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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

DEPARTMENT

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1079

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

8th April 1878, No. 307 I.

Irrigation.
Account.

Read the following paper:—

No. 35. From Lieutenant-Colonel H. L. PRENDERGAST, R.E., District Engineer, North Arcot, to the Chief Engineer for Irrigation, dated Vellore, 17th August 1877, No. 1,674.

I HAVE the honor to submit for sanction six estimates and plans with a sketch showing the group of the Mookoor large tank in the Wandewash taluq.

1 Sketch map.
4 Plans.
6 Sections with plans drawn in them.
6 Detailed estimates with abstracts and reports.
1 Hydraulic statement.

2. *Injeemodoo Large Tank.*—The bund is low and requires raising and strengthening throughout; its revetment is in disorder and requires to be repacked.

The sluices are all out of order. One consists of earthen pipes, and a new sluice is needed; three other old sluices are leaky; they are silted up, and their vents are very small: these sluices require to be rebuilt. The present escape has been closed by the ryots, as it is not sufficient to discharge the surplus water, and badly situated as the water passes over and damages the fields. The villagers therefore have been in the habit of making cuts at the end of the bund, and it is proposed to construct an escape 160 feet long to pass off the surplus of 1,533 cubic feet per second.

Injeemodoo Small Tank.—The bund is low and much worn away, and its sluice is in a ruined state; so that it requires to be reconstructed. This tank receives a supply of only 292 cubic feet per second, but there is no surplus weir and it is proposed to provide an escape 40 feet long. The water has hitherto been let off by a cut on the bund, and the full ayacut area has not been cultivated, as the tank could not hold its full supply.

Masavady Small Tank.—The tank receives a total supply of 815 cubic feet per second, both from its own catchment basin and from the surplus of Masavady large tank. The bund requires to be raised throughout, as it is very low, scarcely above the level of the full supply of water. It is proposed to build an escape 70 feet long at the place where there has been a cut made in the bund, and a small escape 15 feet long to be built at the north end, so as to supply the Injeemodoo small tank. The head of the tank sluice and a part of the body are much out of order, and are in need of early repair.

Masavady Large Tank.—The bund is low and weak and requires raising and widening. The tank has at present a calingulah 33 feet in length which is not sufficient to discharge a surplus of 893 cubic feet per second received from the tanks above. It is proposed to provide an escape 60 feet long at the east end of the tank bund, where the surplus is let out by a cut and to remove the dam stones from the present calingulah, and to raise the crest to the full tank level. The wings of this old calingulah require to be raised and the apron to be repaired. The tank requires also a high level sluice in place of an old pot sluice.

Ragoonathasamoodram Small Tank.—The bund is not above the maximum water level, and requires general raising and the head of its sluice requires some slight repairs. There is no escape to this tank which receives a supply of 562 cubic feet

per second, both from its local drainage and the tanks above; a flush escape 60 feet long is provided in the estimate to be constructed at the north end of the bund.

Mathimungalam Small Tank.—The bund is low and requires raising and strengthening, and its sluice has been carried away, so that cultivation has been carried on by a small drain, and a new sluice is required. The tank has no escape, except a cut at the end of the bund. It is proposed to construct a flush escape 21 feet in length to discharge 170 cubic feet per second.

3. The estimate for Ragoonathasamoodram large tank was sanctioned in G.O., No. 456, dated 9th February 1876, and there are other petty tanks which surplus into Injeemodoo large tank, but are not worth repairing.

4. The repairs to the above tank bunds and the reconstruction of sluices were put in hand last year from Famine Relief Funds. And I have specially to represent that the following items of rebuilding sluices have been commenced, viz.:—

	RS.
Injeemodoo large tank Rupees 554	
Do. small tank 250	1,040
Do. large tank 236	
Masavady large tank 174	
Mathimungalam 173	
Do. 192	
Total ...	1,579

The replacing an old sluice by a new one has been treated as a repair work in submitting estimates, and such works have been sanctioned from Repair funds, e.g., in three estimates sanctioned in G.O., No. 456, dated 9th February 1877. The Range Officer was authorised to carry on all the repair works required in anticipation of sanction, and has been carrying on the works specified.

5. The other items of new works, the escapes, have not been commenced, and these will fall for execution on the Budget allotment for Minor New Works. I have already appropriated my funds under this head; and though I have ample funds under repairs, I am not as yet making any application for transfer of funds pending a reply to my letter, No. 1,599, of the 11th instant. I have therein inquired whether, when Budget allotments for Minor New Works are expended, I can carry on the works from Relief Funds, as, if this is permissible, it will be unnecessary for me to ask for more Budget money for New Works.

