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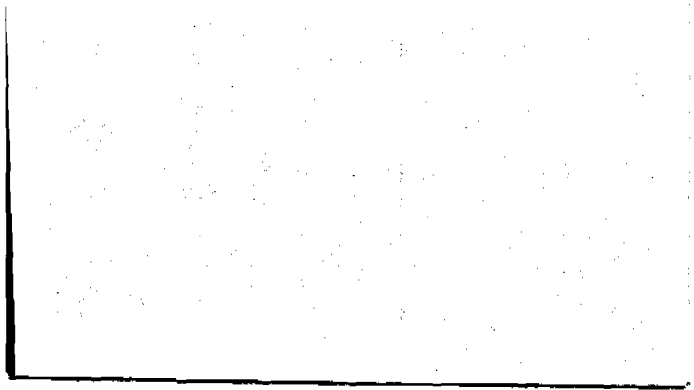
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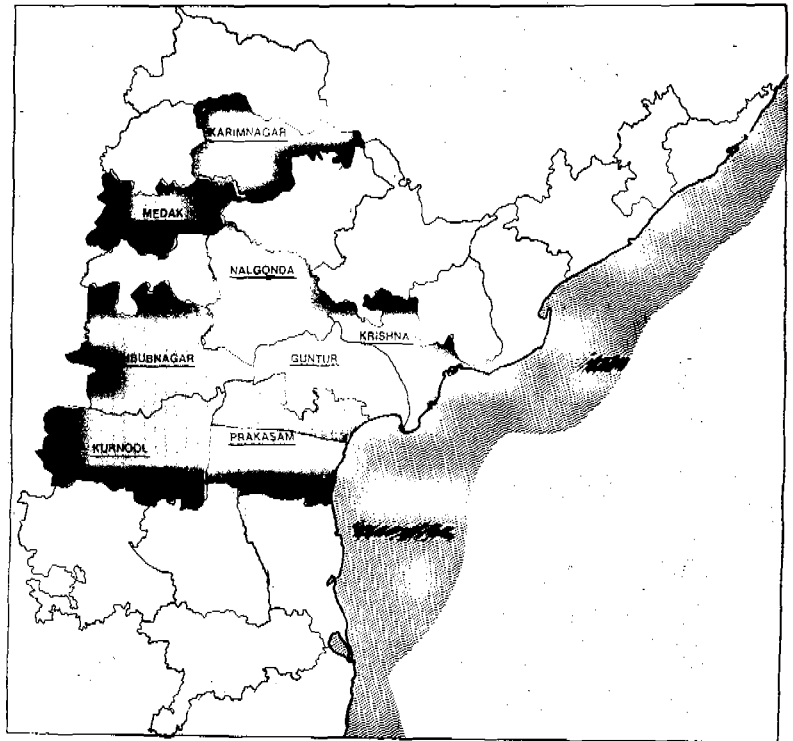
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HYDERABAD - 500 027

QUARTERLY
PROGRESS
REPORT

APRIL TO SEPTEMBER 1995

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LIST OF ABBREVIATIONS

AIRDS	Local NGO
AP	Andhra Pradesh
APDDCFL	Andhra Pradesh Dairy Development Cooperative Federation Limited
AP-I	First generation of Netherlands Assisted projects in AP
AP-II	Second generation of Netherlands Assisted Projects in AP
AP-III	Third generation of Netherlands Assisted Projects in AP
ASSIST	Local NGO
CE	Chief Engineer
CPWS	Comprehensive Piped Water Supply
CWA	Clear Water Augmentation
DC	District Collector
E-n-C	Engineer-in-Chief
ft	feet
GLSR	Ground Level Service Reservoir
GoAP	Government of Andhra Pradesh
GoI	Government of India
GoN	Government of Netherlands
GP	Gram Panchayat
HC	House Connection
HERSELF	Local NGO
IPM	Institute of Preventive Medicine
lakh	100,000
MARI	Local NGO
MEP	Minimum Evaluation Procedure
MI	Minor Irrigation
MIS	Management Information System
MODE	Mode Research Private Limited
NAP	Netherlands Assisted Projects
NAPO	Netherlands Assisted Projects Office
NEERI	National Environmental Engineering Research Institute
NGO	Non-Government Organization
NS	Nagar Sagar
O&M	Operation and Maintenance
OHSR	Overhead Service Reservoir
PRA	Participatory Rural Appraisal
PRED	Panchayat Raj Engineering Department
PRFS	Project Reformulation/Feasibility Study on AP-III
PSP	Public Stand Post
PWS	Piped Water Supply
QPR	Quarterly Progress Report
R&B	Roads and Buildings
RSF	Rapid Sand Filtration
RSM	Review and Support Mission
SNIRD	Local NGO

LIST OF ABBREVIATIONS

SSF	Slow Sand Filtration
SST	Summer Storage Tank
TBLLC	Tunga Bhadra Lower Level Canal
TP	Treatment Plant
TRM	Technical Review Mission
WHO	World Health Organization
WTP	Water Treatment Plant
VAC	Village Action Committee
VBO	Village Based Organization
VDS	Village Development Society

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1. INTRODUCTION

This report reflects the developments in the NAP Programme for the period April to September 1995, as observed by NAP Office.

NAP Office monitoring and observations have been based on analysis of QPRs and other documents provided by the respective programme components, frequent field visits to all programme components by NAPO staff, discussions and consultations with representatives and staff of the various programme components and the assistance of the Support Mission AP 32, conducted by Mr.J. Spit, IWACO.

The months covered in the reporting period have shown many interesting developments, including the appointment of a new Engineer-in-Chief and the arrival of a new water specialist in the Royal Netherlands Embassy.

Andhra Pradesh also experienced dramatic changes in the political field during the month of August, which resulted in a new Chief Minister taking charge.

Within the NAP Programme, NAPO benefited from having full staff on board, enabling us to conduct frequent field visits and major increases in contacts with all programme components.

This has greatly helped NAPO in the efforts to fill previous information gaps and has improved communication between all programme components.

Inventory formats for the technical components of AP II, as well as monitoring formats for the operation of the systems have been devised, approved and introduced into the programme, during this period.

As these constitute the first efforts at systematic gathering and recording of information, the adoption of these monitoring systems can be considered a good step forward, which is expected to benefit all involved.

Availability of design and execution (as built) information will benefit the local staff in understanding their scheme, and will enhance the operation and maintenance of the scheme, while the information provided facilitates internal and external monitoring.

The systematic recording of the operation of the schemes will facilitate : O&M, estimates of O&M budgets and create new forms of accountability for the field staff to the supervising officers; at the same time providing insights of the levels of operation of the schemes to the PRED management and external monitoring.

The high frequency of field visits to technical and social components have enabled NAPO to put together a fair impression of the overall state of affairs of the AP II programme and has helped us in identifying further needs for support and coordinating services.

As described in further detail in the report, the monitoring activities regarding the technical components have provided clear indications of the works and activities still to be done, before the technical project can be considered completed.

NAPO has reviewed Physical and Financial progress as indicators of the level of completion - not for accounting or re-imburement purposes.

On Physical and Financial progress, NAPO would like to draw attention to the following :

- The Physical Progress was assessed on the basis of *designed* and *as laid information* to the extent available.
- These were compared with the PRED QPR's re-imburement claims and the field observations.
- It must be noted that changes in the infrastructure are not consistently reflected in QPRs and re-imburement claims. (Prakasam in particular has many deletions.)
- In order to attain a more accurate assessment of the level of completion, NAPO has inserted a column of deletions, as indicated in the PRED documents.
- Regarding Financial Progress, we would like to note that estimates have been based on Re-Revised Estimates (RRE), which are expected to be replaced by Final Revised Estimates (FRE) in the next QPR.

The analyses of the NGO activities have provided clear indications of inputs needed to improve their direct involvement and effectiveness in the RWS programme.

As a result, NAPO has worked out approaches to involve the users/beneficiaries more directly in the monitoring of drinking water supply to their villages.
This monitoring by users will be introduced during the next quarter.

Throughout these months NAPO is happy to report that the new NAPO staff composition has grown into a coherent team, with increasing operational capabilities for the tasks at hand.

2. BASIC INFORMATION

Project name	-	NAP (Netherlands Assisted Project)	
Projects Phase	-	NAP - AP II	
Location	-	Medak District Mahbubnagar District Prakasam District Kurnool District	
Project Components :		Implementing Institutions :	
RWS	-	PRED	
Sanitation	-	PRED; project Clean Village (preparation alternate project) NGO-Assist, Prakasam	
Lift Irrigation	-	Department for Minor Lift Irrigation, combined with RWS in Mahbubnagar.	
A.P. Dairy	-	APDDCFL, Hyderabad	
External Water Quality Control	-	IPM (Institute of Preventive Medicine), Hyderabad. NGOs with NAPO assistance.	
Health Education/ Hygiene Promotion/ Community Participation		NGOs	District
		AIRDS	Kurnool Mahbubnagar
		ASSIST	Prakasam
		HERSELF	Kurnool
		SNIRD	Prakasam (AP I)
		MARI	Medak, approval is under preparation
Monitoring/ Support Services/ Advisory Services	-	NAPO / ETC	
Technical Support Mission	-	IWACO	
Reporting Period	-	April to September 1995	

3. NAP OFFICE

3.1 Missions , Meetings And Visits

Mr. H. Soree and Ms. P. Mahale (ETC Delhi) paid three elaborate visits to Hyderabad during April, to conduct gender workshops for three different levels of the project and the cooperating agencies.

Ms. R. Turksma RNE / WID, Visited our project on April 5, to highlight the role of women in development programmes and deliver a speech at the start of the first gender workshop.

On 10 April, Mr. T. Janssen and C. Isles visited NAPO to introduce the set up of the AP Well project.

Team leader NAPO visited ETC Delhi office and RNE.

During home leave Team Leader held consultations with ETC and IWACO and participated in the Joined Water meeting DGIS hosted by DGIS/IRC on 23 May.

On 5 May, NAPO TPC met with the Director of IPM (Institute of Preventive Medicine to discuss non-receipt of water testing reports and the possibility of arranging field testing kits for residual chlorine.

On 7 June, NAPO SPC and TPC participated in the UNICEF / PRED workshop on establishment and management of sanitary marts.

8 - 9, May TPC visited Ministry of Rural Development at Delhi to discuss available guidelines on RWS and Sanitation (such instruction Manuals turn out to be in the final process of completion) and the ETC Delhi office.

On 13, June Team Leader NAPO met Mr. Kondala Rao, former E-n-C who has been appointed as Commissioner for special projects.

On 13, June Team Leader and NAPO programme staff met the newly appointed Engineer-in-Chief Dr. M. Venkateshwarlu in his chambers.

On 21, June Mr. Flik, water specialist RNE visited Hyderabad NAP project. As Mr. Flik's term in India has come to an end this was his last visit to our project.

Aside from farewells, Mr. Flik requested PRED for an advance copy on the Final Revised Estimates for AP II, so that he could still process the FRE before his departure.

Mr. Flik also informed the E-n-C (PRED) and NAPO that RNE was looking forward to receiving an early proposal for an alternative to the sanitation project, along the lines of the PRED / UNICEF pattern in Anantapur.

At the meeting with the Principle Secretary in his chambers, the same issues were discussed with the Secretary, the E-n-C and NAPO.

29 and 30 June, NAPO participated in a workshop organised by GOI, RGF and NIRD on "Appropriate Communication Strategies for Rural Drinking Water and Sanitation Programmes", at NIRD in Hyderabad.

On 17 July, NAPO met once more with the Director of IPM to discuss the need for IPM reports on water quality monitoring, and request their assistance in providing Chlorine testing kits for the AP II programme.

24-25 July, NAPO visited RNE (Ms. Vandana Sharma) to exchange information and insights on compilations of financial details regarding AP II.

Visits were also made to the ETC Delhi office and the Ministry of Rural Development to procure literature on de-fluoridation techniques and guidelines on O&M in rural water supply schemes.

On August 4, NAPO and AP Well met to exchange information on the participation of NGOs.

On August 4, E-n-C and PRED staff visited NAP Office to discuss the formalization of the formats of the inventory AP II and the formats for monitoring delivery of RWS.

8 August, NAPO and PRED staff met on the subject of Sanitation.

NAPO visited Anantapur on 7-10 and 13-15 August to observe the UNICEF - PRED Sanitation programme.

During this visit NAPO was accompanied by Mr. H. Soree, while the trip also included visits to Mahbubnagar and Kurnool RWS projects.

18 August, Team Leader NAPO and E-n-C (PRED) met on the subject of AP III

28 August, PRED and NAPO met on the subject of alternative approach to sanitation project Clean Village.

31 August - 2 September, NAPO participated in the ETC-India management meeting in Delhi and visited RNE RWS sector specialist Mr. C. Brands.

September 5, Ms. R. Turksma RNE Sector Specialist WID, visited NAPO.

Support Mission AP 31 was conducted by Mr J. Spit (IWACO) from 5 September through 24 September.

8-12 September, NAPO was visited by Mr. H. Buikema and Mr. L. Back from ETC Leusden. The visitors met with Engineer-in-Chief Dr. Venkateshwarlu at PRED, NAPO and staff, and made a field visit to Nalgonda and Nagarjuna Sagar.

On September 18, Mr J. Spit (IWACO) and F. Hanrath (Team Leader NAPO) visited Mr C. Brands /RNE for a debriefing on the AP 31 Support Mission.

On 14 September, PRED and NAPO met to discuss a preliminary sanitation proposal.

On 29 September a workshop on Management Information Systems was conducted for NAPO by Mr. Kedar Nath.

Listing of NAPO Field visits :

Technical Staff:

May 15 - 17 Mahbubnagar
18 - 19 Kurnool
24 - 26 Kurnool

Visits concerned monitoring of construction activities and review of all CPWSS.

15 - 17 Mahbubnagar (Lift Irrigation Project inquiries into subject of the Bekkam tank - progress on RWS project),
20 - 21 Kurnool (Progress RWS project),
26 - 31 Prakasam (Progress RWS project and water supply at source and NGO SNIRD).

The visit included the introduction of the newly appointed Technical Project officer to expose him to the project area and the NAPO' task of monitoring and support services.

June 19 - 22 Prakasam (Parchur)

NAPO team visited CPWSS AB Palem, CPWSS MV Palem , CPWSS Cherukuru and a few of the IPWSS's to observe progress of construction and the functioning of the schemes

July 5 - 8 Kurnool
17 - 20 Prakasam (Parchur)

Activities were to map the "as laid scheme information", and to visit IPWSS schemes.

July 24 - 29 NAPO team consisting of social and technical staff visited Parchur/Prakasam, to observe functioning of the schemes and to discuss problems of water supply at source of the schemes (N.S. CANAL).

The team also visited NGO ASSIST (refer visits Socio-economic staff).

August 7 - 10 Anantapur (Sanitation PRED/UNICEF)
13 - 18 Anantapur (Sanitation PRED/UNICEF)

Mahbubnagar (Lift Irrigation observed testing of the system and assessed progress of RWS),
Kurnool (Assessed progress of the RWS and discussed mixing of ground water).

Aug/Sep 29-2 Parchur (Prakasam), to get an update on "as laid information" of the Parchur 7 schemes.

6 - 9 Kurnool (Monitoring progress)
CPWSS Chinnakothiliki
CPWSS Manchala
CPWSS Sathnur
CPWSS Hanawal
CPWSS Halvi

11 Nalgonda

The purpose of the visit was to provide the Visiting ETC International Director an exposure to the Nalgonda area and to look at the possibility of the Nagarjuna Sagar main lake as an alternative source for the AP III programme.

The team included Chief Engineer Chowdury and SE Nalgonda, N. Reddy from PRED, J. Spit from IWACO; H. Buikema and L. Back from ETC Netherlands and Team Leader and Technical Programme Coordinator from NAPO.

18 - 22 Prakasam
CPWSS AB Palem
CPWSS MV Palem

Visits included monitoring progress and discussions with PRED staff concerning the source problems.

20 - 22 NAPO and the Support Mission visited Kurnool to observe the progress of the construction and discuss problems of mixing groundwater with surface water, as well as to compare notes on the activities under "mopping up".

Social Support-Services Staff :

April	04-07	Extension Education Institute, Rajendranagar	Gender Workshop
	18-21	AIRDS, Shadnagar	Gender Workshop
	25-28	ASSIST, Chilakaluripet	Gender Workshop
May	15-18	AIRDS, Kollapur	Information Base
	19-21	HERSELF, Mantralayam	Information Base
	24-26	ASSIST, Chilakaluripet	Information Base
	27-31	SNIRD, Donakonda	Information Base
June	14-16	AIRDS, Kollapur	Information Base
July	10-12	HERSELF, Mantralayam	VBO Strengthening
	13-14	AIRDS, Kollapur	VBO Strengthening
	24-26	ASSIST, Chilakaluripet	Monitoring Visit
	27-28	SNIRD, Donakonda	Monitoring Visit
August	07-10	PRED, Ananthapur	Visit - Pilot Study
	13	AIRDS, Kollapur	Project accompanying visit - Mr. H. Soree
	14-15	HERSELF, Mantralayam PRED, Ananthapur	NGO Visit To study UNICEF Sanitation
Aug/Sept	30-01	PRED, Parchur ASSIST, Chilakaluripet	PRA NGO visit

September 11-13 HERSELF
14-15 AIRDS
11-16 ASSIST, Chilakaluripet
25-28 ASSIST, Chilakaluripet
SNIRD, Ongole

Sustainability workshop
Sustainability workshop
Internal Evaluation
Internal Evaluation
QPR Information

3.2 NAP OFFICE AND STAFFING

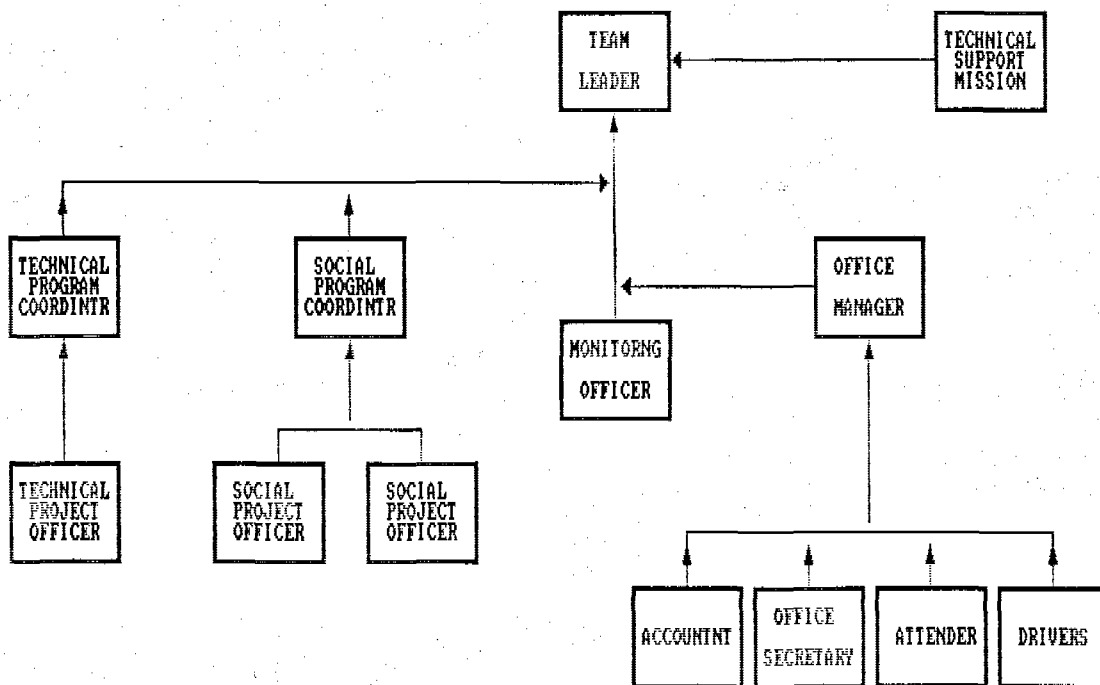
For the first time NAP O has enjoyed a quarter with full staff capacity.

The new Project Officers were provided an introduction programme into the NAP Office and its tasks of support services and monitoring and introduced to the field.

The contract with the watchman was terminated because of misconduct. Watchman duty was rearranged through an external agency.

Mr. David Kumar (Social Project Officer) was offered a permanent position with the Government and left NAP Office per 30th of June 1995. The vacancy for Social project officer could be filled in rather quickly with Mr. Shashi Johnson who joined the NAP Office on 10th August 1995.

During the third quarter NAP Office and ETC reviewed the NAP O staff salaries for the support staff and adjusted the remunerations.



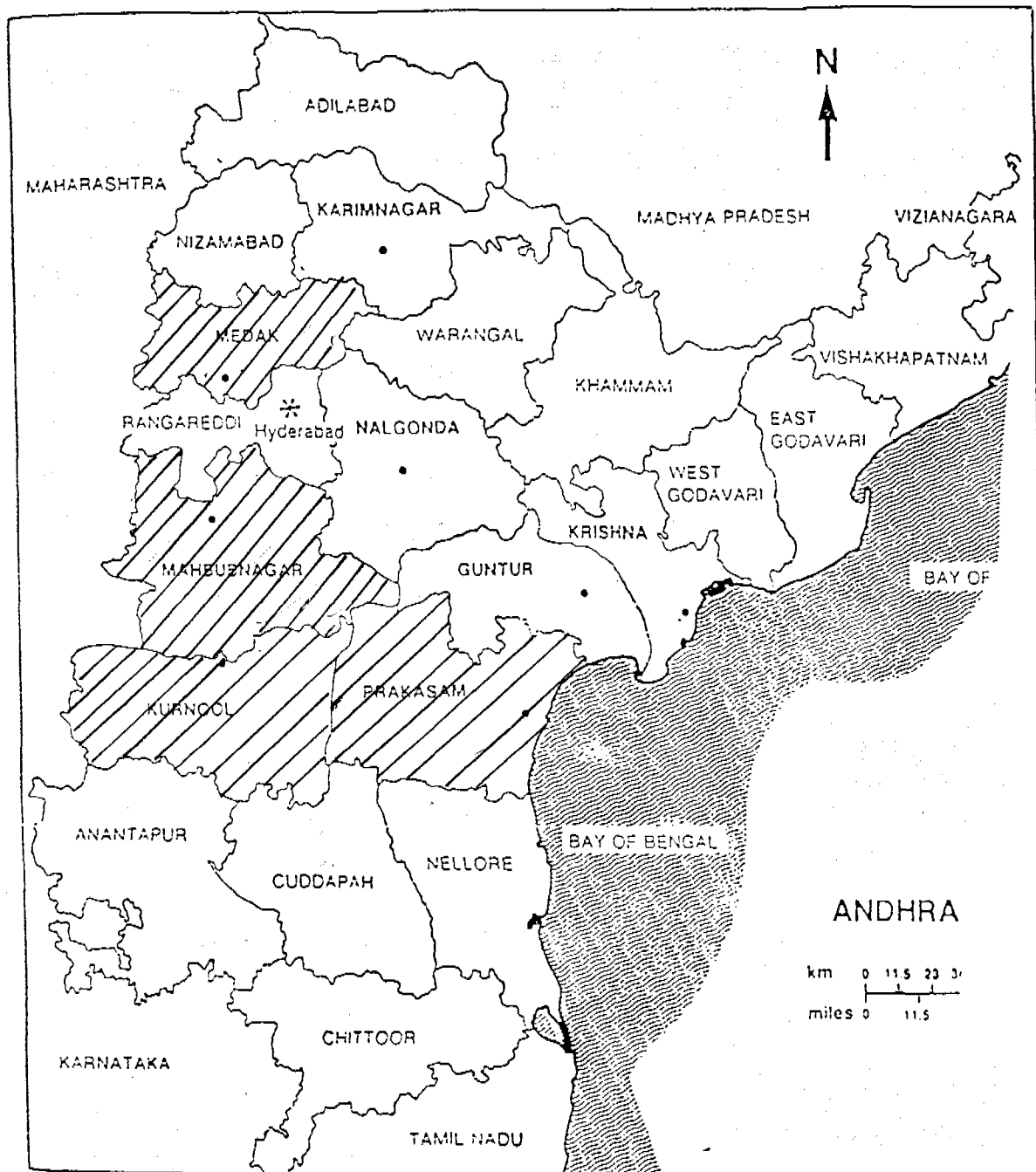
The present NAPO staff and positions are as follows:

(TL)	Team Leader	Frank Hanrath
(TPC)	Technical Programme Coordinator	Mr. A. Zutshi
(SPC)	Social Programme Coordinator	Ms. A. Sharat
(TPO)	Technical Project Officer (from 10th May 1995)	Mr. S. Kumar
(SPO)	Social Project Officer (till 30th June 1995)	Mr. T.D.S. Kumar
(SPO)	Social Project Officer (from 17th April 1995)	Mr. P. R. Kumar
(SPO)	Social Project Officer (from 10th August 1995)	Mr. S. Johnson
(MO)	Monitoring Officer	Ms. M. Nayani
(OM)	Office Manager	Ms. J. Gay
(ACC)	Accountant	Mr. S. Gupta
(OS)	Office Secretary/receptionist	Ms. T. Vinod
	Office Attender	Mr. Shankar
	Drivers	Mr. Ismail Mr. Srinivas Mr. Bakkaiah
(TSM)	Technical Support Mission	J. Spit (IWACO)

4. NAPO MONITORING AND SUPPORT SERVICES

4.1 RURAL WATER SUPPLY

Map 1 : Andhra Pradesh



INVENTORY STATE OF AFFAIRS AP II

Introduction

In continuation of the developments described in the previous QPR, NAPO's monitoring concentrates on the functioning of the schemes.

However our experience shows that problems observed in the functioning of the schemes often take us back to design and execution thereof, making it necessary to avail of basic information on design and execution information.

To fill in this need NAPO has worked out a streamlined inventory format for the AP II projects, in cooperation with PRED, as well as formats for the functioning/ delivery of RWS to the habitations.

(See annexure I and II)

The formats have been based on experiences gained from the NAPO field visits, discussions with the PRED staff in the CPWSS schemes for AP II, and, on elaborate discussions and reviews of the internal monitoring needs in PRED and NAPO; between management and staff of PRED, NAPO and the Support Missions.

After approval by PRED, the formats were introduced by September 95.

In view of the information gaps with NAPO and PRED, as described earlier, it is assumed that the information generated by these inventory formats, per CPWSS scheme, will serve as a permanent data base for the schemes.

The inventory formats and data base are intended as a tool for :

- providing infra-structural details of design and actual construction of the scheme;
- assess differences between design and the actual construction of the schemes;
- assess the quality of the infrastructure from Headworks to delivery point in terms of adequacy, dependability, efficiency and quality of service that could be provided;
- assess if all components of the schemes are functioning as designed;
- formulation of appropriate strategies for operation and maintenance based on infrastructural details, preparation of plans for rehabilitation of schemes that have become defunct, provision of infrastructural details of the assets created, that will be helpful in formulating / updating O&M costs budgets.

Activities during the reporting period :

The formats on inventory, raw and clear water pumping, and delivery to the habitats, have been devised and elaborately reviewed between NAPO and PRED in August, and with the Support Mission AP 31 in September 1995.

These reviews included meetings with the D.E.E.s, E.E.s and S.E.s of the CPWSS schemes of AP II to solicit their views on the coverage and workability of the formats. The formats were also floated to PRED field managers who were invited to comment and suggest modifications.

The formats for the inventory have been formalized with the PRED management in September and have been distributed to all schemes to complete their inventory before December 1995.

On the level of functioning of the schemes, a simple format has been devised providing the aggregated data on pumped quantities of raw water and clear water, per electricity and diesel operation, per cluster or subzone.

(See annex III)

NAPO Social programme, in cooperation with the NGOs involved, has developed a format to monitor the water actually delivered in the habitations.

(see annex IV)

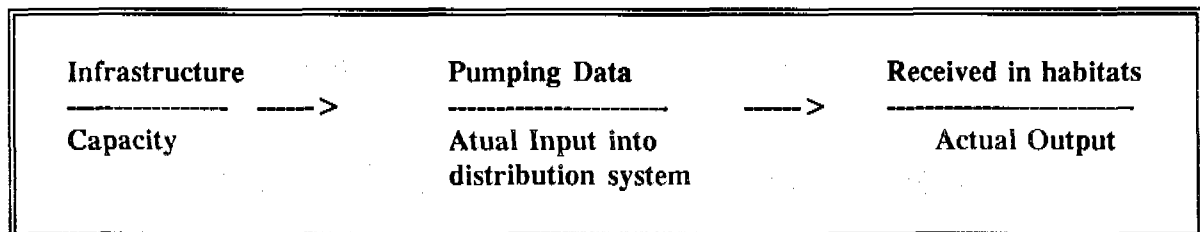
Through NGO appointed and trained people and / or VACs (Village Water Committees) daily records will be kept of the times the OHSR/GLSR are filled. Training/workshops were organized for the NGOs in May to discuss and explain the monitoring formats.

NAPO's efforts with IPM, on water quality testing, have not been very successful (see external water quality testing).

NAPO, in consultation with PRED and the NGOs, has introduced an experiment to test residual chlorine. 50 chlorine testing kits were provided to NGO covered villages. (These cover approximately 90 villages).

The introduction of systematic and uniform internal monitoring will provide PRED and NAPO with:

- scheme and source information, in terms of design and execution --> indicating the **capacity**, per scheme;
- pumping and pumphouse information on raw water and pumping information on clear water per subzone --> indicating the **level of operation**;
- village and cluster (subzone) information on actual delivery --> indicating the actual **delivery** to users and the functioning of the distribution network;
- indications of the **quality** of the water delivered.



With these data the following information can be generated:

- assessment of the created infrastructure in comparison with the design
- comparison of the capacity of the scheme and the level of actual operation of the scheme
- assessment of performance indicators W1 to W8 (World Bank MEP guidelines)
- comparative assessment of quantity of water produced by the infrastructure and the quantity received at delivery point

- comprehensive information on the RWS systems village-wise, cluster-wise, scheme-wise and overall project-wise

PENDING TASKS :

- PRED** - provide internal inventory (as built information) by 1 December 1995 (including hydraulic statements)
- provide as built drawings by 20 October 1995.
 - aggregated pumping data on raw and clear water
 - electricity and generator operation per cluster/subzone, per month from October onwards
- NAPO** - finalise frame work for the analyses of the assembled data and translation of these into the reports.
- finalize the computer database for processing these data.
 - review the incoming data on aggregate pumping and the incoming information on delivery in the NGO covered habitats on RWS quantity and Quality (chlorine) and process these for MEP. W1-W8.
 - review and process incoming data regarding the inventory
- NGOs** - training of VACs or individuals to keep daily records on water supply and testing of residual chlorine.
- assembling and checking the data gathered, and provide aggregate information to NAPO for processing.

RWS SCHEMES AP II

The AP II project is to provide water supply to 280 villages or habitats in four Districts in Andhra Pradesh. (Prakasam, Kurnool, Mahbubnagar and Medak).

The programme also includes a lift Irrigation project in combination with the RWS project in Mahbubnagar covering 10,000 acres, a sanitation component, Water quality monitoring component (IPM), a Dairy project, and the participation of beneficiaries in RWS & Sanitation, organized through 5 NGOs.

Schemewise the AP II programme consists of 12 comprehensive schemes (CPWSS) and 36 Individual schemes (IPWSS).

(please refer Basic Data on AP II Schemes statement)

The project is being executed at a basic cost of approximately Rs.2890 lakhs and a final revised estimate of approx Rs.5320 Lakhs.

Selection of habitations and project rationale was made on the basis of GOI norms concerning scarcity of water, high fluoride content or brackishness in groundwater.

The AP II project replaces groundwater, unfit for human consumption, with surface water drawn from canals and rivers as sources for its schemes.

Duration of the project

The originally proposed period of the project was three years, starting 1988. The duration was subsequently revised to June 1994 and September 1995.

During the discussions between RNE and PRED in June 95, the contractual completion of the AP II projects has been set for March 1996. Financial and administrative completion are targeted for September 1996 with the exception of two CPWSS schemes in Medak which have developed problems at the source.

Structural solutions for these problems at source in Medak call for a feasibility study. It will take more time to implement the selected solution.

(see description under RWS, Medak district)

Final Revised Estimates related to the financial requirements for completion have been submitted to RNE.

NAPO is of the opinion that these targeted dates for completion may still be optimistic in view of the number of works yet to be completed, the projects to be stabilized and the appropriate levels of operation to be reached.

As the AP II RWS scheme in Mahbubnagar is dependant on water supplied through the Lift Irrigation scheme, PRED took the position that completion dates should be set after consultation with the Lift Irrigation authorities.

NAPO expects the Lift Irrigation scheme to be able to deliver water at the end of 1995 and likewise would expect that the lift irrigation programme will not pose any further constraints in the completion of the RWS component.

