TN – IAMWARM PROJECT

VALLAMPATTI SUB BASIN

DETAILED PROJECT REPORT

WATER RESOURCES DEPARTMENT

1.1 . INTRODUCTION

INTRODUCTION

1.1 GENERAL:

Agriculture is the dominant sector in the Indian economy. Tamil Nadu, which is supposed to be the next state to Rajasthan in having Average Annual Rainfall depends largely on the surface water irrigation as well as ground water irrigation. The State has used the surface and ground water potentials 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 the water - use efficiency, it is necessary to improve & upgrade the existing conveyance system and also to introduce modern irrigation methods.

With the above objectives a comprehensive programme has been proposed with Multi disciplinary approach.

1.2 DESCRIPTION OF THE VAIPPAR BASIN:

The Vaippar River Basin is one of the major river basins in Tamil Nadu having a drainage area of 5423 Sqkm. It is bounded by Vaigai basin and Western Ghats on the western side, Tamarabarani and Kallar river basin on southern side and Gundar river basin on northern side. The basin area is covered in 4 districts namely Virudhunagar 68%, Thoothukudi 20%, Madurai 7% and Thirunelveli 5%. The length of the Vaippar River is 112 kms and finally it debouches in to Gulf of Mannar near Vembar Village in Thoothkudi District.

This basin has been divided into 13 sub-basins namely as follows;

1. Nichabhanadhi
2. Kalingalar
3. Deviar
4. Nagariyar
5. Sevalperiyar
6. Kayalkudiyar
7. Vallampatti odai
8. Sindapalli Uppodai
9. Arjunanadhi

10. Gowshiganadhi
11. Uppathurar
12. Senkottaiyar
13. Vaippar

1.3 DESCRIPTION OF VALLAMPATTI ODAI SUB BASIN:

Vallampatti odai is one of the tributary of the river Vaippar. It receives drainage from its own catchment. It originates from the plain terrain near Kuruvikulam village of Sankarankovili taluk.. The catchment area of the sub basin is 163 sq km.

There are 5 non system tanks under this sub basin and the total command area of this basin is 471.29.0 Ha. It runs for a distance of 17 km and finally empties its discharge into Vaippar River near Banduvarpatti village in Sattur Taluk.

The Vallampatti odai sub basin is located between the latitude 9^0 20'00" to 9^0 27'00" and Longitude 77^0 44'00"E to 77^0 58'00"E. The command area of this sub basin comes under Sivakasi Taluk & Sattur Taluk of Virudhunagar District & Sankarankovil Taluk of Tirunelveli District and Kovilpatti Taluk of Thuthukudi District. The blocks lying partially in this Sub Basins are Vembakottai , Kovilpatti and Kuruvikulam.

AYACUT DETAILS

Sl No	Name Of Tank	Ayacut in Ha
1	Vallampatti Tank	204.93.0
2	Gomapankipuram Tank	40.89.0
3	Gukanparai Tank	97.55.0
4	Sippiparai Tank	76.50.0
5	Maipparai Tank	51.42.0
	Total	471.29 Ha

(a) Sivakasi Taluk : 302.48 .0 Ha
(b) Sattur Taluk : 83.30.0 Ha
(c) Sankarankoil : 51.42.0 Ha
(d) Kovilpatti : 34.09.0 Ha
Total : 471.29 Ha

CLUSTER WISE / INFRASTRUCTURE WISE / VILLAGE WISE CONVERGENT TABLE

CLUSTER -1 VALLAMPATTI ODAI – SUB BASIN

Sl.No.	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRO	
		FI	PI	Gap	Wop	WP	Gap	Act	No
1	***Vallampatti Tank***	84.65	8.45	111.83	93.100			Bund Re/We	2650m 1No
2	***Gomapankipuram Tank***	0	0	40.89	0			Bund Re/We	1050m 1No
		84.65	**8.45**	**152.72**	**93.10**			**Bund Re/We**	**3700m 2No**

CLUSTER WISE / INFRASTRUCTURE WISE / VILLAGE WISE CONVERGENT TABLE

CLUSTER -2 VALLAMPATTI ODAI – SUB BASIN

Sl.No.	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRO	
		FI	PI	Gap	Wop	WP	Gap	Act	No
1	***Guganparai Tank***	9.61	0	87.94	9.61			Bund Re/Slu Re/We	1350m 2No 1No
2	***Sippiparai Tank***	0	18.85	57.70	18.85			Bund Re/We	1560m 1No
3	***Maiparai Tank***	0	0	51.42	0			Bund Re/Slu Re/We	1300m 2No 1No
		9.61	18.85	197.06	28.46				

CONVERGENT TABLE- ABSTRACT (FOR EACH CLUSTER)

VAIPPAR MAIN RIVER – SUB BASIN

Sl.No.	Name of the cluster/ Infrastructure/ Village	Total Ayacut (Ha)			Total Area (Ha)			WRO	
		FI	PI	Gap	Wop	WP	Gap	Act	No
1	2	3	4	5	6	7	8	10	11
1	***Cluster 1***	**84.65**	**8.45**	**152.72**	**93.10**			Bund Re/Slu RC/Slu Re/We Re/Sur Esc	12550m 11No 4No 4No 2No
2	***Cluster2***	9.61	18.85	197.06	28.46			Bund Re/Slu RC/Slu Re/We	4930m 5No 1No 3No
	Total	94.26	27.3	349.78	121.56			Bund Re/Slu RC/Slu Re/We Re/HeSlu	18851m 5No 2No 3No 2No

1.2 HYDROLOGY

CHAPTER – 2

VALLAMPATTI ODAI SUB BASIN

HYDROLOGY

2.1 GENERAL:

Vallampatti odai is one of the tributary of the river Vaippar. It receives drainage from its own catchment. It originates from the plain terrain near Kuruvikulam village of Sankarankovili taluk.. The catchment area of the sub basin is 156 sq km.

There are 5 non system tanks under this sub basin and the total command area of this basin is 471.29.0 Ha. It runs for a distance of 17 km and finally empties its discharge into Vaippar River near Banduvarpatti village in Sattur Taluk.

2.2 LOCATION:

The Vallampatti odai sub basin is located between the latitude 9^0 20'00" to 9^0 27'00" and Longitude 77^0 44'00"E to 77^0 58'00"E. The command area of this sub basin comes under Sivakasi Taluk and Sattur Taluk of Virudhunagar District & Sankarankovil Taluk of Thirunelveli District and Kovilpatti Taluks of Thoothukudi District. The blocks lying partially in this Sub Basin are the Vembakottai , Kovilpatti and Kuruvikulam.

2.3 CATCHMENT AREA :

The catchment area of this Sub basin is 156 SqKm. This Sub Basin receives rain fall from North – East monsoon. During summer, the rain fall received is more or less equal to that of South – West monsoon. There are 5 non system tanks under the control of WRO, PWD with a total registered ayacut of 471.29 Ha. But at present only 146.87 Ha is being cultivated during the I st Crop.

2.4 HYDROMETROLOGY:

The weather data observed at Kavalur water shed, maintained by the Chief Engineer, PWD, WRO, State Ground and Surface Water Resources Data Centre, Chennai is used for analysis, since long term data is available.

2.5 RAIN FALL:

There is only one influencing rain fall station in this Sub Basin, namely Vembakottai.

Season	Vembakottai Rain gauge station
South west Monsoon	165.4 mm
North East Monsoon	386.1 mm
Winter	46.0 mm
Summer	159.0 mm
Annual	756.5 mm

2.6 CLIMATE :

TEMPERATURE:

The annual temperature varies from 23.94^0 C to 34.89^0 C . The average mean temperature is 29.33^0C.

RELATIVE HUMIDITY:

The average relative humidity is 62.47 %.

WIND SPEED:

The average wind speed is 4.75 Km / hour. Increase in wind speed occurs during the cyclone which occurs mostly in November.

SUN SHINE:

The average sun shine hours is 7.29 hours per day.

2.7. SOIL CLASSIFICATION :

Soil classification maps have been prepared in 1996 by The National Bureau of Soil Survey and Land Use Planning, Bangalore(NBSS) in cooperation with the Department of Agriculture of Tamilnadu . Based on this, the predominant soil order found in this Sub Basin, are Inceptisol , Alfisol , and Vertisols.

2.8 LAND HOLDINGS:

More than 53 % of the land holdings are below 1 Ha followed by 22 % of land holding with 1 to 2 Ha size. Big farmers contribute to 3% only. The total Nos of land holdings is 6131. .

Category	Size of Holdings	Numbers	% to total
Marginal	Below 1.00 ha	3284	53.60%
Small	1.00 – 2.00 ha	1369	22.30%
Medium	2.00 – 5.00 ha	1311	21.40%
Big	5.00 ha & above	167	2.70%
	TOTAL	6131	

2.9 DEMOGRAPHY:

There are three blocks are lying partially in this Sub Basin. They are Vembakottai block of Virudhunagar Districts, Kovilpatti block of Thuthukudi District and Kuruvikulam block of Thirunelveli District . The population details were obtained from the Director of Statistics; Chennai and used for calculation of domestic water requirement.