6. I request that the enclosures may be returned when no longer required.

No. 84 L.

No. 85-A.

Note by the Chief Engineer for Irrigation.

The following estimates appertaining to the Mookoor large tank group from the Paloor Range are forwarded by the District Engineer, North Arcot, with his letter marginally noted:—

Taluk.	Village.	Work.	Amount.
Wandewash...	Injeemodoo ...	V. Large tank ...	RS. 3,030
Do. ...	Do. ...	V. Small do. ...	580
Do. ...	Masavady ...	V. Do. do. ...	930
Do. ...	Do. ...	V. Large do. ...	1,290
Do. ...	Ragoonathasamoodram ...	V. Small do. ...	625
Do. ...	Mathimungalam ...	V. Do. do. ...	470
Total ...			6,925

2. The financial and hydraulic details of the Irrigation works concerned are exhibited in the following statement:—

I.—Financial Details.

Name of Work.	Ayacut Area.	Assessment.	Average Revenue for five years.	Highest Revenue for five years.	During the previous four years.	OUTLAY.		
						Proposed.		
						Ordinary Agricultural Irrigation.		
						Original Works.	Repairs.	Average Annual proportion of Charges to Revenue.
	ACRES.	RS.	RS.	RS.	RS.	RS.	RS.	PER CENT.
Injeemodoo large tank	188	766	472	Not stated.	None.	1,305	1,225	90.1
Do. small tank	31	156	111	..	..	259	330	104.5
Masavady do.	33	158	205	..	..	340	390	90.7
Do. large tank	110	659	637	..	..	460	830	40.5
Ragoonathasamoodram small tank	17	110	81	..	..	145	480	154.3
Mathimungalam do.	18	98	74	..	..	265	205	127.0
Total ..	395	1,987	1,780	..	..	3,265	3,660	77.8

II.—Hydraulic Details.

Name of Work.	Catchment Basin, Area.	MAXIMUM SUPPLY.		LENGTH OF ESCAPE.		AVERAGE HEIGHT OF BUND.		Surplus discharged at M.W.L. per Second.	Tanks above.
		Catchment per Second.	Channel per Second.	Total.	Effective.	Above F.T.L.	Above M.W.L.		
Injeemodoo large tank	sq. M. 4.5	c. ft. 1,593	c. ft. ..	E 17	17	1.02	0.35	133.2	8
Do. small tank	0.375	292	..	E 160	160	4.50	2.50	1,254.0	None.
				Irregular cody.		0.61	1.24	0.0	
Masavady do.	1.77	815	..	E 40	40	3.50	1.75	256.6	5
				Irregular cody.		0.93	1.07	0.0	
							below		
Do. large tank	2.0	803	..	W 70	85	4.00	2.00	782.7	4
				E 15	28	2.49	0.49	252.0	
				W 33	93	4.50	2.50	883.7	
				W 60	60	4.50	2.50	470.2	1
Ragoonathasamoodram small tank, .	1.0	562	..	Irregular cody.		1.01	0.99	0.0	
				E 60	60	4.50	2.50	470.2	None.
Mathimungalam small tank	0.188	170	..	Irregular cody.		1.01	0.74	0.0	
				E 21	21	3.50	1.75	134.7	

NOTE.—The proposed dimensions of escapes and heights of bund are printed in large type; the existing dimensions in small type. The following abbreviations are used:—C.—Cullingah with dam stones. W.—Weir with overfall. E.—Escape at ground level. B.—Bund of tank. V.—Village.

3. The following is a summary of the work proposed to be carried out in each case:—

Injeemodoo Large Tank.—This tank is situated in latitude 12° 32' 50", longitude 79° 29' 35". The bund throughout is low and weak and the revetment is out of order. The three masonry irrigation sluices are in a leaky condition and silted up, the vents being small it is impracticable to remove the silt and examine them and it is said that

the covering stones are not set in mortar. The pot pipe sluice is also out of order. The length of the existing escape is insufficient and the escape itself is badly situated and seldom used, as the water discharged over it injures the crops, consequently cuts in the bund have to be made to allow the surplus to escape.

The estimate provides for—

- 1st.—Raising and repairing the bund, repacking the revetment and turfing the unrevetted portions of the front and rear slopes of the bund.
- 2nd.—Reconstructing three irrigation masonry sluices.
- 3rd.—Constructing a masonry sluice to replace the pot sluice.
- 4th.—Constructing a masonry flush escape.