BASIC DATA ON AP II SCHEMES

Project/District	Target Villages	Villages presently with Water supply		Cost in lakhs			Population	Source
		No.	%	Original	Revised	Final Rvsd Estimate		
PRAKASAM								
CPWSS to AB Palem	20							N S Canal
CPWSS to MV Palem	9							N S Canal
CPWSS to Cherukuru	4							Komenur Canal
34 Individual Schemes	(+3) 37							N S Canal/K Canal
Total Prakasam	(70+3) 73	69	95.83	735.60	990.00	1061.20	246000	
KURNOOL								
CPWSS Halvi	26							Tungabhadra River
CPWSS Hanaval(+2 IPWSS)	8							Tunga Bhadra Low Level Canal
CPWSS Sathnur	16							Tungabhadra River
CPWSS Mancherla	7							Tungabhadra River
CPWSS Chinnakothiliki	7							Tungabhadra River
Total Kurnool	64	27	42.19	741.40	1040.00	1109.80	173363	
MEDAK								
CPWSS ibrahimpur	46							Manjeera River
CPWSS Borancha	32							Manjeera River
CPWSS Karasgutti	29							Manjeera River
Total Medak	107	86	80.37	640	1088	? 1088	176814	
MAHBUBNAGAR								
CPWSS Chinnamaroor	36	* 9		432.60	780.00	830	(114774+62040)	Krishna River/Sri Sailam R/v
Lift Irrigation Scheme	10,000 acres			340.00	1150.00	1187		Krishna River/Sri Sailam R/v
Total Mahbubnagar	36	9	25.00	772.60	1930.00	2017	106435	
	+10,000 acrs	nil	nil					
Grand Total: 12 CPWSS	280	191	68.21	2889.60	5048.00	5276	702612	
+ 36 PWS	+ 10,000 acres	nil	nil			182.59	+ 10,000 acres irrigation facilities	
						% increase		

Note: Final Revised Estimate Costs as indicated by PRED in June 1995

* 9 villages have been provided with water supply from backflow of Krishna River into Bekkam Tank

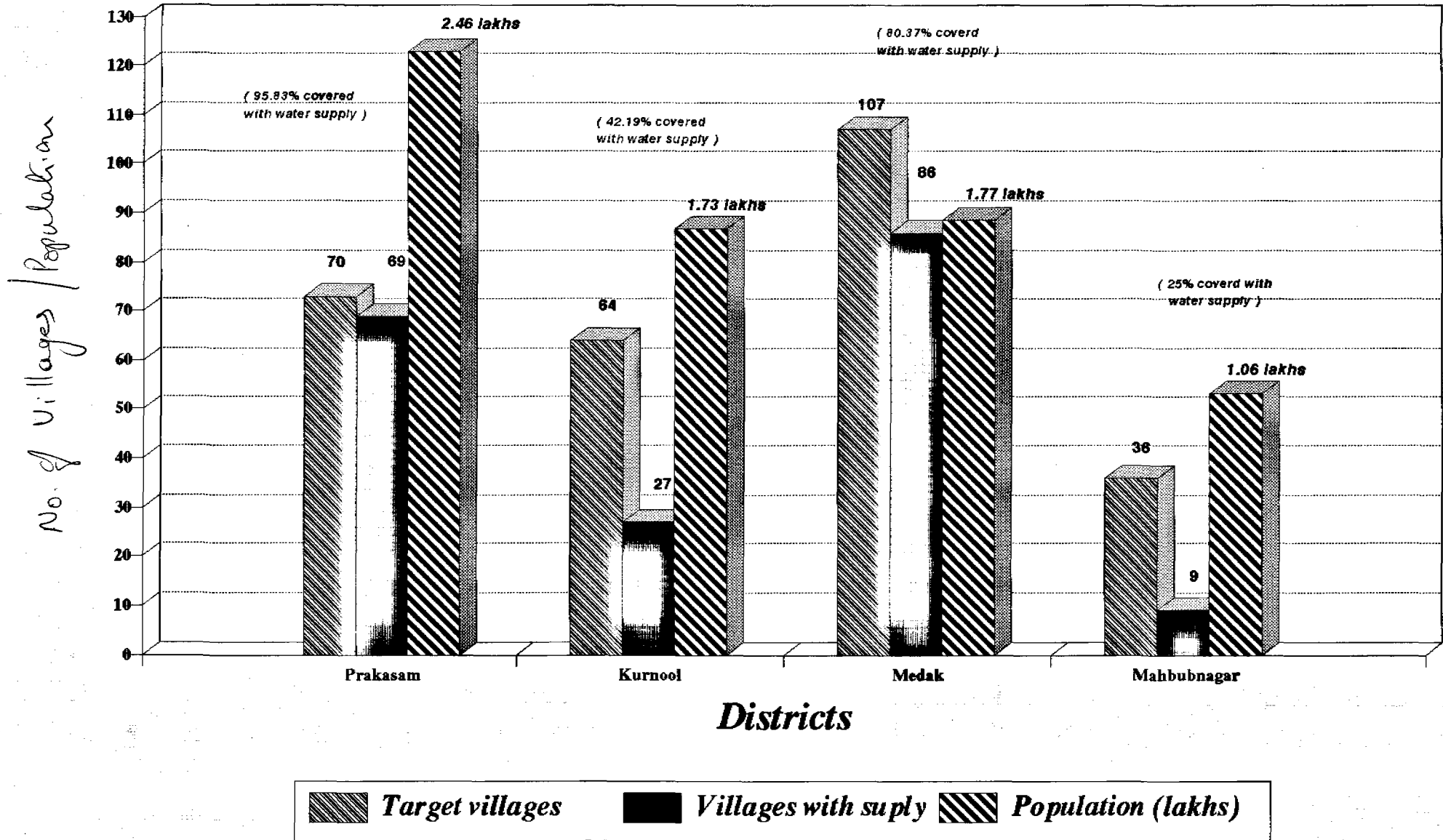
? Final Revised Estimate cost for Medak is not conveyed

Information is as per the re-imbusement claims of June 1995.

Re-imbusement claim 6/95 refers to 64 villages covered in Medak. PRED to explain.

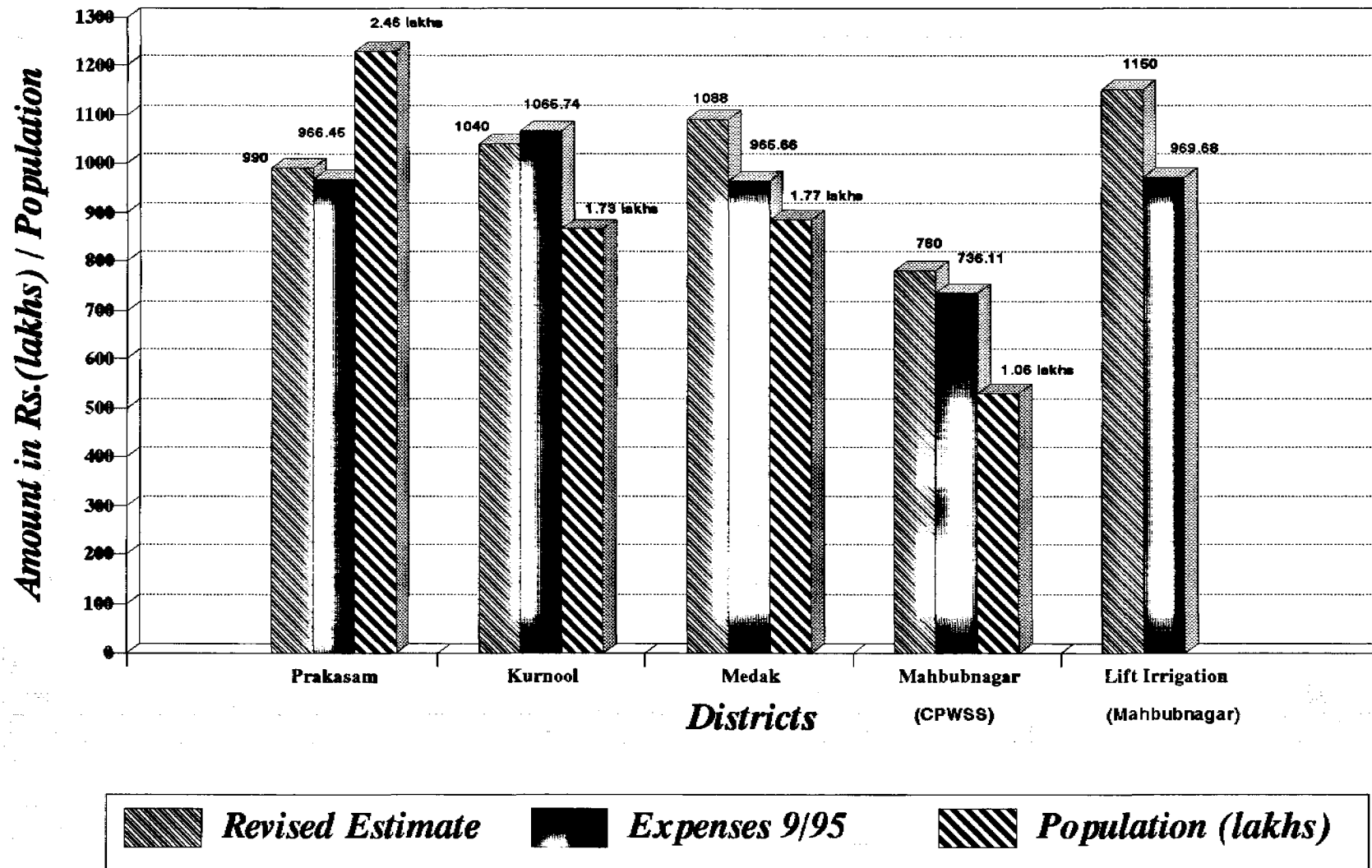
AP II SCHEMES AT A GLANCE

Physical Progress (September 95)



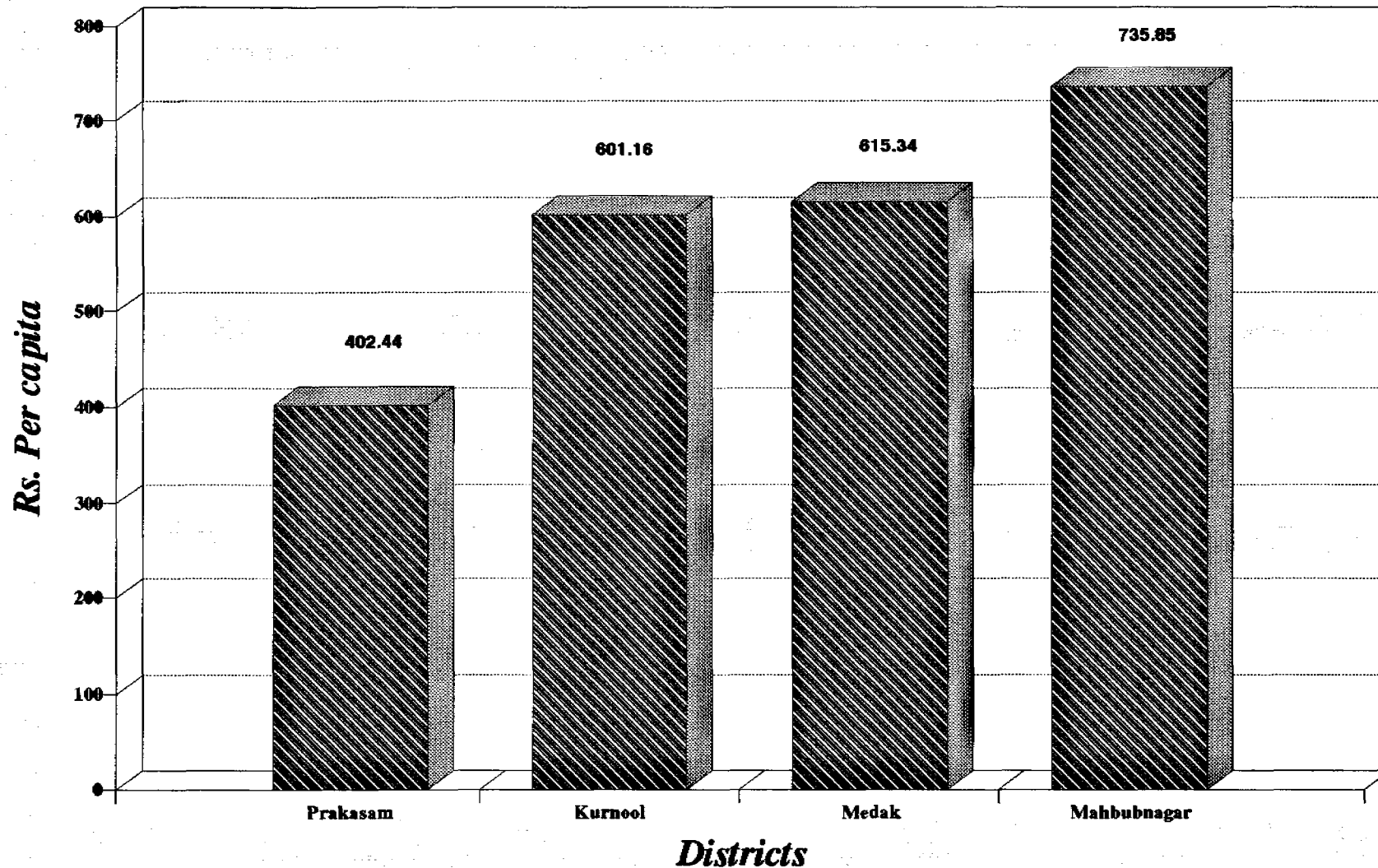
AP II SCHEMES AT A GLANCE

Financial Progress (September 95)



AP II SCHEMES AT A GLANCE

Per Capita Cost (September 95)



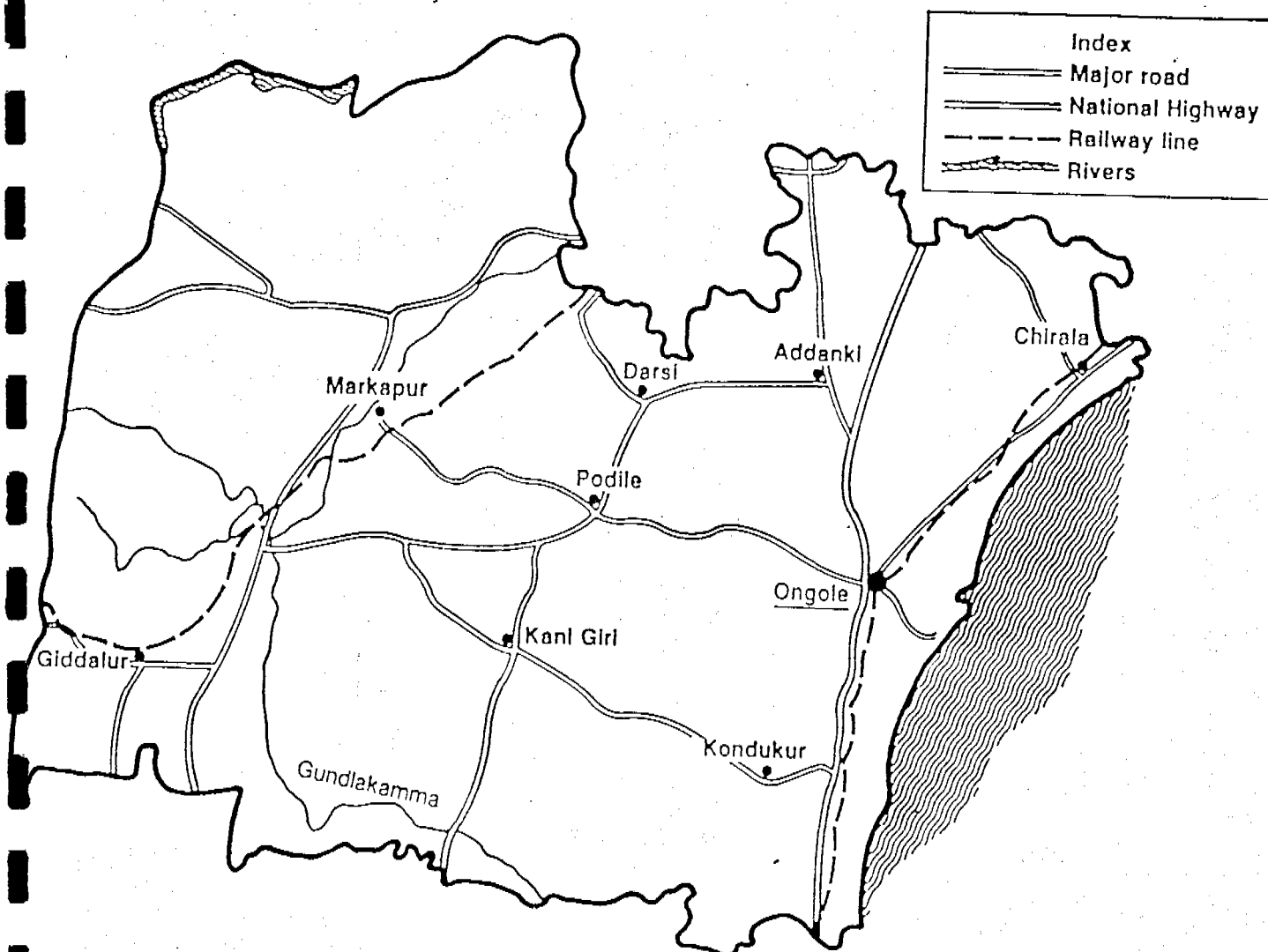
The Sanitation component is entering a new phase, where a proposal for an alternative set-up to the earlier project Clean Village is being prepared to a level of Rs.3.55 crore. This renewed approach is expected to start by December 1995.

Within the community education/participation component, two NGOs will be completing their contracts periods per 31 December 1995, while the other NGOs will continue until 1996 and 1997.

STATUS PER DISTRICT

4.1.1 PRAKASAM

Map 2 : Prakasam



PRAKASAM (PARCHUR) PROJECT

Introduction

The present project is envisaged to serve an ultimate population of 2,46,000, in 70 non-potable, brackish rich, ground water villages. NS canal and Kommunur canal flowing across the project area are used as sources.

The project was planned on the presumption of draw of 215 days discharge from NS Canal and Kommunur Canal respectively.

Transmission lines are designed for 215 days draw period (150 days canal closure period), to transport this water into Summer Storage Tank(S.S.T. - capacity designed for 150 days). Treatment by Slow Sand Filtration and then chlorination to provide safe and clean water through an adequate number of PSPs to the villages.

With the above objectives in mind it was proposed to :

- strengthen the existing village tanks to the required capacity (150 days storage) by raising, consolidation of bunds and compartmentalization;
- block rain water entry into SST to preserve it as a protected source for drinking water;
- construct new S.S.T.s where required.

PROJECT PROFILE

The project was segmented into 3 Comprehensive CPWSS and 33 individual IPWSS (although recently 2 more IPWSS appear to have been added). Out of a total of 70 villages, 47 were projected as new coverage and another 33 as augmentation of raw water or clear water. 57 villages have the N.S.Canal and 13 have the Kommunur Canal as source.

Design Criteria

The 1981 census has been taken as the basis for population computation.

The project is designed for the ultimate population of the year 2012, i.e., 25 years by interpolating population for project year 1987 . Some of the design criteria adopted in project planning were :

- | | | | |
|----|--------------------------------|---|---|
| 1 | Design Period | : | 25 years (2012) |
| 2 | Rate of growth | : | 2 percent per annum |
| 3 | Draw of raw water | : | 60 lpcd |
| 4 | Supply of treated water | : | 50 lpcd |
| 5 | Evaporation and seepage losses | : | 50% of storage |
| 6 | Canal closure period | : | 150 days |
| 7 | Transmission lines | : | Designed for 215 days and functioning at 24 hours flow in gravity and 16 hours in pumping |
| 8 | Raw Water well | : | 7.5 min capacity |
| 9 | Slow sand filters | : | 100 lit/sq.m/hr at 16 hours rate of filtration and 8 hours declining rate of filtration may be 2/3 rd of ROF. |
| 10 | Clear water sump tank | : | 2 hours capacity |
| 11 | Service Reservoirs | : | GLSR and OHSR 8 hours capacity with staging for 7 mts residual head |
| 12 | Village Distribution | : | 8 hours distribution |
| 13 | Public Stand Post | : | 1 for 200-250 people |

14 Disinfection : Chlorination
15 Summer Storage Tanks : 150 days capacity

Scheme Profile:

The designs of AB Palem (20 villages), MV Palem (9 villages), Cherukuru (4 villages) and group of IPWSS (33 villages) based on availability of water in the canal for 215 days.

Provisions CPWSS A. B. PALEM is for:

- augmentation of Raw Water of 6 enroute villages;
- clear water supply to 11 new villages;
- augmentation of clear water to 3 villages.

The source of AB Palem was located at 2 kms. east of the point where the NS canal bifurcates into North & South branches i.e.; Idulapadu sub-minor and Nuthalapadu sub-minor canal).

Provisions CPWSS M.V. PALEM is for:

- augmentation of Raw Water to 1 village (Jagarlamudi);
- clear water supply to other 8 villages located in north and northeast of intake points.

Based on this the source of M.V. Palem was located at 6 Km. east of where the NS minor canal bifurcates into sub-minors).

Provisions CPWSS Cherukuru is for:

- providing clear water supply to 4 villages by way of an intake located in Kommunur Canal.

Apart from these three CPWSS, there are quite a few (25) of IPWSS, having their intakes located past the bifurcation where the availability is halved (CPWSS AB Palem & MV Palem) and may be less, even to 30 days level (tail end points).

Problems :

Most of the water supply systems are completed, however, a substantial number of villages face serious water shortage as a result of the extension of canal closure period by NS authorities because of " WARABANDHI SYSTEM ". Water provision in Idulapadu & Nuthalapadu minors is alternated on weekly basis at the point of bifurcation .

This alternating of water supply to the sub-minor canals, reduces the availability of water to RWS Schemes by 50% .

The actual availability of water in Minor canals Idulapadu and Nuthalapadu proves to be 96 days instead of 215 days, which is less than half, at A. B. Palem and M.V. Palem off-takes and at tail ends where more than 25 PWSS are located, it is even reduced to 30 days/annum.

(Please see Annex VII for Canal Flow Particulars)

The question arises whether the selection of sub-minor canals as a source was based on sound assumptions and solid agreements with the Irrigation Authorities.

It seems perfectly logical to alternate supply of water in the sub-minor canals for irrigation purposes. However, for drinking water purposes, the actual situation is disastrous as the 215 days of availability of water for which the schemes were designed may never be reached.

These problems have been acknowledged and have resulted in the following remedial actions.

Solutions, Actions & Comments :

A.B. Palem

- * PRED has taken up the extension of the Gravity Main by 2 Km. to relocate the intake point to a position in the main canal, (before the point of bifurcation).

M. V. Palem

- * PRED is increasing the pumping capacity at Punuru (Head Works). NAPO has expressed concern regarding the capacity of existing transmission lines to sustain the double discharge.
- * PRED is advised to study the feasibility of providing a common transmission line for A.B.Palem & M.V.Palem, starting from the point in the main canal-before the bifurcation.

These solutions have been covered under the Final Revised Estimates.

I P W S S

An overall solution to this problem seems much more difficult for the 25 Individual schemes depending on the same sub-minor canals.

The following solutions are being considered :

- increasing the filling through open channels;
- some acceptable augmentation of raw water after restoration of rainfed entry is hitherto restricted by PRED into SSTs. The quality of water flowing from agriculture fields containing residues of pesticides and fertilizers is to be studied;
- integrating IPWSS into a CPWSS, by introducing a common gravity transmission line off-taking before the bifurcation point;
- efforts to restore the availability of 215 days of supply in the sub-minors should be undertaken.

The solutions to these problems have **not** been included in the Final Revised Estimates.

REVIEW of the PRED - QPR April-September 1995.

Financial Progress

Referring to PRED - QPRs covering the period April to September, expenditures on the project have reached a level of approximately Rs.972 lakhs (98%) against estimated re-revised costs of project at Rs.990 lakhs.

These figures are matched against the Re-revised estimates that will be overtaken by the Final revised estimates, which have been submitted. After RNE has processed the FREs, further QPRs and reimbursement claims should be based on these Final Revised Estimates to avoid confusion.

ABSTRACT STATEMENT ON BUDGET & EXPENDITURE OF RWS PARCHUR (PRAKASAM PROJECT)

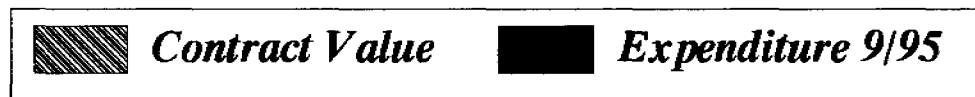
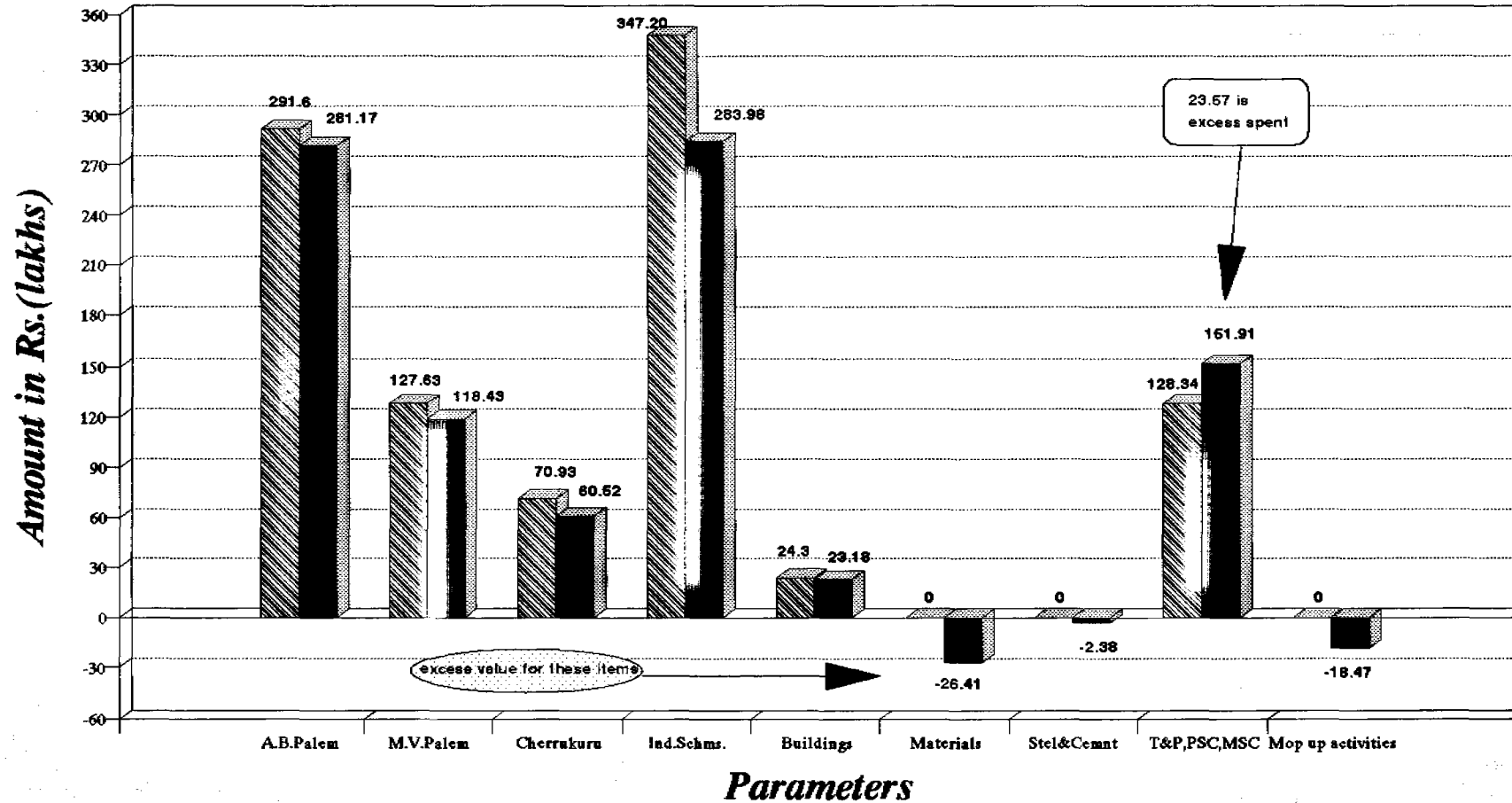
Amount in Rs.(lakhs)

Sl. No.	Particulars	Scope of Villages	Contract Value	Expenditr(Rs.) QPR 3/94	Expenditr(Rs.) QPR 6/94	Expenditr(Rs.) QPR 9/94	Expenditr(Rs.) QPR 12/94	Expenditr(Rs.) QPR 3/95	Expenditr(Rs.) end of 6/95	Expenditr(Rs.) end of 9/95	Balance till end of 9/95
1	Zone 1 CPWSS A.B. Palem	20	291.60	272.76	273.80	274.94	284.69	283.62	280.47	281.17	10.43
2	Zone 2 CPWS M.V. Palem	9	127.63	115.25	117.65	117.65	117.97	117.97	118.00	118.43	9.20
3	Zone 3 CPWSS Cherrukuru	4	70.93	58.75	59.40	59.49	59.91	59.57	60.23	60.52	10.41
4	Zone 4 Individual Schemes	37 (+3)	347.20	261.91	265.38	265.81	273.52	279.86	281.67	283.98	63.22
5	Buildings	-	24.30	23.18	23.18	23.18	23.18	23.18	23.18	23.18	1.12
6	Materials Central stores	-	0.00	24.75	20.58	21.86	29.27	23.89	24.49	26.41	-26.41
7	Steel & Cement	-	0.00	0.89	0.89	1.40	1.40	1.40	1.40	2.38	-2.38
8	T&P and PSC, MSC	-	128.34	173.23	157.91	157.91	157.91	157.91	157.91	151.91	-23.57
9	Mop up activities	-	0.00	0.00	0.00	0.00	0.00	1.90	14.48	18.47	-18.47
	TOTAL	(+3) 70	990.00	930.72	918.79	922.24	947.85	949.30	961.83	966.45	23.55

(P4.38-70.83)

Budget & Expenditure Abstract Statement

RWS Parchur (September 95)



PRAKASAM PROJECT



BIFURCATION OF YADDANAPUDI MINOR WHICH IS THE SOURCE FOR ABPALEM CPWSS, MVPALEM CPWSS AND 25 IPWSS SCHEMS



SST ABPALEM (AUG, 95)
BREACHED BY EXCESSIVE
RAIN WATER

TWIN PIT LATRINE UNDER
CONSTRUCTION, ASSIST SANITATION
PROGRAMME, PRAKASAM



Physical Progress

Till the end of September 1995, 69 out of 73 villages are provided water supply. No additional village was covered during April-September 1995. The WSS Thadiparthi Vari Palem remains to be done.

During the past month NAPO has observed substantial deletions in work components as compare to the designs. As such, deletions have not been reflected in PRED QPRs and re-imburement claims, consultancy, comparison of original works; and completion level may be confusing. We have included a column of deletions to our best knowledge to improve the assessment of completion levels.

Status of Major Components (As per reimbursement claims till end of 06/95) Table - 2

District : Prakasam (Parchur)

Items	Total Works	Works Deleted	Complete till 3/95	Completed till 6/95	Progress 4/95 to 6/95	Balance as on 6/95
Filters	27	1	22	22	0	4
S.S. Tanks	40	13	27	27	0	0
S. Tanks	0	-	0	0	-	0
Raw water wells	53	7	45	45	0	1
Clear water sumps	26	0	25	25	0	1
Pump houses	52	5	39	39	0	8
Pumping units	151	0	137	137	0	14
OHSR	35	0	*	*	*	*
BR	1	0	1	1	-	0
GLSR	-	-	-	-	-	-
Cisterns	-	-	-	-	-	-
Buildings	10	0	10	10	-	0
R/w trans. lines (km)	69.65	0	*	*	*	*
C/w trans. lines (km)	59.34	0	*	*	*	*
Dist. from village (km)	89.35	0	*	*	*	*

Analysis is based on re-imburement claims till end of 6/95, QPRs till end of 9/95 and field visits.

* indicates non-availability of information either in QPR or in re-imburement claim for that period.

- indicates not applicable.

Reimbursement claim till end of 3/95 for Parchur is not submitted by PRED.

Details till end of September 95 are not furnished by PRED.

No progress is recorded for the period April-September 1995, however, cumulative progress for major components is recorded as shown in table - 2.

Filters:

Out of a total of 27 filters, 22 are commissioned. Another 3 are pending for filter media. An SSF is in progress at side wall level at the village Bodawada.

Filters for Nakklapalem and Thadiparthi Vari Palem are deleted, because of adopting open wells as sources. (NAPO will enquire with PRED on the reasons for adopting Ground Water Source in view of the project rationale.

Summer Storage Tanks:

Out of a total of 40 SSTs, 13 are deleted. All SSTs have been filled for use.

Raw Water Wells & Pump houses:

Out of 53 Raw Water Wells, 45 are completed and 1 is at the excavations stage. Another 7 have been deleted and replaced by interconnections.

Out of 52 pump houses, 39 are completed, 8 are at various stages of completion while 5 have been deleted.

Pumping Units:

Out of 151 pumping units, 137 are installed and commissioned. 12 units are completed 50% and 2 units are pending.

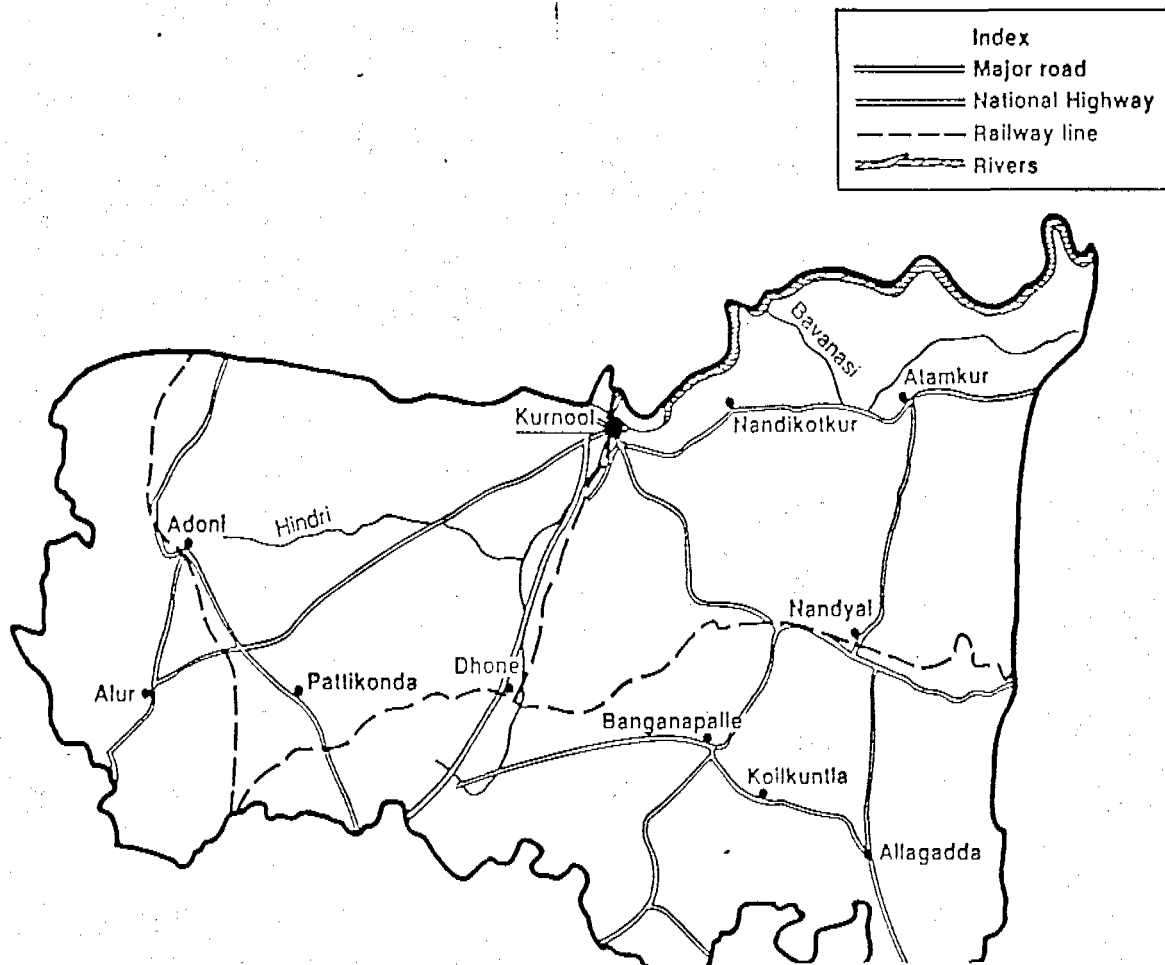
Out of 230 components (activities) of the project, 87 show (major or minor activities) incompletions.

