,PSK Road, Rajapalayam	Rajapalayam	Pulp & Paper	O/S
52	Radhakrishna Rice Mills, Keelarajakularaman Village	Rajapalayam	Rice Mill	O/S
53	Sri Jeyaram Motor Service, Tenkasi Road, Rajapalayam	Rajapalayam	Ser.Station	O/S
54	Premier Enterprises, Sankarapandiapuram, Chathrapatti	Rajapalayam	Sizing	O/S
55	Premier Sizing Industries, Melarajakularaman village, Chathrapatti	Rajapalayam	Sizing	O/S
56	Premier Textiles Exporters, Sankarapandiapuram, Rajapalayam	Rajapalayam	Sizing	O/S
57	Rajasekar Textiles, Ayyanarpuram, Rajapalayam	Rajapalayam	Sizing	O/S
58	Supreme Bandage, Ayyanarpuram, Chathrapatti, Rajapalayam	Rajapalayam	Sizing	O/S
59	Ajantha Spinners, Thombakulam Post, Rajapalayam	Rajapalayam	Spinning	O/S
60	Anandaraman Textiles Mills (P) Ltd, 1205/2A, Chathrapatti, Rajapalayam	Rajapalayam	Spinning	O/S
61	Anushya Cotton Mills, S.Ramalingapuram, Rajapalayam	Rajapalayam	Spinning	O/S
62	Jeyam Spinning Mills, Cotton Market, Rajapalayam	Rajapalayam	Spinning	O/S
63	Prasanth Spinners Pvt.Ltd.,1026, Cotton Market, Rajapalayam	Rajapalayam	Spinning	O/S
64	Radha Spinning Mills, 1063 Cotton Market, Rajapalayam	Rajapalayam	Spinning	O/S
65	Ragul Spinning Mills, 189, Dharmapuram Street,Rajapalayam	Rajapalayam	Spinning	O/S
66	Senthur Textiles Pvt.Ltd,1066, Cotton Market, Rajapalayam	Rajapalayam	Spinning	O/S

67	Sri Bharathi Cotton Mills Ltd.,B'Unit, North venganallur, Rajapalayam	Rajapalayam	Spinning	O/S
68	Sri Saravana Blue Metals, Ayan kollankondan, Rajapalayam	Rajapalayam	Stone Crusher	O/S
69	The Charkonite Products, R.S.No.778/1 Ayankollankondan	Rajapalayam	Stone Crusher	O/S
70	Shenbagavalli Textiles Pvt.Ltd, Chathrapatti	Rajapalayam	Weaving	O/S
71	Jana Industries, 141/F1,T.P.Mills Road, Rajapalayam	Rajapalayam	Willows	O/S
72	Dhanalakshmi Industries, 292, Main Bazaar, Rajapalayam	Rajapalayam	Willows	O/S
73	Nap Willows Factory, 63,Cotton Market, Rajapalayam	Rajapalayam	Willows	O/S
74	Rajapalayam willow Factory, Cotton Market,	Rajapalayam	Willows	O/S
75	Rajashree Industries,1266/2,Pillairkulam,	Rajapalayam	Willows	O/S
76	Sri Vijayalakshmi Willow Industry, Rajapalayam	Rajapalayam	Willows	O/S
77	Ramya Clay, Rajapalayam	Rajapalayam	Clay	O/S
78	Vijay Pipe Industies, Rajapalayam	Rajapalayam	Electrical Class	O/S
79	Archana Chemicals & Industries	Rajapalayam	Lime Stone	O/S
80	RDSS, Rajapalayam	Rajapalayam	Neem Seed Oil	O/S
81	Sri Balaji Blue Metals,	Rajapalayam	Stone Crusher	O/S
82	Sri Vidthya Textiles Mills, Rajapalayam	Rajapalayam	Willows	O/S
83	S.S.T.Retreating Company, Rajapalayam	Rajapalayam	Tyre Retreating	O/S
84	Ramraj Surgical Cotton Mills,	Rajapalayam	Bleeching	O/M
85	Polyspin (P) Ltd.,	Rajapalayam	Poly Sacks	O/M
86	Annai Aluminium Industries	Rajapalayam	Aluminium	R/S
87	Meena Chemicals	Rajapalayam	Bleech Liquor	R/S
88	Limenaph Chemicals,	Rajapalayam	Chemical	R/S
89	Ramco Industries	Rajapalayam	Chemical	R/S

