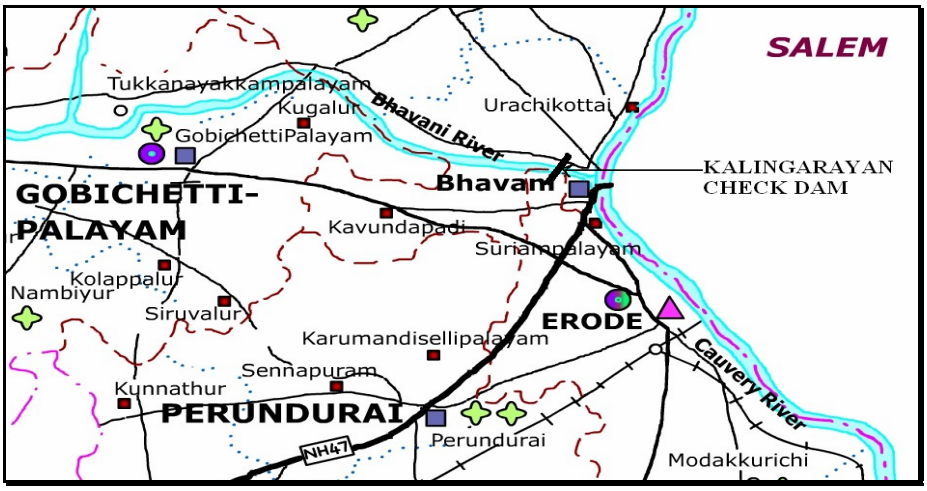
Kalingarayan Canal Water Quality Study, Tamil Nadu

At the instance of Hon'ble Minister of Justice & Social Welfare, the South Zone Office of CPCB has carried out a study in order to evaluate the water quality status of Kalingarayan canal built during 13th century linking the two main tributaries, i.e. River Bhavani & River Noyyal of River Cauvery.

Map Showing the River Bhavani Joining River Cauvery & Kalingarayan Check Dam



The total length of the canal is approximately 92 km passing entirely through the district of Erode, Tamil Nadu and as per the survey conducted about 150 dyeing units and 20 leather tanneries are in operation in catchments area and expected to discharge the trade effluent (both treated & untreated) either directly or indirectly through drain. This has resulted in poor quality and low yield of crops being irrigated with the canal water. In addition, health status of people using the canal water for domestic purposes has been reported deteriorated. The increase in the concentration of the dissolved solids in the canal water at its origin and on the bridge indicating the mixing of untreated effluent. The status of the trade effluents being released by the industries is also monitored and appended below.