Source Problems:

The source problems mentioned on page 19-20 were observed to be addressed for the A.B. Palem CPWSS as pipes to relocate the intake were being laid.

4.1.2 KURNOOL DISTRICT

Map 3 : Kurnool



KURNOOL PROJECT

Introduction

The project is envisaged to serve an ultimate population (2012) of 1,91,420 (Re-imburement claim end 6/95 gives population as 1,73,363) spread in 64, non potable, fluoride rich, brackish ground water problem villages.

The project is segmented into 5 CPWSS and 2 IPWSS.

Project Profile

The project area is located in the north-western part of Kurnool district along the bank of the Thungabhadra river. The area suffers from water scarcity and poor quality (hardness). The original proposal covered 62 villages, of which, 51 depended on river/stream/canal water for drinking. The remaining 11 villages depend on bore and open wells.

The perennial Thungabhadra and the Thungabhadra Low level irrigation canal were selected as the sources for the project. The original set-up into 6 zones was later changed into 5 zones and 2 more villages were added (total 64 villages):

Design Criteria

The 1981 census has been used for population computation. The project is designed for the ultimate population for the year 2012, i.e., 25 years by interpolating population for project year 1987. Some of the design criteria adopted in project planning are :

1	Design Period	:	25 years (2012)
2	Rate of growth	:	2 % per annum
3	Drawal of raw water	:	60 lpcd
4	Supply of treated water	:	50 lpcd
5	Evaporation & seepage losses	:	N.A.
6	Canal closure period	:	66 days
7	Transmission lines	:	N.A.
8	Raw water wells	:	N.A.
9	Slow Sand Filters	:	100 ltrs./sq.m/hr
10	Clear water sump tanks	:	N.A.
11	Service reservoirs	:	N.A.
12	Village distribution	:	N.A.
13	Public stand posts	:	1 for 250 people
14	Disinfection	:	Chlorination
15	Summer Storage Tanks	:	66 days

Scheme Profile

- CPWSS Chinnakothiliki covers 7 villages and can be clubbed into two clusters. One cluster consists of Gangavaram, Joharapuram, Peddakothiliki and Chinnakothiliki. The other cluster consists of Poolachinta, Sogunur and T.S.Kallur. Water supply to these clusters are through separate transmission lines.

- CPWSS to Manchala covers 7 villages and has again two clusters. One cluster has Chetnahali(Clear Water Augmentation), Manchala(Mantralayam - CWA) and Nadikyarawadi. The other cluster consists of Ibrahimpur, Kalludevgunta(CWA), Machapuram and Chilkadona (CWA). The CPWSS has provisions for Clear Water Augmentation (CWA) to 4 villages.
- CPWSS to Sathnur covering 16 villages is yet to be commissioned.
- CPWSS to Halvi covering 26 villages is yet to be commissioned, however certain villages are covered temporarily (Raw Water).
- CPWSS to Hanawal covering 8 villages (irrigation canal).
- The treatment system of the schemes along the canal (TBLLC) consists of sedimentation followed by Slow Sand Filtration.
- The Headworks at Hanawal consist of an SST followed by SSF.

As Kurnool appears behind in completion, much attention and field visits were concentrated at this district. The levels of completion are given Schemewise.

REVIEW SCHEMEWISE

CPWSS Chinnakothiliki

During the field visit NAPO observed the following ;

- many outlets and valve chambers at Headworks and villages have leaking valves;
- the provision of calibrated flow measuring system is pending;
- presently water supply is reaching 5 villages, lower pumping capacity and enroute leakages in transmission system resulted in water not reaching beyond Poolachinta village to Soganur and T.S.Kallur;
- the OHSR at T.S.Kallur is yet to be completed;
- PRED informed NAPO of the inclusion of an additional village Sanjeevapuram to be covered (with RNE, NAPO approval). However, NAPO noticed that the village is not yet included in PRED village list;
- NGO and villagers expressed their apprehensions regarding adequate and proper disposal of waste water at PSPs & GLSRs.

Operation & Maintenance

- log books at Headworks were recently started;
- chlorination is practised manually;
- turbidity levels of influent and effluent SSF/SST are not being maintained; SSF/SST efficiency needs to be studied;
- raw water is pumped for 8 hours a day on an average and water supply is presently provided for 1 hour in the morning;

- one electrician and four helpers are operating and maintaining the CPWSS;
- S.S.F.s are operated mostly on intermittent basis resulting in poor filtrate quality.

CPWSS Manchala

The CPWSS to Manchala is reported to be finalized and the PRED division has already handed over the scheme to the 'ordinary' Maintenance Division. During the field visit, the NAPO/ Mission observed the following:

- in construction, vital 'finishing touches' are yet to be implemented; some devices are already defunct and general appearance can be improved;
- SSF rate control devices have not been implemented yet, which hinders the operation;
- spindles to operate the valves are yet to be implemented;
- flanges are leaking which lead to flooding of the valve chambers;
- the stand-by raw water pump is yet to be installed;
- the pump houses are yet to be finalized;
- fencing around GLSRs and OHSRs are yet to be done;
- there is no approach to the intake/ raw water pump house.

It appears that the constructed Water Treatment Plant (WTP) is not being operated and maintained as foreseen.

The sedimentation process is presently not capable of removing the high turbidity, which can be expected to increase during the rainy season. This leads to a high load of suspended solids on the SSF, which leads to clogging of the SSF and reduced filtration rates.

Reduced filtration rates lead to a decrease of the clean water production. Hence, the population receives only part of the targeted water quantity.

The likely failure of the sedimentation process has already been noticed during RSM AP-26 (September 1992) and AP-27. PRED has assured that tests would be executed to assess the sedimentation requirements and propose improvements. However, no action has been taken so far.

CPWSS Sathnur

The works at the water treatment plant at Sathnur Headworks show good progress.

The NAPO and Support Mission proposed to change the inlet construction of the sedimentation tank. It was observed that the distribution system in the 16 villages is not yet completed. Hence, the speed of implementation needs to increase considerably in order to meet the target date of December 31, 1995.

Completion Infrastructure:

Distribution network at most of the structures is yet to be connected.

Most of Over Head Tanks, Balancing Reservoirs, GLSRs, etc. are completed but for finishing touches.

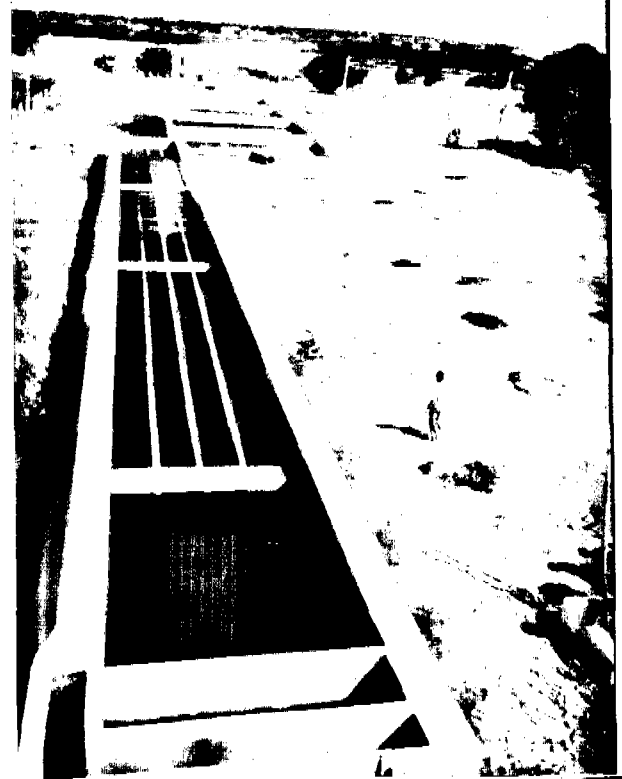


← CISTERN AT SAJEEVAPURAM WITH LEAKING BOTTOM & NO PLATFORM

SEDIMENTATION TANK & SSF AT CHINNAKOTHILIKI HEADWORKS



POOLACHINTA GLSR WITH IMPROVED PSPs



PSP AT MANTRALAYAM DRAINAGE NEEDS IMPROVEMENT -->



The interconnections of Rising Mains with Transmission Mains had a long time gap between construction and filling. This may have a retarding effect in the stabilisation of structures, and may lead to leakages.

NAPO and PRED will have to check the number of PSP's designed and the number executed, for this scheme.

CPWSS Hanawal

Hanawal sector is a typical sector comprising of 1 CPWSS covering six villages and two IPWSS with independent SSTs and SSFs covering each village. The treatment system of the schemes along the canal (TBLLC) consists of sedimentation followed by slow sand filtration.

Two IPWS - Rodure and Upprahaul were regarded by Engineers as problematic (village fights). Completion dates cannot be given as many works are yet to be initiated. One filter, 2 SSTs and 2 OHSRs are yet to be initiated in this sector. Out of 9.7 kms. of distribution line, only 4.5 Km. is laid, out of which, only 2 Km. is tested.

In Hanawal CPWSS, the flow from SST had stopped from 25/05/95. The reason given was non-availability of water in SST for the last one week (only dead storage is available). The SS tank is reportedly designed for 66 days capacity with duplicate arrangement for filling of tank, half by gravity and top half by pumping water from TBLL canal. The canal was closed for annual closure on the 12th of April. The SST could not be filled before the closure of canal.

Pending the laying of the distribution systems, PRED is presently providing Rural Water Supply to Kuntanahalli, Hanawal and Bedinahalli by means of one PSP point located next to the OHSR.

No logbook could be seen at headworks. At the treatment plant (TP), there is no chlorination at all and it is feared that virtually untreated water is being pumped to villages.

There is only one electrician and three casual workers on water supply scheme, with the result, the water could hardly reach beyond Kuntanakal and G. Hosaili except for some occasional regulation.

The number of A.E.s/A.E.E.s available for the project seems limited. The Dy.E.E. has only one A.E. as at present.

CPWSS Halvi

This is the biggest CPWSS under Kurnool, NAP Project, envisaged to cover 26 villages.

State of completion :

- Sanding of 2 beds out of 3 constructed awaits completion; commissioning is possible after arrival of filter media;
- Electric sub-station awaits to be energised, non payment of electric tariff is projected as one of the impediments;

- Rising Main from treatment plant to Balancing Reservoir at top of Hillocks. Half was completed only in September;
- Transmission lines completed except for some gaps;
- Machinery and electrical components recently upgraded give a good impression;
- Most of OHSR, BR, GLSR are completed;
- The use of conjunctive groundwater (see previous QPR and FREs) was abandoned;
- Raw Tunga Bhadra river water is presently being supplied to five villages since 1992, through PSPs;
- 1 electrician, 1 operator and 5 NMRs are available in scheme for O & M of scheme which is yet to be commissioned fully.

The works at the water treatment plant at Halvi also show good progress, however there is still a lot to be done.

Distribution network for majority of the villages is pending to be initiated.

The NAPO/Mission supports the idea of eliminating the 4th SSF which will not be needed in the coming 15 years. It is not yet known what kind of clear water sump will be constructed.

Review of PRED QPR April-September 1995

Financial Progress:

Referring to PRED Apr-Sep QPR, expenditure on project has reached a level of Rs.1063.04 lakhs (102%) against estimated re-revised cost of project at Rs.1040 lakhs.

Rs.61.95 lakhs is the balance to be spent on works components whereas Rs.85.19 lakhs is spent on establishment, etc. in excess of contracted provisions of Rs.1040 lakhs.

ABSTRACT STATEMENT ON BUDGET & EXPENDITURE OF RWS YEMMIGANUR (KURNOOL PROJECT)

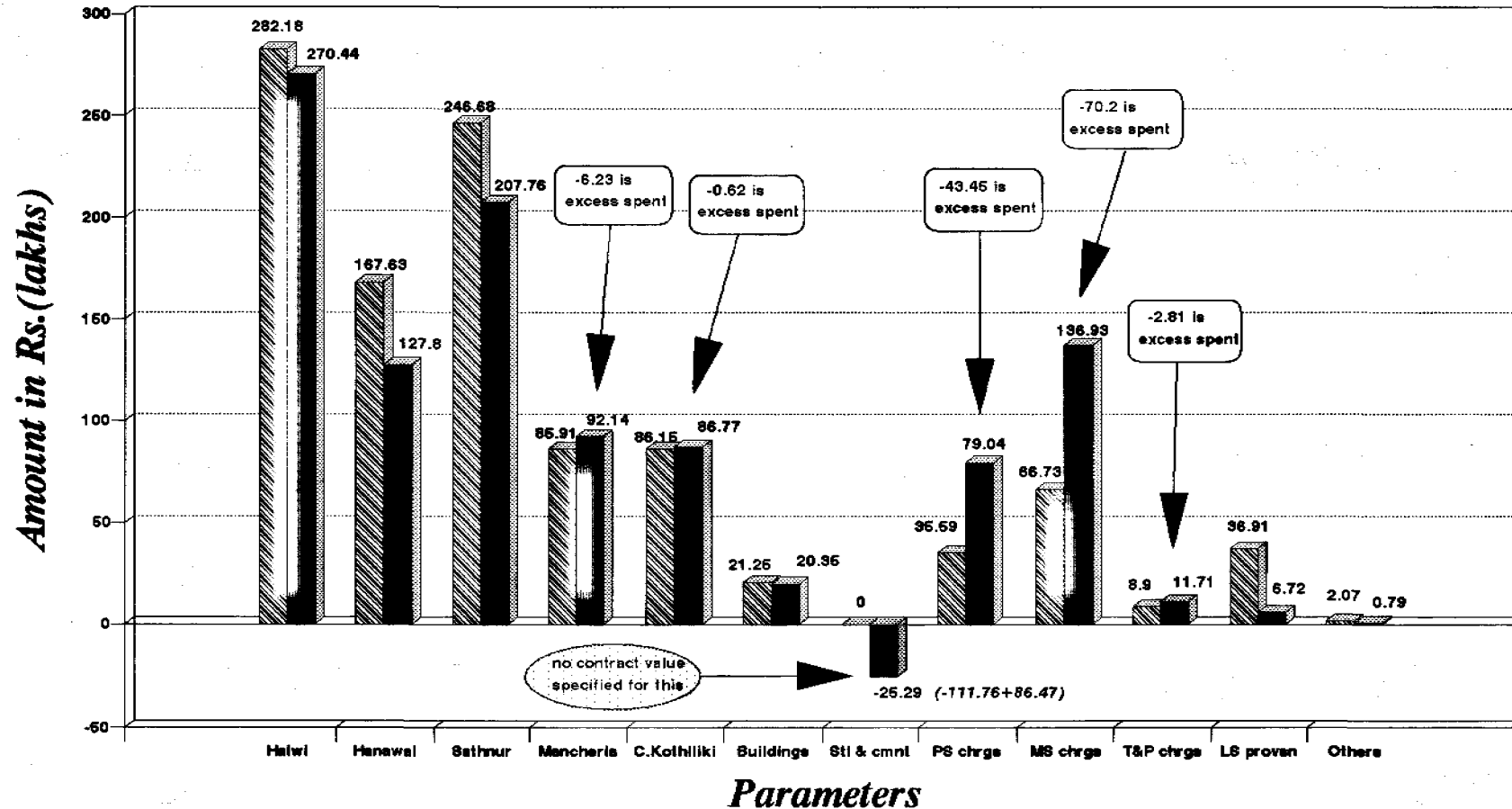
Amount in Rs.(lakhs)

Sl. No.	Particulars	Scope of Villages	Contract Value	Expenditr(Rs.) QPR 3/94	Expenditr(Rs.) QPR 6/94	Expenditr(Rs.) QPR 9/94	Expenditr(Rs.) QPR 12/94	Expenditr(Rs.) end of 2/95	Expenditr(Rs.) end of 6/95	Expenditr(Rs.) end of 9/95	Balance till end of 9/95
1	Zone 1 CPWSS Halwi	26	282.18	235.14	238.09	242.56	244.10	248.57	264.88	270.44	11.74
2	Zone 2 CPWSS Hanawal	8	167.63	112.63	114.07	117.80	120.50	121.27	122.91	127.8	39.83
3	Zone 3 CPWSS Sathnur	16	246.68	155.98	156.88	160.56	166.51	175.14	192.48	207.76	38.92
4	Zone 4 CPWSS Mancherla	7	85.91	73.44	76.39	79.62	80.48	80.88	81.95	92.14	-6.23
5	Zone 5 CPWSS Chinnakothiliki	7	86.15	74.25	76.20	78.60	78.95	79.68	81.86	86.77	-0.62
6	Buildings	-	21.25	18.22	18.22	18.22	18.22	18.77	18.77	20.35	0.90
7	Steel & Cement procured	-	0.00	96.36	96.36	96.47	96.52	96.52	107.86	-111.76	111.76
8	Steel & Cement booked on works	-	0.00	68.68	69.67	71.03	73.33	77.41	84.05	86.47	-86.47
9	P.S.Charges	-	35.59	58.32	62.50	66.33	70.14	72.12	75.09	79.04	-43.45
10	M.S.Charges	-	66.73	113.62	118.06	123.50	127.61	129.75	133.09	136.93	-70.20
11	T & P Charges	-	8.90	10.23	10.71	10.71	10.71	10.71	16.53	11.71	-2.81
12	L. S. Provision	-	36.91	0.58	0.58	4.67	5.57	5.65	6.14	6.72	30.19
13	Others	-	2.07	0.48	0.48	0.48	0.48	0.56	0.79	0.79	1.28
TOTAL		64	1040.00	1017.93	1038.21	1070.55	1093.12	1117.03	1186.40	1015.16	24.84

(234.62-209.78)

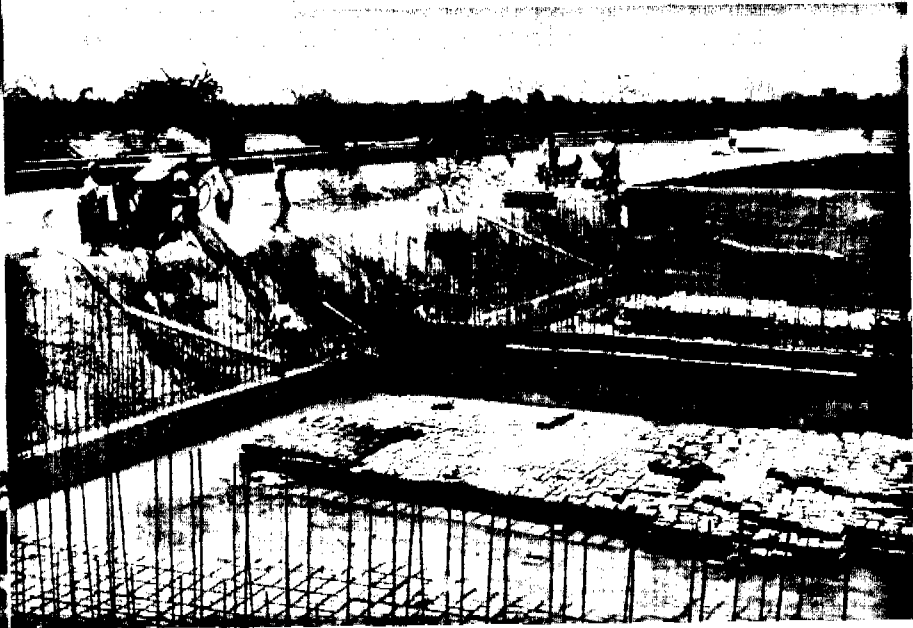
Budget & Expenditure Abstract Statement

RWS Yemmiganur (September 95)

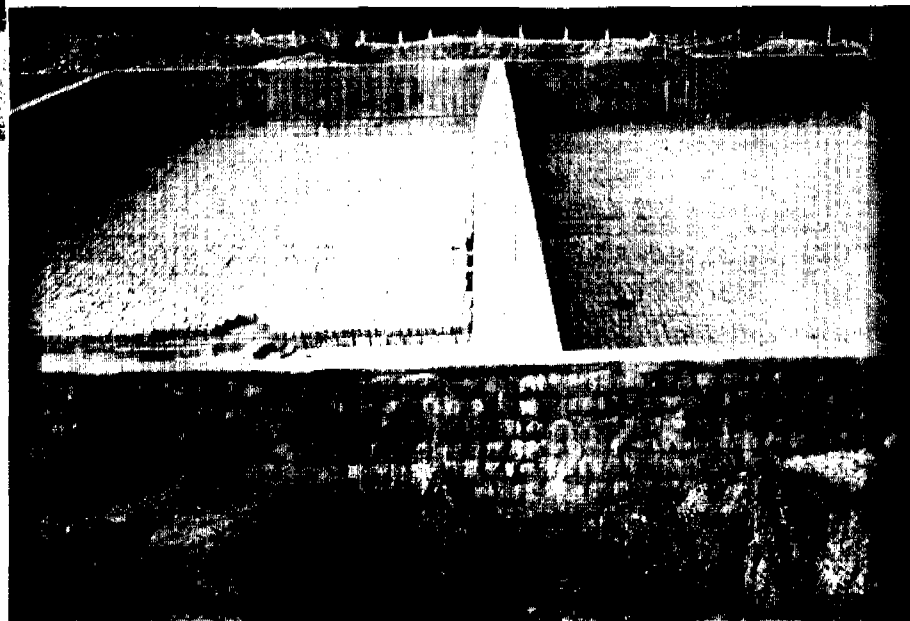




FINISHING TOUCHES AT SOGANUR OHSR (TOP)



SSF UNDER CONSTRUCTION AT SATHNUR



SSF AT HALVI



A PSP AND A HANDPUMP AT CHINNAKOTHILIKI

Physical Progress:

By the end of June 1995, 27 villages are provided with water supply.
Coverage achieved by the end of 9/95 are not clear from QPR in reference.

Status of Major Components (As per reimbursement claims till end of 6/95): **Table : 3**

District : Kurnool (Yemmliganur)

Items	Total Works	Complete till 3/95	Complete till 6/95	Progress 4/95 to 6/95	Balance as on 6/95
Filters	7	3	3	0	4
S.S. Tanks	3	1	1	0	2
S. Tanks	4	4	4	-	0
Raw water wells	6	5	5	0	1
Clear water sumps	7	3	3	0	4
Pump houses	12	9	9	0	3
Pumping units	23	*	*	*	*
OHSR	25	23	23	0	2
BR	4	4	4	-	0
GLSR	10	9	9	0	1
Cisterns	47	25	25	0	22
Buildings	15	10	10	0	5
R/w trans. lines (km)	5.65	5.19	5.19	0	0.46
C/w trans. lines (km)	197.6	190.9	190.9	0	6.7
Dist. from village (km)	25.6	13.44	14.5	1.06	11.1

Analysis is based on re-imburement claims till end of 6/95, QPRs till end of 9/95 and field visits.

* indicates non-availability of information either in QPR or in re-imburement claim for that period.

- indicates not applicable.

Details till end of September 95 are not furnished by PRED.

Filters:

Status is the same as reported in NAPO QPR Jan-Mar 1995. Re-imburement claims of June 1995 reflect that out of 7 filters, 3 filters as completed and another 3 (1 each in zone 1, 2 &3) are at various stages of construction. One is yet to be initiated, discrepancy in 7 filters grounded is not clear. NAPO would enquire into this with PRED.

Summer Storage Tanks:

2 out of 3 SSTs are remaining to be initiated. There is no progress since what was reported in NAPO QPR Jan-march 1995.

Transmission Lines:

Raw Water and Clear water transmission lines status is the same as reported in the Jan-March QPR of NAPO and no progress seems to have been achieved in since.

Raw water - out of 5.65 Km. of pipelines, 5.18 Km. is laid and 5 Km. is tested.

Clear water - out of 197 Km. of pipelines, 190 Km. is laid but only 78 Km. is tested.

Ground Level Service Reservoirs:

Out of 10 GLSRs, 9 are completed, while 10th is grounded.

Over Head Service Reservoirs :

2 OHSRs in sector are yet to be initiated.

Cisterns:

25 out of 47 cisterns are completed, with 15 at various stages of completion. However, activity for the remaining 7 is awaited.

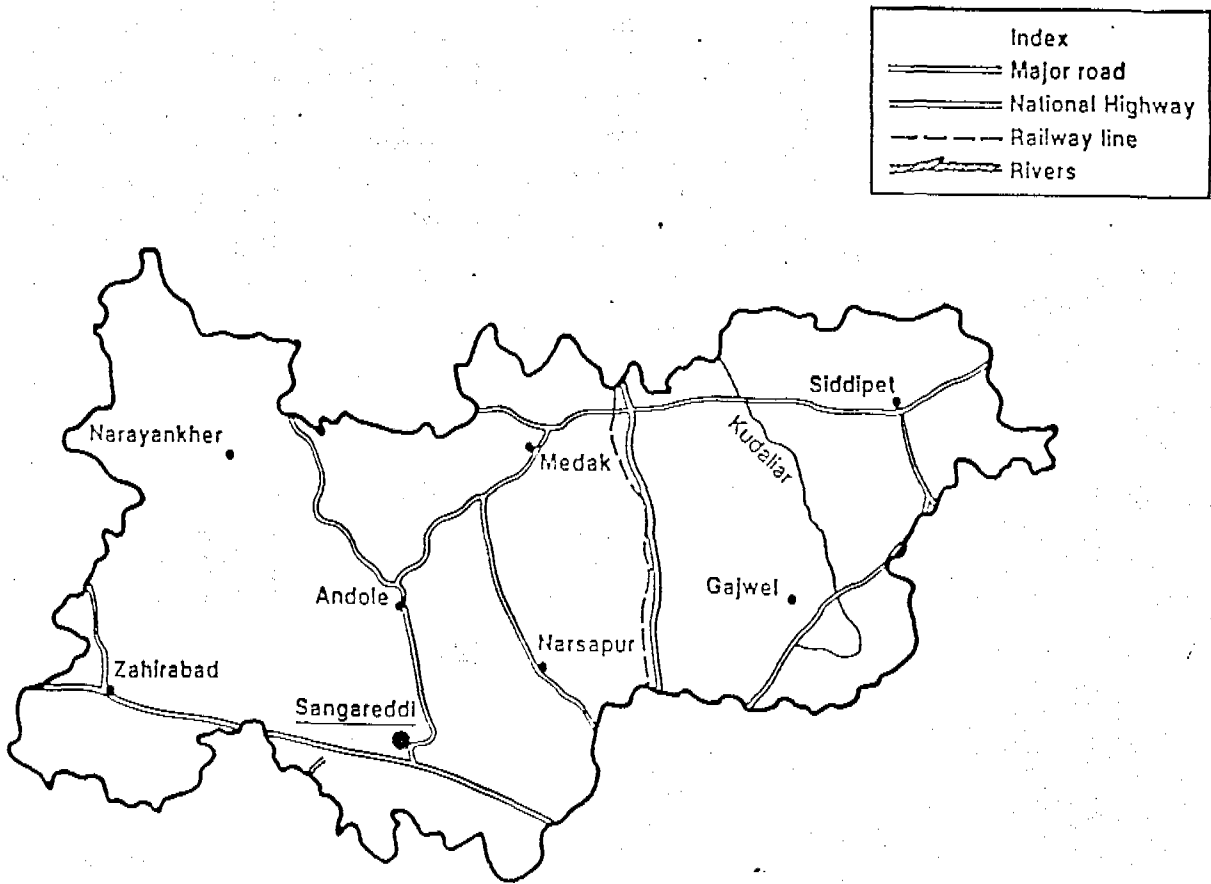
Village Distribution:

43.5% of what is proposed is pending to be laid. Hardly 54.5% out of the laid lines is commissioned/tested as on 6/95. As regards CPWSS Sathnur no distribution lines are tested as yet. Out of a total of some 283 activities (major or minor) , 124 are not completed as yet.

The project has many major components remaining to be done or energized. However, 27 villages are shown as covered. NAPO will inquire into actual coverage.

4.1.3 MEDAK DISTRICT

Map 4 : Medak



MEDAK PROJECT

Physical Progress:

The project is envisaged to serve an ultimate population of 176,814 people spread over 107 villages (64 problem villages and 43 enroute villages) with brackish rich ground water. (Three additional enroute villages were proposed to be covered bringing the total to 110 villages).

The project is segmented into 3 CPWSS. The river Manjira is the source for all CPWSSs.

The number of villages presently receiving RWS is the same as reported in the previous QPR (86 villages).

Financial Progress:

Review of PRED QPR April-September 1995

Referring to PRED QPR April-September 1995, expenditure on project is indicated as having reached a level of Rs.1070 lakhs (98%) by the end of September 1995 against RRE of Rs.1088 lakhs.

There is some discrepancy in expenditure shown as spent till the end of 6/95, i.e., QPR gives a figure of Rs.1061.44 lakhs, whereas re-imburement claims refer a figure of Rs.1046.43 lakhs.

As per the financial statement Rs.79.016 lakhs is the balance to be spent on works component while Rs.61.68 lakhs is spent in excess of contracted provisions of Rs.1088 lakhs.

(Establishment and Rs.15 lacks as transferred to E.E. (PR) Miryalguda division.)

ABSTRACT STATEMENT ON BUDGET & EXPENDITURE OF RWS MEDAK

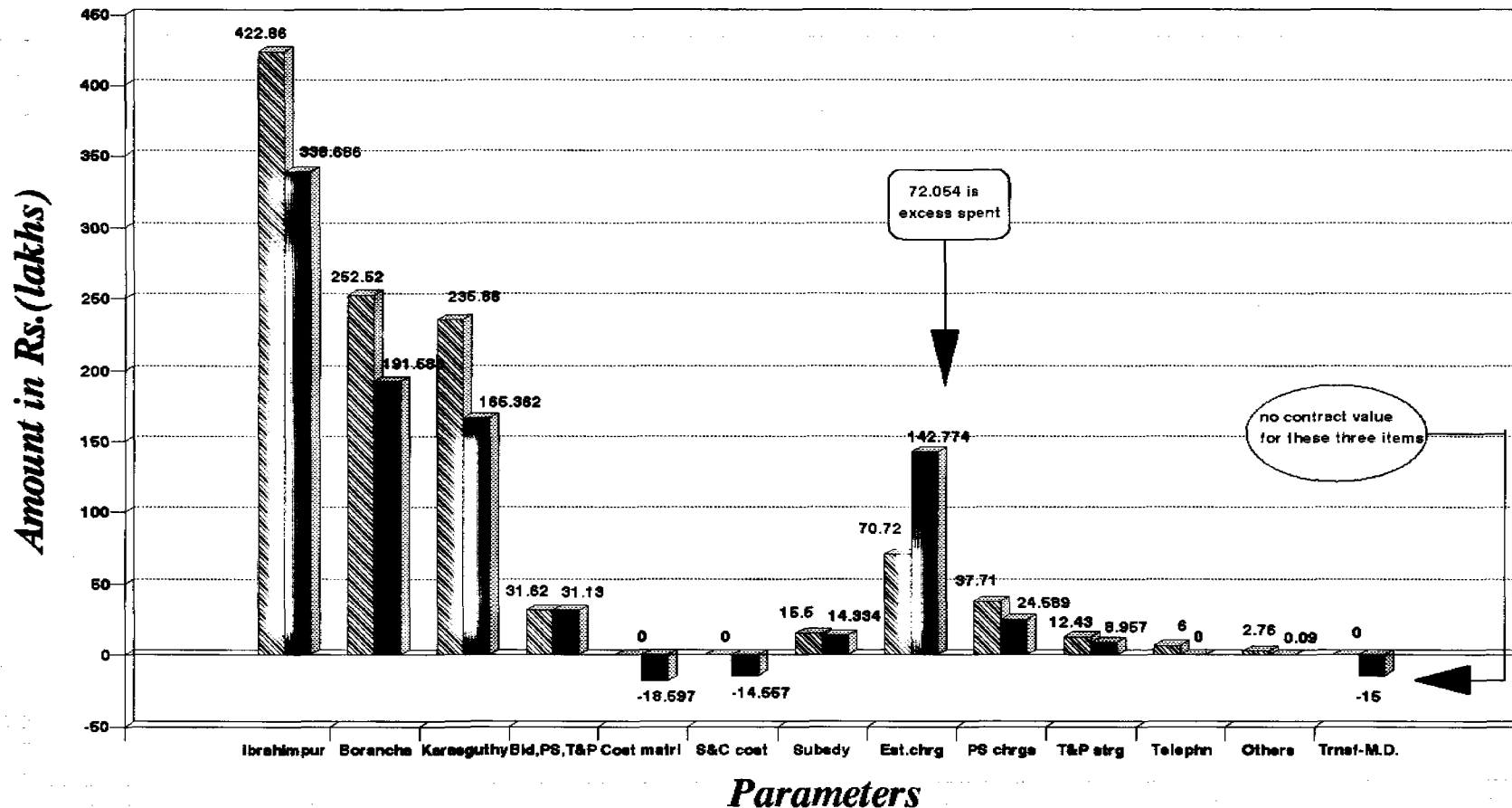
Amount In Rs.(lakhs)

Sl. No.	Particulars	Scope of Villages	Contract Value	Expenditr(Rs.) QPR 3/94	Expenditr(Rs.) QPR 6/94	Expenditr(Rs.) QPR 9/94	Expenditr(Rs.) QPR 12/94	Expenditr(Rs.) QPR 3/95	Expenditr(Rs.) end of 6/95	Expenditr(Rs.) end of 9/95	Balance till end of 9/95
1	Zone 1 CPWSS Ibrahimpur	46	422.86	353.029	359.32	364.74	369.239	374.254	376.623	338.69	84.174
2	Zone 2 CPWSS Borancha	32	252.52	188.803	200.07	210.05	216.715	218.289	220.871	191.59	60.932
3	Zone 3 CPWSS Karasguttu	29	235.88	159.114	182.38	185.65	191.747	197.694	200.057	165.36	70.518
4	Buildings including P.S. and T&P	-	31.62	30.001	30.00	30.001	30.870	31.13	31.130	31.13	0.490
5	Cost of material	-	0.00	21.146	19.874	23.272	21.416	20.666	19.238	18.60	-18.597
6	Cost of Steel & Cement	-	0.00	18.352	16.608	16.074	13.668	14.879	13.983	14.56	-14.557
7	Subsidy paid to APSEB	-	15.50	13.370	13.370	13.370	13.686	13.975	14.334	14.33	1.166
8	Major establishment charges	-	70.72	117.292	123.785	127.118	131.267	134.44	137.799	142.77	-72.054
9	P.S. Charges	-	37.71	18.290	19.416	20.515	21.579	22.545	23.458	24.59	13.121
10	T & P storage	-	12.43	7.818	8.857	8.857	8.857	8.857	8.857	8.96	3.473
11	Telephone charges	-	6.00	0.000	0.000	0.000	0.000	0.000	0.000	0.00	6.000
12	Other unforeseen items	-	2.76	1.039	0.090	0.090	0.090	0.090	0.090	0.09	2.670
13	Transfer to Miryalguda division	-	0.00	0.000	0.000	0.000	0.000	15.000	15.000	15.00	-15.000
TOTAL		107	1088.00	928.254	973.771	999.737	1019.134	1051.819	1061.440	965.66	122.336

(242.544-120.208)

Budget & Expenditure Abstract Statement

RWS Medak (September 95)



Design Criteria

The 1981 census has been referred for population computation. The project is designed for the year 2012, i.e., 25 years by interpolating population for project year 1987. Some of the design criteria's adopted in project planning were :-

- | | | |
|--------------------------------|---|-------------------|
| 1 Design Period | : | 25 years (2012) |
| 2 Rate of growth | : | 1.35 % per annum |
| 3 Draw of raw water | : | 60 lpcd |
| 4 Supply of treated water | : | 50 lpcd |
| 5 Evaporation & seepage losses | : | 50 % |
| 6 Canal closure period | : | N.A. |
| 7 Transmission lines | : | 16 hours flow |
| 8 Raw water wells | : | N.A. |
| 9 Rapid Sand Filters | : | / sq.m / m |
| 10 Clear water sump tanks | : | 1 hour capacity |
| 11 Service reservoirs | : | 8 hour capacity |
| 12 Village distribution | : | 8 hour supply |
| 13 Public stand posts | : | 1 for 250 people |
| 14 Disinfection | : | Chlorination |
| 15 Summer Storage Tanks | : | N.A. |

Physical Progress

Status of Main Components (As per reimbursement claims till end of 6/95)

Table : 4

District : Medak

Items	Total Works	Complete till 3/95	Complete till 6/95	Progress 4/95 to 6/95	Balance as on 6/95
Filters	3	2	2	0	1
S.S. Tanks	-	-	-	-	-
S. Tanks	3	0	3	3	0
Raw water wells	3	3	3	-	0
Clear water sumps	5	4	4	0	1
Pump houses	7	6	6	0	1
Pumping units	15	13	14	1	1
OHSR	4	4	4	-	0
BR	12	12	12	-	0
GLSR	96	90	90	0	6
Cisterns	-	-	-	-	-
Buildings	15	15	15	-	0
R/w trans. lines. (mts)	920	900	900	0	20
C/w trans. lines (km)	261.45	195.92	256.5	60.58	4.95
Dist. from village (km)	4	3.7	3.7	0	0.3

Analysis is based on re-imburement claims till end of 6/95, QPRs till end of 9/95 and field visits.