Name of sub basin	Total no of blocks	Total no of villages	Population		
			1991	2009	2019
Vallampatti odaiSub Basin	3	37	63000	86300	10300

2.10 WATER POTENTIAL:

Surface Water Potential : 28.16 M Cum

Ground Water Potential : 32.49M Cum

Total : 60.65M Cum

District	: Virudhunagar	Partially Irrigated	:	27.30	Ha
Registered Ayacut Area	: 471.29 Ha	Gap	:	349.73	Ha
		Total Ayacut Area	:	**471.29**	Ha

S.No.	Crop	Without Project				With Project				Increas-ing
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
I	**Perennial crop**									
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
II	**Annual Crop**									
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
III	**1st crop**									
1. a	Paddy	94.26	-	-	94.26	-	-	-	0.00	-94.26
b	Paddy SRI	-	-	-	0.00	90.00	-	-	90.00	90.00
2	Maize	-	27.30	-	27.30	100.00	-	-	100.00	72.70
3	Pulses	-	-	25.11	25.11	81.40	-	-	81.40	56.29
4	Fodder Cholam	-	-	7.00	7.00	7.00	-	-	7.00	0.00
5	Vegetables									
	Chillies	-	-	-	0.00	40.00	-	-	40.00	40.00
	Senna	-	-	-	0.00	60.00	-	-	60.00	60.00
6	Prosophis	-	-	92.89	92.89	-	-	92.89	92.89	0.00
7	Fallow / Gap	-	-	224.73	224.73	-	-	-	0.00	-224.73
	Total	**94.26**	**27.30**	**349.73**	**471.29**	**378.40**	**0.00**	**92.89**	**471.29**	0.00
IV	**Grand Total (I+II+III)**	**94.26**	**27.30**	**349.73**	**471.29**	**378.40**	**0.00**	**92.89**	**471.29**	0.00
	2 nd crop									
1	Maize	-	-	-	0.00	100.00	-	-	100.00	100.00
2	Pulses	-	-	-	0.00	100.00	-	-	100.00	100.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**200.00**	**0.00**	**0.00**	**200.00**	200.00
	Great Grand Total	**94.26**	**27.30**	**349.73**	**471.29**	**578.40**	**0.00**	**92.89**	**671.29**	
	Cropping Intensity				**32.61%**				**122.73%**	

2.14: LIVE STOCK- POPULATION:

Name Of Sub Basin	Cattle Buffalo	Sheep Goats	Pigs	Dogs	Others	Poultry
Vallampatti odaiSub Basin	5330	17138	578	-	3149	10450
Monthly Requirement.	0.53 M cum					

2.15 INDUSTRIES & MONTHLY WATER DEMAND in Mcum:

Name of sub basin	Medium Industries			Small Industries			Water Requirement		
	2004	2010	2025	2004	2010	2025	2004	2010	2025
Vallampatti odaiSub Basin	-	-	-	286	-	-	-	0.53 Mcum	1.29

2.16 CROP WATER REQUIREMENT WITH OUT PROJECT

Vallampatti Uppodai
Crop water requirement without Project.

Sl. No.	Name of crop	Extent in Ha.	Crop water requirement		Irrigation water at n*=0.43	Total water requirement in Mcm
			mm	Mcum		
1	Paddy	94.260	570	0.54	1.25	1.25
2	Maize	27.300	552	0.15	0.35	0.15
	Gap Area	224.73	0	0.000	0.00	0.00
	Total	**471.29**			**1.60**	**1.60**

Water Potential

Surface Water Potential(Mcm) = 28.16

Ground Water Potential (Mcm) = 32.49

Total Potential (Mcm) = **60.65**

Water Demand without Project

Domestic	(Mcm)	= 0.80
Livestock	(Mcm)	= 0.53
Industrial	(Mcm)	= 0.53
Irrigation	WRO	= 1.60
	PU & Rainfed	= 3.07
Total Water Demand (Mcm)		**= 6.53**
Water Balance(Mcm)		= 54.12

List of Panchayat Union Tanks in Vembakottai Union

SL NO	NAME OF TANK	NAME OF VILLAGE	AYACUT IN HA
1	VEERAYANKULAM	KANGARAKOTTAI	23.570
2	IRAIVENDURANKULAM	E.REDDIYAPATTI	5.100
3	THALAIKAVUDAIYARKULAM	A.LAKSHMIPURAM	24.670
4	SANANKULAM	E.DHURAISAMYPURAM	3.655
5	VEERASUMUTHIRAM	SEVALPATTI	2.830
6	PALAKANDA AYYANARKULAM	SEVALPATTI	1.275
7	ELANTHAIKULAM	SEVALPATTI	27.000
8	MOORTHINAICKENPATTI	SEVALPATTI	3.140
			91.240

List of Panchayat Union Tanks in Kuruvikulam Union

SL. NO	NAME OF TANK	VILLAGE	AYACUT IN HA
1	VADAMANNARKULAM	MUKUTTUMALAI	6.09
2	KALLIKULAM	KURUVIKULAM	8.07
3	KARISALKULAM	KURUVIKULAM	3.76
4	UPPARIKULAM	PILLAYARNATHAM	1.94
5	VEERININAICKERKULAM	PILLAYARNATHAM	25.25
6	ANDIKULAM	PILLAYARNATHAM	35.05
7	KURUKKALKULAM	PITCHAITHALAIVANPATTI	5.90
8	ALAKIYANAMBIKULAM	VADAKKUPATTI	7.00
9	ILAYARASANENTHAL PERIYAKULAM	ILAYARASANENTHAL	24.37
10	MAITHEENKULAM	ILAYARASANENTHAL	7.00
	TOTAL		124.43

CROP WATER REQUIREMENT WITH PROJECT								
Sl.No.	Name of Crop		Extent in Ha.	Crop Water Requirement		Irrigation Water Efficiency		
				MM	MCM	Surface water 0.53	Drip 0.8	Sprinkler 0.7
I	**Perennial Crops**							
1	Coconut		0	866	0			
2	Sapota	SFI	0	526	0			
		Drip		526	0			
	Total							
II	**I Crop**							
1	Paddy SRI		90.00	399	0.359	0.677		
2	Maize		100.00	550	0.550	1.038		
3	Pulses		81.40	300	0.448	0.845		
4	Fodder cholam		**7.00**	**386**	**0.027**	**0.051**		
	Chillies	SFI	**40.00**	**500**	**0.200**	**0.377**		
		Drip			**0**			
	Senna	SFI	**60.00**	**438**	**0.263**	**0.496**		
		Sprinkler			**0**			
	Total				**1.847**	**3.484**		
III	**II Crop**							
1	Pulses		100	300	0.300	0.566		
2	Maize		100	550	0.550	1.038		
	Total				**0.850**	**1.604**		
	Grand Total				**2.697**	**5.088**		
Water Demand with Project								
Domestic	(Mcm)	= 0.800						
Livestock	(Mcm)	= 0.530						
Industrial	(Mcm)	= 0.530						
Irrigation	WRO	= 5.090						
	PU & GW	= 3.070						
Total Water Demand (Mcm)		**= 10.020**						
Water Balance(Mcm)		= 50.630						

1.3. HYDRAULICS OF THE COMPONENTS

HYDRAULIC PARTICULARS

a) ANICUT

Sl.No	Name of Anicut	Village	Ayacut (Ha)	Length of Anicut(M)	Crest level of Anicut (M)	Front (M)	Free Sq.km	Combined Sq.km	Maximum flood discharge Cumecs/ 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	
1	Varaga noor	Varaga noor	-	98.00	106.65	108.55	14.5	20.00	6600 C/s	Left side	2 Nos 1.50 x 1.20	105s.35	4.25	1500	3	0.9	1 in 1000	2 Nos	This Anicut feeds 4 P.U Tanks having total Ayacut of 34.25 Ha and the same is not considered in the project.

b) TANKS (Non System 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	Viruthunagar	Sivakasi	Vallampatti Tank	204.930	42.20	2	110.33	131.05	0.829	29.570	30.180	3	1	158.50		2650	-	Maipparai Guhanparai Sippiparai Gomapanki puram	Nil
2		Sattur	Gomapan kipuram Tank	40.890	16.86	1	7.77	7.77	0.211	29.500	30.100	2	1	26.00		1050	-	Nil	Vallam patti Tank
3		Sivakasi	Guhanpar ai tank	97.550	20.08	2	21.83	21.83	0.544	100.500	101.400	2	1	28.00		1350	-	Nil	Vallam patti tank

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					
4	Viruthunagar Thuhukudi	Sattur Kovilpatti	Sippiparai Tank	76.500	16.50	2	13.59	13.59	0.332	99.800	100.400	2	1	40.50		1560	-	Nil	Vallampatti Tank
5	Tirunelveli	Sankarankovil	Maipparai Tank	51.420	12.18	2	12.953	12.18	0.386	101.030	101.630	2	1	40.00	41.39	1300	-	Nil	Vallampatti Tank

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	REMARK
		LOCATION	SILL LEVEL	LOCATION	SILL LEVEL							

_____ NIL_____

1.4. COMMAND AREA AND WATER USERS ASSOCIATION

Participatory Irrigation Management (PIM) Under IAM WARM Project in Vallampatti odaiSub basin

1. **The Sub-Basin :** This is one of the Thirteen sub-basins of the Vaippar River Basin. Totally 5 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 is furnished in the Annexure-1. These 5 tanks are located within the sub-basin's hydraulic boundary and spread over 5 villages of Sivakasi & Sattur Taluks in Virudhunagar District, Sankarankovil Taluk of Tirunelveli District and Kovilpatti Taluk of Thuthukudi District. The total Command area under these 5 tanks works out to 471.29 Ha. (Annexure 1)

2. **Command Area :**

i) Under system tanks		:	Nil
ii) Under Non-system tanks	(5 tanks)	:	471.29 Ha
Total	**(5 Tanks)**		**471.29 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 5 TANKS**	**4 NOS. (471.29 HA)**
III)	**THE TOTAL COMMAND AREA COVERED**	**471.29 HA**

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

Activities undertaken and "Walkthrough Surveys" carried out:

i) There are 5 tanks in the sub-basin which spread over 5 villages, as detailed out in Annexure – 01. 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, and list of works suggested by the farmers, list of works analysed and finalized by WRO officials, are all furnished in the Annexure – 02 and Annexure – 03.

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 March – 09)
   ii) Form – II : WUA document to be notified by District Collectors (End of April – 09)
   iii) Completion of preparatory works for the conduct of Elections for WUAs (End of May – 09)

6. **Schedule for Conduct of Elections** in the sub-basin for forming Management Committees **(End of July 2009)**

7. **Support Organisations (SOs) :**

   i) Initiating and completing the process of publishing EOI to hire Support Organisation at Sub-basin level (End of May 2009)
   ii) Short listing and providing Request for Proposals (RFPs) to all the short listed agencies and obtaining Technical and Cost Proposals (Middle of June, 2009)
   iii) Selection and deployment of Support Organisation to the sub-basin (End of June, 2009)

8. **Appointment and the Role of Competent Authorities :**

   i) Section 26 of the Tamil Nadu Farmer's Management of Irrigation Systems (TNFMIS) Act provides for the appointment of "Competent Authorities" to assist the respective farmers organizations (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) Appointment of Competent Authorities for the WUAs proposed to be formed under IAMWARM project is based on the "WRO Section officer wise" distribution as indicated below.

Name of the WRO Sub Divisional Officers working in the Vallampatti odai Sub basin

1) **Er.R. Sornakumar, B.E.**
   Assistant Executive Engineer, WRD
   Vaippar Basin Sub Division, Virudhunagar.