ANNEXURE- V I

GROUND WATER TEST RESULTS IN SEVALAPERIYAR SUB BASIN

Station code	General			Nutrients	Alkalinity		Hardness		Major Ions								Other In-Organics			Biol	
	PH	EC, Umho/cm	TDS ,MG/L	No3+No2 as N,mg/L	Phen, mg CaCo3	Total mg CaCo3	Total,mg CaCo3 mg/L	Ca++mg CaCo3	Ca++mg/L	Mg++ mg/L	Na++mg/L	K++ mg/L	HCO3mg/L	CO3 MG/l	SO4 mg/L	Cl mg/L	Sl.mg/L	F.mg/L	B.mg/L	SAR	
3475	8.1	890	4300	10	0	280	260	20	8.0	58	90.0	10	342	0	19	89		0.21		3.4	
3476	8	2860	1719	30	0	355	310	150	60	39	483	39	483	0	288	461		2.00		16.9	
3493	8	1060	580	2	0	470	340	80	32	63	104	2	573	0	48	35		1.5		3.5	
3486	8.2	1020	556	4	0	160	350	150	60	49	81	3	195	0	29	220		0.46		2.6	
3529	8.0	2080	1134	4	0	250	730	250	100	116.0	145	2	503	0	96	503		0.44		3.3	
3499	7.4	2120	1188	22	0	350	710	330	132.0	92	136	37	427	0	91	390		0.51		3.1	
3540	7	4600	2982	55	0	350	1260	560	224	174	541	8	624	0	960	624		0.55		9.4	
3501	8.2	1220	783	7	0	455	510	180	72	80	99	2	366	0	216	7		0.38		2.7	
3519	7.7	1030	607	16	0	260	330	205	82	30	76	13	317	0	72	103		0.30		2.6	

ANNEXURE- VI

GROUND WATER SAMPLING STATIONS LOCATIONS

Sl.No	Station code No.	Location
1	3475	vembakottai
2	3476	Alangulam
3	3493	Ayyanarkoil
4	3486	Srivilliputtur
5	3529	Rajapalayam
6	3499	R.Reddiapatti
7	3540	Madathupatti
8	3501	Vadakku Venganallur
9	3519	Valayapatti

Name of Work: Environmental Monitoring on water and soil quality and creating awareness & updating of "Environmental and Social Assessment report" for SEVALAPERIYAR sub-basin**.**

Estimate Cost Rs 2.50Lakhs

INTRODUCTION

Under TNWRCP, with World Bank assistance, special emphasis was given for the first time in WRO, to assess the environmental status and degradation caused for all River basins in Tamilnadu. The Environmental cell of WRO assessed Soil and Water samples in this River basin. The assessment includes Environmental impact on the quality of surface, ground water and soil by collecting water & soil samples and testing them. Moreover, "preparation of Micro Level Environmental Status Reports" for the entire River Basins also carried by these Environmental Cell Divisions. All these works were done with the World Bank Assistance upto March 2004.

Also few Awareness programs & Workshops were conducted to create awareness on the Environmental issues & remedies among the public, farmers, Govt. officials and NGOs. Seminars were conducted to find out new techniques and methods developed recently to solve Environmental problems.

Now under IAMWARM project, focus is at each sub basin level to identify and prioritize the requirements for improvements to storage structures, rehabilitation, new schemes for water harvest, and diversification of crops. Any new schemes or rehabilitation of existing one, consideration of the environment issues pertaining to that area and remedial action to overcome the problems is must.

DESCRIPTION OF SUB BASIN

Sevalaperiyar originates from at 1500 m above MSL in the eastern slope of Western Ghats in Rajapalayam reserve forest areas of Rajapalayam taluk of virudhunagar district. This sub basin is bounded by **kayalkudiyar** in the north and the minor sub basin of Manamakiyar and Piravadiyar (Solapuram) which is a tributary of Deviar in the south. Sevalaperiyar is also called **Mudangiar.**

Sevalaperiyar joins vaippar on its left bank just above vembakottai reservoir and about 1 KM south west of Kandiyapuram village in sivakasi taluk. Rajapalayam

town is situated in this sub basin. The total drainage area of basin is 225 Sq. Km of which 49.5 Sq.Km, lies in hilly catchment.

ENVIRONMENTAL PROBLEMS IN THIS SUB BASIN

INDUSTRIAL POLLUTION

There is one major cement industry situated in this sub basin. This industry having own treatment plant. The effluent discharge is minimum and meager**.** The details of Industries and their effluent discharge are given in Annexure-IV.

CATCHMENT DEGRADATION

Forest cover in the basin is only 8.8 % of the basin area which is quite inadequate. Most of forest is deciduous. The areas of keelarajakularaman, ganapathysundarajapuram, keelanmarainadu, kundayiruppu are the Villages affected by soil erosion in sevalaperiyar.

SOLID WASTE DISPOSAL

There is no organized scientific method of disposal in all the Municipalities, town and Village Panchayats. The garbage is dumped in the basin area and hence the harmful chemical substances of the landfill seep through and reach the ground water reservoirs and contaminate these sources

Scheme for Solid waste Management plan is under implementation by Rural Development Department. Under this scheme, collection tank for disposable and undisputable garbage have been constructed. But in most of the panchayats, recycling the waste and converting the solid waste into manure and production of energy is yet to come up. Hence motivating the local bodies for proper implementation of solid waste management project is must.

SEWAGE DISPOSAL LET INTO WATER BODIES

Treatment of sewage and arrangements for safe disposal arrangements has not been provided in most of the Villages.

Under ground drainage arrangements have not been provided even in municipalities and town panchayats. This sewage is washed away and got pounded in the backwaters and unhealthy conditions exit.

The locations of disposal of sewage directly let into water bodies in this sub basin are furnished in Annexure II.