* indicates non-availability of information either in QPR or in re-imburement claim for that period.

- indicates not applicable.

Details till end of September 95 are not furnished by PRED.

Head Works

13 out of 58 activities have some incompletions, Karasguthi segment seems to need extra attention.

Transmission Mains

30 out of 81 activities are to be completed.

Balancing Reservoir/Sumps/Boosters/Pump Houses

16 out of 64 activities are not yet completed. The information regarding deletions of 5 activities 1 in Ibrahimpur and 4 in Borancha is not reflected in the PRED QPR 9/95.

Over Head Service Reservoirs/Ground Level Service Reservoirs

Out of 58 components, one has been deleted in Karasguthi segment. Out of the remaining 57, 40 are listed as incomplete. However, expenditure level stands at 72%, while 80% of the villages are listed as receiving water.

Given the substantial incompleteness of storage reservoirs listed by PRED, NAPO assumes the temporary improvised manipulation of operation on direct pumping in providing the water.

Village Distribution

Out of 5 village distribution systems, 2 systems - Ibrahimpur and Borancha - are not yet completed.

Enroute Villages

The level of expenditure spent in enroute villages is only 72%. The activities in execution need special attention.

Source Problem at MEDAK (CPWSS Karasguthi)

The PRED QPR 9/95 and re-imburement claim till end of 6/95 do not give any insight into corrective measures that were to be taken up at head works Karasguthi where the source had depleted. NAPO shared this concern with E-n-C, PRED.

During the meeting with RNE on June 21, it was decided that the issue needs deeper study and that the issue will be included in the Terms of Reference of the next technical support missions.

During Support Mission AP-30, the depletion of source problem was discussed. PRED was asked to construct an immediate backup system. PRED was further requested to investigate and study (hydrological and topographical surveys), and find out a more permanent solution.

Amelioration Proposal

During the period April-September 1995, PRED through State Ground Water Board (SGWB) investigated the possibility of availability of ground water, for which 2 test bores were drilled to a depth of 45 and 60 meters respectively which indicated expected yield of 7000-9000 lph.

It is estimated that given the ultimate population at 47328, providing for 50% demand and assuming an average discharge at 8000 lph (8 m³/h) at 16 hour pumping, 9 bore wells would be required.

During discussions with E-n-C PRED on 16 September 1995, the following alternatives were identified for feasibility study by PRED towards finding long term solutions to the source problems in Medak. The study is proposed to be completed by PRED by April/May 1996.

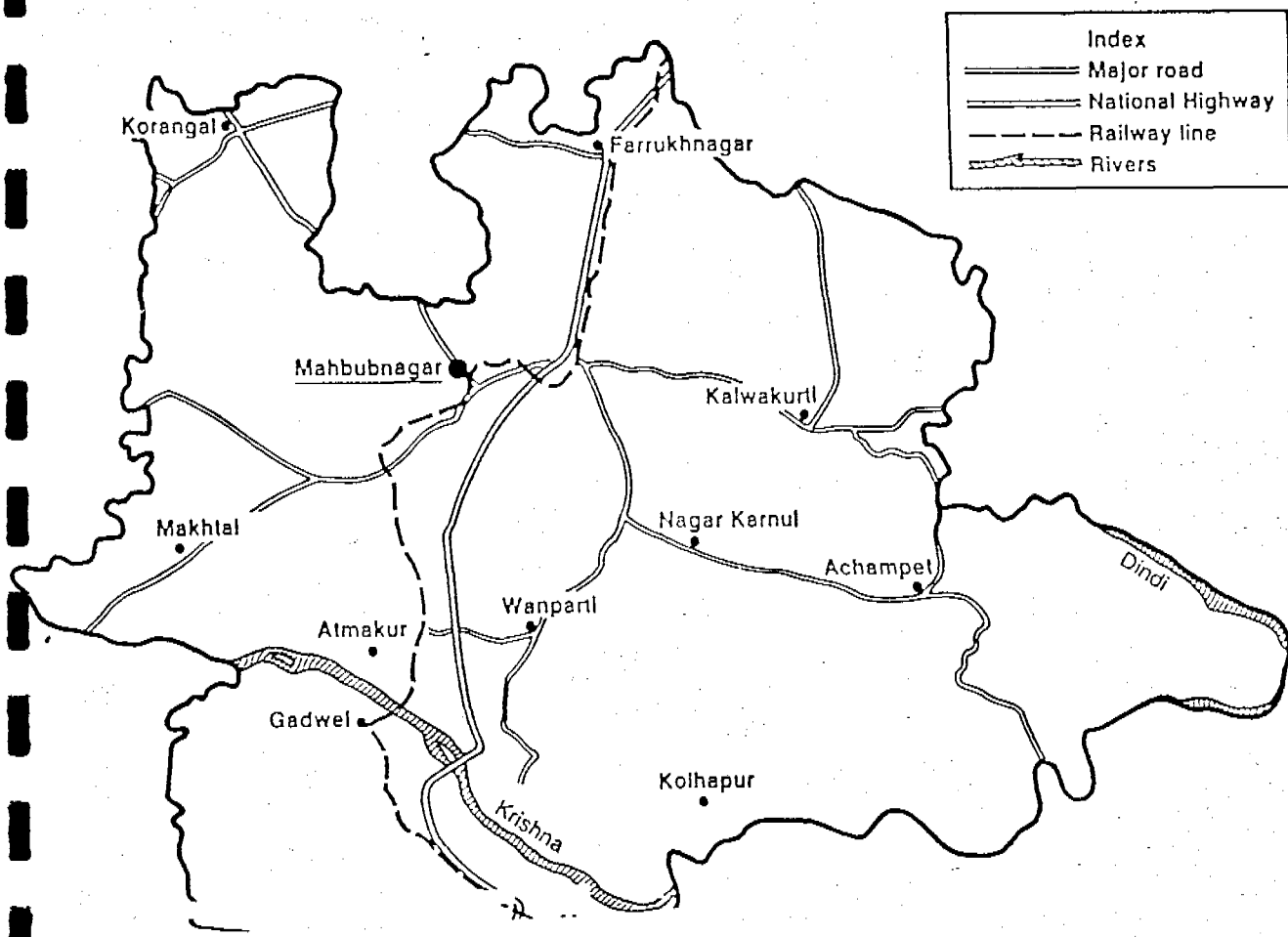
- storage of surface water in SST's (76000 m³ at 5 m depth);
- a completely new SST;
- S.S.T. situated in low lying area;
- S.S.T. along the river, upstream the intake, where the river is wider;
- pondage in the river bed, created by cross bunds;
- extraction of ground water (9-10 boreholes);
- boreholes concentrated near the intake;
- boreholes along the river (infiltration galleries);
- boreholes near booster stations/OHSRs;
- conveying water from Singoor reservoir;
- by creating a larger backwater area through blasting threshold between reservoir & intake;
- transportation of clean, treated water in water tankers from Ibrahimpur to different communities, during recurrence of source depletion.

Actions

Implementation of a thorough feasibility study on 9 alternative solutions. This study is to include cost estimates (investment and O&M costs).

4.1.4 MAHBUBNAGAR DISTRICT

Map 5 : Mahbubnagar



MAHBUBNAGAR/KOLLAPUR PROJECT

The project is envisaged to serve a population of 1,06,435 spread over 36 brackish rich and scarcity villages.

The Bekkam Tank is the source of raw water, the discharge into Bekkam Tank is partly through back waters of *Srisailam* reservoir and partly by *Lift Irrigation scheme Mahbubnagar*.

Financial Progress

Review PRED QPR April-September 1995

Expenditure on the project is indicated approximately as Rs.736 lacks (94%) against estimated RRE of about Rs.780 lacks.

A balance of about Rs.57 lakhs is to be spent on works component whereas about Rs.13.23 lacks is spent (establishment and also establishment charges on O &M from 3/94) in excess of the contracted provision of Rs.780 lakhs approximately.

(Refer abstract statement and graph)

An overview of financial statement ending 9/95 reflects unspent budget at 45% for Balancing Reservoirs, 41% for Village Distribution, 30% for Service Reservoirs, 10% for Head Works and also 10% for Transmission Lines. This clearly indicates that much of infrastructure grounding/completion is still to be done .

ABSTRACT STATEMENT ON BUDGET & EXPENDITURE OF RWS KOLLAPUR (MAHABUBNAGAR PROJECT)

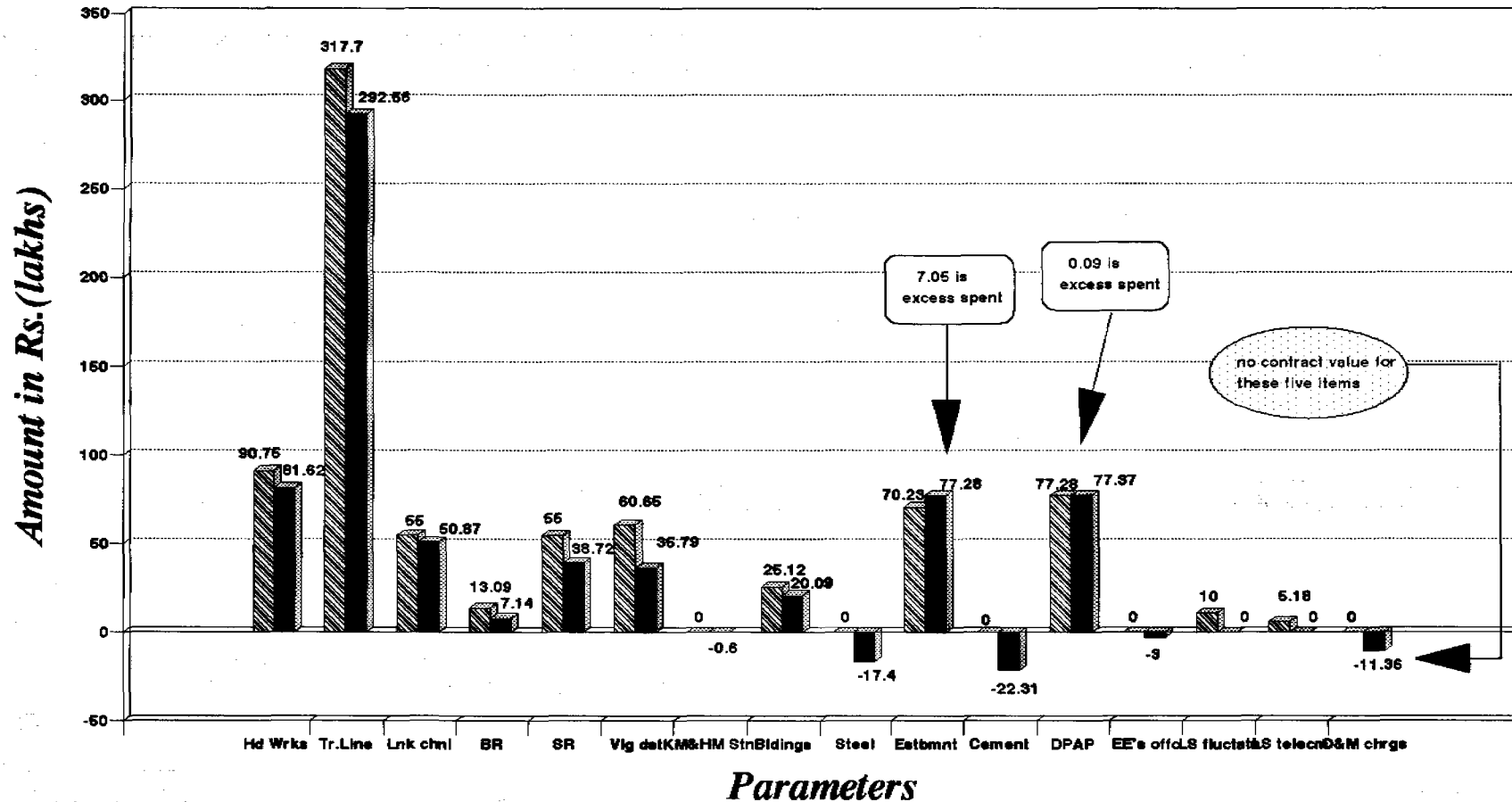
Amount in Rs.(lakhs)

Sl. No.	Particulars	Scope of Villages	Contract Value	Expenditr(Rs.) QPR 3/94	Expenditr(Rs.) QPR 6/94	Expenditr(Rs.) QPR 9/94	Expenditr(Rs.) QPR 12/94	Expenditr(Rs.) till 3/95	Expenditr(Rs.) QPR 6/95	Expenditr(Rs.) QPR 9/95	Balance till end of 9/95
1	Head Works		90.75	71.70	71.70	72.85	75.23	75.97	76.97	81.62	9.13
2	Transmission Line & C.I. Specials		317.70	276.81	279.40	282.44	285.58	285.67	286.64	292.56	25.14
3	Link Channel		55.00	46.57	46.57	46.57	50.87	50.87	50.87	50.87	4.13
4	Balancing Reservoir		13.09	5.13	5.44	6.05	6.05	6.05	6.82	7.14	5.95
5	Service Reservoir		55.00	34.12	34.15	34.78	37.50	38.49	38.72	38.72	16.28
6	Village Distribution		60.65	20.16	21.30	27.68	29.81	30.44	32.47	35.79	24.86
7	K.M. & H.M. Stones		0.00	0.6	0.60	0.60	0.60	0.60	0.60	0.60	-0.60
8	Buildings		25.12	20.00	20.09	20.09	20.09	20.09	20.09	20.09	5.03
9	Steel		0.00	17.40	17.40	17.40	17.40	17.40	17.4	17.40	-17.40
10	Establishment		70.23	87.28	87.28	87.28	87.28	77.28	77.28	77.28	-7.05
11	Cement		0.00	10.26	10.26	10.26	10.26	20.65	21.12	22.31	-22.31
12	DPAP		77.28	77.37	77.37	77.37	77.37	77.37	77.37	77.37	-0.09
13	E.E.'s Office Bulding		0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	-3.00
14	L. S. Fluctuation		10.00	0.00	0.00	0.00	0.00	0.00	0	0.00	10.00
15	L.S. Telecom		5.18	0.00	0.00	0.00	0.00	0.00	0	0.00	5.18
16	Eatablishment chrgs on O&M from 3/94		0.00	0.00	0.89	2.34	4.82	5.73	8.97	11.36	-11.36
	TOTAL	36	780.00	670.40	675.45	688.71	705.86	709.61	718.32	736.11	43.89

(105.70-61.81)

Budget & Expenditure Abstract Statement

RWS Kollapur (September 95)



Design Criteria

The 1981 census has been referred to for population computation. Project is designed for the year 2012, i.e., 25 years by interpolating population for project year 1987. Some of the design criteria's adopted in project planning were :

- | | |
|---------------------------------|------------------------|
| 1. Design Period | : 25 years (2012) |
| 2. Rate of growth | : 2 % per annum |
| 3. Draw of raw water | : 60 lpcd |
| 4. Supply of treated water | : 50 lpcd |
| 5. Evaporation & seepage losses | : 50 % |
| 6. Canal closure period | : N.A. |
| 7. Transmission lines | : 16 hour flow |
| 8. Raw water wells | : N.A. |
| 9. Slow Sand Filters | : 100 ltrs./sq.m. /hr. |
| 10. Clear water sump tanks | : 1 hour capacity |
| 11. Service reservoirs | : N.A. |
| 12. Village distribution | : PF =3 , RH=6M |
| 13. Public stand posts | : 1 for 250 people |
| 14. Disinfection | : Chlorination |
| 15. Summer Storage Tank | : 365 days |

Physical Progress

Status of Major Components (As per reimbursement claims till end of 06/95) Table - 5

District : Mahbubnagar (Kollapur)

Items	Total Works	Complete till 3/95	Complete till 6/95	Progress 4/95 to 6/95	Balance as on 6/95
Filters	1	0	0	0	1
S.S. Tanks	-	-	-	-	-
S. Tanks	-	-	-	-	-
Raw water wells	1	1	1	-	0
Clear water sumps	5	0	0	0	5
Pump houses	5	0	0	0	5
Pumping units	2	2	2	-	0
OHSR	13	8	13	5	0
BR	-	-	-	-	-
GLSR	40	40	40	-	0
Cisterns	-	-	-	-	-
Buildings	10	5	5	-	5
R/w trans. lines (km)	0.8	*	*	*	*
C/w trans. lines (km)	131.9	*	*	*	*
Dist. from village (km)	14	8	8	0	6

Analysis is based on re-imbursement claims till end of 6/95, QPRs till end of 9/95 and field visits.

* indicates non-availability of information either in QPR or in re-imbursement claim for that period.

- indicates not applicable.

Details till end of September 95 are not furnished by PRED.

5 OHSRs have been completed during the period.
PRED QPR reflects 52 out of 128 activities as incomplete.

9 villages out of 36 are reportedly receiving water till end of 6/95. Comparing this information with the budget spent on each activity, NAPO reviews the progress on certain major activities as follows:

Head Works

3 out of 14 activities have some incompletions. NAPO is concerned about the limited activities on repairs to Summer Storage Tank where only 56.5% of the cost is spent till the end of 9/95.

Transmission Lines

5 out of 46 activities are to be completed.

Link Channel

400 m out of 5315 m is still to be done.

Balancing Reservoirs

4 out of 9 balancing reservoirs show incompletions.

Service Reservoirs

Financial expenditure indicate 33 works completed upto 70%, while testing is to be done for 29 works.

Village Distribution

10 out of 14 activities are not yet completed. Levels of budget spent for certain activities are as low as 30%, with average expenditure incurred at 60%.

In view of the above analyses it seems that 52 out of 128 activities need a fair quantum of work before the project is commissioned. PRED's assurance regarding commissioning by 9/95 would imply a great need for speeding up the work. PRED needs to speed up activities in order to fill up gaps before declaring the project completed .

CONCLUSIONS

In view of the above reporting it may be evident that much remains to be done before the AP II project can be considered completed.

The new Engineer-in-Chief intends to maintain March 1996 as completion target for contractual completion.

Much will depend on the capacity to step up the completion of the remaining works. As this reporting period only covers the first few months under the new E-n-C it may be too early to tell if completion by March 1996 can be reached.

The issue of completion may pose confusion in terms of the different perceptions thereof.

NAPO would like to suggest discussions to be held between PRED, RNE, NAPO and the Support Mission, to reach a consensus on the term completion.

Operation and Maintenance being a problem of such great magnitude, needs a process towards solutions. It may have to be viewed somewhat separately from completion of physical work.

In view of the many deviations between design and actual construction and the many deletions of design components observed, NAPO advises to compare designs and actual construction, with the recordings of such components in the reimbursement claims.

Such could be done as part of the completion procedure by means of a physical audit.

OPERATION AND MAINTENANCE

With the AP II schemes expected to be completed in the course of 1996, much attention of NAPO and the Support Mission has been directed at the operation and maintenance of the AP II schemes.

Operation and maintenance have been cited as the major concern in the previous NAPO QPRs and Support Mission reports.

The O&M problems are certainly not unique for the state of Andhra Pradesh, but rather seem to exist throughout the country.

Part of the problem may be rooted in the lack of specialization for RWS and O&M within that field, which in turn is related to the institutional set up where responsibilities for construction of roads, public facilities and RWS are all within one institutional setting.

In Andhra Pradesh these tasks are combined in a Department, the Panchayati Raj Engineering Department, PRED.

As has been described in previous QPRs, the emphasis in the PRED seems to be on construction, with less interest and status among the staff for other activities, such as maintenance.

This has created a very low appreciation for O & M among the staff, who are measured by their construction achievements, rather than by whether these are operational or not.

The mixture of engineering tasks also causes frequent transfers of staff, in a situation where staff try to improve their position through transfers to other activities. These transfers obviously cause discontinuity in management and availability of actual knowledge and information of the systems constructed for RWS.

As NAPO's monitoring activities frequently pull us back into issues related to design and execution, the present efforts to create internal inventories for each and every scheme, are aimed at making this dearly needed information permanently available at the locality, instead of losing the information with the transfer of staff.

The present Chief Minister and the newly appointed Engineer-in-Chief prove to be well aware of these difficulties and the need for improvements in the Operation and Maintenance of Rural Water Supply.

Future possibilities of alternative arrangements seem to be under discussion.

We hope to be able to report on the direction and content of these discussions in the next QPR.

OPERATION AND MAINTENANCE PROBLEMS IN THE NAP PROGRAMME

Among the problems identified in the previous reports are :

- lack of availability of funds leading to insufficient budgets as well as delays in the actual release of these budgets;
- lack of clear policies and systems for O & M;
- insufficient management and overlapping responsibilities within projects and the agencies, and the use of O & M funds for infrastructural purposes;

- focus of interest on creating infrastructure leaving a disproportionately limited interest in O & M;
- low status of O & M tasks in the PRED "corporate culture";
- in terms of management there are no specific or clear institutional arrangements to look after O & M; neither in the staff-structure nor in the reporting structure;

(Please refer to AP 29 for more specifics)

According to the latest information, the total volume of schemes in Andhra Pradesh amounts to 18,784 IPWSS schemes and 40 CPWSS schemes.

Of these 40 CPWSS schemes, 16 are under NAP (40%) and the rest of the CPWSS schemes are predominantly World Bank funded.

In the NAP set up PRED remains responsible for the operation and maintenance of all systems under the NAP programme.

In the regular PRED system covering almost 19,000 IPWSS schemes, the procedure is that PRED designs and constructs the facility and then hands it over to the Gram Panchayat for day to day operation and maintenance.

Responsibility for the bulk of operation and maintenance at distribution level has been placed with the Gram Panchayat and logically, PRED has never concentrated on O & M at distribution level.

The earlier decision to keep O & M of NAP schemes with PRED was to our knowledge based on the Review and Support mission's negative impression on the Gram Panchayats performance in O & M.

In the decision to shift responsibility for day to day operation of distribution systems to the PRED in the NAP Programme, some of the characteristics of the existing situation may not have been taken in to consideration:

- 1) PRED did not and does not have the institutional provisions for O & M of distribution level (as it was not their task).
- 2) Financial coverage for PRED taking on the O & M had to come from State Government, although, State Government may not be able to generate the budgetary requirements in the long run or indefinitely.
- 3) A direct relation between cost recovery and Operation and Maintenance will be hard to realize in this construction. Even more so, as in the "regular transfer" to Gram Panchayats house connections are allowed, and form a basis for the O & M cost recovery. Such is disallowed in the NAP Programme.

Although the official system in NAP stipulates that PRED shall remain responsible for O & M of the schemes built under NAP, the trend of thought is presently towards delegating the O & M for the individual schemes under NAP and the distribution level of the comprehensive schemes to the Gram Panchayat level.

Such move is consistent with the assumption that Government may not cover the O & M costs in the long run and the intention to find solutions that make the schemes' operation and maintenance sustainable through cost recovery for O & M.

In an effort to make such transfers of O & M to Gram Panchayat more sustainable it has been decided that such transfers could only take place if the schemes are in good and completed condition and will be transferred with the inclusion of trained operators, on the basis of clearly specified procedures for handing over.

RNE, PRED and NAPO have agreed to an experiment with pilot schemes, including 1 CPWSS and 10 IPWSS schemes in Prakasam.

As AP II designs have not been based on the inclusion of house connections, it has in principle been agreed that these can be allowed if the capacity of the schemes can cover these.

In NAPO's view "CAPACITY" should in this case be understood as operational capacity rather than design capacity.

Already NAPO has observed the inclusion in the FREs of a separate IPWSS scheme to Ankireddypalem because the villages "upstream" in the comprehensive scheme are taking too much water due to the allowance of house connections.

Support Mission AP 29 provided elaborate advice and support services to PRED on O & M in the form of a workshop for all NAP involved Engineers.

Set-up per schemes were prepared to define :

- outline of O & M tasks;
- listing of personnel involved in AP II;
- preparation of O & M budgets;
- preparation of task descriptions and jobcards;
- identification of training needs;
- preparation of manuals for operators;

(Please refer to mission report AP 29 , page 13-16)

ACTIVITIES OF PRED ON O & M PLAN

While reviewing the O & M problems with the newly appointed E-n-C in July, PRED showed lot of interest and suggested that all the following aspects will be taken into account :

- accounting of money;
- roles of GPs and PRED;
- ownership being with GPs, possible technical support from PRED;
- inclusion of these tasks in Mandal A.E./D.E.E./M.D.O. job cards;
- fund generation - no. of house service connections to be given - tariffing accounting - etc.;
- staffing - sub staff of GPs, supervision of PRED (WI);
- payment making authority delegated to MEO; only necessary approvals to be obtained from competent authority.

Given the above aspects, scheme wise Operation and Maintenance estimates should be made and discussed with GPs, with regard to role of GPs in operation, and role of GPs & PRED in maintenance.

Status of O & M Tasks

Following the workshop O&M in October 1994, PRED has presented a draft paper on procedures for operation & maintenance (O & M) AP- 11.

The O & M tasks as discussed during the work shop are well reflected in the document. However, the outline of the tasks need to be extended further, detailed and tailored to the specifics per scheme.

The concept of O & M

In view of the earlier remarks regarding the lack of specified O & M structures, much of the O & M appears adhoc, and can be characterized as continued crisis maintenance.

As discussed in the workshop, **OPERATION** should be understood as the everyday running and handling of the water supply system.

Proper operation can result in optimum use of the system and reduces breakdowns and the need for maintenance.

MAINTENANCE refers to the activities required to sustain the water supply system in proper working condition and can be subdivided in :

- preventive maintenance; regular inspection and servicing to preserve assets and minimize breakdowns,
- corrective maintenance; minor repairs and replacement of broken or worn-out parts,
- crisis Maintenance; unplanned response to emergency breakdowns and user complaints.

Identification of training needs AP II

Training for Operation & Maintenance aspects will follow after completion of task and manuals per scheme.

Preparation of O & M budgets

Further to the preliminary O&M budgets provided during the earlier workshop (AP 29), final estimates were presented in September.

The support Mission has analyzed these budgets and finds a considerable reduction due to the schemes not yet being operational to the full extend.

(see AP 31 annex 5 and also Training SSF)

Conclusions

PRED is well on its way at identifying O & M tasks for NAP schemes, and is presently advised to further these tasks in the form of scheme specific O & M manuals with job cards and personal planners for the various levels of O & M staff.

Thereafter these manuals still need to be made operational.

The final report on Village Level Water Supply Management (VLWSM) study which was recently received, offers interesting suggestions and inputs for further action at elaborating O & M tasks.

Action PRED

- extending the description of tasks for every water installation on the basis of preventive, corrective and crisis management of the system and formulate the same as CHECK LIST,
- specify the task descriptions to the person appointed for that part by the respective S.E.s,
- operationalize the same in to a personal planner (from Operator level to SE level),
- operationalize the manuals for O&M.

PILOT SCHEMES O & M - AP II

S.E. Ongole has translated the 10 guidelines (see appendix VI, mission report AP-30) into Telugu. However, contrary to the PRED decision in 1994 to restrict coverage to 12 pre-selected schemes, all GPs were approached.

As quoted earlier, the rationale for the pilots is to generate a good procedure for transfer of responsibilities to Gram Panchayats, and not on the number of schemes to be handed over during the pilot.

From a pilot of three schemes earlier proposed, the scope had apparently been expanded to all Gram Panchayats in Parchur.

During the talks in September, the scope was reduced to 1 CPWSS and 10 Individual PWSS.

Activities of P.R.E.D. on pilot schemes

PRED to formulate the procedure at systematic handing over of O & M tasks at village level to Gram Panchayats.

Execute the *pilot project* frame work, taking Support Mission AP-31 guidelines as a tool for a systematic approach. (Please refer Annex 6 SM report AP-31)

Include a few villages where NGOs are active .

PRED to ensure preparation of pilot project by April 1996 .

Bi-weekly meetings with NAPO can be instrumental in monitoring the progress.

NAPO recommends to terminate the agreement with GPs where there is deviation from the planned sequence as documented in Pilot Study .

Actions to be taken

The PRED has expressed its commitment to implement the following activities:

- *preparation of guidelines (partly done, see annexure 6)*
 - * technical guidelines
 - * institutional guidelines
 - * Socio-economic guidelines
- *selection of villages*
 - * preparation of selection criteria
 - * survey of villages which have stated their interest
- *negotiations with the selected villages*
 - * explanation of guidelines
 - * negotiations
 - * signing of contract documents
- *ensure functioning of selected schemes*
 - * rectification of any defects
 - * preparation of design memoranda
 - * preparation of O&M manuals
- *staffing*
 - * selection of staff
 - * letter of appointment for staff
- *training of staff*

- *allocation of funds for O&M*
 - * O&M Estimates
 - * Approval and allocation of budget
- *delegation of responsibility of the scheme*
- *guidance by PRED*
- *monitoring by NAPO*

SLOW SAND FILTERS

Introduction

NAPO has initiated an evaluation of SSFs and coordinated a workshop in Ongole on May 31 through June 2, 1994. In this workshop, the findings of the survey and experiences of the engineers responsible for the schemes were operationalized. An SSF advisory group was constituted, consisting of :

- the S.E. (NAP) Ongole
- the D.E.E. of E-n-C Hyderabad
- the D.E.E. of Ongole
- the D.E.E. (NAP) of Parchur
- the A.E.E. (NAP) of the Maintenance Division, DARSI

Despite the elaborate action plan and the agreements made during the workshop, the activities of the advisory group were very limited.

(see AP 29 and AP 30)

Activities and results of S.S.F. advisory group per September

- *Regarding pilot project on pre-treatment in Kurnool*, SE informed of alternate site at Naguladoddi be taken up in Mahbubnagar, scheduled for completion in December 1995. NAPO in addition, advised PRED to take up the activity at one of the water treatment plants in Kurnool on experimental basis may be coagulation/flocculation, horizontal roughening or dynamic filters;
- *Regarding development of guidelines for management of summer storage tanks*, NAPO received an abstract of the report prepared by an expert of Agriculture university Kakinada in 1990 with S.E.'s (P.R.E.D.) recommendations on it . (NAPO 's observations recorded overleaf);
- *Regarding mechanical de-weeding in SSTs*, PRED informed of rejecting the idea. NAPO however still feels that one of such machinery if procured & used on rotation at major SSTs shall supplement partly manual de-weeding;
- *Regarding experiments on constant dosing equipments for chlorination*, S.E. Ongole informed of progress and assured to provide results of this experiment for its wider applicability;
- *Regarding experiment achieving higher rate of filtration at S.S.F. Darsi*, S.E. (P.R.E.D.) informed that renewal of sand and lowering of inlet weirs is in progress. NAPO has expressed its eagerness to know results once the filters are again put to operations;
- *Regarding monitoring formats produced by A.E.E. Darsi*, NAPO shall discuss these formats with representatives of advisory group and finalise on its actual applications;
- *Regarding training program of SSF operators*, P.R.E.D. has fixed October 1995 for conducting this training budgeted at Rs.20,000/;
- *Regarding availability of equipments to facilitate cleaning of smaller size S.S.F.*, no progress is recorded.

It was decided that advisory group will keep NAPO informed and also brief NAPO in bi-weekly meetings.

Management of Summer Storage Tanks

Management Of S.S.T. consists of :

- filling the tank to required capacity,
- use the tank for full year,
- preventing weed growth and contamination.

Some of the main suggestions proposed by PRED are :

- compartalise the tank and allow to dry alternate year,
- use of herbicides,
- deepening of bed 1 to 2 feet, ploughing the bed and cleaning,
- manual removal of weeds, may be by boats,
- aqua culture (fish), growing "Gross Crop" fish in water tanks,
- human and cattle interference.

