

Annexure – 8(i)

TADIPATRI MUNICIPALITY

Action plan to reduce water losses

Introduction:

Tadipatri town is a Grade – I Municipality in Anantapur district of Andhra Pradesh. It is right at the border of Kurnool district and Kadapa district. Tadipatri is located at 14.92°N 78.02°E. Its average elevation is 223 metres or 731 feet. This town boasts of wide cement roads, greenery, a spacious community hall, a vegetable market complex, drainage water treatment plant, multiplexes, new municipal building and several others. This is the only town with an underground drainage in the whole of Anantapur district.

Tadipatri railway station is on the Guntakal-Chennai line which is part of Mumbai-Chennai line. There are daily trains from Delhi, Mumbai, Chennai, Hyderabad, Kanyakumari, Coimbatore, Thiruvananthapuram, Tirupathi, Kolhapur and Goa – which halt at Tadipatri. One can also reach Tadipatri from Bangalore by changing train at Gooty railway station. Tadipatri Railway Station is located at one end of the Town.

History:

The area around Tadipatri is known as Bhaskara Kshetra to its South lies a forest full of palm trees. It was called Tatipatri during the time of Pemmasani Ramalinga Naidu, a local chieftain under the Vijayanagara king Proudha Devaraya.

Tadipatri got its name from Tatipatri which means garden of Palm Trees. Another version is that Tataki a demon lady who tried to kill Sriram on his way to save the Yaga of Viswamitra but was killed by Sriram at this very place and hence the name.

Tadipatri has two notable temples within the town, Sri Chintala Venkata Ramana Swamy temple and Sri Bugga Ramalingeswara Swamy temple. The sthala puranam or local history says that these two temples were built in a day by two brothers. The Chintala Venkata Ramana Swamy Temple was completed by the next morning but the Bugga Rama Lingeswara Swamy Temple was not completed. The belief is that this temple had been completed it would have been ‘Dakshina Kaasi’ or Kassi of the South. The architecture of these two temples is largely Dravidian and reflects the Vijayanagara style.

Climate and Rainfall:

The normal annual rainfall of the district is 875 mm, which ranges from 635mm to 875mm. The average rainfall in the town is about 700mm and the number of rain days is about 50 in a year.

Water Supply:

Tadipatri Municipality is having 13.0 MLD installed capacity infiltration wells, galleries in the River Penna and with 40 No of Bore wells. There is no other dependable surface water source for domestic water supply. Sub surface water is extracted from infiltration wells and supplied to the citizens for drinking water requirements of Tadipatri town. The present supply is 8.5 MLD during summer as against present demand of 18.57 MLD. The present per capacity water supply is 70 lpcd. Due to constant depletion in the infiltration and bore wells the drawl from the bore wells are considerably reduced and the municipality is hardly managing the water supplies to the citizens of the town.

However, Tadipatri is one of the AMRUT city. In this concern, the city has sanctioned 145 crores for water supply it is proposed to prefer Gandikota Reservoir as a source.

Economy

Granite Industries

Tadipatri is well known place for producing black stone and granite polishing in Anantapur District. It is having about 1300 stone polishing and 300 granite industries, from these industries around 20000 people are getting employment directly and indirectly.

Cement Industries

Ultra Tech cements – Larsen and Toubro was the first cement plant commissioned in 1994 at Bhogasamudram in Tadipatri. Tadipatri was chosen after many considerations of availability of limestone, water, etc. It was very difficult to build the factory in this location because it was a hilly area. There are many advantages to this – when the cement is manufactured, the cement bags would go down on a conveyor belt without much power due to gravity. All the products would then go into the railway siding or lorry siding and could then be dispatched. It is now known as Ultra Tech cements on acquisition of this factory by Aditya Birla Group. It also has its own thermal power plant. Penna Cements – It was commissioned on 2008 at Talaricheruvu in Tadipatri. The facility is used for sourcing limestone from the captive mines of Gudipadu, coal from Singarenni Collieries Company Limited and for transportation of finished goods to the consuming markets in Andhra Pradesh, Tamil Nadu, Karnataka and Kerala.

Steel Industries

Gerdau Steel, Tadipatri – is the first investment made by Brazilian steel major Gerdau in Asia. The plant become operational from January 2014 and producing the special bar quality bars and supplying to many automotive component manufacturers. The existing plant capacity is 3,00,000 tons per year and there is a plan to increase the capacity in near future. Gerdau Steel at Tadipatri is employing around 2000 people directly (900 on company role and 1100 on contract basis). Presently a large scale project – Coke oven and CPP is under implementation and will become operational by mid 2015.