So, creating awareness among the presidents of the local bodies is must and to motivate them to adopt Solid waste management and Sewage management, wherever required, workshop including field visits, exclusively for them is to be conducted under the IAMWARM project**.**

WATER WEEDS

Prosopis Juliflora has invaded the cultivable lands in lower reaches and water bodies' ie.tanks, channels and rivers. Hence, these plants need to be eliminated totally for the conserving precious water resources. But on the contrary, in some villages local people desire to grow this plant in the water spread area of the tanks. Once in 4 or 5 years they get cutting order from the revenue authorities, sale the Prosopis Juliflora or coal produced from it and keep the money for the common expenses like court case for the litigation with the nearby villages, temple repair and Local festivals etc. This is on account of lack of guidance and ignorance of its ill effects. Hence, this problem has to be addressed in all forms, wherever possible Bio gas plant has to be promoted.

GROUND WATER QUALITY

From the chemical composition data for the observation wells, the ground water in the lower reaches of sedimentary formation is of moderate quality.

ACTIVITIES PROPOSED

To monitor the quality of water and soil and create database regarding the Environmental Status for each sub basin, this proposal has now been included with the following activities at sub basin level. The provisions and necessity are explained below.

I. WATER QUALITY AND PROJECT WORKS MONITORING

Water samples were collected and testing of water samples is essential as good and long - range data will enable to understand the problems more precisely. This has now proposed to continue for a period of three years at the following places in the Sevalaperiyar sub basin to Asses the Environmental impact on the quality of surface water in the above sub-basin.

1. S 1 - At Ayyanarkoil,
2. S 2- Vagaikulam Tank at chathirapatti
3. S 3- Causeway Road bridge at Alangulam-Keelanmarainadu

In addition to the above identified locations, water samples will also be collected once in 6 months from tanks and near by wells to estimate the level of pollution in five locations , where sewage is directly let into tanks and channels . These samples test results will be useful in assessing the surface and ground water quality of that area.

II. **ENVIRONMENTAL AND SOCIAL KNOWLEDGE BASE:**

Micro Level Environmental Status Report has been prepared for the entire Vaippar River Basin. To prepare an Environmental Action Plan of a River basin data regarding environmental issues in sub basin wise is necessary. Hence, provision for collecting the environmental and social issues in village wise and analysing them and preparing development report has also made in this proposal.

III. TRANSFER OF TECHNICAL KNOW HOW FOR SOLID WASTE MANAGEMENT SYSTEM (INCLUDING SOURCE)

SEGREGATION, RECYCLES OF DRY WASTE AND LINKAGE WITH USER AGENCIES:

Now, a new scheme for Solid Waste Management plan is under implementation in all Municipalities and major panchayats. Under this scheme, collection tank for disposable and non-disposable garbage have been constructed in most of the Panchayats. But, recycling the waste and converting the solid waste into manure and production of energy from them are yet to come up.

Hence Demonstration and action programs are planned with user agencies and necessary field visits exclusively for officials of local body and Panchayat presidents & members are programmed to transfer of Technical Know How for Solid Waste Management.

III. CONDUCTING AWARENESS PROGRAMS

Awareness Programs are necessary to create awareness among the public about Environmental aspects and the action to be taken by them to remove or reduce the impacts due to the Environmental problems.

Hence, to create and motivate the people, 1 no of awareness programmes are to be conducted in the villages where sewage is directly let into water bodies. It is proposed to conduct 1 Awareness Meeting in School/ Institutions during the study period of three years covering the following subjects in addition to Placing Stickers, Tin sheets, Pham lets and Placing banner containing messages about, the following Environmental problems.

- Sanitation.
- Solid waste treatment.
- Sewage treatment and converting the same into gas
- Organic farming.
- Conversion of aquatic weeds into manure etc

As per the instructions of the environmental specialist Mr. Anupham Joshi, the following alterations are made in the proposal,

In addition to the above, pesticides test for water quality is added and test will be carried out for one location for once in a year.

Moreover, it is proposed to conduct field visits for environmental monitoring of project activities with respect to environmental safe guards.

It is proposed to study the impact due to project investments and hence, provisions for data collection and development reports have now been added.

Provision for preparing environmental atlas is now inserted in the context of marking all environmental and social issues with consultations of stake holders, line departments and NGOS.

MODE OF EXECUTION:

All the works proposed are tobe carried out by outsourcing through an Educational Institute.

TOTAL COST.

The total cost works out to Rs: 2.50 Lakhs (Rupees Two Lakhs Fifty Thousand only)

Name of Work:Environmental Monitoring on Water and Soil quality and Creating Awareness , updating of " Environmental & Social assessment report" for SEVALAPERITAR SUB BASIN