(Please refer annex VI)

CONCLUSIONS

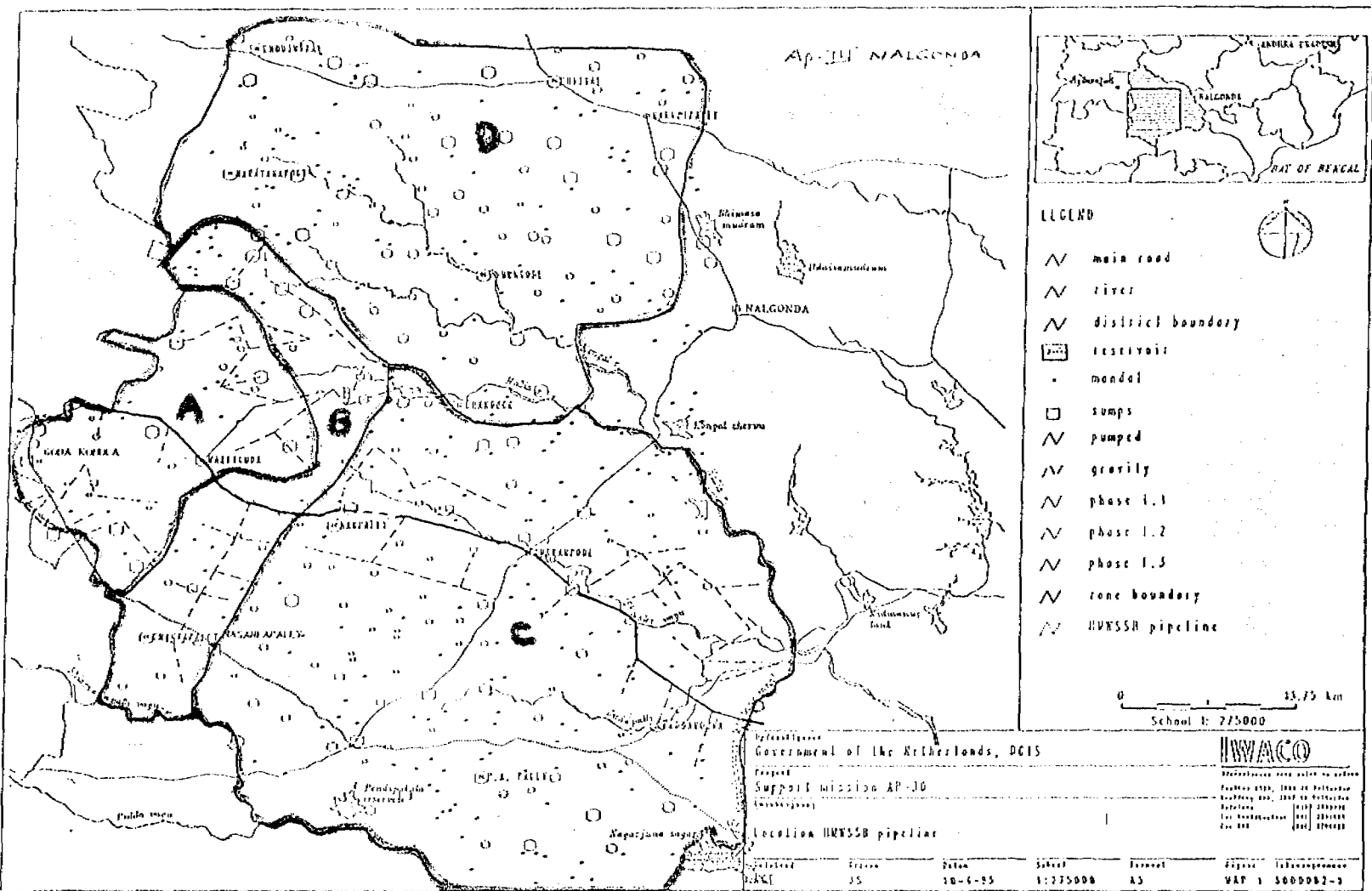
P.R.E.D. has to further elaborate the discussions by giving due considerations to :

- creating extra capacity for allowing one compartment to dry - estimate the budget involved;
- the effects of herbicide applications into a drinking water source - the toxic limit of residue and its interference in the treatment procedure (S.S.F.) supporting the recommendations based on case studies;
- deepening by bed ploughing, cleaning and applying lime on bed can be tried as an experiment;
- manual removal of weeds is a suggestion which could be implemented;
- the effects of fish feed on drinking water should be studied; fishing leads to increased turbidity;
- fencing S.S.T.s may not provide any permanent solution, and has always been discouraged by NAPO and Support Missions; educating GPs may provide a solution.

P.R.E.D. could think of a cost efficient alternative, considering:

- the tank has to be structurally stable (hydraulic grade line), including stability of slopes;
- a sedimentation basin for turbidity considerations;
- the water available in the tank has to be of acceptable standards both on raw water quality and filtrate efficiency.

AP- III NALGONDA
 Map 5 : Nalgonda



AP III - NALGONDA

During the later part of the reporting period April- September 1995, NAPO and the Support Mission had many interesting discussions with the newly appointed E-n-C (PRED) on the subject of AP-III, Nalgonda.

All parties involved seem interested to take the lessons learned from the AP I and AP II projects into serious consideration, in order to prevent the problems which resulted in delays and increased implementation costs of the earlier projects.

Discussions have concentrated on planning, contracting, cost effective Operation & Maintenance, reliability of source and electric power, and active users' participation aspects.

PLAN OF OPERATIONS

During AP-30, PRED had agreed to elaborate and add descriptions of activities for the Plan Of Operations to the example prepared by Mission AP-30, in line with comments of NAPO, GON and WORLD BANK guidelines. The presentation given by PRED was however limited to only elaborating on the steps proposed by the Mission, instead of inputs originating from PRED and the detailed procedures with the PRED. The Mission AP-31, installed the program "TIMELINE" on PRED computers and has also provided training to PRED engineers on the use of this project management software.

After experimenting with the software, PRED and NAPO have agreed to decide on a definitive choice of software for planning within a few months time.

TECHNICAL ASSISTANCE FOR AP III

During the discussions on AP-III in September 1995, PRED has expressed the need for technical assistance during project preparation & implementation on:

- technical designs;
- phasing/rephasing of the project;
- reliability of source;
- institutional setup during and after implementation/O & M
- ease in operation;
- packaging of works and volumes for contracting;
- MIS for maintaining;
- human resource development for PRED;
- on the job training for geophysicists;
- complete software on designing optimal pumping mains.

SOURCE STUDY

E-n-C (PRED) appreciated NAPO's suggestion to consider the selection of source in view of the experiences of reliability of water supply in irrigation canals and reliability of electric supply. PRED has expressed an interest to study the feasibility of locating the source straight into NS reservoir (as is projected for the "Hyderabad Pipe Line"), rather than dependency on NS Canal and storage in to S.S.T. at ALWAL. The need to study is all the more important in view of the source problems in AP II Projects in Prakasam and Medak.

A number of options have been listed and their feasibility and cost comparison will be studied and discussed.

ACTIONS

PRED has agreed to elaborate the Plan of Operations further, in line with the comments of NAPO, the current GoN and modified WB guidelines. PRED has also agreed to add descriptions of activities and to further discuss these with NAPO.

4.2 SANITATION

4.2.1 PROJECT CLEAN VILLAGE

The existing sanitation program under project clean village has not been very successful. From April until September 1995, only 32 latrines have been constructed, incurring an expenditure of only Rs.2.09 lakhs till end of 9/95. 1288 latrines were completed at the cost of Rs.51.607 lakhs.

Abstract on Physical Progress (P.R.E.D. QPR from April to September 1995) Table - 6

Sl. No.	Particulars	May 93	May 93 to Mar95	Apr 95 to Sep 95	Cumulative	Remarks
1	No. of villages	15	0	0	15	Originally 18 villages but 3 subsequently dropped
2	No. of individual latrines	3724	0	0	3724	Target reduced (from 3724 to 1581) i.e. -2143
3	No. of Units sanctioned	876	706	0	1582	42% of proposed
4	No. with down payment	857	767	0	1624	44% of proposed
5	No. of latrines constructed	21	1235	32	1288	35% of prop. & 80% of ben. with down payment
6	No. of latrines in progress	178	-	-	155	9.5% of beneficiary with down payment

(Refer cumulative statement on Sanitation for an over view)

It has been acknowledged that this project does not seem to provide an effective approach for the AP II Sanitation Programme. Hence it has been decided by PRED/RNE/NAPO to wind up this particular pilot effort to concentrate on an alternative approach.

NAPO was requested to support PRED in providing a comparative study of the Project Clean Village and the PRED/UNICEF project in Andhra Pradesh. The results were presented in an internal working document called "Study of NAP Sanitation Programme" in February 1995.

During the visit of RNE Sector Specialist Mr. P. Flik in June 1995, the comparative study was discussed. The approaches received offered no overall solutions, and turned out ineffective in the environmental sanitation. RNE directed NAPO to study the cooperation in sanitation between PRED and UNICEF in Anantapur District.

During the discussions between RNE/PRED in June, it was in principle decided that, given the good reputation of the Anantapur project, PRED would proceed with conceptualizing an alternative proposal along the lines of the Anantapur model at the level of Rs.3.55 crores.

After long delays, due to elections and unavailability of PRED Sanitation cell, NAPO was finally able to visit Anantapur, accompanied by the PRED sanitation cell, to find that the suggestion must have been based on a misunderstanding, as there is no UNICEF/PRED tie-up on sanitation in Anantapur.

Since then NAPO had elaborate meetings with PRED staff to combine the most interesting features of the various sanitation projects and the available literature.

Presently an alternative project is being conceptualized on a combination of the strong points of the various projects.

The project proposal for sanitation is expected to be presented by December 1995.

4.2.2 ASSIST PROJECT

Sanitation - ASSIST:

ASSIST has been progressing at a rather slow pace in the construction of the latrines.

Out of the target of 1725 latrines (May 94 - Sept 95), ASSIST has constructed 622 units (36%). An additional 71 units are under construction.

The reasons given for the slow rate of progress is the depression in the local commodity market for cotton and as such the farmers are not in a position to sell their produce. Many farmers had invested their money in the kharif crops and thus did not have ready cash available. As June is not an auspicious month (Ashada season), people were not prepared to start new constructions. The inability on the part of the committees to motivate people to go for latrines at the envisaged community contribution of 30%, added to the underachievement.

ASSIST has undertaken an internal evaluation. The evaluation has been completed and the final report is awaited.

Smokeless chullahs:

Of the targeted 1725 stoves, 733 (43%) stoves have been distributed.

ASSIST mentions the need to discuss and finalise the targets and financing pattern with NEDCAP since April 95.

Bio Gas:

40 units were planned and have been constructed.

**CUMULATIVE STATEMENT SHOWING THE FINANCIAL AND PHYSICAL PROGRESS REPORT
ON SANITATION IN AP-I & AP-II OF PRAKASAM & GUNTUR DISTRICTS**

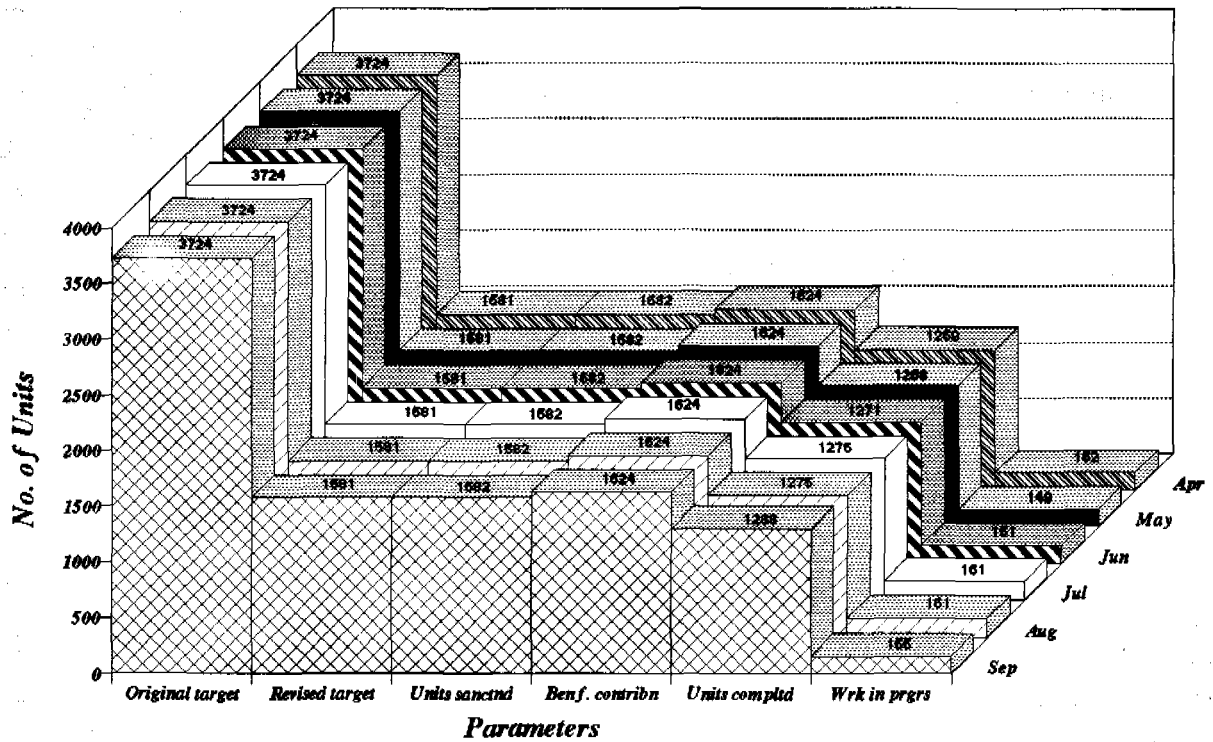
(Rs. in lakhs)

Sl. No.	Month	Original Target	Proposed Target	Units Sanctioned	Beneficiary Contribution	Units Completed	Work in Progress	Expenses			Cum. Expense (RNE release+ GOAP+Intererst +Ben.contrbn)	Balance with PRED
								Prev. Exps.	Currnt Exps.	Cumltv. Exps.		
1	Jan 95	3724	1581	1582	1624	1255	128	29.10	0.60	29.70	83.647	53.947
2	Feb 95	3724	1581	1582	1624	1255	129	29.70	0.17	29.87	83.647	53.777
3	Mar 95	3724	1581	1582	1624	1256	148	29.95	0.00	29.95	83.647	53.697
4	Apr 95	3724	1581	1582	1624	1259	152	29.95	0.00	29.95	83.647	53.697
5	May 95	3274	1581	1582	1624	1268	149	29.95	0.03	29.98	83.647	53.667
6	Jun 95	3724	1581	1582	1624	1271	151	29.98	0.86	30.84	83.647	52.807
7	Jul 95	3724	1581	1582	1624	1275	161	30.84	1.01	31.85	83.647	51.797
8	Aug 95	3724	1581	1582	1624	1275	161	31.85	0	31.85	83.647	51.797
9	Sep 95	3724	1581	1582	1624	1288	155	31.85	0.19	32.04	83.647	51.607

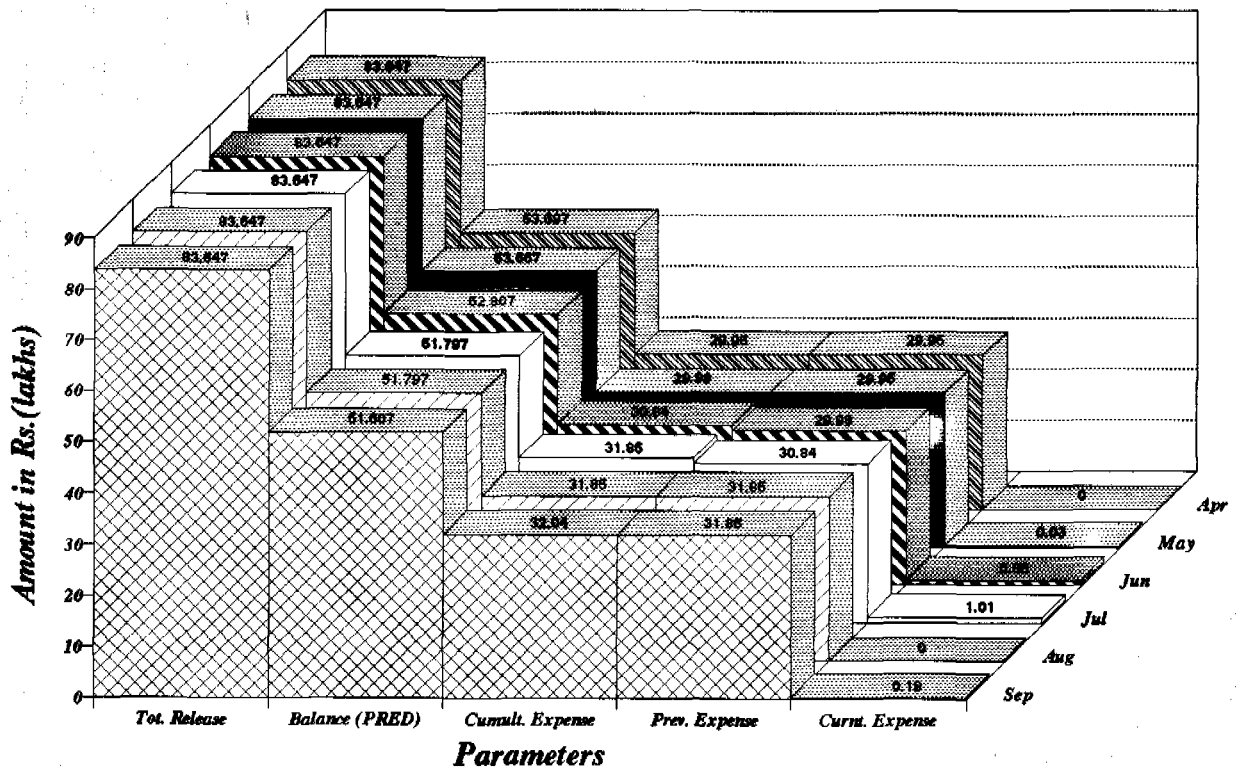
FINANCIAL STATUS FOR EXPENDITURE UPTO SEPTEMBER 1995

	Contributns	Released		
		to June94	July 94	Cumulative
GOAP	8828000	2450000	-1375000	1075000
RNE	26672000	6650000	0	6650000
Interest		151700		151700
Beneficiary contribution		488000		488000
Total	35500000	9739700	-1375000	8364700
Expenditure till end of 9/95				3204000
Balance with PRED till end of 9/95				5160700

Sanitation - Physical Progress April to September 1995



Sanitation - Financial Progress April to September 1995



4.3 LIFT IRRIGATION SCHEME (MAHBUBNAGAR)

The minor lift irrigation and drinking water supply scheme at Chinnamaroor village can be characterised as prone to many modifications and substantial delays in the projects implementation, as well as rather dramatic increases in the implementing costs.

NAPO also has the impression that the scope of the project has expanded beyond the levels of Minor irrigation.

Further to NAPO's inquiries in MARCH 1995 with irrigation department on the pending issues reflected in AP-27, the following response was provided:

1. **GOAP Approval of Revision.** The issue has been addressed and RNE has been informed of GOAP approval .
2. **Listing of Land Owners/Beneficiaries.** Further to information stated in NAPO QPR January to March 1995 and AP-30, Minor Irrigation Department has provided a list of beneficiaries which includes sector D-5, and a statement from the Mandal Revenue Officer Weepanagandla (16-5-95) indicating that no major changes in land owner ships have taken place during the last 5 years .
3. **Cost Benefit Analysis.** The cost-benefit analysis has been made on norms laid down by APSIDC (Minimum return for scarcity areas minor irrigation re-set at 0.5%). Return for the project is given at 0.75%.

NAPO Comments :

- a. Returns expected are linked to size classifications (< 5,000 acres = minor irrigation; 5,000-10,000 medium irrigation; and > 10,000 is major irrigation). Within these classifications, the project could have been classified higher than Minor Irrigation.
- b. Within the sub classification of Minor irrigation Schemes, the bigger schemes are also expected to have higher returns (this must be based on the logic that incremental costs diminish with higher returns).
The project has placed itself at the lowest classification possible, which NAPO finds difficult to understand in view of the 10,000 or 11,000 acres .
Furthermore in NAPO's overall assessment of the dimensions of the project (as executed basically for one crop), the set up infrastructure and available water from Srisailam Reservoir at 1.5 TMC could easily accommodate two crops, this can easily enhance cost-benefit ratio, with some additional O & M costs .
NAPO sees no reason why this good potential should not be reflected in a higher expectations for returns .
- c. Cost-benefit analysis presented is based on 2 years implementation period, with roughly 66% expenditure spent, projected in the first year and 34% in the second year. In reality the implementation has taken 7 years. The calculations are based on 2 years construction/execution and 20 years benefit. The question now arises, whether 20 years should be calculated from 1990 or from actual commissioning in 1995/1996 .
- d. Issue of interest and depreciation have not been considered in calculations for cost/benefit ratio, as these were not included in the APSIDC norms.

4. *Excess Levels of Bund of Bekkam Tank.* Minor Irrigation acknowledges the earlier findings by NAPO and explains them as calculation errors. However now that they exist, the capacity has been increased.
5. *Ownership of Bekkam Tank.* Issue has been answered; PRED has acknowledged having taken over the Bekkam Tank.
6. *Cracked Pipes.* Issue is resolved; please refer NAPO QPR JAN - MAR 1995 page 31 .
7. *Completion.* Excluding Distributary 5 (D-5), commissioning of project as committed by Minor Irrigation could be possible .
8. *Compensation of Land.* The issue of land compensation was added to the 7 points in March 23 meeting at NAPO. E.E. Irrigation and CAD's letter of 20 June 1995 indicates disbursements at Rs.31.15 lakhs out of Rs.38.25 lakhs.

Present Status of project

Most of the components are completed with trial test runs for pumping to be taken up. As reported, the testing of pipeline shall be taken up after the rainy season, in 8/95, upon availability of discharge in the Srisaillam Reservoir.

Field channels in D-1 to D-4 are nearing completion, while tenders are being called for the distributaries and field channels for D-5. Investigation and estimate preparation for field channels is in progress.

Expenditure on the project, as stated, have reached a level of Rs.970.86 lakhs (80%) till end of June 1995, with Rs.21.08 lakhs spent during the quarters Apr - Jun and Jul - Sep 1995.

Rs.216.14 (20%) lacks is still balance to be spent for the RRE costs reflected at Rs.1187 lacks.

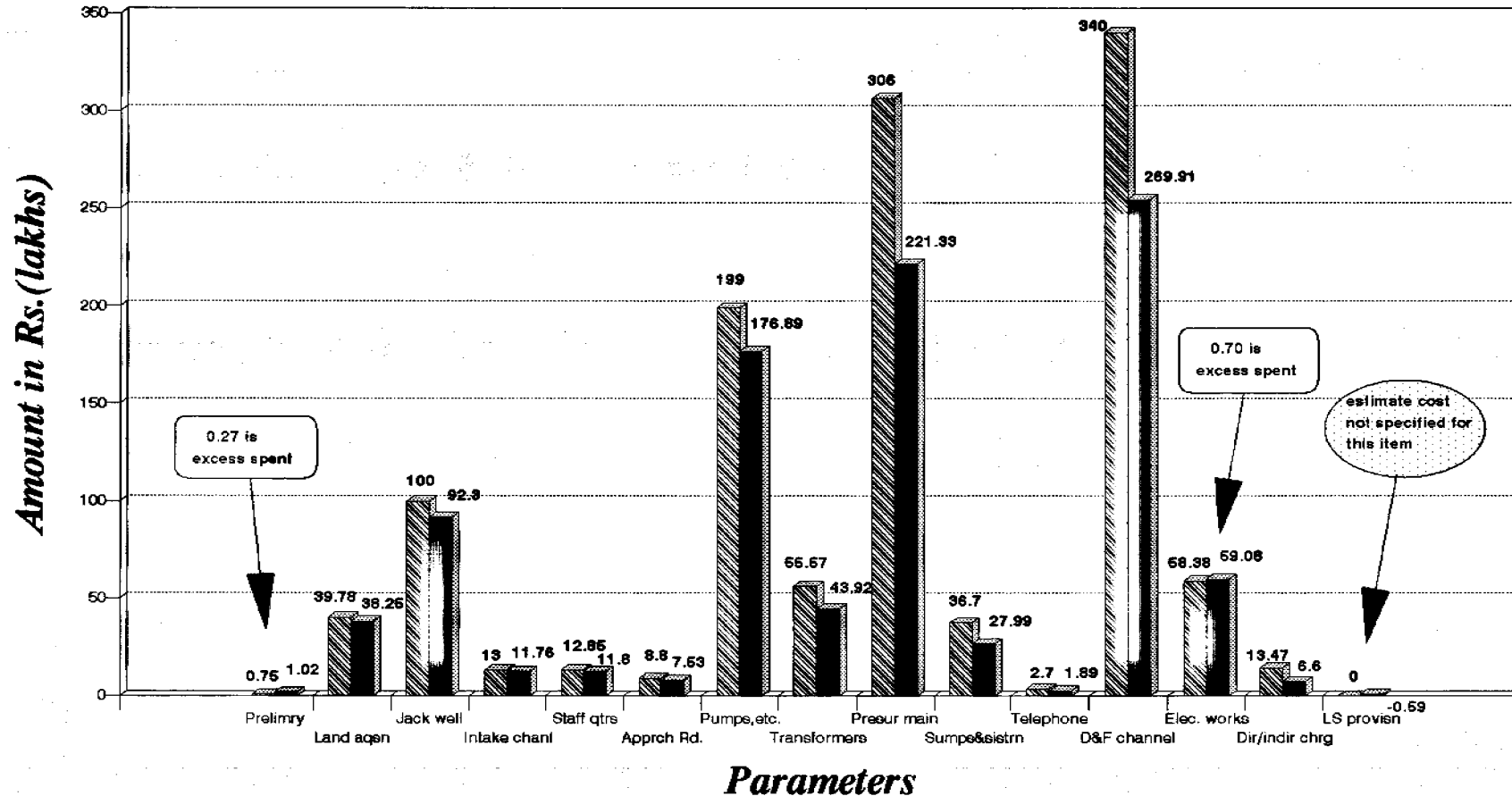
COMPARATIVE STATEMENT OF FINANCIAL EXPENDITURE ON LIS - NAGARKURNOOL

(Rupees in lakhs)

Sl. No.	Name of Work	Est.cost 1987	RE Aug 1988	RE 1992	RE March 94	Balance as on 12/94	Expense upto 3/95	Tot Expns upto 6/95	Expenses Jul-Sept(95)	Tot Expns upto 9/95	Balance as on 9/95
1	2	3	4	5	6	7	8	9	10	11	(6-11) 12
1	Preliminary	0.75	0.75	0.75	0.75	-0.27	1.02	1.02	0	1.02	-0.27
2	Land acquisition	7.80	7.80	33.00	39.78	1.53	38.25	38.25	0	38.25	1.53
3	Jack well	11.50	18.20	27.70	100.00	9.27	90.75	91.28	1.02	92.3	7.70
4	Intake channel	5.00	5.00	13.07	13.00	1.24	11.76	11.76	0	11.76	1.24
5	Staff quarters	7.55	7.55	8.55	12.85	1.05	11.80	11.80	0	11.8	1.05
6	Approach road	4.00	4.50	5.00	8.80	1.27	7.53	7.53	0	7.53	1.27
7	Pump sets, manifold, valves, sludge pumps & gantry cranes	87.90	80.50	132.00	199.00	22.37	176.76	176.76	0.13	176.89	22.11
8	Transformers & transformer yard	8.50	17.00	45.00	55.57	14.65	43.92	43.92	0	43.92	11.65
9	Pressure main	99.00	100.00	220.00	306.00	84.67	221.33	221.33	0	221.33	84.67
10	Sump and cisterns	2.00	5.00	10.00	36.70	11.15	25.54	26.35	1.64	27.99	8.71
11	Telephone	0.00	2.70	2.70	2.70	1.70	1.00	1.89	0	1.89	0.81
12	Distributerries & field channels	60.50	60.50	240.00	340.00	93.25	253.91	253.91	16	269.91	70.09
13	Electrical works	6.50	56.50	56.86	58.38	-0.70	59.08	59.08	0	59.08	-0.70
14	Direct & Indirect charges	39.00	48.00	48.00	13.47	6.93	6.54	6.54	0.06	6.6	6.87
15	LS provision & unforeseen	0.00	0.00	5.37	0.00	-0.59	0.59	0.59	0	-0.59	0.59
	TOTAL	340.00	414.00	848.00	1187.00	247.52	949.78	952.01	18.85	969.68	217.32

Lift Irrigation Scheme - Nagarkurnool

Financial Expenditure (September 95)



Rev. Est. Mar 94



Total Expenses 9/95

OBSERVATIONS DURING FIELD VISITS

During NAPO's field visits, Irrigation Dy.E.E. informed that back-filling shall only be done once the pipeline testing is completed. NAPO however observed during its field visit in August 1995 observed that most of the pipeline is already filled to formation level when testing for pipeline is yet to start.

The construction of Berm all along the distributary channels is still not initiated. Also pending for execution is Distributary D-5 and Link Channels .

4.4 EXTERNAL WATER QUALITY MONITORING

The project with IPM (Institute of Preventive Medicine) has been considered completed and closed. RNE has settled the finances and the final report and audit are still awaited. NAPO has sent several letters reminding IPM of the need to submit these reports.

On the role and cooperation of IPM for the AP II programme, NAPO cannot help but be pessimistic. Efforts to involve IPM in the RWS programme for AP I and II, as planned and agreed with the assistance for the set up of their laboratories, have remained unsuccessful.

As reports on the quality of water in the NAP programme had been requested since 1993 but never received, NAPO again met with the IPM Director to get these activities started.

IPM promised to provide the water quality reports retro active to January 1994.

After the meeting NAPO received a number of test-reports which were totally unrelated to the NAP Programme and returned these to IPM.

IPM was requested and agreed to assist in the procurement of test-kits for residual chlorine, but after a few month's waiting, NAPO purchased these in the market, in order not to further delay the programme.

Unless pushed in other ways, it looks realistic not to expect further cooperation with IPM.

4.5 A.P. DAIRY

The project with A.P. Dairy was considered closed per 31 December 1994.

The final report and audited statement are still awaited while a balance is expected to be returned to RNE.

RNE and NAPO have sent reminders to that effect.

4.6 COMMUNITY PARTICIPATION AND INVOLVEMENT OF NGOS

Introduction

Four NGOs - AIRDS, HERSELF, SNIRD and ASSIST - are involved in education, motivation and awareness building activities to achieve the RWS / Sanitation objectives in the Districts of Mahboobnagar, Kurnool, and Prakasam, respectively.

These NGO's were selected in the earlier days of the set up and only cover a limited area of the AP II project.

In the case of SNIRD the processing of the approval by Government took so long that SNIRD could start operations in AP I area after AP I was already considered completed.

Since the reorganization of NAPO in 1993/1994 NAPO has rebuilt its capacity in the social component with one coordinator and two project officers. They had to develop approaches and strategies for re-invigorating the NGO involvement.

Most of the NGOs were already in existence before being invited to join the NAP Programme, and hence had and have broader objectives than their contribution to the RWS and Sanitation programme only.

The present efforts by NAPO are directed to strengthen their interest and attention for the RWS and Sanitation component and to provide directions on approaches and activities to that effect.

The two quarters April-June and July-September have been active quarters for NAPO where the Social Component has been able to make some headway.

In addition to analysing the programmes of the NGOs, new directions and inputs were linked to the activities stemming from the Gender workshop which was conducted for RNE/WID by ETC Delhi, and increased attention for actual progress in the activities and financial monitoring.

It was also felt appropriate to make a quick internal review/ assessment of the NGOs by NAPO, to plan the course of action for the coming six months.

As compared to the past, the increased attention and activity of NAPO by the reorganized NAP Office has greatly improved the rapport with the NGOs as well as NAPO's understanding of their situations. As the previous problems in the NAP NGO sector had also generated apprehensive attitudes towards NGOs with the PRED, the new situation finds NAPO in a much improved position as a bridge between the technical and the social components of the programme.

(1) Gender Workshop

NAPO has assisted ETC India in conducting the Gender Workshops.

3 workshops were held in the month of April for three levels of personnel both from the PRED and the NGOs:

- the *first workshop* for those responsible for the *management*, who included the Superintending/Executive Engineers of the PRED and the NGO Project Directors;
- the *second workshop* for *Junior Engineers, the NGO cluster organisers and Project coordinators* (line managers) and;

- the *third workshop* for the *Work Inspectors* and the *community organisers*.

It was the first time that P.R.E.D. and the N.G.O.s were brought onto a common platform for discussion and interaction.

All 4 NGOs - AIRDS, HERSELF, SNIRD and ASSIST - were invited to participate, and have done so enthusiastically.

The NGOs welcomed the gender approach and expressed their willingness to support the cause which they assured would be incorporated into the future action plans.

It is encouraging to note that within a short time after the workshop, the NGOs have been working for increased representation of women on their committees. In some village level committees the representation has even reached 100%.

Another important development has been the promotion of exclusive women groups. These groups show greater interest to take on increased responsibility at the village level.

(2) NGO Workshop on MIS

NAPO organised a 2 day workshop in May for the NGO Project Partners. The objectives of the workshop were :

- to enable the participants to develop a better understanding regarding the RNE reporting format;
- to review the project objectives and plan alternate strategies for achieving these objectives;
- to identify constraints in project implementation and the support services required from NAPO;
- to identify issues that will help to improve the quality of operation and reporting.

The workshop provided a meeting ground for NAPO to meet with the partner NGOs and to discuss strategies that could be adopted for effective monitoring and execution of the software.

The NGOs were of the opinion that the exercise helped them to enhance their understanding and would result in qualitatively improved implementation and reporting. The importance of process recording and the need to balance the physical and financial targets were highlighted.

The workshop has actually resulted in much better understanding and reporting of the activities of the NGOs, as evidenced in the subsequent N.G.O. QPRs.

(3) Information Base

NAPO has been able to make a dent in building up its information base on NGOs and their activities.

During May/June, all the 93 villages covered by the 4 NGOs were visited atleast once. And an information base was prepared, based on parameters focusing on the objectives of the programme in relation to RWS and Sanitation.

This exercise has helped NAPO to make a quick internal review/assessment of the work undertaken by the NGOs.

NAPO is processing the information for better monitoring and providing of support services. The exercise has helped NAPO to gain a deeper understanding of the dynamics at the village level, which has its repercussions on the project implementation.

NAPO is confident that the feedback will help the NGOs to step up their activities and also systematically plan their future course of action.

(4) Strategies for withdrawal

As the contracts with AIRDS and HERSELF projects come to an end by December 1995, there was a need to consider the future options: to extend or to plan for withdrawal without losing the gains made so far.

Project holders and coordinators were called for a meeting/discussion at NAPO in July, where the concepts of sustainability and effective withdrawal strategies were discussed.

It was decided that NAPO would help both the groups clarify issues and plan for the future course of action in combined workshops arranged for the purpose.

The two groups met, had discussions on the strategies for withdrawal and prepared specific action plans for the coming 6 months.

Meanwhile both NGOs are supposed to conduct internal evaluations, which should provide insights as to whether there is scope for extension.

(5) Evaluations

The two NGOs, ASSIST and SNIRD, having completed one year, were due for the annual evaluation as planned in their project document.

The evaluations were an internal affair and NAPO was requested to help them to conceptualize the specific indicators and plan the future course of action.

The evaluations have been completed and the final report is awaited.

(6) Program Components

On a broader framework the four NGOs have similar program components:

Group Formation

The emphasis in the two quarters has been on strengthening of the hitherto formed groups and ensuring that women's representation is enhanced to 50%.

In the villages where self motivation has been rather slow, efforts are on to form new groups.

AIRDS has formed 49 PSP Committees with 100% women representation, 24 GLSR/OHSR Committees with 90% women representation, and 124 Mahila Mandalis (women groups) with 15 members each have been formed. These women are also given the added responsibility of maintenance of the PSPs and GLSRs.