It is not necessary to allow four sluices for this tank under which the acreage is not likely to much exceed 200 acres, the ayacut being 188 acres and the average cultivation less. Two well-placed and conveniently arranged sluices will do very well and for the reconstruction of 2 out of 4 Rupees 900 may be allowed. If the villagers wish for more sluices to suit their own ideas of convenience they can be built if funds are subscribed by them and paid into the treasury.

The two proposed high level sluices would be of very little use, and such sluices should not be allowed unless the circumstances are exceptional.

The water regulation arrangements should be designed with reference to Circular No. 35. For the surplus weir a work of the form shown in Circular No. 67, Design No. 5, will, it is considered, do very well, viz., a masonry wall with raised ends, a rough stone apron and revetments to the ends of the bund, Rupees 400 will suffice.

Whenever M.W.L. is higher than the present top of the bund, a considerable part of the soil for raising and widening should be placed inside the present section as shown at cross section No. 7.

Injeemodoo Small Tank.—The bund is low and weak and the irrigation sluice is in ruins. There are no proper means of escape for the surplus, and consequently the water has to be discharged by cuts made at the ends of the bund, and the ground at these points has been cut up considerably, so much so that the tank is incapable of retaining its full supply and cannot irrigate the whole of the ayacut.

The estimate provides for—

- 1st.—Raising and repairing the bund, closing the breaches, turfing the front slope and sowing grass seeds on the rear slope.
- 2nd.—Reconstructing the irrigation sluice.
- 3rd.—Constructing a masonry flush escape.

The remarks on the plan of proposed works should be attended to.

Masavady Small Tank.—The bund is weak and low throughout. The tank has no surplus work; the water is discharged at the end of the bund, and the front portion of the irrigation sluice is in a leaky condition.

The estimate provides for—

- 1st.—Raising and strengthening the bund, closing the breach, turfing the front slope, and sowing grass seeds on the rear slope of the bund, rebuilding the head and a portion of the tunnel of the irrigation sluice.
- 2nd.—Constructing a masonry weir.
- 3rd.—Constructing a masonry flush escape.

One escape will suffice and should be of the form shown for the 15 feet weir, at the site of which it can be placed. The cost will be about Rupees 240 for a length of 85 feet.

Masavady Large Tank.—The bund is low and weak. The length of the calingulah is insufficient and a portion of the surplus water has to be discharged through a cut in the bund.

The high level sluice is constructed of earthen pipes and is insufficient.

The estimate provides for—

- 1st.—Raising and repairing the bund, turfing the front slope, and sowing grass seeds on the rear slope of the bund.
- 2nd.—Converting the calingulah into a weir by removing the dam stones, and raising the body-wall to F.T.L. and the wings to a corresponding height and repairing aprons.
- 3rd.—Constructing a masonry weir.
- 4th.—Constructing a masonry irrigation sluice to replace the pot sluice.

The surplus weir may be of a cheaper form, viz., a crest wall with raised ends, an apron and wing revetments. The amount for this work has been reduced therefore to Rupees 185.

Ragoonathasamoodram Small Tank.—The bund of this tank is low and weak, the irrigation sluice is in need of slight repairs, and the tank is not provided with a surplus work.

This tank irrigates, in addition to its own ayacut area, a portion of the land belonging to the large tank of the same name.

The estimate provides for—

- 1st.—Raising and repairing the bund, closing the breach, turfing the front slope, and sowing grass seed on the rear slope and repairing the irrigation sluice.
- 2nd.—Constructing a masonry flush escape.

Mathimungulam small Tank.—The bund is low and weak and the sluice was destroyed by the late Cyclone rains; so that the irrigation under the tank has to be carried on by a small imperfect and insecure drain constructed by the ryots. The tank is not provided with a surplus work.

The estimate provides for—

- 1st.—Raising and repairing the bund, turfing the front slope, and sowing grass seed on the rear slope.
- 2nd.—Constructing an irrigation sluice to replace the one built by the ryots.
- 3rd.—Constructing a masonry flush escape.

The new sluice should be provided with wings in front, as F.T.L. is nearly 7 feet above its sill.

Revenue Survey Maps should be used as the basis for group maps. The group map sent with the estimates should be completed in the manner required by Circular No. 76, and all tanks which have been thoroughly repaired or for thorough repair of which estimates have been sanctioned should be distinguished by color or cross hatching, and the meaning of these indications should be given in the references.