DETAILED ESTIMATE

Sl no	Description of work	No	Measurement			Contents
			L	B	D	
I.Water & Soil Quality Monitoring, Project Works Monitoring						
a)	Water Samples from rivers in 3 locations collected once in six months for a period of three years 3x2x3 =18 Nos		18 Nos.			18 Nos
b)	Water Samples from rivers in 3 locations collected once in the project period of three years 3x1x1 =3 Nos		3 Nos			3 Nos
c)	Hiring Jeep driver	1No	1 Months per year X 3 year			3 Man months
d)	Conveyance, Purchases of Cans, Bottles, Chemicals hire Purchase of Still camera etc and Documentation of Water quality data and engaging labour		3 years			3 years
e)	Provisions for field visits for environmental Monitoring for project activities with nrspect to environmental safe guards.		3 years			3 years
II Environmetal, Social Knowledge base						
a)	Village Level Data collection on Environmental And social state regarding other impacts		10 Man months			10 Man months
b)	Expert Analysis and Development Reporting on other impacts		LS			LS
c)	Impact studies due to project investments		5 Man months			5 Man Months
d)	Expert Analysis and Development Reporting due to project investments		LS			LS
III. Environmental Social Awareness Creation						
a)	Propagation through Stickers, Tin Sheets, pamphlets,Banners		3 years			3 years
b)	Awareness Programs for Public		1 Nos.			1 Nos.
c)	Awareness Meeting in school/Institutions		1 No			1 No

d)	Preparing and publishing Environmental Atlas for the Sub basin for the use of line departments/Institutions for better management of sub basin.	LS	LS
c)	Documentation of the entire activities, and HirePurchase of LCD , Up gradation of Computer and Accessories, Video films and Web site development and engaging computer operator	LS	LS
IV.	**Variation in Rates and unforeseen items**	**LS**	**LS**

Name Of Work: Environmental Monitoring on Water and Soil quality and Creating awareness, updating of " Environmental and Social Assessment report" for SEVALAPERIYAR SUB-BASIN.

ABSTRACT ESTIMATE

Sl.No.	Qty.	Description of Work	Rate	Per	Amount	
I.Water & Soil Quality Monitoring, Project works monitoring						
a)	18 Nos	Water Sample Testing	1400	each	25,200	
b)	3 Nos	Water Sample Testing (Pesticides)	12000	each	36,000	
c)	3 Man months	Hiring Jeep Driver	3500	1 Man month	10,500	
d)	3 years	Conveyance, Purchases like Cans,Bottles,Chemicals hire Purchase of camera etc and Documentation of Water quality data engaging labour	5000	per year	15,000	
e)	3 years	Provisions for field visits for environmental Monitoring for project activities with nrspect to environmental safe guards.	6000	year	18,000	
II.Environmental, Social Knowledge Base, Analysis and Development base						
a)	10 Man months	Village Level Data collection on Environmental And social state regarding other impacts	5000	month	50,000	
b)	L.S	Expert Analysis and Development Reporting on other impacts	L.S		10,000	
c)	5 man months	Impact studies due to project investments	5000	month	25,000	

d)	L.S	Expert Analysis and Development Reporting due to project investments	L.S		15,000	
IV. Environmental Social Awareness Creation						
a)	3 years	Propagation through stickers, Tin Sheets, pamphlets, banners.	1600	per year	4800	
b)	1 No	Awareness Program for Public	20000	each	20000	
c)	L.S	Preparing and publishing Environmental Atlas for the Sub basin for the use of line departments/Institutions for better management of sub basin.	L.S		50000	
c)	LS	Documentation of the entire activities, hire purchase of LCD and Up gradation of Computer and Accessories, Video films and Web site development and engaging computer operator	L.S		20,000	
V.Variation in rates and unforeseen items.					500	
Total					**250,000**	
Rupees TWO LAKHS FIFTY THOUSAND only						

DESIGN AND DRAWING

Design of surplus weir of

Appaneri tank in Rajapalayam taluk

(a) Hydraulic Design

1) Length of Weir

Maximum Discharge fromCatchment =2.553 umecs (As per History register)

Length of existing weir = 3.80 m

Head of flow H = 0.30 m

Type HC weir

Discharge per metre width for HC Weir q = $CLH^{3/2}$ C = constant = 2.43

=2.43 L $H^{3/2}$

= 2.43 x1.00 x0.30 3/2

=0.3943 Cumecs

Discharge through weir =3.80 X 0.3943

=3.80 X 0.3943

=1.498

Which is less than M.F.D of2.553 Cumec

Hence the weir length is insufficient

There fore it is proposed to extend the weir at right flank

Proposal is made to discharge the balance MFD = 2.553-1.498=1.054 Cumecs

Proposed additional length =1.0540/0.394

2.67 say 3.00 m

Total **length proposed=3.80+3.00=6.80 m**

Dish charge through proposed weir =6.80 mx 0.394

= 2.68 Cumecs>2.55 Cumecs (MFD)