AIRDS has facilitated 14 Women groups to get financial assistance from DWCRA, and help about 200 women to supplement their income by taking up leaf plate making, fish vending, mat weaving and stone crushing. In addition 20 Youth Groups have been formed and strengthened.

AIRDS has continued its efforts in group formation under the Lift Irrigation Scheme. Efforts are on to form Distributary and Channel committees. 5 Distributary committees have been formed. Similarly 6 channel committees are in the process of formation. The delay in energising the Lift Irrigation Scheme has its consequences in forming the relevant groups.

Though information in the reporting is impressive, NAPO would like to verify the existence in the field and get an impression of the qualitative aspects of these groups. In view of the delayed water supply in Mahboobnagar, it seems difficult and unlikely that such volume of group formation is real and can be sustained without water being provided.

For HERSELF, the pace of group formation had retarded due to the GP elections in the first quarter but picked up momentum in the second quarter.

HERSELF has deviated from its plan of action to form 29 PSP, 7 GLSR and 1 OHSR Committee across 9 villages where RWS has reached.

In addition, 40 Women and 40 Youth Groups have been formed and strengthened across 12 villages against the targeted 40 Women and 40 Youth Groups in all the 20 identified villages.

SNIRD and ASSIST have completed the group formation process.

VACs (Village Action Committees)

AIRDS is in the process of consolidating the different groups with representation from each group into the VACs. 26 of the 36 target villages were reported to have strong groups and are said to be formed into VACs.

With the VACs taking more responsibility of the assets AIRDS is confident that the committees will be in a position to manage the O & M component of RWS.

HERSELF has formed 9 VACs across the 9 villages where water has been released.

The VACs are effective and aware of their roles and responsibilities.

In the remaining target villages, the process is ongoing and though the VACs are formed, they are not yet very effective. The delay in release of water is affecting the tempo of the groups organizing.

SNIRD is presently involved in strengthening the different groups and the formation of a VAC with representatives from the different groups.

In addition, the organisation is assisting the Mahila Mandalis and Youth Groups to register themselves to get legal status, and in networking with other women and youth groups at the District/State level.

Until now 21 Mahila Mandalis (Women Groups) and 16 Youth Groups have been registered.

In ASSIST the VACs are called the VDS (Village Development Societies).

These societies are well established in all the 11 target villages. These VDSs have been playing a vital role in the villages and are involved in educating and motivating the Community members on the need to own a latrine. They also involved in mobilising the cash contribution of each family based on their economic status.

The VDS has also been playing a supervisory role in the latrine construction.

Case study - MUNNAGAVARIPALEM
(a target village of ASSIST)

The VDS of MUNNAGAVARIPALEM played a vital role in mobilising people for the latrine programme.

The society president Mr. Nagi Reddy, 70 years old is very dynamic and takes pains to personally encourage the people. He is a farmer who belongs to the upper middle class.

Not utilising the subsidy available from the project, he expressed his willingness to bear the total cost of Rs.4200 towards the cost of latrine.

This gesture helped him in gaining stature to facilitate decisions on the levels of "own contributions" of the beneficiaries, in his function in the village development society.

This enabled the village contribution level to reach 40%. In addition, the interest and enthusiasm of the VDS members to complete the targets has made them advance the money to the poorer people in their village, to be recovered from them later in easy instalments.

Strengthening of groups

Different initiatives are adopted by each NGO to motivate and strengthen the groups formed. The common methods are through individual/group meetings, village level meetings, exposure visits, campaigns and use of cultural media.

- **The Village Level meetings** are used as forums for exchange of views and discussion and arriving at decisions on community based issues.

AIRDS has reported 60 village level review meetings across the 36 villages on water supply and sanitation.

Monthly review meetings are held across all the 36 target villages involving the GP leaders, women and youth leaders.

The O & M issues, withdrawal of AIRDS and the need for the community to sustain their assets is highlighted.

HERSELF has reported 56 village level meetings across 18 villages.

The average attendance of participants is said to have improved from 35 to 80 participants per meeting.

The issues raised for discussion in these meetings are the importance of personal, home and environmental sanitation and steps to ensure the same, understanding of the RWS System and

issues related to O & M, collection and Storage of water and importance of the various committees and roles and responsibilities of the same.

The O & M issues, withdrawal of HERSELF and the need for the community to sustain their assets is highlighted.

SNIRD has conducted 125 meetings with the GLSR/OHSR/VACs, 434 meetings with the PSP committees and 65 meetings with the youth groups across 26 villages on issues related to O & M, hygiene promotion, community contribution, importance of these groups and the need for registration.

The meeting date and agenda are displayed on the information board prior to the meeting. On the day of the meeting the agenda is discussed and recorded. The action plans are worked out accordingly.

SNIRD has also been conducting fortnightly school health meetings. SNIRD has adopted an innovative approach of arranging for street corner meetings. These meetings are arranged in such a way that each village is covered in a month's time. The street meetings focus mainly on health and hygiene related to RWS and the effects of consumption of fluoride water.

In ASSIST the Village Health Promoters have been continuing their efforts to educate the communities on issues related to personal hygiene, environmental sanitation and immunisation.

The VHPs being based in the villages, give them an opportunity to interact with the community members on an everyday/on the spot basis.

The VHP talks to the community members mainly on 3 issues, educating and motivating them to clean the internal drains, taking up of kitchen gardens and family planning operations.

All the four NGOs have been taking special interest in conducting meetings for the women in the villages.

Women are formed into Mahila Mandals in all the target villages. Meetings are conducted on a regular basis and issues related to the need for Mahila Mandalis and their role in water management and sanitation promotion are discussed. In addition the NGOs have been working towards promoting self help groups to initiate savings and also to link up with the DWCRA programme.

During NAPO field visits, it was observed that the village level meetings need to be systematised. The meetings proceedings are not properly recorded.

NAPO suggested a systematic recording of each meeting in separate Minutes Books kept for the purpose. The details on the decisions taken and responsibility entrusted with target dates also needs to be clearly recorded.

NAPO has been insisting on the NGO guiding but ultimately allowing the people to conduct the meetings themselves and record the meeting proceedings. This exercise will help the community based organisations in moving towards sustainability.

- **Exposure Visit**

Field Exposure Visits are encouraged by the NGOs. AIRDS has made 2 trips taking 40 men to the filter beds for a better understanding of the Headworks.

The other NGOs have not undertaken any exposure visit in the last two quarters.

- **Campaigns**

AIRDS has undertaken a health campaign in 12 of their target villages on personal health and hygiene with the help of the PHC.

SNIRD has undertaken different campaigns in their target villages related to consumption of fluoride water, diarrhoeal diseases, sanitation and primary health.

The people from the community are involved in these campaigns.

Campaigns were also held on awareness on ecology and environment.

The NGOs are of the opinion that these campaigns have resulted in enhanced community response and improved health practices.

- **Use of cultural media**

AIRDS and HERSELF staff themselves perform skits, role plays and use different media to educate the people in the villages. The villagers are also included and a participatory approach adopted.

SNIRD has organised 8 street plays, 8 film shows and 8 folk art programmes in the target villages. The focus of these programmes is on water borne diseases, fluorosis, preventive measures to be followed in the consumption of affected water, and the need for home and village sanitation.

SNIRD has also arranged for a professional folk art viz; Burrakatha, to be performed in 8 of the target villages on the theme of water and water related diseases.

Training

Training the project personnel and community members to enhance their skills, knowledge and responsibility is another method adopted by the NGOs.

AIRDS has conducted 22 health education and awareness training camps on the importance of personal/domestic hygiene, environmental sanitation and water borne diseases.

28 Women leadership training camps were conducted for 600 women with the objective of motivating them to form into Mahila Mandalis.

The village dais and health workers from the 12 villages are also involved to complement the activities of AIRDS in increasing the awareness and knowledge levels of the community regarding personal/ community health and hygiene. 3 Training programmes were organised for each of these groups on the related topics.

Strengthening of the different VBOs through village level meetings, specific issue based training for specific groups like women's groups, youth groups, school teachers and GP leaders has been taken up on a regular basis in all the target villages. Training is also conducted on the strategies for withdrawal and sustainability for the women's group, youth groups and the GP leaders .

HERSELF has conducted training programmes for 250 women leaders, 200 youth leaders, 60 community leaders and 53 VAC members from the target villages.

In addition 40 GP members and 20 school Teachers were also trained.

The focus of these training programs was on increasing awareness and knowledge levels regarding personal and environmental hygiene, sanitation and roles and responsibilities of the communities in O & M of RWS systems in the villages. The issue of the NGO withdrawing from the area and the need to plan for sustainable strategies were discussed.

SNIRD has been conducting village level training programs for Youth, Women and Village Action Committee members.

Until now SNIRD has conducted 10 youth training programmes training 150 youth and 10 Mahila training programmes training 150 women.

The training is of one day duration. The participants include the active youth and women from the OHSR/GLSR and PSP committees. In addition, cluster level training programmes are conducted for youth and women groups. 4 cluster level training programmes of one day duration training 53 participants and 3 cluster level training programmes of one day duration training 50 participants were undertaken by SNIRD.

SNIRD has also conducted 15 training programmes of one day duration for the VAC members training 175 members. The training programmes focus on water borne diseases, fluorosis, group formation and the role of community in relation to O & M.

ASSIST has not under taken any training programmes in this quarter.

a. Training Methodology

All the NGOs have been adopting the participatory approach in addition to the lecture method. To strengthen the interactions/discussions and decision making process, audio visual aids are being used.

Literature from different sources is translated and used as discussion material. The local paper and relevant periodicals in vernacular are made available to the community.

Increased use of the cultural media to convey the messages is found to have a better impact.

All the four NGOs have been involving external trainers other than the project staff for the training.

Subject Specialists/Professionals are also hired for specific training programmes.

It is encouraging to note that the PRED staff and the staff from the local institutions are involved in the training programmes.

It is expected that these training programmes will result in an increased awareness and responsibility on the part of the community.

NAPO is assisting the NGOs to arrange for need based training, preparation of training modules and to improve the training methodology.

b. Internal Staff Training

The four NGOs AIRDS, HERSELF, SNIRD and ASSIST have been conducting fortnightly/monthly staff meetings. These meetings are also avenues for review, discussion, clarification and feedback.

Depending on the need, the meetings are also used as training sessions. The quarterly/monthly action plans are prepared during the staff meetings.

Internal training for the staff was organised by all the 4 NGOs. Review of work done and preparation of action plans are the main points on the agenda.

c. External Training

All the four NGOs have participated in the Gender Workshops organised in April. In the first workshop meant for the Senior level, the Project Directors participated. In the second workshop meant for the second level staff the project coordinators and cluster organisers participated. In the third workshop for the grass root level workers, the community organisers participated.

The four NGO Directors and the Accountants participated in the MIS Workshop on 5-6 May 1995 at NAPO.

SNIRD has sent the Project Coordinator and the NAP Desk in charge for training programmes on Training of Trainers, Disaster Preparedness and Training programmes on PMES.

Review Meetings

AIRDS reports of monthly review meetings with the PRED, MRO, MDO and PHC. The proceedings of the meeting with PRED & NGO are recorded. AIRDS takes the initiative and in each meeting issues relevant to RWS, (testing of pipeline, construction of PSPs and link channel etc.) are discussed.

HERSELF has been in contact with the different Government Departments. One review meeting took place between the PRED and HERSELF. Issues related to RWS (construction of platform, additional points, leakages etc) and sanitation were discussed.

SNIRD and ASSIST also have been meeting with the different Government departments but no formal meetings have taken place this quarter.

The NGOs have been in contact with the district officials and have been liasoning for the various government schemes.

School Health Programme

AIRDS and SNIRD had meetings with the school Teachers and the school health club. As part of the school health programme sanitation, planting of trees and digging of garbage pits was undertaken.

Impact of NGO involvement at Village level

The NGOs have been reporting of increased willingness on the part of the people to take up additional responsibilities related to RWS O & M of assets and sanitation.

AIRDS reports a better understanding of the project objectives among the people. The Community has been expressing willingness to take responsibility for the assets provided. Increased cooperation and participation in training and meetings is said to be observed. People have been showing interest and enthusiasm to learn more.

HERSELF reports of instances of Community initiative to undertake O & M operations being evident as a result of increased awareness.

In 3 villages, the committee members mobilised monetary contributions ranging from Rs.80 to Rs.150 to purchase pipes and taps and get them fixed for the GLSRs and PSPs. This has enhanced the number of collection points and also helps prevent wastage of water. The other areas of community initiative is seen in the OHSR and GLSR committee members cleaning the assets and the area around it.

In **ASSIST** the VDS members have been taking responsibility in their respective villages to protect the water sources.

In order to avoid the water from getting polluted with the entry of cattle, in one of the target villages, a care taker has been appointed on a monthly salary of Rs.600/-. This amount is to be met from the contributions collected from the people.

ASSIST has also been able to pressurise the GP to clean the village drains. The VDS has also taken steps to attend to the cleaning of the internal drains and maintenance of RWS in the target villages.

SNIRD reported that the different committee meetings have resulted in quicker follow up action. In 21 villages chlorination was taken up once a month covering 76 units, in 11 villages 12 GLSR units were chlorinated once a quarter, in 4 villages 3 OHSR were chlorinated once a quarter, and in 15 villages for about 45 PSPs repairs and maintenance work was attended to.

Greater accountability from the Government machinery has been forthcoming as a result of the NGO involvement at the village level.

AIRDS reports of issues related to water supply and sanitation being taken up for review and discussion with PRED.

PRED has been consulting **AIRDS** before the water points are being finalised. There are incidence of PRED changing the points fixed earlier in agreement with the community/**AIRDS**.

HERSELF ensures greater accountability from the local Panchayats and the PRED officials.

Under pressure the Sarpanch agreed to appoint one person for cleaning the village drain. The PRED has also undertaken to repair and replace handpumps, and to attend to leaking of pipes which have long been neglected.

Improved health and hygiene practices

AIRDS reports of a gradual but steady improvement in the health practices of the people. The houses and the surroundings are found to be maintained clean.

There seems to be an improvement in personal health and hygiene practices. The communities are aware of simple oral rehydration practices, and are taking care to consume protected / chlorinated water and have been practising pot chlorination.

HERSELF also reports of increased initiative shown towards personal and community hygiene and sanitation.

HERSELF estimates that at an individual level about 50% of the targeted families in the 20 project villages are now practising basic precautionary steps with regard to use of safe drinking water and maintenance of cleanliness both domestic and environmental. On an average 8 of the villages have started using treated water for drinking.

People have started taking responsibility of informing **PRED** about leakages and breakages. It was also observed that people have become more conscious of taking nutritious food.

ASSIST reports of improved practices regarding personal health and environmental hygiene. The VHPs during their visit to the families ensure that the people change their unhealthy practices. The community with the help of the GP has undertaken to clean the internal drains. Practice of family planning methods and encouraging the members to adopt the small family norms have been quite effective.

SNIRD reports of better practices regarding health care.

Increased use of protected water and environmental hygiene being evident in the target villages.

Tackling of simple diseases, preparation of rehydration solution were a regular feature. Increased use of alum has become an everyday practice.

(7) Bottlenecks

The village level GP elections has retarded the involvement / activities of the NGOs in the first quarter.

The purpose of any public meeting with a political motive has made the NGOs cautious in their mass awareness campaigns.

The NGOs are confident that now the GP elections have been completed and the elected persons are in place, the VACs role would be more acceptable.

The VACs and the GP together would be in a position to take better care and responsibility of the assets provided, at the Village level.

The delay / absence of protected water is making the people lose interest in the programme and decrease the willingness to cooperate in the action programmes.

NAPO Support

In general terms, the quality of the NGOs seems to leave ample room for improvements. The NGOs seem to have problems at the conceptual level: how to formulate their mission/vision statements and objectives and how to translate these into operational terms, with measurable indicators to assess the results of their own efforts.

As mentioned earlier, The NGO had not worked out their specific role and objectives for RWS and Sanitation, beyond general levels.

As may be evident from the above record, the NGO reports seem to concentrate on the quantity and frequency of meetings, rather than on the content of these meetings or on measuring the impact of their activities on the groups they conduct these activities for.

As much as we appreciate the good news of the gained results as described in the preceding pages, there is no understanding as to how these improved attitudes, awareness, practices, etc. were measured and compared with prior situations or other villages where such activities did not take place. A culture and / or methodology of systematically recording the impact of the activities, to review the results as well as the efficiency and effectiveness of the NGO activities has apparently not yet been developed among the NGOs.

Now that NAP Office has a fair understanding of the characteristics and the circumstances of the NGOs in the NAP Programme, NAPO will assist the NGOs in improving their level in terms of conceptual capabilities as well as operational capacities.

During the next quarter NAPO intends to organize a number of activities aimed at developing indicators for internal impact assessment of NGOs, assist the NGOs in defining RWS/Sanitation specific objectives and the operationalization thereof, and methods of improved reporting, including the coverage of the content of the activities, rather than the frequency of meetings and trainings conducted.

ACTIONS FOR THE NEXT QUARTER

1. NAP office extends its support to AIRDS and HERSELF to plan the withdrawal strategy in the light of the possibility of the NGOs withdrawing from the project villages by December 1995. Specific areas of support would be in organizing combined workshops for the project staff on withdrawal strategies and sustainability of community based organizations, and preparation of a realistic action plan for the coming 6 months.
2. Undertake an (internal) impact assessment of the involvement of the 2 NGOs AIRDS and HERSELF to plan the need for NGO intervention/involvement in the area.
3. Extend support to the two NGOs ASSIST and SNIRD to plan for the evaluation of their programs as planned in the project proposal and come out with a realistic action plan.
4. Plan for strategic workshops with the NGOs ASSIST, SNIRD and MARI to facilitate translation of organizational objectives into realistic action plans and achievable/measurable targets.
5. Organize a follow-up workshop on MIS for the NGOs to further improve upon the reporting styles and review the internal MIS of NGOs to identify areas that need strengthening.
6. Provide support services to the NGOs to clarify the roles and responsibilities of the Community Based Organizations (CBO) across all levels of NGO staff and target villages.

ANNEXURE I

FORMAT FOR WATER SUPPLY

(ENGLISH & TELUGU)

FORMAT FOR WATER SUPPLY

Name of the Village :
District:

Mandal :
NGO :

Name of Water Supply Scheme :

No. Of Households:

Population (95/96) :

No. of PSP:

Functioning :

Reservoir Particulars

Type Of Reservoir (OHSR/GLSR)	Capacity	Standard filling time	Functioning ----- (Y/N)	Remarks
1)				
2)				
3)				
4)				
Balancing (GLBR or Reservoir OHBR)				

Water Sources and Utilisation :

Source\Utility	Drinking	Cattle	Washing/Bathing	Others
Tap				
Well				
Tank				
Hand Pump				
Canal				
River				

Date/Month	Reservoir Filling Time			Water Supply Time			Residual Chlorine	Visitors		Reasons for Disruption
	From	To	Total	From	To	Total		PRED	NGO	
								DEE/AAE/AE		
1	1)									
	2)									
	3)									
2	1)									
	2)									
	3)									
3	1)									
	2)									
	3)									
4	1)									
	2)									
	3)									
5	1)									
	2)									
	3)									
6	1)									
	2)									
	3)									
7	1)									
	2)									
	3)									
8	1)									
	2)									
	3)									
9	1)									
	2)									
	3)									
10	1)									
	2)									
	3)									

VAC member :
Place :

Signature :
Date :

Date/Month	Reservoir Filling Time			Water Supply Time			Residual Chlorine	Visitors		Reasons for Disruption
	From	To	Total	From	To	Total		PRED	NGO	
								DEE/AAE/AE		
11	1)									
	2)									
	3)									
12	1)									
	2)									
	3)									
13	1)									
	2)									
	3)									
14	1)									
	2)									
	3)									
15	1)									
	2)									
	3)									
16	1)									
	2)									
	3)									
17	1)									
	2)									
	3)									
18	1)									
	2)									
	3)									
19	1)									
	2)									
	3)									
20	1)									
	2)									
	3)									

VAC member :
Place :

Signature :
Date :

Date/Month	Reservoir Filling Time			Water Supply Time			Residual Chlorine	Visitors		Reasons for Disruption
	From	To	Total	From	To	Total		PRED	NGO	
								DEE/AEE/AE		
21	1)									
	2)									
	3)									
22	1)									
	2)									
	3)									
23	1)									
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	3)									

VAC member :
Place :

Signature :
Date :

నీటి సరఫరా రికార్డు

గ్రామము :

మండలము :

టిల్లా :

స్వచ్ఛంద సంస్థ :

నీటి సరఫరా పథకము :

గ్రామ కుటుంబముల సంఖ్య :

జనాభా :

వీధి కుళాయిల సంఖ్య :

పని చేయుచున్నవి :

జలాశయము వివరములు

ట్యాంకు రకము	పరిమాణము	జలాశయము నింపు సమయము	పనిచేయుచున్నది (అవును/రాదు)	ఇతర వివరములు
1)				
2)				
3)				
4)				
BALANCING RESERVOIR (OH/GL) సమస్వయం జలాశయము				

జల వనరుల వివరముల

వనరులు/ఉపయోగములు	త్రాగుటకు	పశువుల కొరకు	ఉతుకుట/స్నానము	ఇతరములు
కుళాయి				
బావి				
చెరువు				
చేతి పంపు				
రాలువ				
నది				

తేదీ/నెల	జలాశయమును నింపు సమయము			నీటి సరఫరా సమయము			నీటిలో క్లోరిన్	నందర్శకులు		సరఫరా భంగమునను కారణము
	నుండి	వరకు	మొత్తం	నుండి	వరకు	మొత్తం		PRED	సంస్థ	
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VAC మెంబరు :

నంతరము :

స్థలము :

తేదీ :

తేదీ/ నెల	జలాశయమును నింపు సమయము			నీటి సరఫరా సమయము			నీటిలో క్లోరిన్	సంచర్యులు		సరఫరా భంగమునకు కారణము
	నుండి	వరకు	మొత్తం	నుండి	వరకు	మొత్తం		PRED	సంస్థ	
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VAC మెంబరు :

సంతకము :

స్థలము :

తేదీ :

ANNEXURE II

INTERNAL INVENTORY FORMAT AP II

NETHERLANDS ASSISTED PROGRAM - RURAL WATER SUPPLY

INTERNAL INVENTORY FORMAT AP II

PRED

15-09-1995

Program:	R.W.S.	Sanitary Latrine	Environmental Sanitation	Community Motivation	V.L.P.
----------	--------	---------------------	-----------------------------	-------------------------	--------

I Village Profile

1. Profile:

Village Name: _____
 Habitat name: _____
 Mandal Name: _____
 Scheme Name: _____
 Area of Village: _____
 (in Sq.Kms.)

Village Code:

--	--

 Habitat code:

--	--

 District Name: _____
 Location of : _____
 Village (Head Works/Mid Reach/Tail End)
 Village Topography: _____
 (Plain/Hilly/Semi Hilly)

2. Demographic Details of Village:

Population:

Year	Total	SC	ST
1981	_____	_____	_____
1991	_____	_____	_____
1995	_____	_____	_____
2012	_____	_____	_____

No. of Households: _____
 in the village

Access to Village:

Approach Road to Village: _____
 (PR/KR/NR/NC/NW/FP) *

Distance (in Kms): _____

Reference Point: _____
 (National Highway/State Highway/
 Major Dist.Roads/Village Road)

Type of Road : _____
 (Black Top/Metalled/Earthen Road/Gravel)

Communications: _____
 (Bus/Railway/Navigable Waterway)

Note: * (Pucca Road/Kutch Road/Navigable River/
 Navigable Canal/Navigable Waterway/Foot Path)

II RURAL WATER SUPPLY

1. Scheme Information:

Scheme Name: _____

Scheme Type: _____
(CPWSS/IPWSS/New/Augmented)

Date of Start: _____
(MM/YY)

Baseline Year: _____
(Census)

Year of Design: _____

Rate of Water: _____
Supply (LPCD)

Village Code :

--	--

Habitat Code :

--	--

Project Planning: _____
Year (MM/YY)

Commissioning : _____
Date (MM/YY)

Present Population: _____
(in lakhs)

Design Population _____
(in lakhs)

Type of Supply: _____
(Continuous/Intermittent)

2. Source Description:

Source Name: _____

Source Type: _____
(River/Stream/Canal/Lake/Tank/Well/Bore)

Source Discharge : _____
(Mtr.cube/sec)

Capacity Designed: _____
(Mtr. Cube/day)

Alternate Source: _____

Water Type: _____
(Raw water/Clear water)

Pollution (Y/N): _____

Location of Source: _____

Type Executed/ : _____
Functioning

Closure period per: _____
Year (no. of months)

Capacity Executed/: _____
Functioning (Mtr. Cube/day)

Distance from : _____
Village (in Kms.)

Turbidity : _____

Nature of : _____
Pollutant

Distance of pollution from Source to intake: _____
(in Kms.)

In case of CPWS, please fill in the following information:

S.N.	Village code (Census no.)	Village name	C/NC	Population					Demand	
				1981	1987	1991	1995	2012	1995	2012
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
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48										
49										
50										

Note: C - Covered villages (with water supply)
NC - Not covered villages (with water supply)

III Source of Water :

River	Canal	Tank	Well	Lake	Stream
-------	-------	------	------	------	--------

1. Raw Water off-take :

Sluice	Collection Well	Infiltration Well	Open Well
--------	-----------------	-------------------	-----------

Type capacity
m3/sec.
Designed : _____
Executed : _____
Functioning : _____

Structure :

Poor	Fair	Good
------	------	------

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

2. Raw Water Main :

Pumping	Gravity
---------	---------

Trns. Line Length Pipe Matr. Valves (Nos.)
Size (mm) (Mtrs.) & Class Scour Sluice Air NRV*
Designed : _____
Executed : _____
Functioning : _____

Alignment :

Plain	Hilly	Semi Hilly
-------	-------	------------

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Note : * NRV - Non Return Valve

Raw Water Pumping Station & Machinery

Pump house type :

Self Priming	Induced Priming
--------------	-----------------

Pump house shape :

Circular	Rectangular	Square
----------	-------------	--------

Size (mxm) :

Designed	Executed	Functioning	Location (RW/SST)
----------	----------	-------------	-------------------

Structure :

Temporary	Semi permanent	Permanent
-----------	----------------	-----------

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Type of pumps :

Submersible	Centrifugal	Vertical Turbine
-------------	-------------	------------------

Designed : _____ Functioning: _____
 Executed : _____

	Number	Capacity (m3/hr.)	H.P./K.W.	Standby No Capacity	Hours of pumping/day
Design	_____	_____	_____	_____	_____
Executed	_____	_____	_____	_____	_____
Functioning	_____	_____	_____	_____	_____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Availability of power (Hrs./day)	Summer	Winter	Gensets designed :		no capacity
			executed :	functioning :	
	Pumping hrs. (Summer)	Timings	Hours of pumping (Winter)	Timings	
	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____

Transformers:

	Number	Capacity (KVA)
Designed	_____	_____
Executed	_____	_____
Functioning	_____	_____

Electric substation maintenance :

Poor	Fair	Good
------	------	------

4. Raw Water Flow meter

Designed (Y/N) : _____
Executed (Y/N) : _____
Functioning (Y/N) : _____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

5. Raw Water Collection

a) Summer storage tank name : _____
Location : _____

	No. of Tanks	No. of Compartments	Surface area	Capacity each	Total Capacity(m3)
Designed	_____	_____	_____	_____	_____
Executed	_____	_____	_____	_____	_____
Functioning	_____	_____	_____	_____	_____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

b) Sedimentation Tank name : _____
Location : _____

	No. of Tanks	No. of Compartments	Surface area	Capacity each	Total Capacity	Detention time
Designed	_____	_____	_____	_____	_____	_____
Executed	_____	_____	_____	_____	_____	_____
Functioning	_____	_____	_____	_____	_____	_____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

6. Treatment/Purification :

SSF	RSF
-----	-----

Treatment Type :

Co-augulation	Lime Dosing	Floculation	Sedimentation
---------------	-------------	-------------	---------------

	Shape	Nos.	Size	Rate of filtration (m ³ /m ² /hr)	V-notch	
					Reading (cms)	Discharge lpm
Designed	_____					
Executed	_____					
Functioning	_____					

No. of Filter Beds : _____ Stand by (% and No.) : _____

Filter Operation :

Continuous	Intermittent
------------	--------------

	Free board	Depth of Supernatant Water	Loss of Head
Designed	_____	_____	_____
Executed	_____	_____	_____
Functioning	_____	_____	_____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

7. Clear Water Pumping Station & Machinery

Pump house type :

Self Priming	Induced Priming
--------------	-----------------

Pump house shape :

Circular	Rectangular	Square
----------	-------------	--------

Size (mxm) :

Designed	Executed	Functioning	Location (CWS)
----------	----------	-------------	----------------

Structure :

Temporary	Semi permanent	Permanent
-----------	----------------	-----------

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Type of pumps :

Submersible	Centrifugal	Vertical Turbine
-------------	-------------	------------------

Designed : _____ Functioning: _____
Executed : _____

Design : _____
Executed : _____
Functioning : _____

Number	Capacity (m3/hr.)	H.P./K.W.	Standby No Capacity HP/KW	Hours of pumping/day
--------	-------------------	-----------	---------------------------	----------------------

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Availability of power :

Summer	Winter
--------	--------

(Hrs./day) _____

*Sensitive info
(please refer back)*

Pumping hrs. Timings Pumping hrs. Timings
(Summer) (Winter)

Transformers:

Designed :

Number	Capacity (KVA)
_____	_____
_____	_____
_____	_____

Electric substation maintenance :

Poor	Fair	Good
------	------	------

8. Clear Water Flow meter

Designed (Y/N) : _____
 Executed (Y/N) : _____
 Functioning (Y/N) : _____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Transmission Mains :

Pumping	Gravity
---------	---------

	Size	Compound Length	Pipe Material & Class	Valves (Nos.)			
				Scour	Sluice	Air	NRV

Designed : _____

Executed : _____

Functioning : _____

Alignment :

Plain	Hilly	Semi Hilly
-------	-------	------------

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

9. Chlorination

Mode of Chlorination : Chlorine Bleaching Powder

	Type	No.	Capacity
Designed :	_____	_____	_____
Executed :	_____	_____	_____
Functioning :	_____	_____	_____

Point of Application : Rising Main Gavity Main Sump GLSR OHSR BR

	Type	No.
Designed :	_____	_____
Executed :	_____	_____
Functioning :	_____	_____

Frequency of Chlorination (hrs. of application) :

Designed :	_____
Executed :	_____
Functioning :	_____

Maintenance : Poor Fair Good

Remarks : _____

10. Clear Water Sump

	No. of Tanks	No. of Compartments	Surface area	Capacity each	Total Capacity (m3)
Designed :	_____	_____	_____	_____	_____
Executed :	_____	_____	_____	_____	_____
Functioning :	_____	_____	_____	_____	_____

Structure : Poor Fair Good

Maintenance : Poor Fair Good

Remarks : _____

11. Pumping Stages

a) Balancing Reservoirs :

OHBR	GLBR
------	------

	Number	Capacity	Material
Designed :	_____	_____	_____
Executed :	_____	_____	_____
Functioning :	_____	_____	_____

Structure :	Poor	Fair	Good
-------------	------	------	------

Maintenance :	Poor	Fair	Good
---------------	------	------	------

Remarks : _____

b) Clear Water Pumping/Gravity(Transmission Main Stagewise)

Balancing Reservoir	Stage 1	Stage 2	Stage 3	Stage 4	stage 5	Stage 6
Reservoir Type						
Designed Number						
Executed Number						
Functioning Number						
Designed Capacity						
Executed Capacity						
Functioning Capacity						
Designed Material						
Executed Material						
Structure (P/F/G)						
Maintenance (P/F/G)						
Pipe Length						
(a) (b)						
(c) (d)						
Pipe Diameter						
(a) (b)						
(c) (d)						
No. of Motors						
Capacity (H.P.)						
Stand by No.						
Stand by Capacity						
Number of Transformers						
Transformer Capacity (KVA)						
No. of Generators						
Generator Capacity (KVA)						
Power Supply (hrs./day)						
Energy Consumption						

12. Village Distribution

a) O H S R

	Number	Capacity	No. of fillings/day		Hrs. of supply	PSP	Drainage	HSC
			Sumr	Wntr				

Design :

Executed :

Functioning :

Structure :

Poor	Fair	Good
------	------	------

Maintenanc :

Poor	Fair	Good
------	------	------

Remarks :

1) Clear Water Pumping Station & Machinery

Pump house type : Self Priming Induced Priming

Pump house shape : Circular Rectangular Square

Size (mxm) :

Designed	Executed	Functioning	Location (OHSR)
_____	_____	_____	_____

Structure : Temporary Semi permanent Permanent

Maintenance : Poor Fair Good

Remarks : _____

Type of pumps : Submersible Centrifugal Vertical Turbine

Designed : _____ Functioning: _____
Executed : _____

Design : _____
Executed : _____
Functioning : _____

Number	Capacity (m3/hr.)	H.P./K.W.	Standby No Capacity	Hours of pumping/day
_____	_____	_____	_____	_____

Maintenance : Poor Fair Good

Remarks : _____

Availability of power (Hrs./day) :

Summer	Winter
_____	_____

*Genset info
(please refer back)*

Pumping hrs. (Summer)	Timings	Pumping hrs. (Winter)	Timings
_____	_____	_____	_____

Transformers:

Number	Capacity (KVA)
Designed : _____	_____
Executed : _____	_____
Functioning : _____	_____

Electric substation maintenance : Poor Fair Good

ii) Chlorination

Mode of Chlorination :

Chlorine	Bleaching Powder
----------	------------------

	Type	No.	Capacity
Designed :	_____	_____	_____
Executed :	_____	_____	_____
Functioning :	_____	_____	_____

Point of Application :

Rising Main	Gavilty Main	Sump	GLSR	OHSR	BR
-------------	--------------	------	------	------	----

	Type	No.
Designed :	_____	_____
Executed :	_____	_____
Functioning :	_____	_____

Frequency of Chlorination (hrs. of application) :

Designed :	_____
Executed :	_____
Functioning :	_____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

b) GLSR

	Number	Capacity	No. of fillings/day		Hrs. of Supply	PSP	Drainage	HSC			
			Sumr	Wntr							
Design											
Executed											
Executed											
Structure			<table border="1"> <tr> <td>Poor</td> <td>Fair</td> <td>Good</td> </tr> </table>		Poor	Fair	Good				
Poor	Fair	Good									
Maintenance			<table border="1"> <tr> <td>Poor</td> <td>Fair</td> <td>Good</td> </tr> </table>		Poor	Fair	Good				
Poor	Fair	Good									
Remarks											

Note: Additional information on separate sheets

1) Clear Water Pumping Station & Machinery

Pump house type : Self Priming Induced Priming

Pump house shape : Circular Rectangular Square

Size (mxm)	Designed	Executed	Functioning	Location (GLSR)
_____	_____	_____	_____	_____