PRESENT EXISTING WATER SUPPLY SYSTEM

1.1 Introduction:

Tadipatri Municipality is having 13.0 MLD installed capacity of having capacity infiltration wells, galleries in the River Penna and with and 70 No of Bore wells. There is no other dependable surface water source for domestic water supply. Sub surface water is extracted from infiltration wells and supplied to the citizens for drinking water requirements of Tadipatri town. The present supply is 8.5 MLD during summer as against present demand of 21.09 MLD. The present per capacity water supply is 70 lpcd. Due to constant depletion in the infiltration and bore wells the drawl from the bore wells is considerably reduced and the municipality is hardly managing the water supplies to the citizens of the town.

1.2 Source including Summer Storage Tanks:

The main source for the water supply is dependant on Rive Penna which flows along the northern boundary of the town. The major system which was adopted was the infiltration wells which were way back 1960s to draw the sub surface waters. The Municipality has inception 8.50 MLD installed capacity infiltration wells and galleries in the River Penna. The water from the infiltration wells is collected in the collection wells located on the bank and from where the clear water is pumped to the distribution through the ELSRS. There was an addition of 40 No of Bore wells in the river to the infiltration wells to supplement the reduction in the draft from infiltration wells due to the depletion in water table of the river at times to maintain the manageable level of water supply to the public. The presently a supply of 8.50 MLD is being provided from all the sources to the town as against demand of 4.28 MLD at the per capacity supply of 70 lpcd.

The Brief description of the Existing System.

1.2.1 The filter points at Nandalapadu:

There were 4nos filter points provided in Penna river for the purpose of Nandala padu and surrounding areas. The water from the filter points is collected in a sump cum pump house where from the clear water is pumped to the ELSR located in school premises in Nandalapadu to effect the supply to Zone1 presently the 4 filter points are functioning out of which 1.8 MLD is being drawn against the designed 2.7 MLD. The present level of water in the filter points is available at 15 deep against the total available depth of 40 feet. During 2011 summer a qty of 0.9 MLD could only able to be drawn from the above source resulted a per capita supply of 30 lpcd to the above zone.



1.2.2 Arabindu Aashramam water works:

This was the inception scheme. There were 12 nos no of Bore wells/ filter points subsequently provided in Penna river for the purpose of old town and old bus stand area and surrounding areas. The water from the infiltration wells and filter points is collected in a sump cum pump house located where from the clear water is pumped to the ELSR located in Sanjeeva nagar to effect the supply Zone4. Presently 12 filter points are functioning out of 18 points drilled. About MLD is being drawn from this source (12 wells -5.6 MLD from Bore wells). The present level of water in the filter points is at 17 feet deep against the level of 54 feet at installation. During last summer a qty of 2.7 MLD could only be drawn out of the above source. The ELSRS at Sanjeevanagar (900 KL), JC Nagireddy Colony (1000 KL) ND Kondappa ELSR (900 KL) are being fed from the said source.



1.2.3 Source at Bugga:

There were 3 no of infiltration wells / filter points (14 nos) provided in Penna river for the purpose of North eastern Part of the town. The filtered water from the infiltration wells / filter points is collected in a collection well where from the clear water is pumped to the ELSR located in Nehru park area, Yellanur Road and Near Market to cover the areas under Zone9, Zone6 & Zone8. Presently 9 filter points are functioning out of 14 points drilled and '0' no of infiltration wells and filter points. The present level of water in the filter points is available at 2m deep against the depth 40m during installation. The depth of water available for the drawl from the filters is ---mts only since BC soil strata is met beyond. During last summer a qty of 2.5 MLD could only be drawn from the source.

INFRASTRUCTURE DETAILS UNDER HEAD WATER WORKS:

The above mentioned source can supply 5.5 MLD to 7.00 MLD of water during summer. Existing water 8.5 MLD is available from Bores and Infiltration wells.

Existing Water Supply per capita

Total Water Supply	:	8.50 MLD
Losses	:	15%
Population	:	108249
Per Capita	:	70 LPCD

1.3 Raw Water Pump House & Raw Water Transmission Main

There is no water pump house and raw water Transmission Main because subsurface water supplied from Penna river.

1.4 Water Treatment Plant

There is no Water Treatment plant in Tadipatri Municipality because subsurface water supplied from Penna river.

1.5 & 1.6 Clear Water Pump House, Clear Water Transmission Mains & Feeder Main:

Water from the collection wells from each of the source are pumped to the ELSRs pertaining to the respective zones to effect the distribution. The details of the pumping mains connected to all the Reservoirs from each of the source are presented. Clear water Pump Houses at Arabindo Ashram and Nandalapadu.

S.No	Source	Dia of Pipe	Pipe Material	From	To	Length of Main Mts
1	Nandalpadu	300 mm	AC	From sump	Nandalpadu ELSR	2500 m
2	Aarbind Aashramam	300 mm	AC	From sump	JC Nagi Reddy ELSR	1500 m
3	Aarbind Aashramam	350 mm	AC	From sump	Kondappa Layout	1000 m
4	Aarbind Aashramam	400 mm	CI	From sump	Sanjeev Nagar	500 m
					Total	5500 m

1.7 Storage Reservoir & Service reservoir:

There are at present four distribution zones are existing. Clear water is being supplied by pumping to various zonal reservoirs located in the town. At present, water is supplied to the main town of Tadipatri from the existing 6 nos of Elevated Level Service Reservoir having a total capacity of 4937 KL.