2) **Er. . Rajamanickam, B.E.**
Assistant Executive Engineer, WRD
Upper Vaippar Basin Sub Division, Sankarankovil

List of Competent Authorities :

A.	**SECTION OFFICER, WRD,** **VAIPPAR BASIN SECTION,** **SIVAKASI.**	**WUA 1** **WUA 2** **WUA 3**
B.	**SECTION OFFICER, WRD,** **UPPER VAIPPAR BASIN SECTION,** **KURUVIKULAM**	**WUA 4**

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 53 Nos of farmers from 5 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 the farmers and the tasks to be taken up under scheme modernisation finalized on 16.02.2009.

ii) During the meeting, the farmers presented 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 done by the contractor and any lapse in the quality of work may be reported to the field officers of WRD, as well as to the Executive Engineer of WRD, who has been designated as the Nodal Officer for the sub-basin concerned.

iii) The field officers of WRD 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 modernization 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 WRD officers were also informed that they are personally responsible for handing over the irrigation systems after completing the tasks 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) at randomly selected villages (4 numbers out of 5 villages) located with 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 'Vallampatti odai sub-basin', the Managing Committee will be trained to take up the responsibility of improving the Water charges recovery percentage. These will be followed up, after completing the modernization 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 organize various "Capacity building" programmes at suitable locations within the sub-basin command area, to benefit the farmers of the WUAs in the sub-basin.

ii) The "Support Organisation" will also arrange for organizing the "Study Tours" both within and outside the state to enhance their knowledge and experiences which will help them 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 Committees” of the WUAs.

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

Annexure – 1

An Assessment of Command Area and WUAs under the control of WRO of PWD in Vallampatti odai Sub-basin

SL. NO	NAME OF IRRIGATION SYSTEM AND TANKS	COMMAND AREA IN (HA)	LOCATION OF THE COMMAND AREA			COVERAGE OF COMMAND AREA UNDER DIFFERENT PROJECTS (HA)		STATUS OF FORMATION OF WUAS IN THE SUB-BASIN	
			VILLAGE	TALUK	DISTRICT	WRCP AND OTHERS	IAMWARM	FORMED UNDER WRCP (CODE)	TO BE FORMED UNDER IAMWARM (CODE)
	RAIN FED TANKS								
1	VALLAMPATTI TANK	204.93.0	VALLAMPATTI	SIVAKASI	VIRUTHUNAGAR	NIL	204.93.0	NIL	VALLAMPATTI TANK & GOMAPANKIPURAM TANK WATER USERS ASSOCIATION
2.	GOMAPANKIPURAM TANK	40.89.0	SANKARAPANDIYAPURAM	SATTUR	VIRUTHUNAGAR	NIL	40.89.0	NIL	
3.	GUKANPARAI TANK	97.55.0	GUKANPARAI	SIVAKASI	VIRUTHUNAGAR	NIL	97.55.0	NIL	GUKANPARAI TANK WATER USERS ASSOCIATION

4.	**SIPPIPARAI TANK**	**42.41.0** **34.09.0** **76.50.0**	**SANKARAPANDIYAPURAM LAKSHMIPURAM**	**SATTUR** **KOVILPATTI**	**VIRUTHUNAGAR** **THUTHUKUDI**	**NIL**	**76.50.0**	**NIL**	**SIPPIPARAI TANK WATER USERS ASSOCIATION**
5.	**MAIPPARAI TANK**	**51.42.0**	**MAIPPARAI**	**SANKARANKOVIL**	**TIRUNELVELI**	**NIL**	**51.42.0**	**NIL**	**MAIPPARAI TANK WATER USERS ASSOCIATION**
	TOTAL	**471.29 .0**					**471.29 .0**		

ABSTRACT

1. Command Area already covered under WRCP and other projects / schemes. : Nil
2. Command Area Proposed to be covered under IAMWARM project (Grand total of Column-8) : 471.290 Ha
3. Total Command area controlled by WRO PWD in the sub basin (Sl.No 1+2 as above) : 471.290 Ha
4. Total No. of WUAs already formed under WRCP : Nil
5. Total No. of WUAs proposed to be formed under IAMWARM : 4 Nos
6. Total No. of WUAs that will cover the entire sub-basin : 4 Nos.

Annexure – 2

Details of "Awareness Creation Activities and Walk-through Surveys".

SL. NO	DATE OF VISIT	NAMES OF THE VILLAGES VISITED	AWARENESS PROGRAMME (NO. OF FARMERS ATTENDED)	WALK-THROUGH SURVEY (NO. OF FARMERS PARTICIPATED)	REMARKS
1.	12.12.08 10.02.09	VALLAMPATTI TANK		10 12	
2.	12.12.08	GOMAPANKIPURAM TANK		7	
3.	12.12.08	GUKANPARAI TANK		8	
4.	12.12.08	SIPPIPARAI TANK		9	
5.	29.01.09	MAIPPARAI TANK		7	

Annexure – 03

Details of Modernisation works as suggested by the Farmers and as finalized by the officials of WRO

SL. NO	DATE OF VISIT	NAME OF THE VILLAGES VISITED	OUTCOME OF WALK THROUGH SURVEY AND DISCUSSIONS WITH FARMERS	
			WORKS SUGGESTED BY FARMERS	WORKS FINALIZED BY WRO OFFICIALS
1.	12.12.08 10.02.09	VALLAMPATTI TANK	BUND STRENGTHENING REPAIRS TO CULVERTS IN FIELD CHANNEL WEIR REPAIR WATER OUT FLANKS IN AYACUT AREA AND ENTERS INTO FIELDS	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 2650M REPAIRS TO WEIR BODY WALL DESILTING THE SURPLUS COURSE FOR A LENGTH OF 1200 M
2.	12.12.08	GOMAPANKI PURAM TANK	BUND STRENGTHENING LINING OF FIELD CHANNEL WEIR REPAIR	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 1050M REPAIRS TO WEIR APRON AND BODY WALL
3.	12.12.08	GUKANPARAI	STRENGTHENING	STANDARDISATION OF

		TANK	OF THE TANK BUND AND CONSTRUCTION OF RETAINING WALL IN WEAKER PORTION REPAIRS TO SLUICE AND FIXING S.G. PLUG SHUTTER TO ARREST LEAKAGES REPAIRS TO WEIR BODY WALL	BUND FOR THE ENTIRE LENGTH OF 1350 M REPAIRS TO SLUICES 1 & 2 WITH RETAINING WALL OF SUITABLE LENGTH. REPAIRS TO WEIR BODY WALL

SL. NO	DATE OF VISIT	NAME OF THE VILLAGES VISITED	OUTCOME OF WALK THROUGH SURVEY AND DISCUSSIONS WITH FARMERS	
			WORKS SUGGESTED BY FARMERS	WORKS FINALIZED BY WRO OFFICIALS
4.	12.12.08	SIPPIPARAI TANK	BUND STRENGTHENING WEIR REPAIR	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 1560 M REPAIRS TO WEIR APRON AND BODY WALL
5.	29.01.09	MAIPPARAI TANK	BUND	STANDARDISATION

			STRENGTHENING **SLUICE REPAIRS & LINING OF FIELD CHANNEL WEIR REPAIR**	**OF BUND FOR THE ENTIRE LENGTH OF 1300M** **REPAIRS TO SLUICES 1 & 2 REPAIRS TO WEIR APRON AND BODY WALL**

DETAILS OF WUAS PROPOSED IN VALLAMPATTI ODAISUB BASIN

Sl No	WUA No.	Name of Tank	Name of Villages	Name of WUA	Ayacut in Ha
1	**VPO I**	Vallampatti Tank	Vallampatti	Vallampatti Tank and Gomapankipuram Tank water users association	245.820
		Gomapankipuram Tank	Sankarapandiyapuram		
2	**VPO 2**	Gukanparai Tank	Gukanparai	Gukanparai Tank water users association	97.550
3	**VPO 3**	Sippiparai Tank	Sankarapandiyapuram Lakshmipuram	Sippiparai Tank water users association	76.500
4	**VPO 4**	Maipparai Tank	Maipparai	Maipparai Tank water users association	51.420
				Total	471.290

PARTICULARS OF WALK THROUGH SURVEY

SL NO	DATE OF WALK THROUGH SURVEY	LOCATION	FARMERS REQUEST	TECHNICAL SOLUTION	PROPOSAL MADE
1	12.12.2008 10.02.09	VALLAMPATTI TANK	BUND STRENGTHENING SLUICE REPAIRS & REPAIRS TO CULVERTS IN FIELD CHANNEL WEIR REPAIR WATER OUT FLANKS IN SURPLUS COURSE AND ENTERS INTO FIELDS	STRENGTHENING OF THE TANK BUND REPAIRS TO SLUICE AND FIXING S.G. PLUG SHUTTER TO ARREST LEAKAGES REPAIRS TO WEIR APRON AND BODY WALL DESILTING THE SURPLUS COURSE	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 2650M REPAIRS TO SLUICES 1, 2 & 3 REPAIRS TO WEIR APRON AND BODY WALL DESILTING THE SURPLUS COURSE FOR A LENGTH OF 2000 M
2	12.12.2008	GOMAPANKIA PURAM TANK	BUND STRENGTHENING SLUICE REPAIRS & LINING OF FIELD	STRENGTHENING OF THE TANK BUND AND CONSTRUCTION OF RETAINING WALL IN WEAKER PORTION	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 1050M REPAIRS TO SLUICES 1&2

			CHANNEL WEIR REPAIR WATER OUT FLANKS IN SUPPLY CHANNEL AND ENTERS INTO FIELDS	REPAIRS TO SLUICE AND FIXING S.G. PLUG SHUTTER TO ARREST LEAKAGES REPAIRS TO WEIR APRON AND BODY WALL DESILTING THE SUPPLY CHANNEL	REPAIRS TO WEIR APRON AND BODY WALL DESILTING THE SUPPLY CHANNEL FOR A LENGTH OF 3000 M
3	12.12.2008	GUKANPARAI TANK	BUND STRENGTHENING SLUICE REPAIRS & LINING OF FIELD CHANNEL WEIR REPAIR WATER OUT FLANKS IN SUPPLY CHANNEL	STRENGTHENING OF THE TANK BUND AND CONSTRUCTION OF RETAINING WALL IN WEAKER PORTION REPAIRS TO SLUICE AND FIXING S.G. PLUG SHUTTER TO ARREST LEAKAGES REPAIRS TO WEIR APRON AND BODY WALL DESILTING THE SUPPLY CHANNEL	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 1350 M REPAIRS TO SLUICES 1 & 2 REPAIRS TO WEIR APRON AND BODY WALL DESILTING THE SUPPLY CHANNEL FOR A LENGTH OF 5000 M
1	2	3	4	5	6
4	12.12.2008	SIPPIPARAI TANK	BUND STRENGTHENING	STRENGTHENING OF THE TANK BUND	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 1560 M