Hence safe

As per History Register

FTL of tank = 144.775

MWL of tank = 145.075

TBL of Tank = 146.325

Body wall heigh = Crest level - Low watr level of tank

=144.775 -143.875

= 0.90 m

Scour Depth:-

NormalScour, R = $1.35\ (q^2/f)^{1/3}$

= $1.35 \times (0.39^2/1)^{1/3}$

= 0.73 M

Front Scour level = FMFL-1.5 R

= 145.075-1.50 x0.73

= 143.98

ie. U/s Cut off depth = 1.095 m

Provide minimum = 1.50 m

Rear Scour level = RMFL- 2 R

= 145.075-2.00 x0.73

= 143.51

ie. D/s Cut off depth = 1.46 m

Provide minimum = 1.50 m

Structural Design

Height of Body wall as existing =0.90m

Top width of Body wall = $(H^{1/2} + d^{1/2})\ /1.81$

= $(0.90^{1/2} + 0.30^{1/2})/1.81$

= 0.826 m

Adobt 0.80 m

Base width of body wall = $H + D/p^{1/2}$ H- Height of bodywall

= (0.90 +0.30) /2.40 D- Head over crest

= 0.77 m p-Specific gravity of concrete

Since height of bodywall is 0.90 m the base width may be Adobt 1.20 m

Total Length of U/S apron W1 = 1.50 Hb

=1.50 x 0.90

=1.35 m

Provide 3.00 m length of U/S Apron

Total Length of D/S Impervious Apron W2 = 4C Hb/(10 x 3.28) C=6 for Clay

= 4 x 6 x 0.90/33

= 3.96

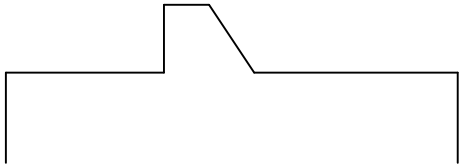
Provide 4.00 m length of D/S Apron

Check for Exit gradient

$\alpha = b/d$	Where b= length of solid apron
	d= depth of cut off wall below apron level
	=(3.00+1.20+4.00)/0.90
	=9.11
	$\lambda = (1+(1+ \alpha^2)^{1/2})/2 \quad = (1+(1+ 9.11^2)^{1/2})/2$
	=5.08
Exit gradient GE	= Hb/d x /(3.14 $\lambda^{½}$)
	=0.90/0.90 / (3.14 x5.08 $^{1/2}$)
	=0.14<0.25

For Block cotton soil GE ¼ to 1/5
Hence safe

Check for creep length



Total crrep length required	= CHB
	= 6 x 0.90 =5.40 m
Total creep length provided	= 1.50 +3.00 +1.20+4.00 +1.50
	= 11.20 m
	Hence safe

Check for Uplift

Creep length up to Toe	= 1.50 +3.00+1.20
	= 5.70 m
Residual head	= Hb/Creep length Xcreep length up to toe
	0.90/11.20 X5.70
	= 0.46

Considering safty factor provide 60 cm thick of base Concrete to with stand any variation
.Provide 15 cm tk wearing coat in M20 with nominal Reinforcement

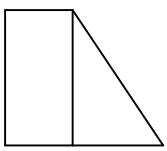
Check for Stability

Condition : I

Front water level up to Crest and no rear water

Hb = Height of Body wall = 0.90 mλ

Taking moment about o



Sl No	Area of section M2	Specific Gravity t/m	Weight t	Lever Arm m	Moment t-m
1	0.80 x0.90=0.72	2.40	1.73	0.80/2=0.40	0.69
2	1/2x0.90x0.40=0.18	2.40	0.43	0.80+(0.40)/3=0.93	0.40
			2.16		1.09

Moment due to water pressur = $H^3/6$
$0.90^3/6 = 0.12$ t-m

Total Moment 1.09 +0.12 = 1.21 t-m

Lever Arm resultant = 1.21/2.16 = 0.56

Resultant falls within middle third

Condition : II **when the rear water level up to Crest when weir is discharging full**

Total moment

Sl No	Area of section M2	Specific Gravity (under water t/m	Weight t	Lever Arm m	Moment t-m
1	0.80 x0.90=0.72	1.40	1.01	0.80/2=0.40	0.41
2	1/2x0.90x0.40=0.18	1.40	0.25	0.80+(0.40)/3=0.93	0.23
			1.26		0.64

Horizontal moment due to water pressure = ½ H^2x h

=1/2 x0.90 x0.90 x0.30 =0.12 t-m

Total moment = 0.64 +0.12 =0.76 t-m

Lever Arm resultant = 0.76/1.26 = 0.60

Resultant falls within middle third

Condition : III **when the tail water is critical condition**

Since this is tank weir this condition will not occure.So this check is not necessory

Design of Abutment:

Top level of abutment = TBL ie 146.325

Height of abutment = 146.325-143.875= 2.45 m

Base width of abutment as per Coulums theeory = 0.68 x 2 .45
=1.66 m
Adobt 1.70 m
Adobt top width 0.45 m

Design of U/S Return:

Top level of Return = MWL + 0.30 m

= 145.075 + 0.30

= 145.375

Height of Return = 145.375-143.875

= 1.50 m

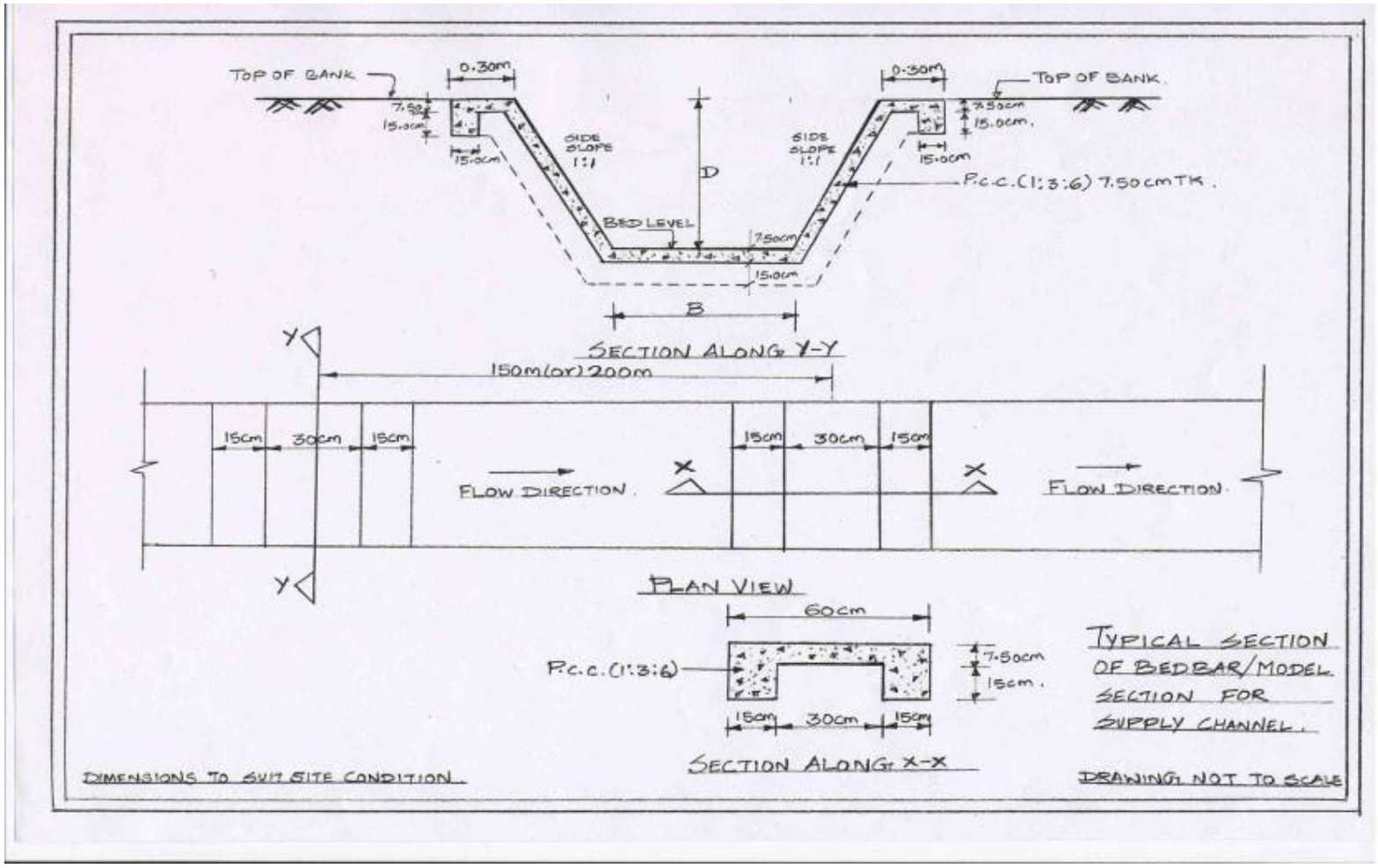
Base width of Return as per Coulums theeory = 0.60 x 1.50

=0.90 m

Adobt top width 0.45 m

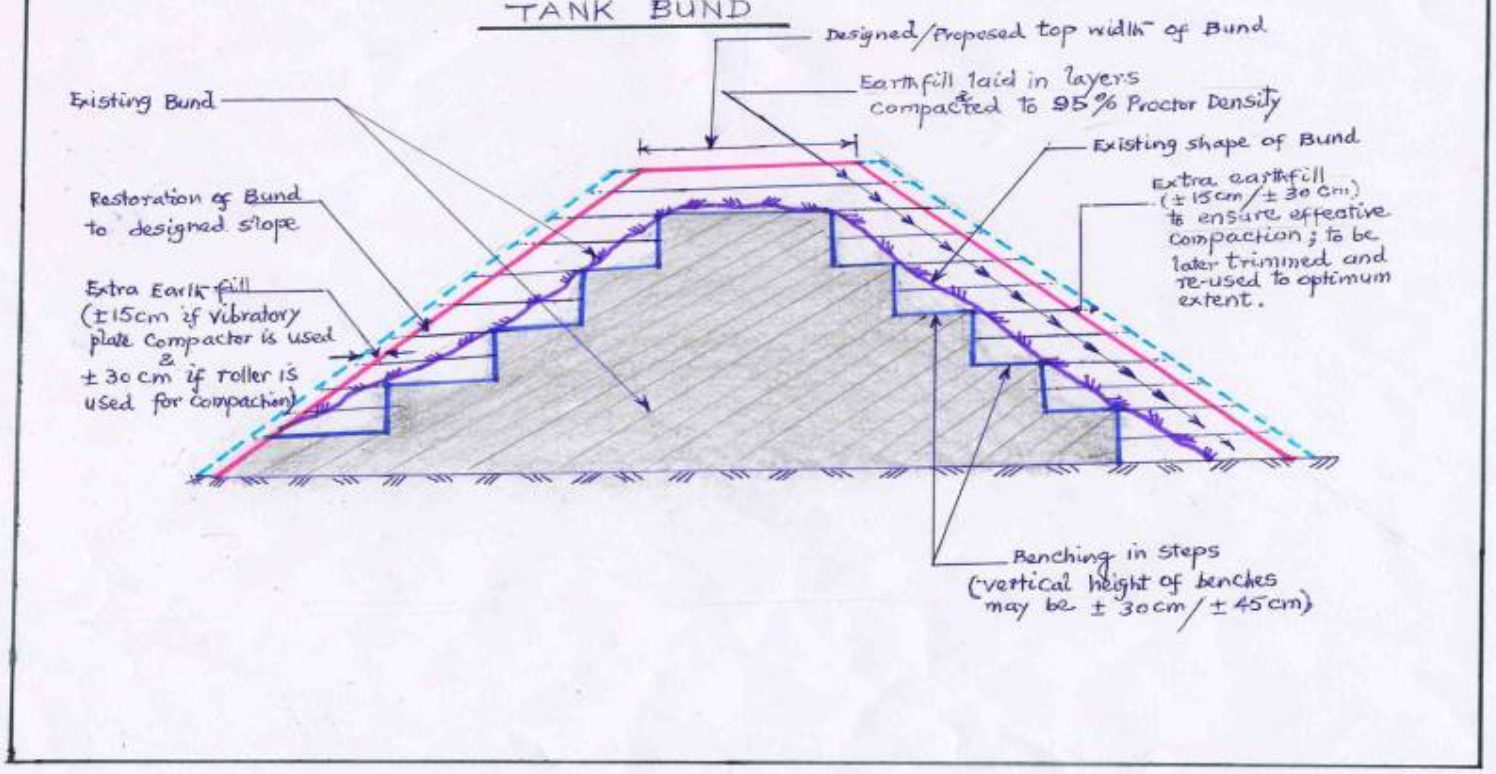
Design of D/S Return:

Top level of Return	= FTL + 0.30 m
	= 144.775 + 0.30
	= 145.075
Height of Return	= 145.075-143.875
	= 1.20 m
Base width of Return as per Coulums theeory	= 0.50 x 1.20
	=0.60 m
	Adobt top width 0.45 m

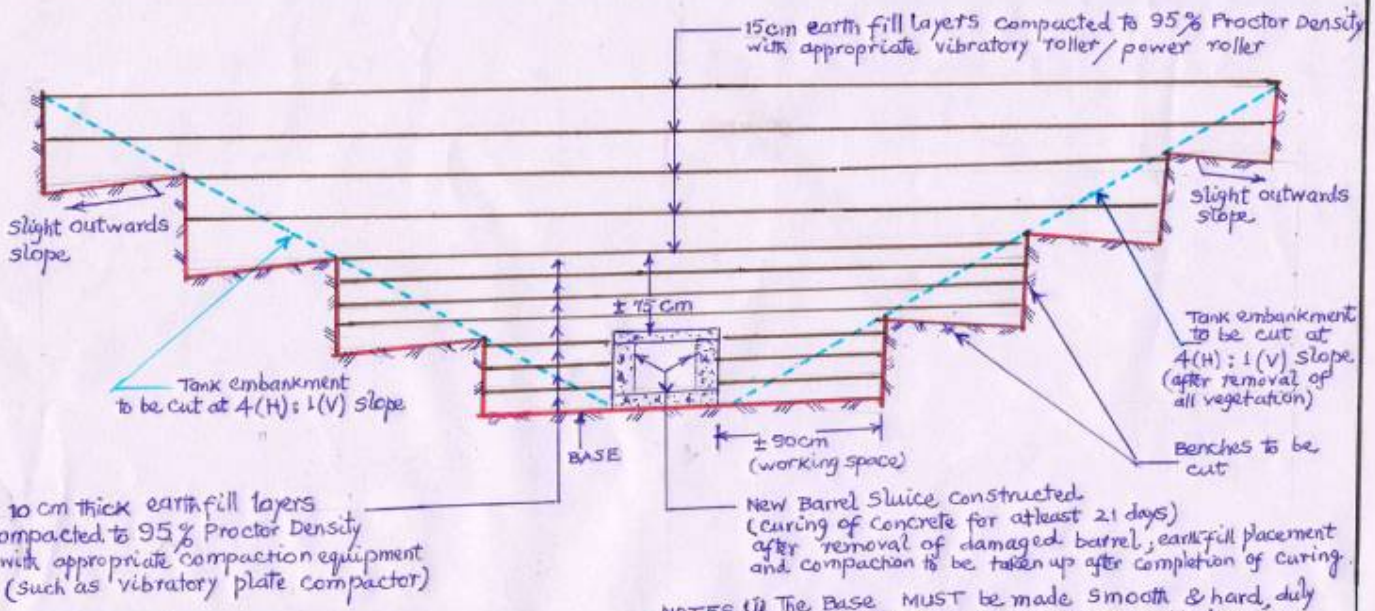

TOP OF BANK
0.30m
7.50cm
15.0cm
15.0cm
SIDE SLOPE 1:1
D
BED LEVEL
7.50cm
15.0cm
B
SIDE SLOPE 1:1
0.30m
TOP OF BANK
7.50cm
15.0cm
15.0cm
P.c.c.(1:3:6) 7.50cm TK.
SECTION ALONG Y-Y
150m(or) 200m
Y
Y
15cm
30cm
15cm
15cm
30cm
15cm
FLOW DIRECTION.
X
X
FLOW DIRECTION.
PLAN VIEW
60cm
P.c.c.(1:3:6)
7.50cm
15cm.
15cm
30cm
15cm
SECTION ALONG X-X
TYPICAL SECTION OF BEDBAR/MODEL SECTION FOR SUPPLY CHANNEL.
DIMENSIONS TO SUIT SITE CONDITION.
DRAWING NOT TO SCALE