Structure : Temporary Semi permanent Permanent

Maintenance : Poor Fair Good

Remarks : _____

Type of pumps : Submersible Centrifugal Vertical Turbine

Designed : _____ Functioning: _____
 Executed : _____

	Number	Capacity (m ³ /hr.)	H.P./K.W.	Standby No Capacity	Hours of pumping/day
Design	_____	_____	_____	_____	_____
Executed	_____	_____	_____	_____	_____
Functioning	_____	_____	_____	_____	_____

Maintenance : Poor Fair Good

Remarks : _____

Availability of power : _____
 (Hrs./day)

*Sensitive info
 (please refer back)*

Pumping hrs. (Summer)	Timings	Pumping hrs (Winter)	Timings
_____	_____	_____	_____

Transformers:

	Number	Capacity (KVA)
Designed	_____	_____
Executed	_____	_____
Functioning	_____	_____

Electric substation maintenance : Poor Fair Good

II) Chlorination

Mode of Chlorination :

Chlorine	Bleaching Powder
----------	------------------

	Type	No.	Capacity
Designed :	_____	_____	_____
Executed :	_____	_____	_____
Functioning :	_____	_____	_____

Point of Application :

Rising Main	Gavity Main	Sump	GLSR	OHSR	BR
-------------	-------------	------	------	------	----

	Type	No.
Designed :	_____	_____
Executed :	_____	_____
Functioning :	_____	_____

Frequency of Chlorination (hrs. of application) :

Designed :	_____
Executed :	_____
Functioning :	_____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

c) Distribution lines

Distribution Type :

Gravity	Pumping
---------	---------

	Size	Length	Pipe material & Class	Valves (Nos.)		
				Scour	Sluice	NRV

Designed : _____

Executed : _____

Functioning : _____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Note : Villagewise information to be taken on additional sheets

1) Clear Water Pumping Station & Machinery

Pump house type :

Self Priming	Induced Priming
--------------	-----------------

Pump house shape :

Circular	Rectangular	Square
----------	-------------	--------

Size (mxm) :

Designed	Executed	Functioning	Location
----------	----------	-------------	----------

Structure :

Temporary	Semi permanent	Permanent
-----------	----------------	-----------

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Type of pumps :

Submersible	Centrifugal	Vertical Turbine
-------------	-------------	------------------

Designed : _____ Functioning: _____

Executed : _____

Design : _____
Executed : _____
Functioning : _____

	Number	Capacity (m3/hr.)	H.P./K.W.	Standby No Capacity	Hours of pumping/day
Design	_____	_____	_____	_____	_____
Executed	_____	_____	_____	_____	_____
Functioning	_____	_____	_____	_____	_____

Maintenance :

Poor	Fair	Good
------	------	------

Remarks : _____

Availability of power (Hrs./day) :

Summer	Winter
--------	--------

Sensitive imp (Please refer back)

Pumping hrs. (Summer)	Timings	Pumping hrs. (Winter)	Timings
_____	_____	_____	_____
_____	_____	_____	_____

Transformers:

	Number	Capacity (KVA)
Designed	_____	_____
Executed	_____	_____
Functioning	_____	_____

Electric substation maintenance :

Poor	Fair	Good
------	------	------

II) Chlorination

Mode of Chlorination : Chlorine Bleaching Powder

	Type	No.	Capacity
Designed :	_____	_____	_____
Executed :	_____	_____	_____
Functioning :	_____	_____	_____

Point of Application : Rising Main Gavity Main Sump GLSR OHSR BR

	Type	No.
Designed :	_____	_____
Executed :	_____	_____
Functioning :	_____	_____

Frequency of Chlorination (hrs. of application) :

Designed :	_____
Executed :	_____
Functioning :	_____

Maintenance : Poor Fair Good

Remarks : _____

13. Water Quality Testing:

Frequency of lab testing : Daily Weekly monthly

Date of last sample test : _____

Residual Chlorine as on date (ppm) : _____

14. (a) Water Quality Standards (Physical and Chemical standards of Potable Water):

Sno	Characteristics	Acceptable	Rejectable	Reading as on	Observations
1.	Turbidity (Units on J.T.U. Scale)	2.5	10		
2.	Colour (Units on Platinum Cobalt scale)	5.0	25		
3.	Taste and Odour	Unobjectionable	Unobjectionable		
4.	pH	7.0 to 8.5	<6.5 or >9.2		
5.	Total dissolved solids (mg/l)	500	1500		
6.	Total hardness (mg/l) (as CaCO ₃)	200	600		
7.	Chlorides (as Cl) (mg/l)	200	1000		
8.	Sulphates (as SO ₄)	200	400		
9.	Flourides (as F) (mg/l)	1.0	1.5		
10.	Nitrates (as NO ₃) (mg/l)	45	45		
11.	Calcium (as Ca) (mg/l)	75	200		
12.	Magnesium (as Mg) (mg/l)	not > 30	150		
13.	Iron (as Fe) (mg/l)	0.1	1.0		
14.	Manganese (as Mn) (mg/l)	0.05	0.5		
15.	Copper (as Cu) (mg/l)	0.05	0.5		
16.	Zinc (as Zn) (mg/l)	0.1	1.0		
17.	Phenolic compounds (as Phenol) (mg/l)	0.001	0.002		
18.	Anionic detergents (as MBAS) (mg/l)	0.2	1.0		
19.	Mineral Oil (mg/l)	0.01	0.3		
	<i>Toxic Materials</i>				
20.	Arsenic (as As) (mg/l)	0.05	0.05		
21.	Cadmium (as Cd) (mg/l)	0.01	0.01		
22.	Chromium (as hexavalent Cr) (mg/l)	0.05	0.05		
23.	Cyanide (as CN) (mg/l)	0.05	0.05		
24.	Lead (as Pb) (mg/l)	0.10	0.10		
25.	Selenium (as Se) (mg/l)	0.01	0.01		
26.	Mercury (total as Hg) (mg/l)	0.001	0.001		
27.	Polynuclear aromatic hydrocarbons (as PAH) (mg/l)	0.2	0.2		
	<i>Radio Activity</i>				
28.	Gross Alpha activity	3 pci/l	3 pci/l		
29.	Gross Beta activity	30 pci/l	30 pci/l		

(b) Bacteriological Standards

Sno.	Characteristics	Acceptable	Rejectable	Reading as on	Observations
	<i>Distribution system</i>				
1	Coliform count (per 100 ml)	0	> 0		
2	E. Coli count (per 100 ml)	0	> 0		
3	Coliform organisms count (per 100 ml)	≤ 10	> 10		
4	% of Coliform organisms (per 100 ml) in Sample 1	0	> 0		
*	(per 100 ml) in Sample 2	0	> 0		
	<i>Individual/Small community Supply</i>				
5	E. Coli count (per 100 ml)	0	> 0		
6	Coliform organisms count (per 100 ml)	≤ 3	≥ 3		

Note : * Coliform organisms should not be detectable in 100 ml. of any two consecutive samples of more than 50% of the samples collected for the year

15. WATER QUALITY SURVEILLANCE

a) Internal Laboratory

i) Location :

ii) Laboratory facility :

<i>Equipment</i>	<i>Chemicals</i>	<i>Staff</i>

iii) Number of samples tested as on date

<i>Samples</i>	<i>Physical</i>	<i>Chemical</i>	<i>Bacteriological</i>
Raw Water			
Clear Water			

b) External Laboratory (IPM)

i) Location :

ii) Laboratory facility :

<i>Equipment</i>	<i>Chemicals</i>	<i>Staff</i>

iii) Number of samples tested as on date

<i>Samples</i>	<i>Physical</i>	<i>Chemical</i>	<i>Bacteriological</i>
Raw Water			
Clear Water			

16. Assessment:

Indicators	Unit	Values
W1 Water Quantity	[% requirement]	
W2 Water Quality	[Bad/Fair/Good]	
W3 Reliability	[Bad/Fair/Good]	
W4 Convenience	[Bad/Fair/Good]	
W5 Utilization	[% Population]	
W6 Volume Used	[KL]	
W7 Condition of PSPs	[Bad/Fair/Good]	
W8 Physical State of Structures	[Bad/Fair/Good]	
F1 Budget Allocation for O&M	[% requirement]	
I1 Institutional Responsibility	[PRED/GP/VAC]	

17. Operation & Maintenance :

(a) O&M In-Charge :

Circle : _____ Superintending Engineer
 Division : _____ Executive Engineer
 Sub Division : _____ Dy. Executive Engineer
 Section : _____ Assistant Engineer / AEE

Village Level O&M By :

P R E D	Gram Panchayat	V A C
---------	----------------	-------

Pumping Station In-charge : _____

Designation : _____ Qualification : _____

Experience in O&M: _____ Trained (Y/N) : _____
 (No. of years)

(b) O&M Cost for CPWSS/IPWSS:

Original Estimate Revised Estimate Rehabilitation Cost Sanctioned Budget Expenditure

Annual Budget :
(in lakhs)

Particulars	1993 - 94 Etimated	1993 - 94 Sanctioned	1992 - 93 Actual
1. Chemicals			
2. Electrical Energy			
3. Maintenance - Masonry - Machinery			
4. Repairs - Masonry - Machinery			
5. Staff Salary			
6. Contingent Staff			
7. Miscellaneous			
Total			
8. (a) Water Tariff	GP	PRED	
Private Connection Annual Connection			
(b) Down Payment			
Private Connection Annual Connection			

18. Maintenance Staff

a) Operation & Maintenance Agency : P R E D Panchayat Individual

b) Staff Details :

Location :

Position	Regular	Temporary	Trained	Trade & Qualifications

Filled up by :

Signature :

Date :

IV Sanitation

(a) Environmental Sanitation:

Particulars	(Y/N)
1. Waste Water Fish Ponds	
2. Smokeless Chulas	
3. Soakage Pits	
4. Bathing Platforms	
5. Cattle Platforms	
6. Social Forestry	
7. Kitchen Gardens	
8. Garbage Pits	
9. Open Drains	
10. Storm Water Drains	
11. Bio-gas Plants	
12. Others	

(b) Sanitary Latrines:

Program Active (Y/N) : _____ Targetted No. : _____
of Latrines

No. of Individual : _____ % in use _____ % defunct
Latrines Status : _____

Type of Latrines : Single Pit Double Pit

(c) Institutional Sanitation:

Particulars	(Y/N)
1. School Latrines	
2. Institutional Latrines	
3. Community Latrines	
4. Recreational area Latrines (Parks, Theatres, Video halls, Restaurants. etc.)	
5. Others	

SSH

ANNEXURE III

FORMAT ON AGGREGATE PUMPING DATA

ANNEXURE IV

PSP LEVEL WATER SUPPLY MONITORING FORMAT

(ENGLISH & TELUGU)

PSP LEVEL WATER SUPPLY MANAGEMENT COMMITTEE(P SPLWSMC)
WATER SUPPLY MONITORING FORMAT

NGO Name :
 Cluster Name:
 Village Name :

Month & Year :
 CPWSS/IPWSS Name:
 PSP No. :

Date	Water Supply Time			Signatures			Remarks
	From	To	Total	PSP Member	VAC member	NGO Staff	
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

PSP LEVEL WATER SUPPLY MANAGEMENT COMMITTEE(P SPLW SMC)
WATER SUPPLY MONITORING FORMAT

NGO Name :
 Cluster Name:
 Village Name :

Month & Year :
 CPWSS/IPWSS Name:
 PSP No. :

Date	Water Supply Time			Signatures			Remarks
	From	To	Total	PSP Member	VAC member	NGO Staff	
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

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**VILLAGE LEVEL WATER SUPPLY MANAGEMENT COMMITTEE (VLWSMC)
WATER SUPPLY MONITORING FORMAT**

Abstract Information per Village

Project Name:
Cluster Name:
NGO Name:

CPWSS/IPWSS Name :
Village Name :
Month :

PSP No.	Total no of days with supply	Total hours of discharge in the month	Remarks
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Signatures :

PSP Member

VAG-Member

NGO Director

సంస్కృత సంస్థ :
 కార్యకర్త :
 గ్రామము :

నేటి సర్కార పత్రము

నెల మరియు సంవత్సరము :
 స్థలము :
 కుళాయి నెం :

క్ర.సం.	నేటి సర్కార సమయము			సంతకము			ఇతరములు
	నాంబి	వరకు	పూర్తిము	పి.ఎస్.పి.వెంబరూ	పి.ఎ.సి.వెంబరూ	సంస్థ స్థానము	
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కూలీ నడి సరఫరా కమిటీ
నడి సరఫరా పత్రము

స్వచ్ఛంద సంస్థ :
కమిటీ :
గావము :

నెల మరియు సంవత్సరము :
స్థలము :
కూలీ నెం :

తేదీ	నడి సరఫరా సమయము			సంతకము			ఇతరములు
	నుండి	వరకు	మొత్తము	పి.ఎస్.పి.వెంబరూ	వి.ఎ.సి.వెంబరూ	సంస్థ సీల్	
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గ్రామ స్థాయి వోటి సర్ఫరా కమిటీ

నడి సర్ఫరా పరిశోధన పత్రము

ప్రాజెక్టు :
సంఖ్యం సం. :
గ్రామము :

వెల/సర వర్షరము :
నోటు :
:

కుళాయి నెంబరు	సర్ఫరా దినములు నంబరు	వెల మొత్తములో సర్ఫరా గంటలు	ఇతరములు
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ANNEXURE V

ABSTRACT STATEMENTS ON PRED QUARTERLY PROGRESS

REPORTS

FOR

APRIL - JUNE AND JULY - SEPTEMBER 1995

FINANCIAL PROGRESS REPORT FOR THE MONTH OF JUNE '95

P.R. N.F.A.P. Division, Parchur

PW April to June '95

S.No.	Item	Re-vised Estimate	Target upto 3/93	Expenditure upto 3/95	Expenditure during 1995-96			Cumulative	Remarks
					Upto last month	During the month	Total		
1)	CPUS Schemes to ABPalom & 19 Other villages	291.60	291.60	283.62	(-) 3.29	0.14	(-) 3.15	280.47	
2)	-do- M.V.Palom & 9 other (V).	127.63	127.63	117.84	..	0.16	0.16	118.00	
3)	-do- Charukuru & 3 other (V).	70.93	70.93	59.57	0.07	0.59	0.66	60.23	
4)	34 Individual schemes to cover 39 villages	347.20	347.20	279.86	1.64	0.17	1.81	281.67	
5)	Buildings	24.30	24.30	23.18	..	..	..	23.18	
6)	Central stores stock account	..	..	23.89	0.45	0.15	0.60	24.49	
7)	Cement & Steel	..	..	1-40	--	--	..	1-40	
8)	PSC; MSC; T & P etc.	128.34	128.34	157.91 157.91	xxxx	--	xxxx	157.91	157.91
9)	MOP UP activities	..	..	1.90	12.50	--	12.50	14.48	
Total:		990.00	990.00	949.17	11.45	1.21	12.66	961.83	

D. C. S. 4/12
Executive Engineer, P.R.,
MTC division, Darsi

5/4/95

PANCHAYATRAJ ENGINEERING DEPARTMENT
 NETHERLANDS ASSISTED PROJECTS: YEMMIGANUR DIVISION: KURNOOL DISTRICT
 ABSTRACT OF QUARTERLY PROGRESS REPORT FOR THE QUARTER ENDED BY JUNE 1995

(Rs. In Lakhs)

ZONE	Original Est. Cost	Revised Est. Cost	R.R.E	F.R.E	TARGETS		EXPENDITURE		EFFICIENCY		Plan For Next Quarter
					This Quarter	Cumulative	This Quarter	Cumulative	This Quarter	Cumulative	
1. CPWSS to Halvi & 25 Other villages	166.19	254.19	282.18	286.52	0.00	286.52	11.96	264.88	0.00	92.45	286.52
2. CPWSS to Hanawal & 5 Other villages & 2 PWS	86.52	144.67	167.63	175.63	0.00	175.63	1.19	122.91	0.00	69.98	175.63
3. CPWSS to Sathanur & 15 Other villages	180.88	232.57	246.68	232.05	0.00	232.05	9.47	192.48	0.00	82.95	232.05
4. CPWSS to Manchala & 6 Other villages	49.28	77.19	85.91	103.29	0.00	103.29	0.34	81.95	0.00	79.34	103.29
5. CPWSS to Chinnakothiliki & Other villages	42.77	77.58	86.15	86.77	0.00	86.77	1.75	81.86	0.00	94.34	86.77
6. Administrative Complex @ Yemmiganur	15.40	21.26	21.25	24.27	0.00	24.27	0.00	18.77	0.00	77.34	24.27
7. Steel & Cement Procured	0.00	0.00	0.00	0.00	0.00	0.00	6.01	107.86	0.00	0.00	0.00
8. Steel & Cement Booked on Works	0.00	0.00	0.00	0.00	0.00	0.00	-2.13	-84.05	0.00	0.00	0.00
9. P.S. Charges & Contingent Charges	24.64	32.30	35.59	73.50	0.00	73.50	1.78	75.09	0.00	102.16	73.50
10. M.S. Charges	40.58	60.56	66.73	130.04	0.00	130.04	2.06	133.09	0.00	102.35	130.04
11. T & P Charges	5.41	8.07	8.90	11.00	0.00	11.00	5.82	16.53	0.00	150.27	11.00
12. L.S. Provisions	130.46	39.54	36.91	0.00	0.00	0.00	0.00	6.14	0.00	0.00	0.00
13. Others	2.07	2.07	2.07	1.93	0.00	1.93	0.09	0.79	0.00	40.93	1.93
	741.20	950.00	1040.00	1125.00	0.00	1125.00	38.34	1018.30	0.00	90.52	1125.00

SUPERINTENDING ENGINEER (P)
 P. R. CIRCLE
 KURNOOL


M. Sreenivasulu
 EXECUTIVE ENGINEER (P)
 N. A. P. DIVISION
 YEMMIGANUR

ARTERLY PROGRESS REPORT FOR THE QUARTER ENDING JUNE 1995
A.P. A.P.II-MEDAK DISTRICT PROJECT N.A.P. DIVISION SADASIVPET

1.	2.	3.	4.	5.	6.
No.	Name of Sub-Head	Provision in R.R.E of Rs. 1088.Lakhs.	Exp.upto March'95	Exp.from 4/95 to 6/95.	Exp.upto June'95
1.	CPWSS Ibrahimpur and 24 other Problem Villages.	356.470	336.142	0.686	336.828
2.	CPWSS Borancha and 20 other problem villages	216.260	190.936	0.652	191.588
3.	CPWSS Karasguthy and 17 other problem villages	193.920	162.578	2.354	164.932
4.	Buildings incl.P.S. and T&P	31.620	31.130	-	31.130
5.	Cost of materials procured but not allocated to works such as CI Valves,Spls, and CILA Pipes etc.	-	20.666	(-)1.428	19.238
6.	Cost of cement and steel procured but not allocated to works.	-	14.879	(-)0.896	13.983
7.	Subsidy paid to APSEB Incl. constn.,of D.P.Structures	15.50	13.975	0.359	14.334
8.	CPWSS Ibrahimpur 21 Enroute Villages.	66.39	38.112	1.683	39.795
9.	CPWSS Borancha 11 Enroute Villages.	36.26	27.353	1.930	29.283
10.	CPWSS Karasguthy 11 Enroute Villages.	41.96	35.116	0.009	35.125
11.	Major Estt.Charges.	70.72	-	-	-
a)	S.T.O. Payment	-	79.802	3.022	82.824
b)	On Furniture,Telephones Xerox M/C.Computers Vehicles.	-	22.917	0.337	23.254
c)	Exp. of S.E.NAP.	-	31.721	-	31.721
12.	P.S.Charges	37.71	22.545	0.913	23.458
13.	Tools and Plants and Storage	12.43	8.857	-	8.857
14.	Telephone connections	6.00	-	-	-
15.	Other Unforeseen items	2.76	0.090	-	0.090
16.	Amount transferred to E.E. (PR) Miryalguda.	-	15.00	-	15.00
GRAND TOTAL:		1088.00	1051.819	9.621	1061.440

EXPENDITURE INCURRED ON OPERATION AND MAINTENANCE (Grant yet (1995-96) to be allocated) - 8.650 8.650

NOTE: ALL FIGURES ARE LAKES.


 Executive Engineer, (PR)
 N.A.P. DIVISION SADASIVPET
 10/7/95

Sl. No.	Name of the work	Estt. cost in Lakhs	Revised estimate cost	Upto last year 3/95	EXPENDITURE		Total	Commulative Expenditure in Lakhs
					Upto end ofprevi-our quar-ter	During the Quarter		
1.	Head works	75.15	90.75	75.97	-	1.00	1.00	76.97
2.	Transmission line including CI Spl. & Pump sets	277.98	317.70	285.67	-	0.97	0.98	286.64
3.	Link Channel	-	55.00	50.87	-	-	-	50.87
4.	Balancing Reservoirs	43.83	13.09	6.05	-	0.77	0.77	6.82
5.	Servicing Reservoirs (SGLSR & OHSRs)	-	55.00	38.49	-	0.23	0.23	38.72
6.	Village Distribution	60.85	60.65	30.44	-	2.03	2.03	32.47
7.	Buildings	36.28	25.12	20.09	-	-	-	20.09
8.	KM and HM stones	1.01	-	0.60	-	-	-	0.60
9.	Steel	-	-	17.40	-	-	-	17.40
10.	Establishment @ 12.5 on 506.27	68.28	70.23	77.28	-	-	-	77.28
11.	Cement	-	-	20.65	-	0.47	0.47	21.12
12.	D.P.A.P.	12.44	77.28	77.37	-	-	-	77.37
13.	CEs Office Building vide Lr.No.DB/1173/91-92	-	-	3.00	-	-	-	3.00
14.	L.S.Fluctuation of rates	-	10.00	-	-	-	-	-
15.	L.S.for Telecommunication	-	5.18	-	-	-	-	-
	Total:	744.16	780.00	703.88	-	5.47	5.47	709.35
16.	Establishment charges O&M	-	-	5.73	-	3.240	3.24	8.97
	Total:	744.16	780.00	709.61	-	8.71	8.71	718.32

Revised

PANCHAYATRAJ ENGINEERING DEPARTMENT
 NETHERLAND ASSIGNED PROJECTS/VERNIGANUR DIVISION/KARNACOL DISTRICT
 ABSTRACT OF QUARTERLY PROGRESS REPORT FOR THE QUARTER ENDED BY SEPTEMBER 1993

(Rs. In Lakhs)

ZONE	Orig-inal Est. Cost	Revi-sed Est. Cost	R.R.E	Final Revised Est. Cost	TARGETS		EXPENDITURE		EFFICIENCY		Plan For Next Quarter
					This Quarter	Cumula-tive	This Quarter	Cumula-tive	This Quarter	Cumula-tive	
1. CPWSS to Halvi & 25 Other villages	136.19	254.18	222.10	226.82	0.00	226.52	3.56	270.44	0.00	54.39	226.82
2. CPWSS to Manawai & 3 Other villages & 2 PWS	26.52	144.57	127.53	173.52	0.00	173.52	4.29	127.52	0.00	72.77	173.52
3. CPWSS to Sathanur & 15 Other villages	180.88	232.57	246.68	232.05	0.00	232.05	15.28	207.76	0.00	80.53	232.05
4. CPWSS to Manchale & 6 Other villages	45.23	77.15	85.91	103.29	0.00	103.29	10.15	92.14	0.00	89.21	103.29
5. CPWSS to Chinnakothiliki & Other villages	42.77	77.58	82.15	86.77	0.00	86.77	2.51	84.07	0.00	96.69	86.77
6. Administrative Complex @ Yemmiganur	15.40	21.23	21.23	24.27	0.00	24.27	1.58	20.03	0.00	32.85	24.27
7. Steel & Cement Procured	0.00	0.00	0.00	0.00	0.00	0.00	0.00	111.75	0.00	0.00	0.00
8. Steel & Cement Booked on Works	0.00	0.00	0.00	0.00	0.00	0.00	-2.42	-86.47	0.00	0.00	0.00
9. P.S. Charges & Contingent Charges	21.64	35.30	35.59	73.50	0.00	73.50	3.95	79.64	0.00	107.54	73.50
10. M.S. Charges	40.52	60.56	66.73	130.04	0.00	130.04	3.64	136.93	0.00	105.30	130.04
11. T & P Charges	3.41	8.07	8.90	11.00	0.00	11.00	1.00	11.71	0.00	106.45	11.00
12. L.S. Provisions	130.45	39.54	36.91	0.00	0.00	0.00	-5.24	6.72	0.00	0.00	0.00
13. Others	2.07	2.07	2.07	1.93	0.00	1.93	0.00	0.79	0.00	40.92	1.93
	741.20	950.00	1040.00	1125.00	0.00	1125.00	44.74	1063.04	0.00	94.49	1125.00

SUPERINTENDING ENGINEER(P)
 P.S. CIRCLE
 K. U. R. S. D. L.

[Signature]
 EXECUTIVE ENGINEER(P)
 W.A.P. DIVISION
 YEMMIGANUR

QUARTERLY PROGRESS REPORT FOR THE QUARTER ENDING SEPTEMBER 1995

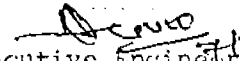
N.A.P. A.F. II-KUDAK DISTRICT PROJECT N.A.P. DIVISION SADASIVAPET

Sl. No.	Name of Sub-Head	Provision in R.R.E. of Rs. 1000 Lakhs	Exp. upto June '95	Exp. from 7/95 to 9/95.	Exp. upto September '95
1.	2.	3.	4.	5.	6.
1.	CPWS Ibrahimpur and 24 other Problem Villages.	356.470	336.828	1.358	338.006
2.	CPWS Doranchara and 20 other Problem Villages	216.260	191.588	-	191.588
3.	CPWS Karasguthy and 17 other problem Villages.	193.920	164.932	0.430	165.362
4.	Buildings incl. P.C. and T&F	31.620	31.130	-	31.130
5.	Cost of materials procured but not allocated to works such as GI Valves; Spils, and CILA Pipes etc.	-	10.239	(-) 0.341	10.597
6.	Cost of cement and Steel procurd but not allocated to works.	-	13.923	400.574	14.957
7.	Subsidy paid to APSCD incl. const., of B.I. Structures.	15.50	14.334	-	14.334
8.	CPWS Ibrahimpur 21 Enroute Villages.	66.39	39.795	0.406	40.201
9.	CPWS Doranchara 11 Enroute Villages.	36.26	29.233	0.159	29.442
10.	CPWS Karasguthy 11 Enroute Villages.	41.96	35.125	0.042	35.147
11.	Major Batt. Charges	70.72	-	-	-
a)	S.T.C. Payment	-	02.624	4.619	87.443
b)	On Furniture, Telephones Xerox P/C Computers Vehicles	-	23.254	0.356	23.610
c)	Exp., of S.E. MAF.	-	31.721	-	31.721
12.	P.S. Charges	37.71	23.453	1.131	24.589
13.	Tools and Plants and Storage	12.43	8.357	-	8.357
14.	Telephone connections	6.00	-	-	-
15.	Other Unforeseen items	2.76	0.090	-	0.090
16.	Amount transferred to S.E. (PR) Miryalguda	-	15.00	-	15.00
GRAND TOTAL: Rs.		1032.00	1061.440	9.234	1070.674

EXPENDITURE INCURRED ON OPERATION AND MAINTENANCE (1995-96) (Grant Rs. 3.125 released upto date)

8.650	11.503	20.158
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NOTE: ALL FIGURES ARE LAKHS:


 Executive Engineer, (PR)
 N.A.P. DIVISION SADASIVAPET
 7/10/95

ABSTRACT PROGRESS REPORT FOR QUARTER ENDING SEPTEMBER, 1995 KAP KOLLAFUR

Sl. No.	Name of the work	Estt. cost in Lakhs	Revised estimate cost	Upto last year	EXPENDITURE			Commulative Expenditure in Lakhs
					Upto end of previous quarter	During the month Quarter.	Total	
1.	Head works	75.15	90.75	75.97	1.00	4.65	5.65	81.62
2.	Transmission line including CI Spl. & Pump sets	277.98	317.70	285.67	0.97	5.92 1.33	6.89 2.30	287.99 292.56
3.	Link Channel	--	55.00	50.87	--	--	6.22	50.87
4.	Balancing Reservoirs	43.83	13.09	6.05	0.17	0.32	1.09 0.42	6.43 7.14
5.	Servicing Reservoirs (SGLSRS and CHSRs)	--	55.00	38.49	0.23	--	0.23	38.72
6.	Village Distribution	60.85	60.65	30.44	2.03	3.32 2.79	5.35 6.82	35.79 35.79
7.	Buildings	36.28	25.12	20.09	--	--	--	20.09
8.	KM and EM stones	1.01	--	0.60	--	--	--	0.60
9.	Steel	--	--	17.40	--	--	--	17.40
10.	Establishment @ 12.5 on 506.27	68.28	70.23	77.28	--	--	--	77.28
11.	Cement	--	--	20.65	0.47	1.19	1.66	22.31
12.	D.P.A.P.	12.44	77.28	77.37	--	--	--	77.37
13.	CEs Office Building vide Lr.No.ES/1173/91-92	--	--	3.00	--	--	--	3.00
14.	L.S. Fluctuation of rates	--	10.00	--	--	--	--	--
15.	L.S. for Telecommunication	--	5.18	--	--	--	--	--
Total:		744.16	780.00	703.88	5.47	15.40 10.28	26.87 15.08	718.95 724.75
16.	Establishment charges C & M	--	--	5.73	3.24	2.39	5.63	11.39 11.36
Total:		744.16	780.00	709.61	8.64 8.71	13.00 17.78 17.79	26.50	730.63 736.11

P.R. Wanaparthi
Executive Engineer
P.R. WANAPARTHY.

P.R. Wanaparthi
Deputy Executive Engineer,
P.R. Operation & Maintenance,
Sub-Division, GUEM.

ANNEXURE VI

CANAL FLOW PARTICULARS - PARCHUR

Annexure - 6

CANAL FLOW PARTICULARS

S.No.	Name of the Scheme.	Source.	1987-88. (8.7.87 to 12.4.88) (234 days)	1988-89. (3.8.88 to 23.4.89) (283 days)	1989-90. (5.8.89 to 13.4.90) (248 days)	1990-91. (4.8.92 to 2.3.91) (240 days)	1991-92. (5.8.91 to 14.2.92) (210 days)	1992-93. (28.8.92 to 16.4.93) (235 days)	1993-94. (26.7.93 to 17.4.94) (254 days)	1994-95. (9.8.94 to 26.4.95) (257 Days)
1	2	3	4	5	6	7	8	9	10	11
1)	A.B.Palem & 8 other villages under Group.I st	NSP canal milage at 1-2-330 th	139	141	130	131	96	106	112	108
2)	M.V.Palem & 8 other village under Gr.II nd	-do- 5-1-550 th	139	141	130	131	96	89	95	87
3)	PWS Scheme to Pusapadu th	-do- 3-3-154	98	110	93	90	60	47	57	50
4)	-do- Chinthagunta- palem th	-do- 6-2-10 th	139	141	130	131	96	77	57	50
5)	-do- Y. V.Palem th	-do- 9-1-005	139	141	130	131	96	77	50	50
6)	-do- Audipudi th	-do- 5-7-000 th	98	110	93	90	60	41	50	50
7)	-do- Nuthalapadu th	-do- 8-1-600 th	139	141	130	131	96	71	50	50
8)	-do- Thimidhipadu th	-do- 1-5-330 th	139	141	130	131	96	71	50	50
9)	-do- Naqualapalem th	-do- 11-1-275	139	141	130	131	96	71	45	40
10)	-do- Venkayalapadu & Sjjbharreddypalem.	-do- 8-1-600 th	139	141	130	131	96	71	57	50
11)	-do- Nagandla th	-do- 2-3-164	104	110	96	97	61	51	38	38
12)	-do- Nakkalapalem.	-do- 2.5.200	104	110	96	97	61	51	36	35

Contd.....2.....

:: 2 ::

1	2	3	4	5	6	7	8	9	10	11
13) PWS Scheme Pavuluru & Kothapalem ^{FF}	N.S. Canal 0-2-515 ^{FF}		104	110	96	97	61	51	30	30
14) -do- Tadiparthivaripalem ^{FF}	-do- 3-2-110 ^{FF}		104	110	96	97	61	51	30	30
15) -do- Hanumojipalem ^{FF}	-do- 5-1-100 ^{FF}		104	110	96	97	61	51	30	30
16) -do- Naiduvaripalem & Gronadula Minor extn ^{FF}	-do- 8/2-378 ^{FF}		104	110	96	97	61	51	50	50
17) -do- Pothinavaripalem ^{FF}	-do- 2-1-330 ^{FF}		104	110	96	97	61	56	50	50
18) -do- Kesavarappadu & 3 other villages ^{FF}	-do- 10-3-145 ^{FF}		104	110	96	97	61	58	50	50
19) Upputuru -do-	-do- 13-0-330 ^{FF}		70	80	60	59	56	36	34	28
20) -do- Vaorannapalem ^{FF}	-do- 15-2-330 ^{FF}		60	75	58	59	56	36	30	30

Alia
6/1/86
Executive Engineer (PR)
Maintenance Diva, Darsi

6851

ANNEXURE VII

MANAGEMENT OF SST - A DOCUMENT BY PRED

MANAGEMENT OF SUMMER STORAGE TANKS

Management of S.S. Tanks mainly deals with,

- (1) Filling of the Tank to the required Capacity.
- (2) Using the Tank for the Scheme to run throughout the year.
- (3) Preventively weed growth and contamination.

The quantitative analysis is made taking the Canal Closure period and evaporation percolation losses with consideration and design the schemes with 150 days storage capacity. The items 1 & 2 can be taken care by Executivizing the Tanks with the above design.

WEED GROWTH :

Problems identified with Weed growth. :-

Weed Growth is very preddamanating problem in S.S. Tanks of Parchur Project. It is causing colour and odour in the water. Certain weeds like lotus occupies the entire top surface of water and prevents the entry of sublight to the bottom layers and disturbing the acquatic balance. The high growth of weeds amits Corbondioxide during respiration in nights and causes Oxyision diplition in bottom layers. The use of water by plants also causes loss to the quantity of water in the tank. The capacity of the tank is also reduced to some extent to the presence of weeds in the rx tank. The decomposition of the dead plants causing foul order in the water and may develops growth of Pathogems and associated problems.

Therefore to analyse the problem the opinion of the expert from the Agriculture University in invited. The weed specialist has visited six tanks in different villages and suggested the methods to be adopted for eradication of the weeds. The report is enclosed. (Annexure-III)

→ where ?

The main suggestions are :-

- (1) Making the tank in two compartments and using one keeping the other dry alternatively year by year.
- (2) Using Herbicides when the tank is not in use.
- (3) Deepening the tank by excavating the bed for 1 to 2 feet depth.
- (4) Manual removal of the weeds for successive growth in water.