			SLUICE REPAIRS WEIR REPAIR WATER OUT FLANKS IN SUPPLY CHANNEL LINING OF FIELD CHANNEL	REPAIRS TO SLUICE AND FIXING S.G. PLUG SHUTTER TO ARREST LEAKAGES REPAIRS TO WEIR APRON AND BODY WALL DESILTING THE SUPPLY CHANNEL	REPAIRS TO SLUICES 1&2, REPAIRS TO WEIR APRON AND BODY WALL & DESILTING THE SUPPLY CHANNEL FOR A LENGTH OF 3000 M
5	29.01.09	MAIPPARAI TANK	BUND STRENGTHENING SLUICE REPAIRS & LINING OF FIELD CHANNEL	STRENGTHENING OF THE TANK BUND REPAIRS & RECONSTRUCTION TO SLUICES AND FIXING S.G. PLUG SHUTTER TO ARREST LEAKAGES	STANDARDISATION OF BUND FOR THE ENTIRE LENGTH OF 1900M REPAIRS TO SLUICES 1 & RECONSTRUCTION OF SLUICE 2 REPAIRS TO WEIR APRON AND BODY WALL

			WEIR REPAIR **WATER OUT FLANKS IN SUPPLY CHANNEL**	**REPAIRS TO WEIR APRON AND BODY WALL** **DESILTING THE SUPPLY CHANNEL**	**DESILTING THE SUPPLY CHANNEL FOR A LENGTH OF 2000 M**

1.5 IRRIGATION INFRASTRUCTURE OF THE SUB BASIN

1.5.1 LIST OF ANICUTS

Sl. No	Anicuts	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Discharge Capacity
1	Varaganur	Varaganur	Vembakkottai	Sivakasi	Virudhunagar	Nill	6600 C/S

1,5,2 LIST OF TANKS Non System tanks

Sl. No	Tank	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity
1	Vallampatti Tank	Vallampatti	Vembakkottai	Sivakasi	Virudhunagar	204.93	42.20
2	Gomapankipuram Tank	Sankarapandiyapuram	Vembakkottai	Sattur	Virudhunagar	40.89	16.86
3	Guhanparai Tank	Guhanparai	Vembakkottai	Sivakasi	Virudhunagar	97.55	20.08
4	Sippiparai Tank	Sippiparai	Vembakkottai	Sattur	Virudhunagar	76.50	16.50
5	Maipparai Tank	Maipparai	Kurvikulam	Sankarankovil	Tirunelveli	51.42	12.18

1.5.3 List of Supply Channel - NILL

List of tanks/Anicuts executed under various schemes (Viz, Part II Scheme, NABARD, WRCP I etc.,) since 2000.

SI.NO.	NAME OF ANICUT / TANK	AYACUT IN HA	SCHEME IN WHICH EXECUTED	AMOUNT IN LAKHS	DETAILS OF COMPONENTS EXECUTED	REMARKS
1	VALLAMPATTI TANK	204.93	NABARD RIDF IX	30.00	FIELD CHANNELS LINING BUND STANDARDISATION, AND SLUICE REPAIR	WORK COMPLETED ON 10/2007
2	GOMAPANKIPURAM TANK	40.89	DESILTING TWO TANKS IN MLA CONSTITUENCY	8.00	BUND STANDARDISATION, SLUICE REPAIR.	WORK COMPLETED ON 9/2008
3	SIPPIPARAI TANK	76.50	DESILTING TWO TANKS IN MLA CONSTITUENCY	10.00	FIELD CHANNELS LINING BUND STANDARDISATION AND SLUICE REPAIR	WORK COMPLETED ON 9/2008

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

NAME OF SUB BASIN: VALLAMPATTI

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	AYA CUT	NOS	SUPPLY CHANNEL IN KM	AYACUT	LENGTH	DIRECT AYACUT	
1	AVAILABLE INFRASTRUCTURE IN SUB BASIN	1	1500	-	-	-	-	5	-	471.29	-	-	
2	INFRASTRUCTURE EXCLUDED IN IAMWARM PROJECT SINCE WORKS CARRIED OUT UNDER VARIOUS SCHEMES FROM 2000	-	-	-	-	--	--	3	-	322.32	-	-	--
3	INFRASTRUCTURES THAT DOES NOT REQUIRE ANY REHABILITATION WORKS	-	-	-	-	-	--	--	-	-	-	--	-
4	WORKS TAKEN UP IN IAMWARM PROJECT A) WORKS TAKEN UP IN OTHER SCHEMES BUT ALSO TAKEN UP IN IAMWARM B) WORKS TAKEN UP IN IAMWARM	0 1	0					3 2		322.32 148.97	-	-	COMPONENT OF WORKS THAT ARE NOT TAKEN UP IN VARIOUS SCHEMES ALONE PROPOSED IN IAMWARM PROJECT.

1. Certified that the Panchayat Union Tanks are not considered in this project.
2. Certified that the component of works in tanks which were executed under various schemes (Viz, WRCP I, NABARD, PART II schemes etc.,) since 2000 were not proposed in this project.

1.6. REHABILITATION OF IRRIGATION INFRASTRUCTURE

A. REHABILITATION OF IRRIGATION INFRASTRUCTURE OF THE VALLAMPATTI ODAI SUB BASIN

STRUCTURAL STATUS & DEFICIENIES IN THE SYSTEM :

Necessary walk through survey in the tanks and in its ayacut were performed with line departments on 12.12.08, 29.01.2009 & 10.02.2009. All the line department officials were participated and explained in detail the concept of the IAM WARM Project. Based on the observations made, the following are the present structural condition of the Vallampatti odai Sub Basin system.

1. This system is a good old system existing for more than 50 Years as such requires rehabilitation.
2. No scheme works were done during the past years which resulted in non effective Irrigation systems.
3. This Vallampatti odai sub basin totally consists of 5 Non system tanks and no reservoir in the sub basin area. Hence the sub basin requires rehabilitation of non system tanks

In order to improve the Conveyance and Operational Efficiency in Irrigation, it is now proposed to improve and modernize the Irrigation Infrastructures in Vallampatti odai Sub Basin.

1 Repairs to Varakanur Anicut – Removal of souls in the U/S of Anicut and construction of Retaining wall in the bund portion.

2 Desilting the surplus course of Vallampatti Odai by earth work excavation deploying machineries.

3 Strengthening the tank bund wherever necessary for effectively storing the water and also for conveying agricultural inputs to the field.

4 Repairs to the damaged weirs.

5 Repairs to the damaged Sluices.

6 Providing retaining walls in selective area of the tanks.

7 Providing S.G. Shutter / Plug arrangements to Sluices, Scour vents etc.,

9 Removing, Repairing and refixing in position of the existing S.G. shuttering arrangements and providing locking arrangements etc.,

Out come of the Project:

1. Increase in conveyance efficiency from 43 % to 53 %

2. The present Gap area of 349.73 Ha is to be converted as a fully irrigated area.

In total, the following irrigation infrastructures development works are proposed in the sub basin.

1) Repairs to Varakanur Anicut. – 1No

2) Rehabilitation works for tanks - 5Nos (Non System Tanks)

DETAILS OF WORKS PROPOSED

Sl No	Name of Tank	Ayacut In Ha	Length of Bund in m	Length of Bund to be standardised	Sluice			Weir			Desilting of Chanell
					Total No	To be reconstructed	To be repaired	No of Weir	To be reconstructed	To be repaired	
1	Vallampatti Tank	204.93.0	2650	2650	3	0	0	1	0	1	surplus course 1100m
2	Gomapanki puram Tank	40.89.0	1050	0	2	0	2	1	0	1	–
3	Gukanparai Tank	97.55.0	1350	1350	2	0	2	1	0	1	–
4	Sippiparai Tank	76.50.0	1560	1560	2	0	1	1	0	1	–
5	Maipparai Tank	51.42.0	1300	1300	2	0	2	1	0	1	–
6	Varakanur Anicut		0	0	0	0	0	0	0	0	–
	TOTAL	**471.29.0**	**7910**	**6860**	**11**	**0**	**7**	**5**	**0**	**5**	**1100**

A. Details of proposals in each Infrastructure of the sub basin

Cost analysis to be carried out in PWD tanks in Vallampatti Odai sub Basin

Sl. No	Name of tank/ Anicut/ Reservoir	Bund		Sluice Repairs		Weir Repair		Anicut repair		Surplus Course		Amount in Lakhs
		Length	Amt	No	Amt	No	Amt	No	Amt	Length	Amt	
1	Vallampatti Tank	2650	23.89	0	0	1	2.39	0	0	1100	11.72	38.00
2	Gomapankipuram Tank	-	6.78	2	0.13	1	0.15	0	0	0	0	7.09
3	Gukanparai Tank	1350	14.03	2	0.81	1	1.05	0	0	0	0	15.89
4	Sippiparai Tank	1560	17.26	1	0.31	1	2.08	0	0	0	0	19.65
5	Maipparai Tank	1300	18.87	2	2.25	1	1.39	0	0	0	0	22.51
6	Varakanur Anicut	0	0	0	0	0	0	1	2.97	0	0	2.97
7	Measuring devices											1.86
	Total	**6860**	**80.53**	**7**	**3.50**	**5**	**7.06**	**1**	**2.97**	**1100**	**11.72**	**107.64**

VALLAMPATTI ODAISUB BASIN

SL. No.	NAME OF THE SUB BASIN	SUB BASIN PACKAGE TOTAL ESTIMATE	PACKAGE DETAILS							SPREAD OF WORK WITHIN THE PACKAGE	REMARKS
			EACH PACKAGE NUMBER	EACH PACKAGAE ESTIMATE AMOUNT IN LAKHS	NO.OF TANKS	ANICUTS		CHANNELS	WEIRS TO BE REHABILITATED	SLUICES TO BE REHABILITATED	
						REPAIRS	CONSTRUCTION				
1	VALLAM PATTI	1	VPO	107.64 Lakhs	5	1	0	--	4	4	From north to south 7 Km
											From east to west 15 Km

VALLAMPATTI ODAISUB BASIN

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 M3	STEEL IN M.T.	METAL 40MM IN M3	METAL 20MM IN M3	RR IN M3	FUEL
01/IAMWARM/WRO/VPO /WORKS III/2009-10	2	2	2	10	2	2	2	350	734	7.39	587	660	294	