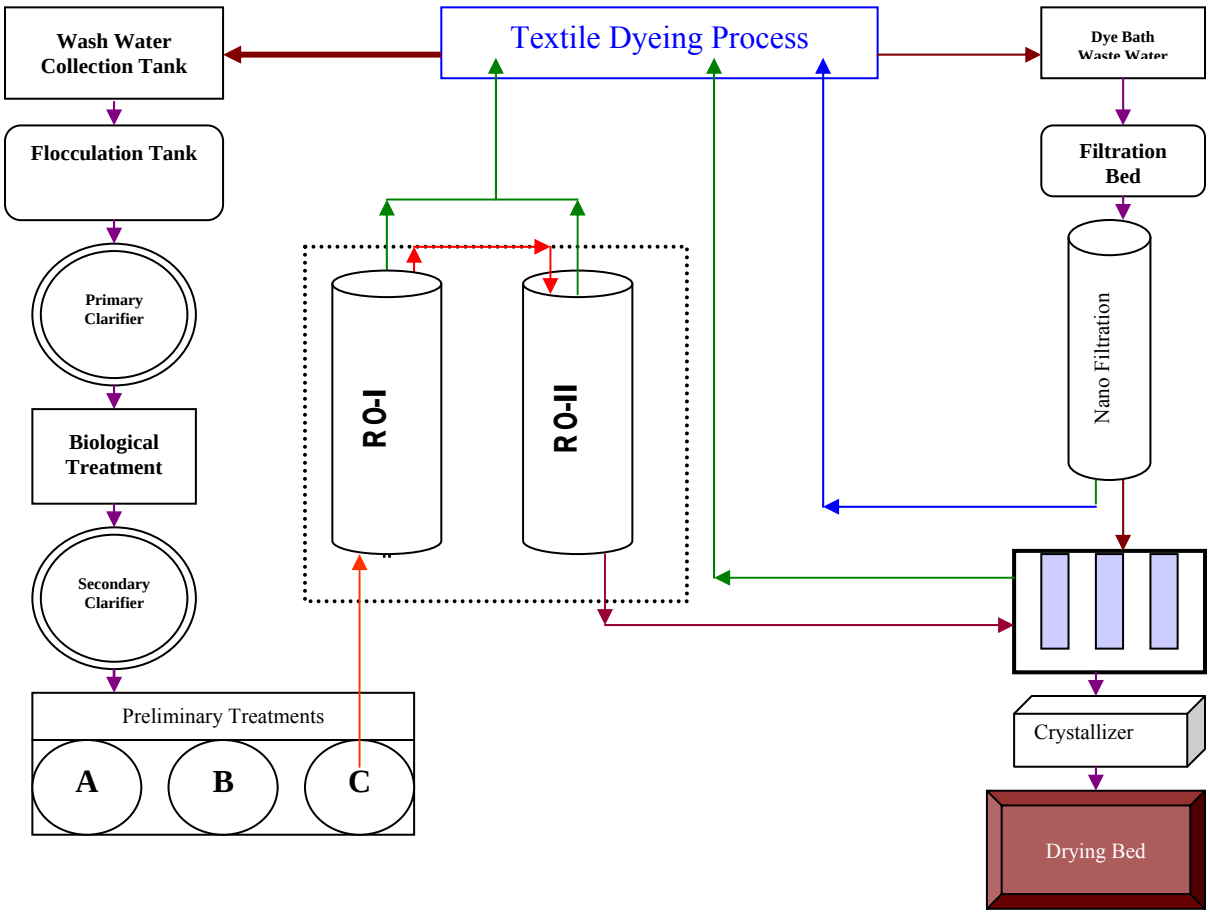
Analysis Results of Samples Collected at Various Points of Kalingarayan Canal				
S.No	Parameter	Bhavani River	Kalingarayan Canal	
		On Bhavani River - 3 km upstream to Kalingarayan Check Dam	Konaivaikal Bridge upstream side	Karungalpalyam Bridge on Salem Road
1	pH	7.69	7.85	8.00
2	EC, µS/cm	350	390	500
3	Total Dissolved Solids, mg/l	208	242	272
4	Total Alkalinity, mg/l	136	138	157
5	Phenolpthalein Alkalinity, mg/l	Nil	Nil	Nil
6	Chloride, mg/l	21	27	57
7	Sulphate, mg/l	10	14	18
8	Total Hardness as CaCO3, mg/l	140	145	180
9	Calcium Hardness as CaCo3, mg/l	80	85	90
10	Sodium, mg/l	18	26	44
11	Potassium, mg/l	2	204	3

Quality of the industrial wastewater generated by some of the Textile (Dyeing & Bleaching) industries located in Erode and Bhavani (Grab samples collected on 11/08/2006)