Much of the revision made in this office should have been effected by the District Engineer.

The following statement shows the proposed distribution of the outlay recommended for sanction to the debit of the several heads of account involved:—

HEAD OF SERVICE—IRRIGATION.
Fund—Ordinary Agricultural.

Name of System or Group.	Distinguishing Number or Letter of Group.	Name of Tank or Channel.	Description of Work.	Main Head.	Class.	Amount of each Item.	Amount to be separately accounted for.
Main group, Mosoon large tank. Sub-group, Vannamangalam large tank. Section of sub-group, Vannamulloor large tank.	..	Injeemodoo large tank.	Repairing bund	Irrigation.	Repairs..	Rs. 1,225	Rs. 2,125
			Reconstructing two irrigation sluices		Do. ..	900	
			Flush escape		Original Works.	400	400
	..	Do. small tank.	Repairing bund		Repairs.	330	510
			Reconstructing irrigation sluice		Do. ..	180	
			Flush escape		Original Works.	70	70
	..	Masavady small tank.	Repairing bund and sluice ..		Repairs.	590	500
			Masonry weir		Original Works.	240	240
					Works.		
	..	Do. large tank.	Repairing bund		Repairs..	740	830
			Converting calingulah into weir		Do. ..	90	
			Masonry weir		Original Works.	185	370
Main group, Mosoon large tank. Sub-group, Vannamangalam large tank. Section of sub-group, Vannamulloor large tank.	..	Ragoonathasamoodram small tank.	Do. irrigation sluice		Do. ..	185	
			Repairing bund and sluice ..		Repairs..	480	480
			Masonry flush escape		Original Works.	145	145
	..	Mathimangalam small tank.	Repairing bund		Repairs.	205	205
			Irrigation sluice		Original Works.	185	240
			Flush escape		Do. ..	55	

PORT ST. GEORGE,
20th March 1878.

(Signed) P. MONTGOMERIE, Major, R.E.,
Ag. Dy. Chief Engineer for Irrigation,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government, Public Works Department, Irrigation Branch.

No. 36. ORDER THEREON, 8th April 1878, No. 307 I.

THE following estimates for Irrigation Works in the Peleor Range, North Arcot District, forwarded by the Chief Engineer for Irrigation with his memorandum marginally noted are sanctioned:—

Head of Service—Irrigation.

Name of System or Group.	Name of Tank.	Description of Work.	Class.	Amount.	Irrigation Register No.
Main group, Mosoon large tank. Sub-group, Vannamangalam large tank. Section of sub-group, Vannamulloor large tank.	Injeemodoo large tank.	Repairing bund	Repairs ..	Rs. 1,225	1
		Reconstructing two irrigation sluices	Do. ..	900	2
		Flush escape	Original Works	400	3
				2,525	
	Injeemodoo small tank.	Repairing bund	Repairs ..	330	1
		Reconstructing irrigation sluice ..	Do. ..	180	2
		Flush escape	Original Works	70	3
				580	

Name of System or Group.	Name of Tank.	Description of Work.	Class.	Amount.	Irrigation Register No.
Main group, Mosoon large tank. Sub-group, Vannamangalam large tank. Section of sub-group, Vannamulloor large tank.	Masavady small tank.	Repairing bund and sluice ..	Repairs ..	Rs. 590	1
		Masonry weir	Original Works ..	240	2
				830	
	Masavady large tank.	Repairing bund	Repairs ..	740	1
		Converting calingulah into weir ..	Do. ..	90	2
		Masonry weir	Original Works ..	185	3
				1,209	
	Ragoonathasamoodram small tank.	Repairing bund and sluice ..	Repairs ..	480	1
		Flush escape	Original Works ..	145	2
				625	
	Mathimangalam small tank.	Repairing bund	Repairs ..	205	1
		Irrigation sluice	Original Works ..	185	2
		Flush escape	Do. ..	55	3
				445	

2. These sanctions are registered as shown above.

(True Extract.)

(Signed) JOHN MULLINS, Lt.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

(True Copy.)

P. Montgomerie

Major, R.E.,
Under Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Superintending Engineer, North Arcot.
" Collector of North Arcot.
" Chief Engineer for Irrigation.
" Examiner of Public Works Accounts.
" Revenue Department.

Exd. E. C. Shunkar.
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THE UNIVERSITY OF CHICAGO

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains.

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402-1878

Florida Large Tree Group, North America
 Tabularia Group to which Tabularia
 is added.

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