TANK DETAILS WITH FREE BOARD PROVIDED

SL. NO.	NAME OF THE TANK	MAXIMUM HEIGHT OF BUND (M)	FREE BOARD		LENGTH OF BUND
			PROVIDED PREVIOUSLY	PROVIDED NOW	
1	VALLAMPATTI TANK	3.90	1.21	1.50	2650
2	GOMAPANKI PURAM TANK	3.20	1.00	1.50	1050
3	GUKANPARAI TANK	3.90	1.00	1.50	1350
4	SIPPIPARAI TANK	4.40	1.40	1.50	1560
5	MAIPPARAI TANK	3.20	1.20	1.50	1300

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

Name of Package
Rehabilitation and modernization of Non system tanks in Vallampatti odai Sub-basin in Sattur Taluk of Virudhunagar District & Sankarankovil Taluk of Tirunelveli District & kovilpatti taluk of Thuthukudi District

WRO COST TABLE

Sl. No	Description of work	Quantity	Amount in Lakhs	Remarks
I. Tank Component				
	Repairs to Varakanur Anicut	1 No	2.97	
	Desilting and improvements to SURPLUS COURSE.	1.10 Km	11.72	
	Standardisation of tank bund	6.86 Km	80.53	
	Repairs to sluices	7 No	3.50	
	Repairs and improvements to weir	5 No	7.06	
	Provision for flow measuring devices such as V.notches	11 Nos	1.86	
II. Non Tank Component			**0**	
	SubTotal		**107.64**	
	Environmental cell		**2.50**	
	Grand Total		**110.14**	

Package Details

Package - 1

Sl. No.	Name of Tank / Anicut	Amount in Lakhs
1	Vallampatti Tank	38.00
2	Gomapanki puram Tank	6.76
3	Gukanparai Tank	15.89
4	Sippiparai Tank	19.65
5	Maipparai Tank	22.51
6	Varaganur Anicut	2.97
7	Measuring devices - V.notches 11 Nos	1.86
	Total	**107.64**

C. WRO COST TABLE (PHYSICAL AND FINANCIAL PROGRAMME)

Sl No	Description	I Year		II Year		Total	
		Qty	Amount in lakhs	Qty	Amount in lakhs	Qty	Amount in lakhs
	Tank Component						
1	Repairs to Varakanur Anicut	1 No	2.97	0	0	1 No	2.97
2	Desilting and improvements to SURPLUS COURSE.	1.10	11.72	0	0	1.10 Km	11.72
3	Standardisation of tank bund	3.70	48.53	3.16	32.00	6.86 Km	80.53
4	Repairs to sluices	2	1.50	5	2.00	7 No	3.50
5.	Repairs and improvements to weir	2	2.06	3	5.00	5 No	7.06
6.	Measuring devices			11	1.86	11No	1.86
	Total		**66.78**		**40.86**		**107.64**

VALLAMPATTY ODAI SUB BASIN

CONSTRUCTION METHODOLOGY

Sl No	Description of Item	Working Months									Rainy season			Total
		1	2	3	4	5	6	7	8	9	10	11	12	
	Earth work excavation													
1	Surplus Course	20000	20000	20000	15000	15000	-	-	-	-				90000
2	Bund	12000	12000	12000	12000	12000	10000	10000	10000	4000				108000
3	Foundation	-	200	200	150	-	-		-	-				550
	Concrete													
4	M 7.5 grade	-	90	90	75	90	30	-	-	-				375
5	M 10 grade	-	85	100	100	100	150	150	100	100				885
6	M 20 grade	-	-	-	-	75	75	75	25	-				250
7	Random rubble masonry	-	-	-	75	75	75	75	-	-				300
8	Plastering	-	-	-	-	-	250	250	250	250				1000

VALLAMPATTI ODAI SUB BASIN
Requirement of materials

Sl No	Description of Item	Quantity (m3)	Cement (MT)	Sand (m3)	20 mm Metal (m3)	40 mm Metal (m3)	Rubble stone (m3)	Steel rods (MT)
1	M 7.5 grade Concrete using 40 mm metal	375	60.75	168.75	-	338	-	-
2	M 10 grade Concrete using 20 mm metal	885	191.2	398.25	796.50	-	-	-
3	RCC M20 grade using 20 mm metel	250	107.70	112.50	225	-	-	-
4	Random rubble masonry in C M 1 : 4	300	36.72	102.0	-	-	330	-
5	Plastering with C M 1: 4 , 20 mm thick	1000	7.92	22.0	-	-	-	-
6	Pointing with C M 1 ; 4	600	1.94	5.40	-	-	-	-
7	Fabrication of steel rods	4	-	-	-	-	-	4
	Total quantity		406.23	808.90	1021.5	338	330	4

VALLAMPATTI ODAI SUB BASIN

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 M3	STEEL IN M.T.	METAL 40MM IN M3	METAL 20MM IN M3	RR IN M3	FUEL
IAMWARM/WRO/VPO/ NCB/CW-1/2009-10	4	2	2	16	2	2	2	406	309	4	338	102	330	

VALLAMPATTI ODAI SUB BASIN
Calculation of machineries Requirement

Hydraulic excavator & 4 Tippers / Lorries		8 Hours / Day	
(4 No x 2 loads/ hour x 8 Hr x 4 m3/ trip)			256 M3 /Day
For 1 month (20 Working days)		20 x 256 m3	5120 m3/ month
Total quantity of earth work		184550 m3	
Working period for earth work		9 months + 3 Months rainy season	

Machinary required 4 Nos of Hydraulic excavator , 16 Tippers/ Lorries , 2 Nos power roller , 2 Nos Vibrated compactor & 2 Nos water lorry

Mixer machine	2 m3 / hour	For 7 hours / day	14 m3 / day
Total quantity of concrete		1510 m3	
Nos of Mixer machine required		2 Nos for 10 days / month -- 8 months	

Material conveyance		**Tippers/ Lorries**	
Cement	10 mt / Trip	1 trip / day	10 mt / day
Sand	5.60 m3 / Trip	2 trips / day	11.20m3 /day
Metal / stone	5.60 m3 / Trip	3 trips / day	16.80 m3 /day
Total quantity of cement		406 mt	
Lorry required for conveyence		406/10	40 Lorry days
Total quantity of sand		808.9 m3	
Lorry required for conveyence		808.9/11.20	73 Lorry days
Total quantity of metal		1360 m3	
Lorry required for conveyence		1360 /16.80	81 Lorry days
Total quantity of stone		330 m3	
Lorry required for conveyence		330 /16.80	20 Lorry days

Materials conveyence -Tipper / Lorries — 2 Nos for 15 days for 8 months

GUHANPARAI VILLAGE – DISCUSSION WITH FARMERS

(12.12.08)

GUHANPARAI VILLAGE – DISCUSSION WITH FARMERS

(12.12.08)

GUKANPARAI TANK - WALK THROUGH SURVEY (12.12.08)

GUKANPARAI TANK - WALK THROUGH SURVEY (12.12.08)

SIPPIPARI TANK - WALK THROUGH SURVEY (12.12.08)

SIPPIPARAI TANK - WALK THROUGH SURVEY (12.12.08)

GOMAPANKIPURAM VILLAGE – DISCUSSION WITH FARMERS

(12.12.08)

GOMAPANKIPURAM TANK - WALK THROUGH SURVEY (12.12.08)

VALLAMPATTI TANK – DISCUSSION WITH FARMERS (12.12.08)

VALLAMPATTI TANK – DISCUSSION WITH FARMERS (12.12.08)

VALLAMPATTI TANK - WALK THROUGH SURVEY (12.12.08)

CULTIVATION IN VALLAMPATTI TANK (12.12.08)

VALLAMPATTI TANK – DISCUSSION WITH FARMERS (10.02.09)

VALLAMPATTI TANK – DISCUSSION WITH FARMERS (10.02.09)

MAIPPARAI TANK - BUND

MAIPPARAI TANK - DAMAGED SLUICE

MAIPPARAI TANK - BREACHED PORTION OF BUND

MAIPPARAI TANK - WEIR

GUGANPARAI TANK - BUND

GUGANPARAI TANK - WEIR

GUGANPARAI TANK - SLUICE

GUGANPARAI TANK - SLUICE REAR CISTERN

VARAGANOOR ANICUT

SIPPIPARAI TANK - WEIR

1.7. Environmental Component

INDEX

Environmental Monitoring on water and soil quality and creating awareness & updating of "Environmental and Social Assessment report" for ***VALLAMPATTI ODAI SUB BASIN.***

IAMWARM PROJECT

(ENVIRONMENT COMPONENT IN SUB BASINS)

Name of River Basin:	**VAIPPAR BASIN**
Name of Sub Basin:	**VALLAMPATTI ODAI**
Name of WUA:	To be form
Name of Division:	**1.Executivr Engineer, PWD/WRO Vaippar Basin Division, virudhunagar**
Name of Sub Division:	**1.Assi.Exe. Engineer, PWD/WRO Vaippar Basin Sub Division, virudhunagar**
District:	**Virudhunagar, Tirunelveli**
Taluk:	**Sivakasi, sattur, Sankarankoil**
Block:	**Kuruvikulam, Vembakottai, Sattur**
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 -V,VI

ANNEXURE-I

VALLAMPATTI ODAI SUB BASIN --WEED DETAILS

Sl.No	District	Taluk	Block	Name of Village	Name of Tank	Ayacut(Ha)	Type of Water Weeds
1	Viruthunagar, Tirunelveli	Sivakasi, Sattur, Sankarankoil	Sivakasi, Sattur, Sankarankoil	Vallampatti	Vallampatti Tank	204.93	ProsopisJuliflora
2				Gomapankipuram	Gomapankipuram Tank	40.89	ProsopisJuliflora
3				Guganparai	Guganparai Tank	97.55	ProsopisJuliflora
4				Sippiparai	Sippiparai Tank	76.5	ProsopisJuliflora
5				Maipparai	Maipparai Tank	51.42	ProsopisJuliflora

ANNEXURE-I I

THERKAR SUB BASIN

DOMESTIC SEWAGE

Sl. No.	Name of Town	Water body into which Sewage is discharged
1	Madurai Corporation	Sottathatti Channel Panaiyur Channel Anuppanadi Channel Chinthamani Channel
2	Thirupparankunram Town panchyt	Thenkal Tank
3	Thiruppuvanam Town Panchyat	1.Peramanur Channel 2. Viraghanur right Flank Channel
4	Harveypatty Town panchyat	Seawge Farm
5	Avaniyapuram Town Panchyat	Pudukulam Tank
6	Thirumangalam Municipality	Vadagarai channel
7	Usilampatty Municipality	Usilampatty tank.