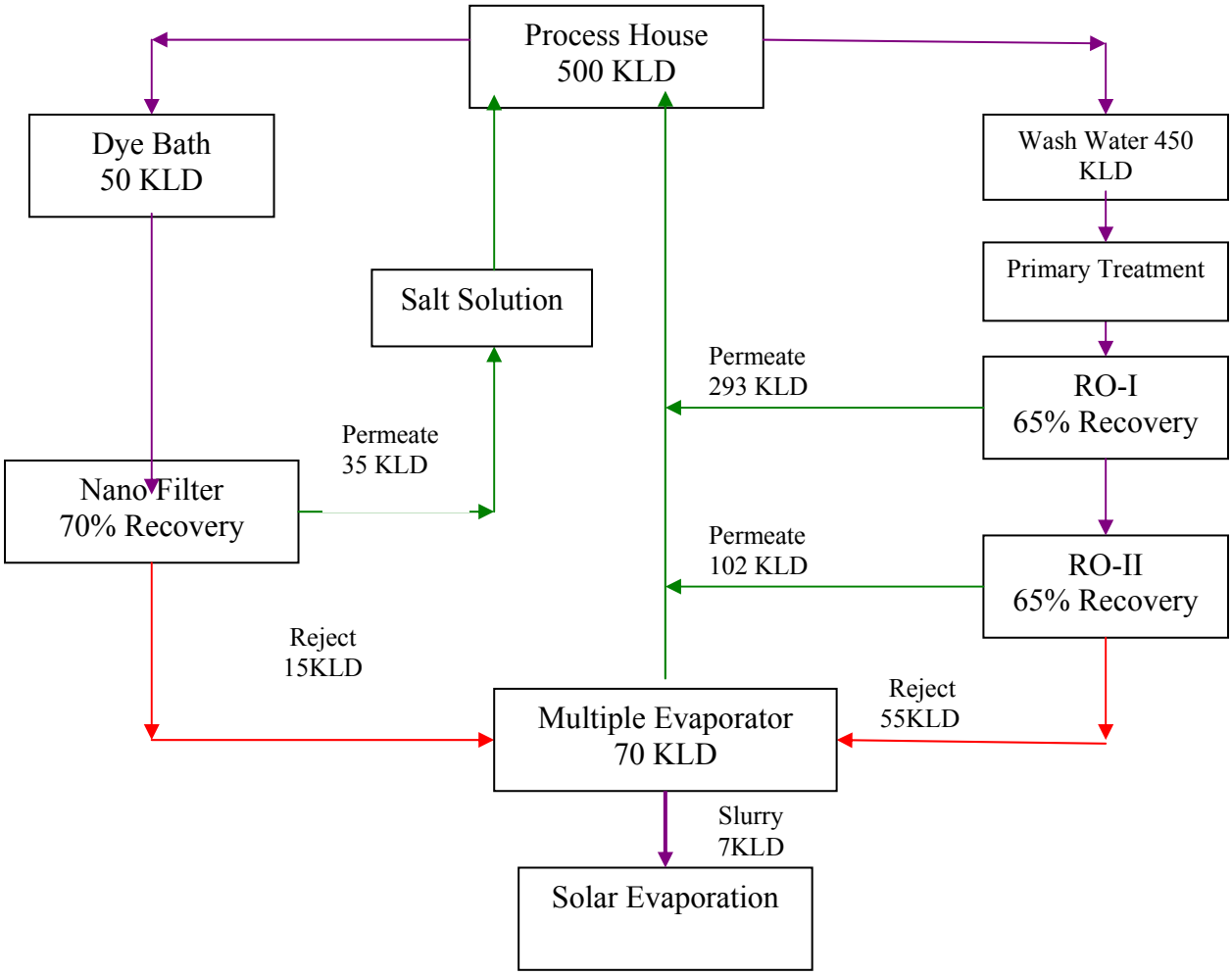
Parameters	M/s United Yarn Processors, Bavani		M/s Rajalakshmi Textile Processing (P) Ltd, Erode				
	Inlet to ETP	RO Reject	Inlet to ETP	RO Reject	Dye bath water + Silicate Wash	Inlet to ME	ME Reject
pH	9.58	8.41	11.60	7.36	>12	11.75	>12
EC, mS/cm	5400	4100	5400	12400	32000	10700	174000
TDS, mg/L	3270	2618	2804	8078	25660	9504	163320
COD, mg/L	345	16	881	383	3142	996	20233
T. Alkalinity, mg/L	900	780	1060	440	15000	4160	65500
P. Alkalinity, mg/L	250	60	1040	Nil	10000	3240	50000
Chloride, mg/L	1350	840	571	4037	1040	623	10056
Sulphate, mg/l	25	30	50	425	500	400	6500
Total Harness, mg/L as $CaCO_3$	260	600	120	650	250	90	750
Ca-Hardness, mg/L as $CaCO_3$	180	260	60	550	150	60	650
Na, mg/L	1280	840	920	2920	8000	2600	42000
K, mg/L	37	32	39	74	79	34	630

Tanneries, Erode on 11/08/2006(Grab Samples)							
Parameters	**EK Mohammed and Sons**			**KKSK Tannery**			
	Inlet to	**RO**	**Ground**	**Inlet to**	**RO Feed**	**RO**	**Ground**
pH	8.12	4.87	7.61	6.60	5.85	5.70	8.50
EC, mS/cm	14200	18400	1040	19300	23000	32400	5000
TDS, mg/L	9130	13170	546	13885	18202	22888	3264
COD, mg/L	2682		-	1916	728	590	-
T. Alkalinity, COD,	2700	14	299	1750	150	80	244
P. Alkalinity, COD,	Nil	Nil	Nil	Nil	Nil	Nil	10
Chloride, mg/L	2760	4480	124	1405	4688	5887	1135
Sulphate, mg/l	1000	2500	92	7120	4750	8000	716
Total Harness, mg/L as $CaCO_3$	400	750	320	1260	1870	2350	680
Ca-Hardness, mg/L as $CaCO_3$	110	570	210	720	1240	1360	550
Na, mg/L	2600	3800	240	4040	4720	1200	840
K, mg/L	35	36	9	34	50	57	24

The above status reveals that the units who have provided proper effluent treatment plant require better management of reject in order to prevent the ground water contamination, thus the canal water and the industries that have not provided and treatment of trade effluent shall be asked to do immediately without fail.



Typical schematic diagram of advanced waste water treatment technology for recycling of textile dyeing wastewaters



Flow diagram of zero discharge in textile dyeing unit using advanced treatment