TYPICAL SKETCH

RAISING & STRENGTHENING OF TANK BUND



TYPICAL SKETCH



RECONSTRUCTION OF SLUICES

NOTES

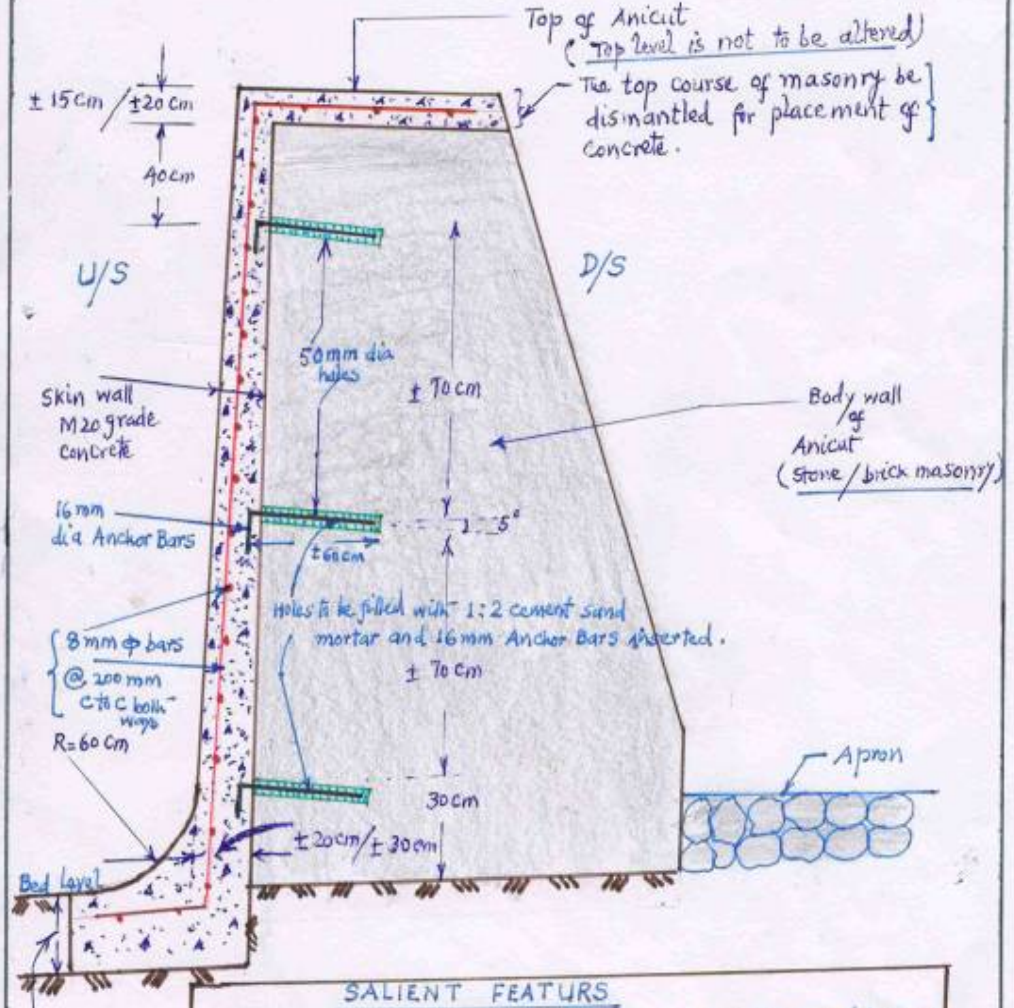
(i) The Base MUST be made smooth & hard, duly compacted with compactors / pneumatic tampers.

(ii) Earth fill compaction adjoining the Barrel and Benches should be compacted by mechanical / pneumatic tampers to ensure effective compaction.

(iii) Earth obtained from "benching" be reused (after removal of clods (bigger than 7.5 cm), vegetation etc) in earth fill layers.

TYPICAL SKETCH

Rehabilitation of Anicut through SKIN WALL Concrete



SALIENT FEATURS

- Joints on u/s surface to be raked to 25mm depth & Surface roughened by Chipping.
- Drill holes of 50mm to be filled with 1:2 mortar and 16 mm Anchor Bars to be pushed in.
- The roughened surface to be kept wet for 72 hours and cement slurry (1:2·5) of 0·70 water-cement ratio be applied over the surface prior to placement of skin concrete.
- Concrete of M20 Grade is to be used with 20 mm maximum aggregate size.
- Curing is to be done for 21 days.
- Thickness of skin Concrete: 15cm at top & 20cm at bottom for Anicuts of height upto ± 1·50 m and 20 cm at top & 30 cm at bottom for Anicuts of height more than ± 1·5m