ANNEXURE- III

VALLAMPATTI ODAI 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	Oorani
1	Dullukkankuruchi			—	—	Oorani
2	Guganparai			River(Supply channel	—	—
3	Sankarapandiapuram	Road Side		—	—	—
4	Kannakudumpanpatti			—	—	Oorani
5	Vallampatti	Road Side		—	—	—
6	Banduvarpatti	Road Side		—	—	—
7	Surankudi	Road Side		—	—	—
8	Achchankulam	Road Side		—	—	—

ANNEXURE -I V

LIST OF INDUSTRIES IN VALLAMPATTI ODAI SUB BASIN

Sl.no	Name of Industry & Address	Taluk	Category	Type	
	INDUSTRIES IN VIRUDHUNAGAR DISTRICT				
	SIVAKASI TALUK				
1	Gurusamy Fire Works, Panaiyadipatti, Sivakasi	Sivakasi	Fireworks	R/S	
2	N.T.K.Paul Nagar Tannery, 8/154, Sivasangupatti Road, Elayirampannai, Sattur	Sattur	Tannery	R/S	
3	Rajarathinam Match Works,540/1, Vembakottai Road, Sivakasi	Sivakasi	Fireworks	R/S	
4	Sri Palanimurugan Fire works, 160, Vembakottai, Sivakasi	Sivakasi	Fireworks	R/S	
5	Harinarayana Fire works, Vembakottai, Sivakasi.	Sivakasi	Fireworks	R/S	

ANNEXURE- V

VALLAMPATTI ODAI SUB BASIN

GROUND WATER SAMPLING STATIONS LOCATIONS

Sl.No	Station code No.	Location
1	93125	Thiruvengadam
2	83115	Vembakottai
3	83116	Alangulam

ANNEXURE- VI

GROUND WATER TEST RESULTS IN VALLAMPATTI ODAI 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	
93125	7.5	2060	1226	12	0	330	470	115	46	86	184	121	403	0	192	340		0.07		5.2	
83115	8.1	890	4300	10	0	280	260	20	8.0	58	90.0	10	342	0	19	89		0.21		3.4	
83116	8	2860	1719	30	0	355	310	150	60	39	483	39	483	0	288	461		2.00		16.9	

Environmental Monitoring on water and soil quality and creating awareness & updating of “Environmental and Social Assessment report” for VALLAMPATTI ODAI **sub** basin.

Estimate: Rs 2.50 Lakhs

INTRODUCTION

Under TNWRCP, with World Bank assistance, special emphasis was given to 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 water, ground water and soil by collecting water & soil samples and testing them. Moreover, “preparation of Micro Level Environmental Status Reports” all the River Basins has also prepared. These works have been carried out with the World Bank Assistance up to March 2002.

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

The Vallampatti odai sub basin is located between the latitude 9^0 20’00” to 9^0 27’00” and Longitude 77^0 44’00”E to 77^0 58’00”E. The command area of this sub basin comes under Sivakasi Taluk and Sattur Taluk of Virudhunagar District &

Sankarankovil Taluk of Tirunelveli District and Kovilpatti Taluk Thuthukudi District. The blocks lying partially are Vembakottai , Kovilpatti and Kuruvikulam.

Vallampatti Odai sub basin lies on the southern side of Vaippar with Nichabanathi sub basin on the west and Uppathurar sub basin on the eastern side. **Uppodai** is the general name by which the stream is called in the region. It originates from north of **Kuruvikulam** village of **sankarankoil Taluk** in the plain at an altitude of about 130m above MSL. It has a number of small streams which join together near **Maipparai** village of **sankarankoil Taluk**. Similarly, number of small streams joins Uppodai near Guhanparai village, Virudhunagar District. It joins with Vaippar near Banduvarpatti village of Sattur Taluk. The confluence of the streams with Vaippar is about 2.5KM upstream of **Sankaranatham Anicut** across Vaippar River.

The approximate length of Vallampatti Odai is about 25 KM. The total catchments area of this sub basin in plain is 163 sq.km. Kovilpatti rainfall station is more pronounced to Sattur rainfall station. **Elayirampannai** is the main town in this sub basin. There is one Anicut Viz. **Virahanur** Anicut, in this sub basin.

ENVIRONMENTAL PROBLEMS IN THIS SUB BASIN

SAND MINING

In this sub basin **Banduvarpatti, Achchankulam** village's sand has been removed indiscriminately and unauthorized. In Vaippar river below Vembakottai road bridge near Vembakottai Reservoir. It causes acute drinking scarcity during summer, submersion of agricultural land, irrigation tanks and ooranies without water due to obliteration of supply channels to tanks and decrease ground water level over the last 10 years affecting agricultural production. At various places wherever sand is available mining is being carried out in small quantities for local use.

INDUSTRIAL POLLUTION

Virudhunagar is one of the industrially progressive districts compared to other districts of the basin. Textile, cement, chemical industries, matches and fireworks industries are prominent in the area. Sattur, Sivakasi and Rajapalayam are the leading industrial towns in Vaippar basin. There are 2 cement factories functioning in this district. The important handloom centres are situated in Aruppukottai, Srivilliputhur and Rajapalayam taluk of virudhunagar district and Sankarankoil in Tirunelveli district. Sivakasi and Sattur are municipal towns with good industrial background having dry climate condition (high temperature) favorable for specific type of industries engaged in the manufactures of matches, crackers (fire works) for domestic consumption and for export.

There are no major industries situated in this sub basin. Only small-scale industries are there in this sub Basin. In Sivakasi, Sattur Taluk most of the industries are fire works and matches. The effluent discharge is minimum and meager**.** They are discharging the wastes into the nearby tanks, channels without treatment.

However, the effluents discharged from the industries are closely monitored by TNPCB. Any further activity to minimize the effect of pollution on water bodies will be dealt by the TNPCB.

CATCHMENT DEGRADATION

In this sub basin there is one Anicuts and 5 Tanks. Soil erosion is there in the riverbeds of this sub basin. In respect of prevention of soil erosion, the Agricultural Engineering Department took up effective measures. However Agricultural Engineering Department will give proposals to prevent further soil erosion. Other major environmental issues polluting Water resources pertaining this sub basin are listed below

SOLID WASTE DISPOSAL

Dumping of solid wastes by the villagers is very limited. Usually they are being dumped near the toe of the tank bunds. The solid wastes generated in the

towns are dumped nearby low lying areas or tanks without proper segregation of organic and degradable matter. This creates health hazard and water pollution. Non availability of compost yards and proper space for sanitary landfills are the constrains faced by the local administrations. Even the civic bodies are recklessly dumping the solid waste into water bodies.

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 plans is under implementation by Rural Development Department. Under this scheme, collection tank for disposable and undisputable garbage have been constructed. 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.

Sold waste if allowed to accumulate is health hazard and there is a correlation between improper disposal of solid waste and incidence of vector- borne diseases. Hence motivating the local bodies for proper implementation of solid waste management in IAMWARM project is must, to protect the water bodies from the accumulation of wastes.

SEWAGE DISPOSAL LET INTO WATER BODIES

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

In the recent decades, on account of the rapid industrial development, numerous obnoxious and deleterious chemical compounds are released into the water bodies. Agricultural drainage, discharge of domestic sewage and industrial effluents trigger the growth of water weeds. Indiscriminate uses of fertilizers have led to the increase in nutrients into natural water system causing nitrification and eutrophiction. Aquatic weeds may be emergent, submerged or free floating. Submerged weeds can survive only if there is optimum sunlight. Floating debris favours the development of aquatic weeds.

"Prosopis Juliflora" plants are multi-stemmed shrubby bushes growing from 3m to 15m tall. *"Prosopis Juliflora"* has been known to send its roots 10, 20 or even 30m to catch water. The roots lift water much higher than it can be lifted by capillary action of the soil. The draft on water supply is greatest during a long, hot growing season, with scanty precipitation and low humidity.

"Prosopis Juliflora" and Ipomea have invaded the cultivable lands in lower reaches and water bodies' ie.tanks, channels and rivers. In most of the Vallampatti Odai sub basin tanks are severely affected by *"Prosopis Juliflora"* and Ipomea, in some places water Hyacinth.

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 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 MOINITORING 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 Vallampatti Odai sub basin to assess the Environmental impact on the quality of surface water in the above sub-basin.

VO1: U/S Side of Varaganoor Anicut.
VO2: Sankarapandiapuram-Vembakottai Causeway @ Jegamveerampatti.
VO3: Sattur-Vembakottai Road Bridge near BanduvarPatti.

Water Samples in these above locations will be collected and tested once in six months, when flow occurs for physical, chemical and biological characteristics.

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 analyzing them and preparing development report has also made in this proposal.

III. TRANSFER OF TECHNICAL KNOWS 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 Panchayats presidents & members are programmed to transfer of Technical Know How for Solid Waste Management.

IV. 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, Awareness programs are to be conducted in the villages where sewage is directly let into water bodies. It is proposed to conduct Awareness Meeting in School/ Institutions and awareness programs, 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 five locations 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 to be carried out by outsourcing through an Educational Institute.

TOTAL COST.