It is observed that the methods followed in the Aqua Culture Tanks in the surrounding area are giving good results in preventing weeds. The methods are

- (1) Making the bed dry and ploughing with blades and removing the plants debris once in a year.
- (2) Spreading lime on tank bed before releasing water.
- (3) Using boat for manual removal of weeds for successive development in water.
- (4) Growing fish.

The above methods are also recommended by the Professor of Agriculture University, Kakinada in a leaflet enclosed. - (Annexure-III).

As the tanks are designed with 150 days summer *only designed* storage it is not possible to dry the tank during summer for taking up of treatment as suggested by the Specialist. In rainy season ploughing and cleaning cannot be possible in wet bed. Therefore, monitoring of the tanks in filling using and treatment has to be evaluated considering the seasonal rains, canal running period etc. ~~xxxx~~

~~XXXXXX~~

Taking the all above points into consideration, the following ~~prax~~ procedure is proposed.

- (1) Filling the tank by pumping during canal running period.
- (2) Using the compartments one after other.
- (3) Drying the bed after use in one compartment.
- (4) Using Herbicides. in dry bed.
- (5) Plowing the bed and cleaning.
- (6) Again filling the tanks for use.
- (7) Using boat with mobile team for removing the weeds manually.
- (8) Growing 'Gross Comps' fish in water tank.

The feasible system for operating the above procedure is evaluated in a skematic diagram for two compartment tanks and three compartment tanks seperately and enclosed.-(Annexure-I)

For this purpose scales are installed in S.S. Tanks to observe to the ~~x~~ water levels and different periods and to use the compartments accordingly.

HUMAN & CATTLE INTERFERENCE :-

The entry of the human and cattle in the tank making disturbance in water and causing and high turbidity when the water is at lower level. Using the tank bunds for ~~three months~~ night soil defication is highly contaminating the raw water.

Health Education Camps, providing individual latrines, under sanitation programme, and providing fencing to S.S. Tanks are the ~~proposed~~ possible ways to avoid the above problem.

Fencing ~~x~~ is very costly and it is opnioned that it cannot do without change in ~~ix~~ the attitude of the people. However, as a trail base four tanks are provided with fencing under I.J.R.Y. normal funds with matching of NAP Grant of 1.00 lac. for each tank under mopup activities.

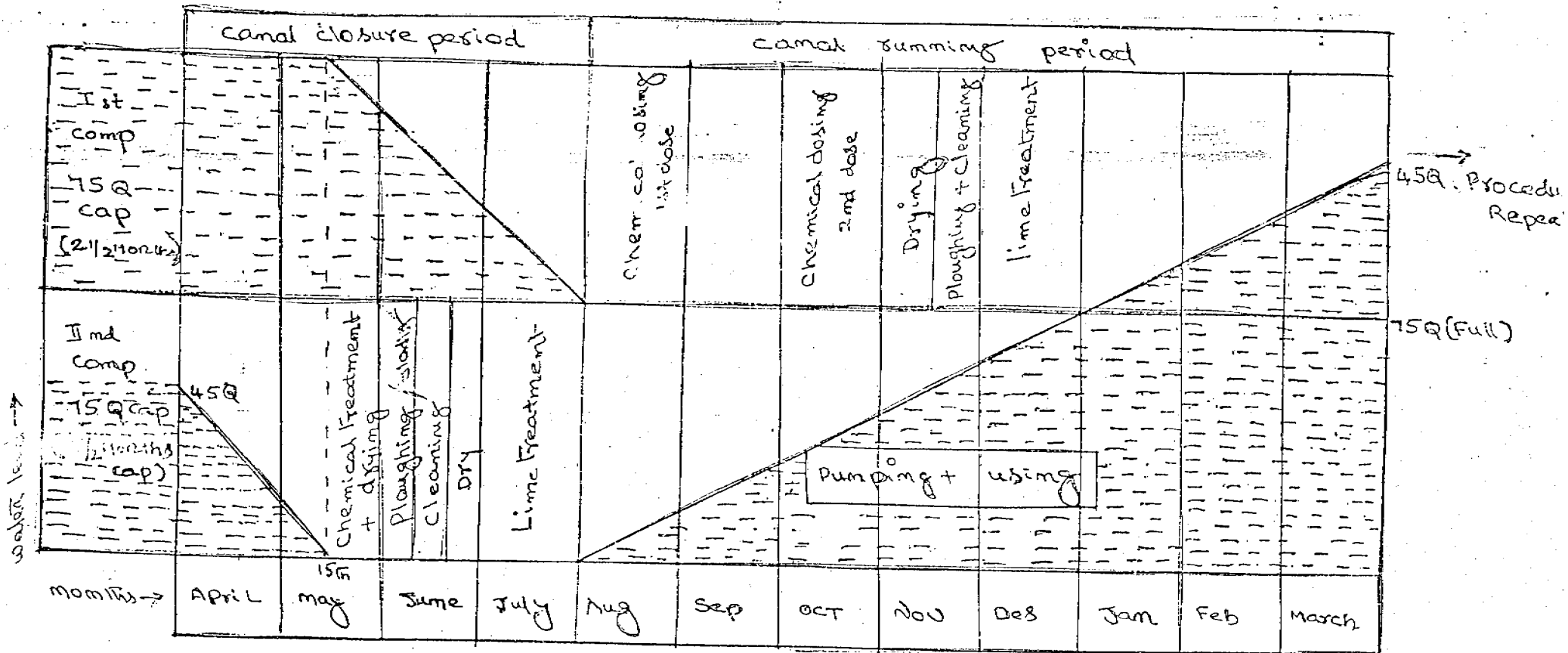
: 4 :

Health Education Camps and providing individual latrines are proposed to take up in 37 villages and under consideration for sanction.

HANDING OVER THE SCHEMES TO PANCHAYATS FOR PILOT STUDY :-

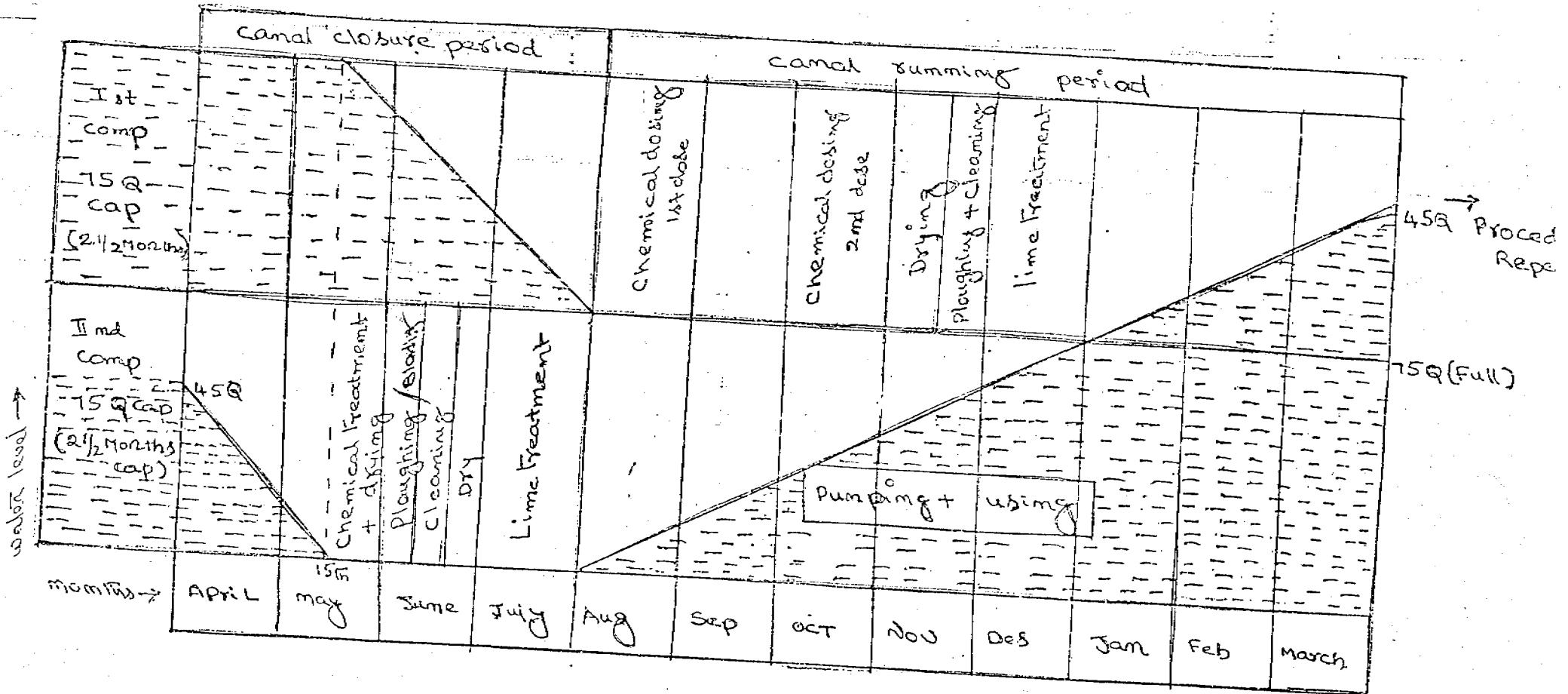
The guidelines are formulated and communicated to all Surpanches and they are invited to come forward to take up the maintainance voluntarily ^{who} ~~is~~ ever interested. Response is awaited. Because of the staying of the results of Panchayat Elections by the Court, the new Surpanches are ^{yet} ~~not~~ to take administration. And the old Surpanches are not showing interest to take up new assignments. Due to the above political unstability the handing over of the schemes is delayed.

Deccan
7/9/95
S.B. Pr. Omphette



Q = Per day consumption

1.5Q = Per day pumping



Q = Per day consumption

1.5Q = Per day pumping

చేపల చెరువులలో నీటి కలుపు మొక్కల నిర్మూలన

డా. టి. గోపాలకృష్ణ
 డి. ఎల్. రాజకృష్ణ
 డి. మునింద్రారెడ్డి
 మత్స్య విజ్ఞానాధికారి,
 ఆంధ్ర ప్రదేశ్ వ్యవసాయ విజ్ఞానాశ్రమము
 కాకినాడ-533007

చేపల చెరువులలో కలుపు మొక్కల వల్ల చెరువుల్లో కూడా నవాజంగా చిలుకల సేద మొక్కలు పెరుగుతాయి. చేపల పెంపకానికి ప్రత్యక్షంగా లేదా పక్కా నాసి చేసే మొక్కలను నీటి కలుపు మొక్కలంటారు. చెరువుల పుష్కలక క్రమ క్షీణించేటవి, చేపల పెరుగుదలను తగ్గించి, తరచుగా చేపలు, చేపపిల్లలు, ముఠాపుటకు కూడా కారణమగు ఈ నీటి కలుపు మొక్కల నిర్మూలన చేపల పెంపకదారులు తప్పనిసరిగా అవలంబించవలసిన తదితర్య.

1. నీటి కలుపు మొక్కల వలన చేపల పెంపకానికి కలిగే నష్టాలు
2. చేరువుల్లో వాడే సుంద్రమైన రసాయనిక నిరుష్ణలలోని హానికరద్రావణాలను నీటి కలుపు మొక్కలు వినియోగించుకొని విచ్ఛిన్నం పెరుగుతాయి. అందువలన చేపల పెంపకానికి వాడన ఎరువులు నిరర్థకమవుతాయి.
3. నీటి కలుపు మొక్కలు తిమ్మట పూట నీటిలోని ప్రాణవాయువును అధికం చేస్తాయి. రోజుకొన్ని ముప్పులు వచ్చిన రోజుల్లోను నీటిలో అధిక ప్రాణవాయువును క్యాన్డ్రేటరుకు వినియోగించుకుని బొగ్గుపులుసు తాయి. ఇది (కార్బన్ డై ఆక్సైడ్ వాయువు) నీటిలోనికి విడుదల చేస్తాయి. దీని వలన రోజు 12 గంటల సుంద ఉదయం 8 గంటల వరకు చెరువు నీటిలోని ప్రాణవాయువు స్థాయి తగ్గి చేపలకు హానికరమగుతుంది. చేపవకాలంలో ఈ వివరత వరిస్తూనే చేపలు దీనితోపాటునే కూడా అన్యాయమగును.
4. నీటి కలుపు మొక్కలు చెరువులో ప్రవహించే సూర్యరశ్మి తోకుండా అటంకపడతాయి వలన చెరువు నీరు, వాతావరణపు గాలి నంపర్కం జరుగడం కష్టం. చెరువుల్లో సాధారణంగా జరిగే జీవక్రియలకు ఈ కలుపుమొక్కలు ఆవరోధం కలిగింతుతాయి.
5. నీటి కలుపు మొక్కలు విరివిగా పెరిగి చెరువు అంతటా వ్యాపించుట వలన నీటివరిమూస తగ్గి, దాని కనుగుణంగా చెరువు ఉల్కాడక కత్తి క్షీణించుతుంది. మొక్కలు జరిగే భాస్వర్యకము వలన కూడా చెరువులో నీటి వరిమూస తగ్గుతుంది.
6. కలుపు మొక్కల కాంక్షములు, చేళ్ళ మధ్య మట్టి రేణువులు తోగయి చేపల చెరువుల లోతు క్రమంగా తగ్గిపోతుంది.
7. దట్టంగా పెరిగిన కలుపు మొక్కలు, తోగుల వంటి వాడు, చేపల చలనానికి అటంకమవుతుంది. చేప పిల్లలు నీటిలో చిక్కుకొని చనిపోతాయి.
8. నీటి కలుపు మొక్కల అకులు, కాండలు కుళ్ళి చెరువు అడుగుల గాన స్థించి విచ్ఛిన్నమవులను ఉల్కాడక చేస్తూ చెరువు మట్టి సుంద

9. కలుపు మొక్కలు చేప పిల్లలు, చేపలను తమ కడుకాలు, పాదములు వంటి మూసభక్తక జంతువులకు, రోగ కారక క్రమలకు ఆశ్రయమవుతాయి. చేపలకు వ్యాధులను కలుగజేసే కొన్ని వరాన్న జీవులు కలుపు మొక్కలపై గ్రుడ్లను పెడతాయి.
10. వివరతంగా అభివృద్ధి చెందిన కొన్ని రకాల 'అల్గేలు' విచ్ఛిన్నద్రావణము ప్రవింది చేపల మొవ్వలకు అడ్డువది క్యాన్డ్రేటరుకు అటంకమేర్పచి భవలకు హాని చేస్తాయి.
11. దట్టంగా పెరిగిన కలుపు మొక్కలు చెరువులో పలలులాగి చేపలు పట్టుకు అటంకమవుతాయి.

కలుపుమొక్కలు చేపలకు ఉపయోగపడతాయా?

చేపవకాలంలో చేపలకు నీడగాను, వగటివుల నీటిలో ప్రాణవాయువు స్థాయి వృద్ధిచేయడానికి, ఆలల తాకిడినుంచి చెరువుగట్లను కాపాడుటానికీ, కొన్ని నీటి కలుపుమొక్కలు, మొక్కల అకులు, కాండలపై పెరిగే "పెరిస్ట్రాచా" అనే సూక్ష్మజీవుల నమూనాయమును, గ్రాసకార్మ వలన వంటి చేపలకు అహారంగా వుపయోగించవచ్చుననే భావంతో రైలుకల చెరువులలో కలుపుమొక్కలను పెరిగిస్తారు.

నీటి కలుపుమొక్కలు చెరువులోని వడవంచు ప్రదేశానికి తరిమిపోయి తక్కువ సంఖ్యలో సున్నపుడు చేపలపెంపకానికి సరైనవికావు. అందులో నీటి కలుపుమొక్కల పెరుగుదల ఒకసారి ప్రారంభమైతే కట్టకాలంలో దట్టంగా చెరువు అంతటా వ్యాపించి, చేపలు పెంపకానికి అపహేళన వుపయోగంకంటే వయదిధాలుగా ఎక్కువ హాని కలుగజేస్తాయి.

చెరువుల్లో కలుపుమొక్కలు పెరుగుటవలన చేపలకు కలిగే ఉపయోగాలను రైతులు తమ చెరువులలో కలుపుమొక్కలు తరచుగా పెరిగి సాధించవచ్చు. ఉదాహరణకు నీటిలోను 4-6 అడుగులన్నీరు ఉండగా ఆ అడుగులుగానూ చేపవకాలంలో గూడా నీరు తక్కుగా పుచ్చి, రోజు నమయంలో అంతకంటే ఎక్కువ మోతాదులో నీటిలోని ప్రాణవాయువును వినియోగించుకొని చేపలకు హాని చేస్తాయి. చెరువుగట్లను కాపాడుకోవడానికీ తూడు, జమ్మివంటి మొక్కలకు అదులుగా రైతులు "సెరాట్రాన్" "నెపియోగ్రాస్" వంటి గత్తినీ పెంచి చెరువుగట్లను ఆలల తాకిడినుంచి వ్యర్జించడమేకాక, గ్రాసకార్మవంటి చేపలకు విచ్ఛిన్నలకు సోతగా వుపయోగించవచ్చు. చెరువుల్లో చెల్ల ఎండు కమ్మలనుచేసే "పెరిస్ట్రాచా" ను అభివృద్ధి చేసుకోవచ్చు. చెరువులలో ఎరువులను వాడే రోజు, కట్టి చేపలను అత్యవసరమయిన "ఫ్లోకూల్" నమ్మర్థిగా వుత్పత్తి చేయవచ్చు.

కలుపుమొక్కలు- చెరువుల్లో పెరిగే రకాలు:

చేపల చెరువులలో వివిధ రకాల కలుపుమొక్కలు పెరుగుతాయి. అవి పెరిగే స్థలము, వాటి అకారము, వరిమూసాన్ని బట్టి మూసభక్తగా వివరించవచ్చు.

బంగా ప్రాగుచేసి బయటకు తీసేయవచ్చు. దీన్ని చెరువులకు ఈ వర్షం అనుకూలమైనది.

రసాయనిక వర్షాభి

రసాయనిక వర్షాభిములను వినియోగించి కలుపుమొక్కలను త్వరగా ను, పూర్తిగాను నిర్మూలించవచ్చు. ఈవర్షాభిలో కలుపుమొక్కలు చెరువు లోనే ద్రుగ్ధిపోయి నశించుటచే వాటిలోనున్న తోవకవర్షాభిములు మరల సిటిలోకి పరుచుటయే చేవల సుంపకానికి వినియోగపడతాయి.

చెరువులలో చేవలకు పోని చేయక నీటి కలుపు మొక్కలను మాత్రమే నిర్మూలించుట అనుగుణమైన రసాయనిక వర్షాభి మోతాదు వాటిని చెరువులలో వినియోగించే వర్షాభిలను తెలిసికొండం.

మైలతుత్రం (కాపర్ సల్ఫేటు):

ఈ రసాయనిక వర్షాభి చెరువులో దట్టంగా పెరుగు దారపుపోగుల వంటి 'అల్లె'లను (స్వల్పంగా, ఈదగనియం, ఏథిలోరా) అధికసంఖ్యలో పెరిగి పీచీపై తెల్లలుగాకట్టు సూక్ష్మమైన 'అల్లె'లను (మైక్రోస్పైసి, ఆనబినా మొసపి) నిర్మూలించుటకు అనువైనది. ఈ రసాయనికవర్షాభి మోతాదు ఎకరానికి (3 ఆడుగుల నీటిలోకు) 400 గ్రాములనుండి 2 కి.గ్రాములు. ఈ రసాయనిక వర్షాభి కావలసిన మోతాదును ఒకేసారి చెరువులలో వాడుటకంటే ఎకరానికి 250-400 గ్రాముల వ్యయన 7 రోజులలో వలుముచ్చ వాడుట మంచిది. ప్రతి 250 గ్రాముల కాపర్ సల్ఫేటు న్యూటికములను పోడిచేసి 10 లీటర్ల నీటిలో కలిపి చెరువునీటి ఉపరితల ముపై అంతటా స్ప్రెయర్ నహాయముతో వేదజల్లాలి.

2, 4-D:

చెరువునీటిపై పెరుగు గుర్రపుదెక్క, పిస్టయూ, సోర్టినియా చెరువు అడుగుభాగమునుండి ఉపరితలమునకు పెరుగు కలుపు, తామర చెరువు అంచున పెరుగు జమ్ము, తూడు, కిలకపియా మరియు వలురకా లైన గడ్డిజాతి కలుపుమొక్కలను నివారించుటకు ఇది అనువైన కలుపు మొక్కల సంహారకమందు. దీనిమోతాదు ప్రతి ఎకరానికి 1.5 నుండి 9 కిలోల వరువులోని కలుపుమొక్కల సాంధ్యకనుబట్టి ఈ రసాయనపు మోతా నిర్ణయించాలి. దట్టంగా పెరిగిన పొద్దు కలుపుమొక్కల నిర్మూల నకు దీనిని ఎక్కువమోతాదులో వాడాలి.

తామర, కలుపువంటి కలుపుమొక్కల నిర్మూలనకు ఈ కలుపుమొ క్కల సంహారకమందును ఎకరానికి 2 నుండి 4 కిలోల మోతాదులో వాడాలి. ఇది తామర, కలుపుమొక్కల ఆకులు, కాండాలను మాత్రమే నిర్మూలించి మట్టిలో తేడాగానుండు దుంపలను చంపలేదు. అందుచేత ఈ దుంపలు మరల చిగురించుటకు అస్సాదం ఉంది.

ప్రతి 250 గ్రాముల కలుపుమొక్కల సంహారకమందును 10 లీటర్ల నీటిలోకలిపి కలుపుమొక్కలపై ఎకరేతిగా స్ప్రెయర్ కే వేదజల్లాలి. గుర్రపుదెక్క, పిస్టయూ, సోర్టినియావంటి కలుపుమొక్కల ఆకులపై మైసోపూత ఫండుటచేత నీటిలో కలిపిన ఈ మందు ఆకులపై స్థిరంగా నిలవుడు. ఈమందు సమర్థంగా వనిచేయుటకు 250 గ్రాముల మందు కలిపిన 10 లీటర్ల నీటిలో 250 మి.లీ.ల కరోసన్ లక డీసెల్. ఆయిల్ ను లాగాకలిపి ఆ మిశ్రమాన్ని తల్లరంగువచ్చేవరకు బాగాచిలికి, కలుపుమొ క్కలపై స్ప్రెయర్ నహాయంత వేదజల్లాలి.

సిమజ్జెన్:

ఈ కలుపుమొక్కల సంహారకమందు ధారస్తాపోగులవంటి అల్లెలు

అధికంగా పెరిగి తెల్లలుగాకట్టి సూక్ష్మమైన అల్లెలతపాటు నీటిలో మునిగి యుండు వివిధజాతుల కలుపుమొక్కలను నిర్మూలించుతుంది. దీనిని ఎకరానికి రెండునుండి మూడునున్నర కిలోల మోతాదులో వాడాలి. దారస్తాపోగులవంటి అల్లెలను నీటిలో తెల్లలుకట్టి అల్లెలను నిర్మూలించు టకు తక్కువ మోతాదులో ప్రతి ఎకరమునకు 2-4 కిలోల వ్యయన వాడాలి. ఈ రసాయనము చేవలకు పోనిచేయదు. కలుపుమొక్కలను, అల్లెలను నివారించుటకు సుమారు 3 వారాలు పడుతుంది. అయితే దీని ప్రభావం చెరువులో కొన్ని నెలలవరకుఉంది నీటిలో ప్రైట్ సొంకాన్ అభివృద్ధి జరుగుతుంటే అడ్డుపెడుతుంది. అందుచేత చేవల చెరువులలో ఈ మందును పలుమార్లు వినియోగించకూడదు.

పెరాక్సైడ్:

నీటిలో మునిగివుండు కలుపుమొక్కలను అధికంగా పెరిగి నీటిపై తెల్లలుగాకట్టి 'వినబినా', 'ఏథిలోరా'వంటి అల్లెలను నిర్మూలించుటకు అనువైనది. నీటిలో మునిగివున్న కలుపుమొక్కల నిర్మూలనకు ఈ కలుపుమొక్కల సంహారకమందును ఎకరానికి 400-800 గ్రాముల వ్యయన వాడాలి. అల్లెలను నియంత్రించ చేయుటకు 400-500 గ్రాముల ప్రతి ఎకరానికి వాడాలి. ఈ మందు ప్రభావం నెమ్మదిగా కలిగినా దీర్ఘకాల ముండుంది.

పెరాక్సైడ్, 2,4-D లను సామాన భాగాలుగా కలిపి వాడనచే జమ్ము వంటి చెరువు అంచున పెరుగు కలుపుమొక్కలు మరియు చెరువు నీటిలో యుండు వలురకా కలుపుమొక్కలను సమర్థంగా నిర్మూలించవచ్చు. పెరాక్సైడ్ రసాయనాన్ని చెరువునుట్టి పిల్చుకుంటుంది. అందు చేత మట్టిరేణువులు అధికంగా నున్న ముంకినీటిలో దీనిని వాడకూడదు.

తెలపాన్:

కలుపుమొక్కల సంహారక మందును ప్రతి ఎకరానికి 2 నుండి 4.5 కి.గ్రాముల మోతాదులో వాచి చెరువుగట్టి అంచున, చెరువులోపలి భాగ మున పెరుగు వలురకముల గడ్డిజాతి కలుపు మొక్కలను నిర్మూలించవచ్చు. చెరువులో ఎత్తుగా పెరిగిన గడ్డిజాతి కలుపుమొక్కలను నిర్మూ లించుటకు ఆ చెరువులోని నీరు పూర్తిగా తీసేసే ఈ మందును నీటిలో కలిపి స్ప్రెయరు నహాయంత కలుపు మొక్కలపై ఎకరేతిగా వేదజల్లాలి.

అమ్మోనియా:

ఇది నీటిలో మునిగియున్న వివిధ రకాల కలుపుమొక్కలను నిర్మూ లించుటకుకాక చెరువులో ఎరువుగా భూత ఉపయోగపడతాయి. తోవైన చెరువులలో గూడ దీనిని ఉపయోగించవచ్చు. రట్టముగా కలుపుమొక్క లున్న నీటిలో అమ్మోనియాను ప్రతి ఎకరానికి 100 కి.గ్రాముల వ్యయన కలుపుమొక్కల మధ్యలో వేదజల్లాలి. దీనిని ఉపయోగించుటచేవలన చెరువులలో అధికసంఖ్యలో ప్రైట్ సొంకాన్ అభివృద్ధి చెంది, నీరు ముదురు అకువచ్చి రంగులోకి మారి నీటిలో కలిగిన ప్రాణవాయువు స్థాయి తగ్గుతుంది. అందుచేత చెరువులలో కనీసం 2 నెలలను ఎదురల చేయుటకు ముందుగాని, లేక చెరువులలో చేవల వెంకటేపిన తదుపాత గాని అమ్మోనియాను వాడాలి.

ముందుల వాడకంలో జాగ్రత్తలు:

కలుపుమొక్కల సంహారక మందులను, చెరువులలో పెరిగిన కలుపు మొక్కల రక్తము వాటి సాంప్రతకనునరించి నిర్ణయించిన మోతాదుల లోనే వాడాలి. ఆదిగా వాడనచే వాటి రసాయనిక ప్రభావము చెరువుమధ్య నీటిలో దీర్ఘకాలము వుండి చెరువు వ్యర్ధాధిక కట్టి క్షీణించుతుంది.

4

కలుపుమొక్కల సంవరక మందుల పెట్టలపై ఆ మందులనున్న రసాయనిక శక్తి వివరంగా తెలియజేశారు. రసాయనిక శక్తినువరించి చెరువులో వాడవలసిన మందు యెలాదును నిర్ణయించారు. అదాహరణకు మార్కెట్లో వెరాక్టల్ మందు గ్రామోక్స్-40, సీమజైన్ మందు లావలైన్-50 గాను లభ్యమవుతుంది. వెరాక్టల్ మందును చెరువులో 400 గ్రాములు వాడవలసినవచ్చినపుడు మార్కెట్లో లభ్యమగు గ్రామోక్స్-40 మందును ఒక కిలో వాడాలి.

కలుపుమొక్కల సంవరక మందులు వాడినపుడు చేసినచేయిన మొక్కలు చెరువులో కృత్రిమము సీటిలోని ప్రాణవాయువును వినియోగించు కుంటాయి. అందుచేత చెరువు అంతా మందును వాడి ఒకేసారి అన్ని కలుపుమొక్కలను నిర్మూలించుటకంటే, చెరువులో ముందుగా ఒక భాగంలోని కలుపుమొక్కలను నిర్మూలించి, ఆ భాగములో ప్రాణవాయువు స్థాయి అనుకూలమైన పదవ ఆ చెరువు మరియొక భాగంలోని కలుపు మొక్కలను నిర్మూలించాలి.

నమగ్ర యాజమాన్య వద్దతి - నీటి కలుపు మొక్కల నిర్మూలన

చెరువులో పెరిగిన నీటి కలుపుమొక్కలను పైన వివరించిన వర్ణకులలో నిర్మూలించినప్పటికీ కలుపు మొక్కల విత్తనాలు, మట్టిలోపల లోతుగా నుండు కుంబలు, చేళ్ళు మరల పురుగుచటం లేదా చెరువు నీటి ఉపరితలంపై వుండు కలుపుమొక్కలను నిర్మూలించిన తర్వాత చెరువు అడుగుభాగావే ఇతర రకాల కలుపు మొక్కలు పెరుగుటకు అవకాశం వుంది. అందుచేత రైతులు ఎల్లప్పుడు చెరువులను వరికిరించుకూ రుండు, మూడు రకాల నిర్మూలన వర్ణకులను ఆవలంబించి సరైన కలుపు మొక్కలు మరల విస్తారంగా పెంకగుండా చేయువచ్చు.

అదాహరణకు చెరువు నీటిలోను ఎల్లప్పుడు 4 అడుగులకంటే ఎక్కువగా నుండి (6 అడుగుల లోతు మంది) క్రమంగా ఎరువులనువారి, క్రితగా పెరుగుతూ తక్కువ సంఖ్యలోనున్న నీటి కలుపు మొక్కలను ఎన్నోవర్షము ఒకేసారి చెరువులో కలుపు మొక్కలులేకుండా చెరువు పట్టు నీటిలో మునిగియుండు కలుపు మొక్కలను చెరువులో కింతనిడు వాయులకు తీసేసే కలుపు మొక్కల సంవరక మందునువారి ఆ మొక్కలను నిర్మూలించి కొత్త నీటిలో చెరువును నింపి, గ్రామోక్స్ మందును నిర్మూలించిన మరల ఆ చెరువులో కలుపు మొక్కలు పెంక వివారించవచ్చు.

కలుపుమొక్కలను చెలరేగి చెరువులో ఎరువుగా వినియోగించవచ్చు

కలుపు మొక్కలు బూట్లలోకి అప్పుడులవంటి సంద్రయములను, బాక్టీరియా ప్రాంత్రతను వృద్ధిచేసి దేవలకు వాసికలుగదే ప్రాయి.

చేవల చెరువుల యాజమాన్యంలో ప్రథమవర్గ అయిన నీటి కలుపు మొక్కల నిర్మూలనను చేపట్టి చెరువునున్న నీటిలోని తీవ్ర వదాల్లాలను చేవల పెంచకానిక నిక్రమంగా వినియోగించుకని రైతులు అధిక తిగుబడిని సాధించవచ్చు.

“క్రిపి క్విజ్”

యస్. లక్ష్మన్
వ్యవసాయ ఎరికరనా స్థానం,
అదిలాబాదు.

ప్రశ్నలు

1. వెరాక్టల్పై తక్కువ ప్రభావం వచ్చినపుడు మంచి ఏది?
2. అంతర్జాతీయ మందు అంటే ఏమిటి?
3. చెరువులను వాడవచ్చులేకా వచ్చు వచ్చుడు వాడవచ్చుడు ఏకా. విస్తారాదిక వాడవలసిన మందు పెరుగుటలవా, తగ్గటంలా?
4. వచ్చిన మందులు గొట్టవచ్చు ముఖ్యంగా గుమింపవలసిన రెండు విషయాలు తెలుసుకు.
5. ICRISAT వాడు గుమింప వచ్చుటలను ఏది?
6. కవం పరిష్కారంల మారణం పరికారం చేయువచ్చు ముఖ్యమైన మెటకువ ఏమిటి?
7. నీటిలో తగ్గే తీసుకుంటుండు వాడవచ్చుడు గుమింపవలసిన ముఖ్యమైన మెటకువ ఏమిటి?
8. మెటకుగా వేతనం ఎప్పుడు వచ్చువచ్చు గుమింపవలసిన రెండు విషయాలు చెప్పండి.
9. బోర్డింగు, బోర్డింగు తయారుచేయడానికి ఏమిటి అవసరం?
10. బోర్డింగు, బోర్డింగు గొట్టవచ్చుటలకు తగ్గే వాటిగా?
11. కవం వచ్చుటలపై తగ్గే వచ్చుటలను ఏది?
12. బోర్డింగు వచ్చుటలను ఏది తెలుసుకోవచ్చు?
13. దానికాదు పెంకలలో పెంకలకు వచ్చువచ్చు ముఖ్యమైన మెటకువ ఏమిటి?
14. అమ్మోనియా పరికారం ఎంత గాతం గుంకం (Sulphur) వుంటుంది. ఇది ఏ మెటకు వచ్చువచ్చు అవచ్చుగరం?
15. తగ్గేవచ్చు పరికారం ఎంత గాతం తగ్గేవచ్చు అమ్మోనియా గుంకం యుంటుంది?
16. కుంకంపరికారం ఎంత గాతం గుంకం యుంటుంది?
17. వచ్చువచ్చు వచ్చుటలపై ఏ వచ్చు దానిలో అమ్మోనియా వచ్చువచ్చు వచ్చుటలకు ఏమిటి?
18. మెటకుల వచ్చుటలలో మెటకులకు మెటకు వచ్చువచ్చు వచ్చుటలకు తగ్గే ఏమిటి?
19. వచ్చువచ్చు వచ్చువచ్చువచ్చు ఏమిటి వచ్చుట?
20. 7 గాతం గుంకం యుంటుంది వచ్చువచ్చు వచ్చుటలకు ఏమిటి వచ్చుటలకు ఏమిటి వచ్చుట?
21. వచ్చువచ్చు వచ్చుటలకు వచ్చువచ్చువచ్చు ఏ మెటకు వచ్చువచ్చు వచ్చుట?
22. 100 PPM వచ్చువచ్చు NAA వచ్చువచ్చు ఏమిటి వచ్చుటలకు?
23. యుంటుంది పరికారం దానిలో వచ్చువచ్చు అమ్మోనియా వచ్చువచ్చు వచ్చు గాతం యుంటుంది వచ్చుట వచ్చుట.

(జవాబుల కోసం 61వ పేజీ చూడండి.)

నిలకడ నీళ్ళకే నోరుపట్టేది