The total cost works out to Rs: 2.50 Lakhs (Rupees Two Lakhs and fifty thousand only)

Name of work:Environmental Monitoring on water and soil quality and creating awareness , updating of " Environmental & Social assessment report" for VALLAMPATTI ODAI 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 river in 3 locations once in six months for a period of 3 years 3x2x3= 18 Nos		18 Nos			18 Nos
b)	Water samples from river in 3 locations once in the project period of 3 years 3x1x1= 3 Nos		3 Nos			3 Nos
c)	Conveyance, Purchases of Cans, Bottles, Chemicals hire Purchase of camera, Documentation of Water quality data,and Engaging labour, etc.,		3 years			3 years
d)	Provision for field visits for environmental Monitoring for project activities with respect 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		1x6 man months			6 Man months
b)	Expert Analysis and Development Reporting on other impacts		LS			LS
c)	Impact studies due to project investments		1x3 Man months			3man months
d)	Expert Analysis and Development Reporting due to project investments		LS			LS
IV. Environmental Social Awareness Creation						
a)	Propagation through pit notices, stickers, Tin Sheets, pamphlets, banners.		3 years			3 years
b)	Awareness Programs for Public		1 No			1 No.
c)	Preparing and publishing Environmental atlas for the Sub basin for the use of line departments/Institutions for better management of sub basin.		LS			L.S
d)	Documentation of the entire activities, and including purchase of stationetry, HirePurchase of LCD , Up gradation of Computer and Accessories, Video films and Web site development,engaging computer operater etc.,		LS			LS
V.	**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 VALLAMPATTI ODAI SUB-BASIN

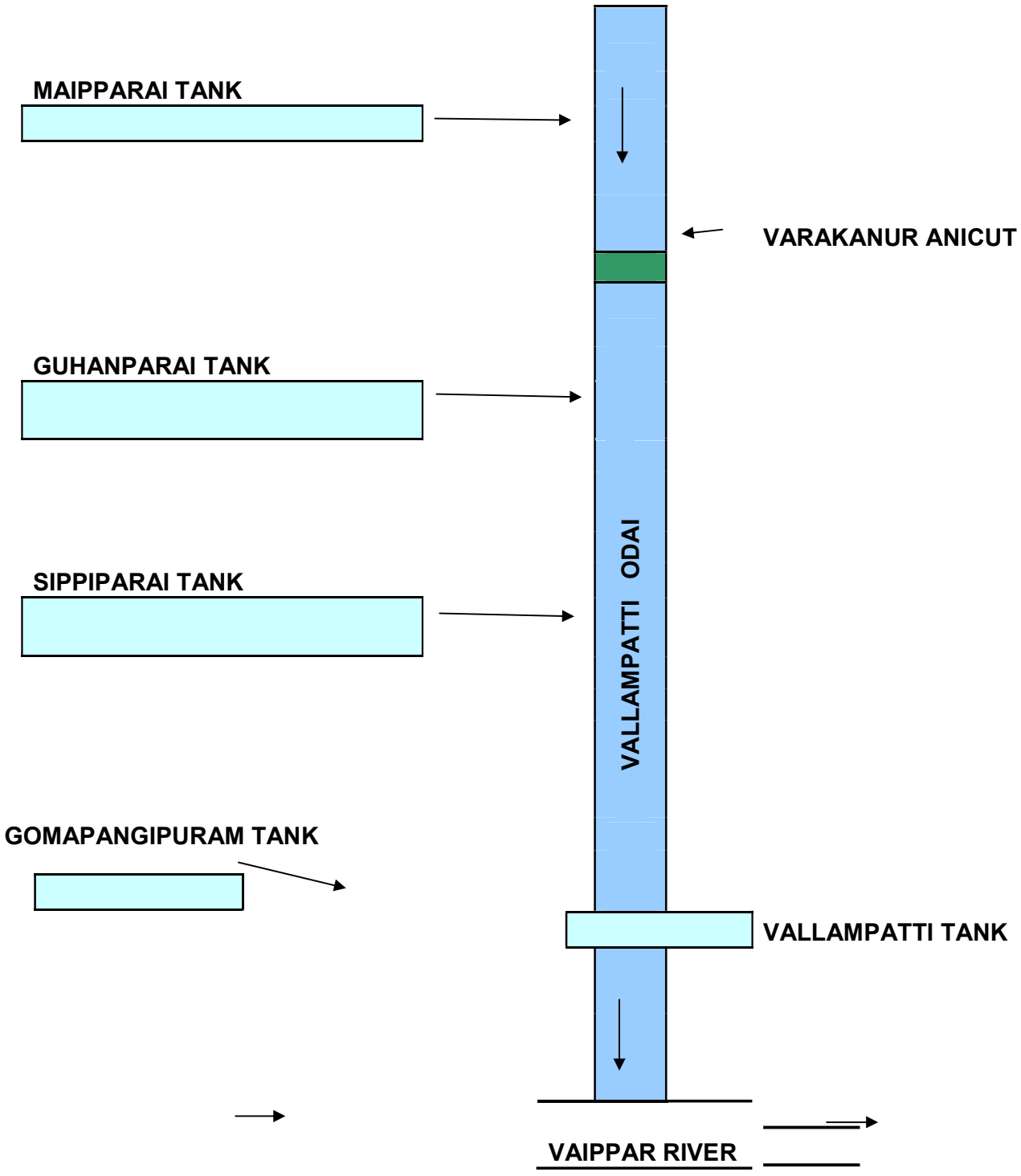
ABSTRACT ESTIMATE

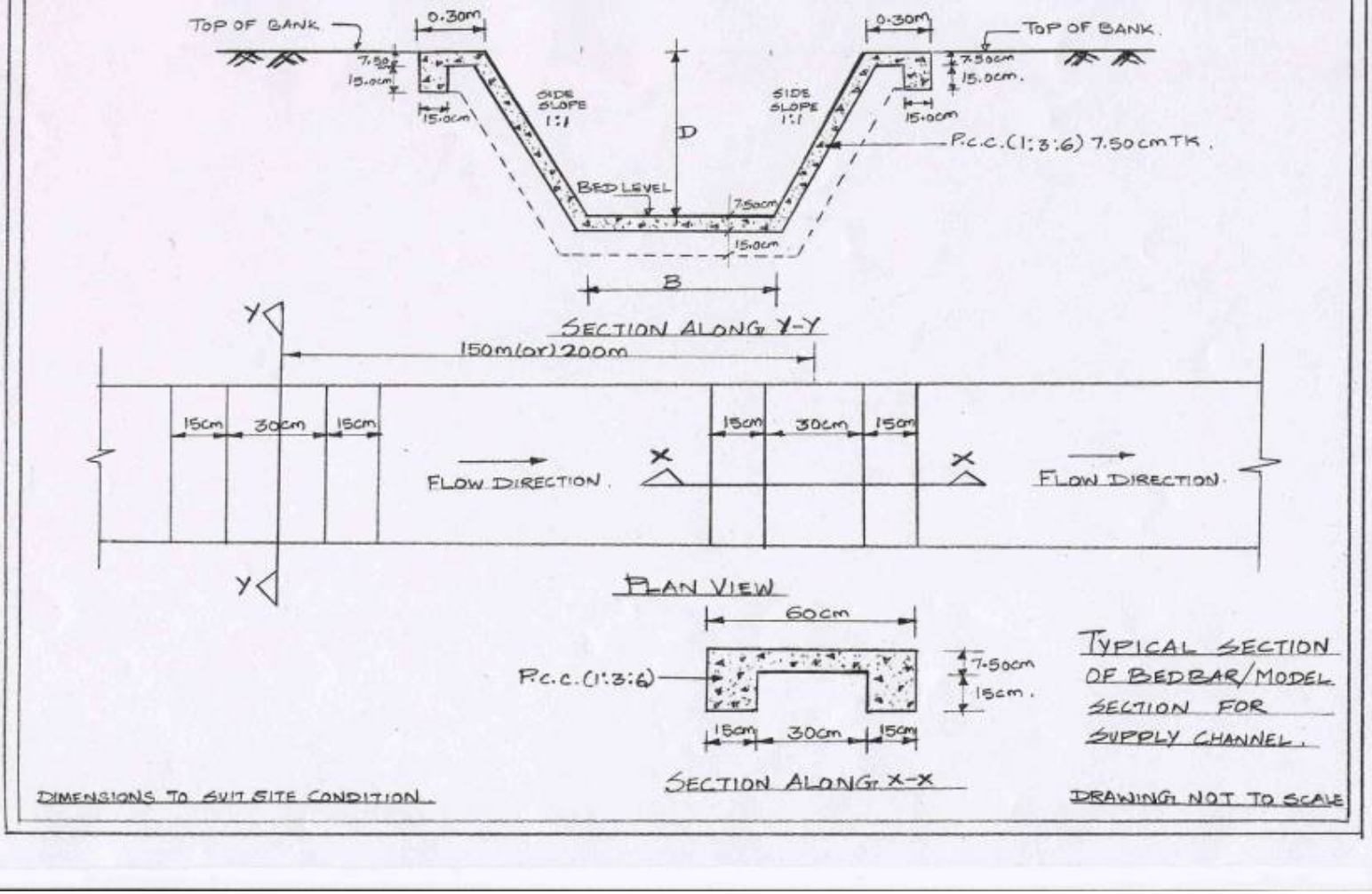
Sl.No.	Qty.	Description of Work	Rate	Per	Amount
I.Water & Soil Quality Monitoring, Project Works Monitoring					
a)	18 Nos	Water Sample Testing	1400	each	25,200
b)	3 Nos	Water Sample Testing (Pesticides)	12000	each	36,000
c)	3 Years	Conveyance, Purchases of Cans,Bottles,Chemicals hire Purchase of camera, Documentation of Water quality data, and engaging labour etc.,	5000	per year	15,000
d)	3 Years	Provision for field visits for environmental Monitoring for project activities with respect to environmental safe guards.	6000	each	18,000
II.Environmental, Social Knowledge Base,Analysis and Development base					
a)	6 Man months	Village Level Data Collection on Envirnmntal and Social State regarding other impacts	5000	month	30,000
b)	L.S	Expert Analysis and Development Reporting on other impacts	L.S	L.S	10,000
c)	3 Man months	Impact studies due to project investments	5000	month	15,000
d)	L.S	Expert Analysis and Development Reporting due to project investments	L.S		15,000

Sl.No.	Qty.	Description of Work	Rate	Per	Amount
IV. Environmental Social Awareness Creation					
a)	3 years	Propagation through pit notices, stickers, Tin Sheets, pamphlets, banners.	1300	per year	4,900
b)	1No	Awareness Program for Public	20000	each	20,000
c)	LS	Preparing and publishing Environmental atlas for the Sub basin for the use of line departments/Institutions for better management of sub basin.	L.S		50,000
d)	LS	Documentation of the entire activities, including purchase of stationery,hire purchase of LCD and Up gradation of Computer and Accessories, Viedo films and Web site development,engaging computer operater etc.,	L.S		10,000
V.Variation in rates and unforeseen items.					900
				Total	**250,000**
(Rupees Two Lakhs and fifty thousand only)					

FLOW CHART

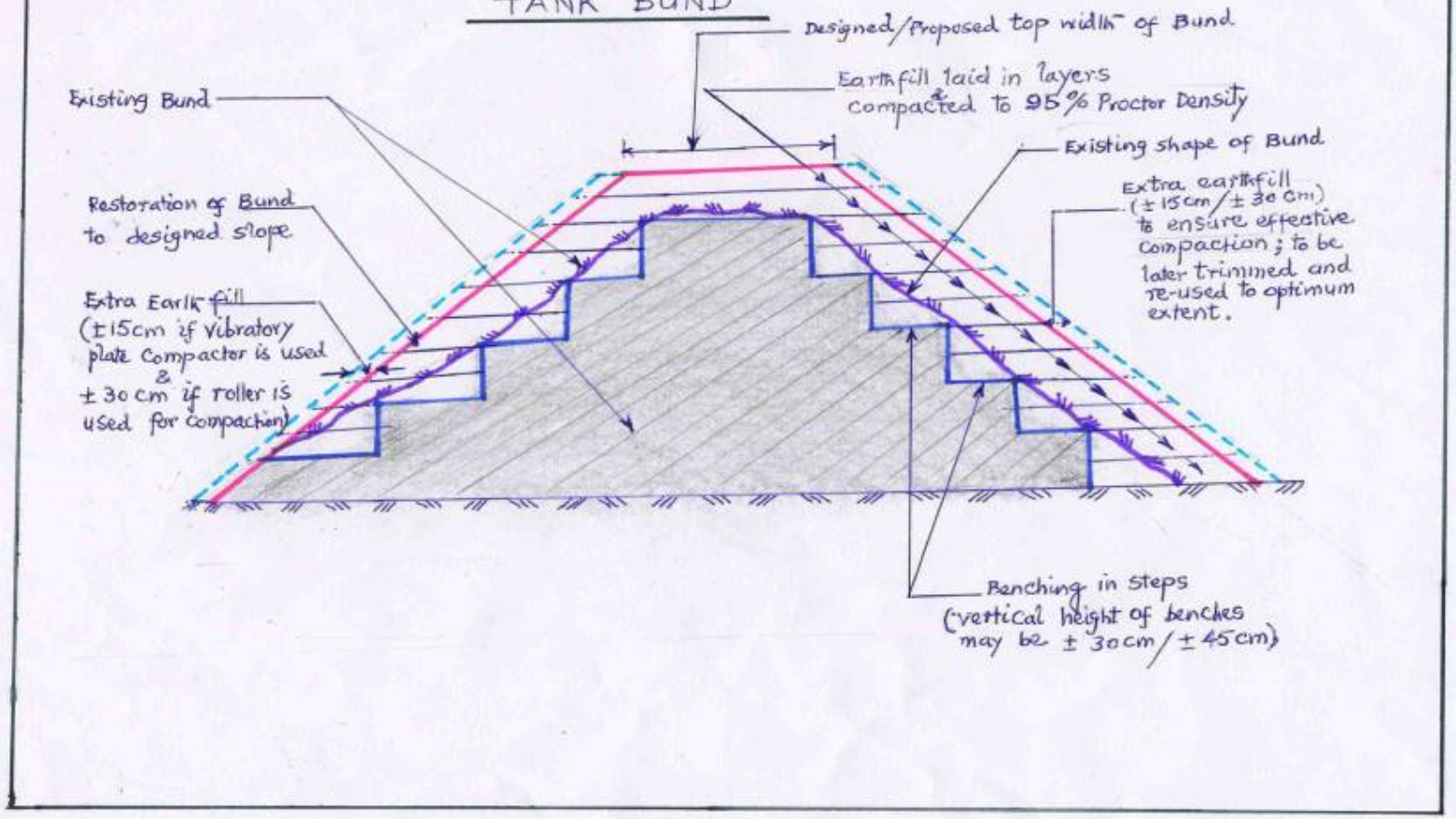
VALLAMPATTI ODAI SUB BASIN



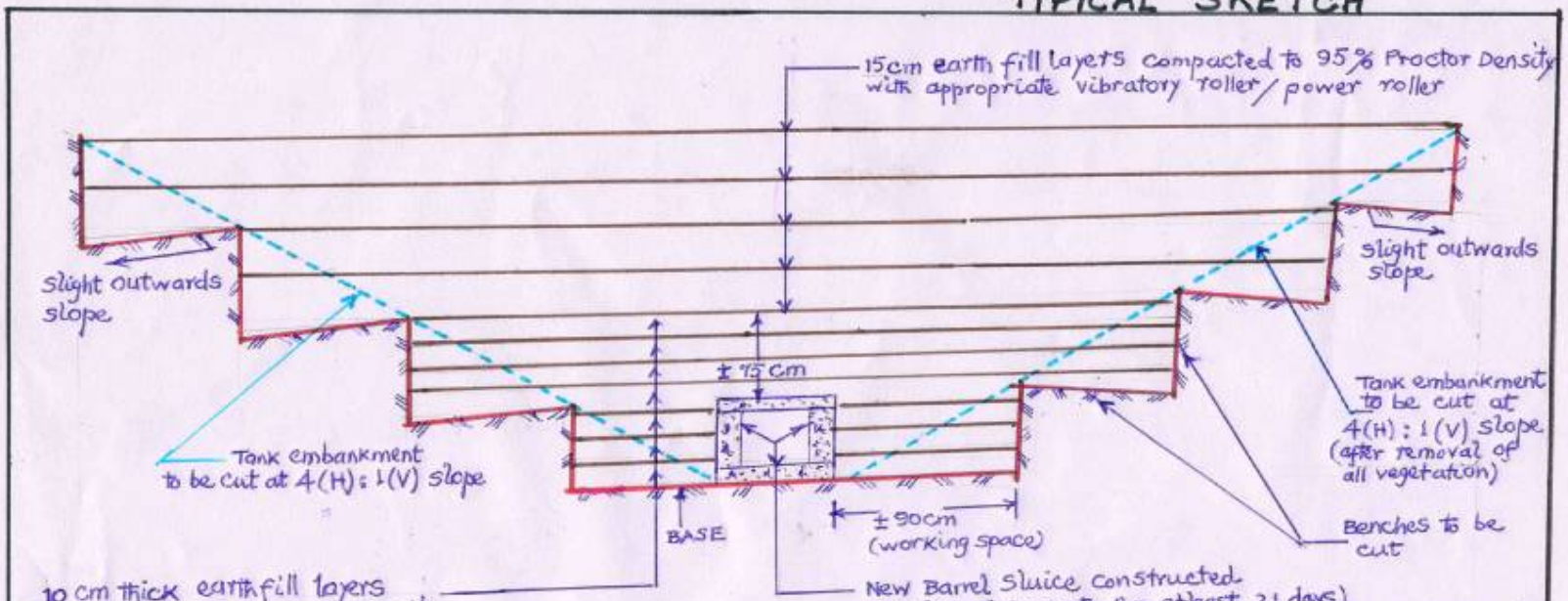

TOP OF BANK
0.30m
7.50cm
15.0cm
15.0cm
SIDE SLOPE 1:1
D
BED LEVEL
7.5cm
15.0cm
B
SIDE SLOPE 1:1
0.30m
TOP OF BANK
7.50cm
15.0cm.
15.0cm
P.C.C.(1:3:6) 7.50cm TK.
SECTION ALONG Y-Y
150m(or) 200m
Y
Y
15cm
30cm
15cm
FLOW DIRECTION.
X
X
15cm
30cm
15cm
FLOW DIRECTION.
PLAN VIEW
60cm
P.C.C.(1:3:6)
7.50cm
15cm.
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

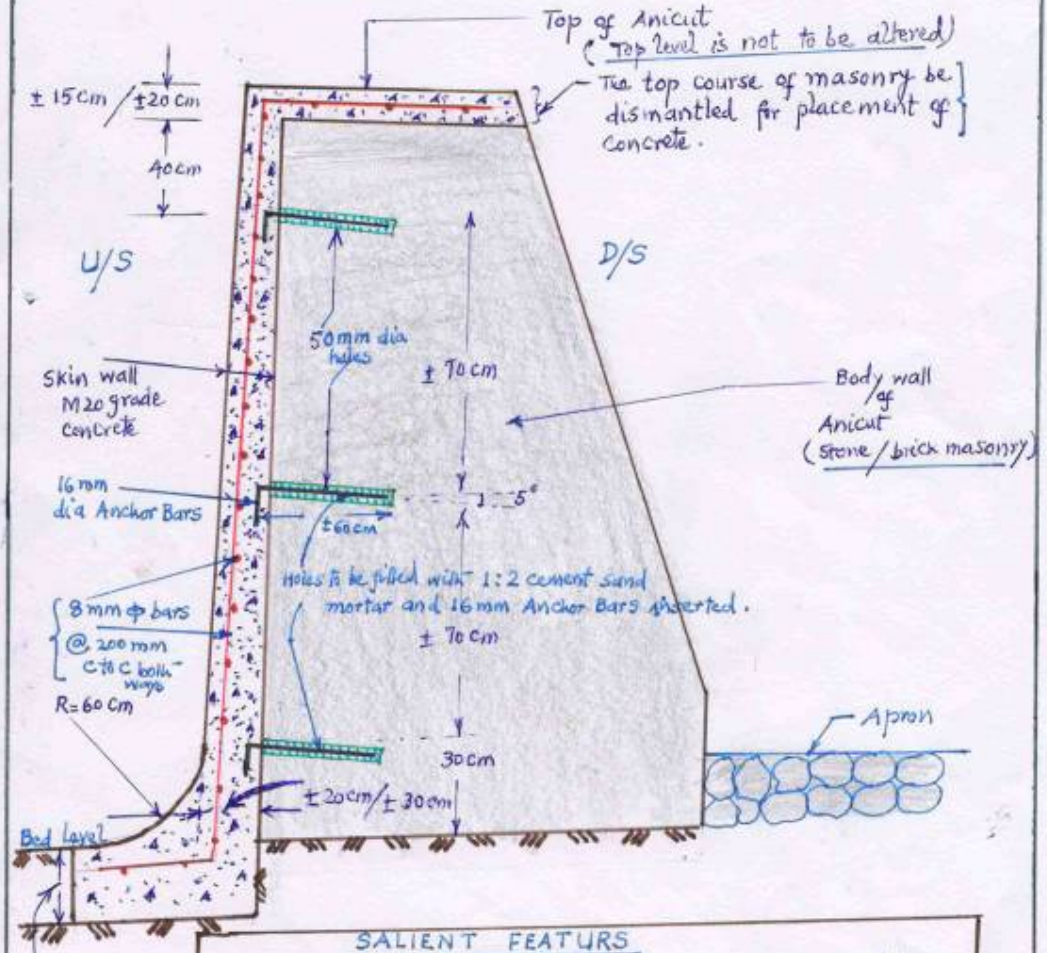
NOTES (i) The Base MUST be made smooth & hard, duly compacted with compactors/pneumatic tampers.

(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 7.5cm), vegetation etc) in earthfill layers.

TYPICAL SKETCH

Rehabilitation of Anicut through SKIN WALL Concrete



SALIENT FEATURS

- Joints on u/s surface to be raked to 25 mm depth & Surface roughened by Chipping;
- Drill holes of 50 mm 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 : 15 cm at top & 20 cm 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 ± 1.50 m.