S.no	Location	Capacity(KL)	Age of Reservoir	Staging	Av.G.L(m)	LWL (m)	MWL (m)
1	Nandalpadu	900	1990	12.0	236.50	248.50	252.50
2	Sanjeev Nagar	787	1989	12.0	234.80	246.80	250.80
3	JC Nagi Reddy Colony	1000	2006	12.0	232.00	246.00	250.00
4	Yellanur Road	1000	2005	12.0	232.40	246.40	250.40
5	Near Market	800	2013	12.0	232.90	246.90	250.90
6	Nehru Park	450	1988	12.0	231.30	245.30	249.30
	Total	4937 KL					

The existing reservoirs are having 12.0mts staging. Hence to maintain minimum of 7.0mts residual head in the distribution network. The existing six reservoirs are considered in the present proposals. The ELSR of Kondappa lay out which is not in good condition has not been accounted for the calculation of the capacity.

Existing Water Supply System

S.No.	Description	Quantity
1	Raw water Sources	Bore wells 54 nos (24 working)
2	Water Treatment Plant	Nil
3	Service Reservoirs	6 No.
4	Reservoir Storage Capacity	1.94 ML (Operation)
5	Hand Bore Wells	168 No.s
6	Power Bore Wells	54 Nos
7	Distribution Zones	There are Seven existing distribution zones.
8	Type of supply	Two Hour in alternative day through pipe distribution lines and tankers.
9	Present Clear Watter Demand	18.57 MLD
10	Present Water Supply	8.50 MLD
11	Population as per 2011 census	108249
12	Per capita Water supply	70 lpcd
13	Percentage of population covered	55%
14	Total area of town	7.49 sq km
15	Supply covered area	3 sqkm
16	No of revenue wards	16
17	No of Electoral wards	34
18	Percentage of area covered	72%
19	Road length	140 km

OPERATION AND MAINTENANCE PLAN

The ULB as a local govt. is responsible for the creation and a maintenance of assets in municipality. The ULB is committed to provide safe and required quantity of water to the public of its town. The process of commitment involves the operation and maintenance of various types like electrical, mechanical systems to meet the required quality and quantity of water supplies. Good operation and maintenance of systems will result in increased life of the assets, reduces recurrence in expenditure, avoid break down affects. The poor in O&M leads to the failures of the systems. Hence the importance of O&M plans.

The main deficiencies in the O&M of existing situation in Tadipatri Municipality under water supply are enlisted as

2. The system does not possess any online metering system for monitoring the function of the system.
3. The staff is not equipped with tools like leak detection equipment for better quality of work in maintenance.
4. Lack of adequate skills and capacity to the maintenance staff

5. Constraints in Finance and delegations for the advance planning to O&M.

Therefore there is a need for the approval of the O&M plan with necessary budget allocations to have an advance planning for O&M to prevent the breakdown maintenance to the possible extent. Regular trainings for updating the skills of the staff is to be taken up in the operation and use of the latest techniques/latest tools for the better delivery of the service.

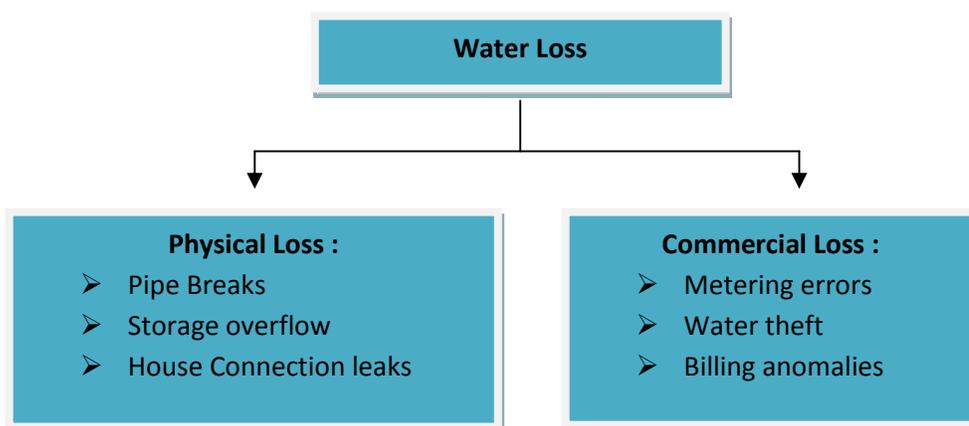
CAPACITY BUILDING PLAN

The present capacities of existing personnel and assesses the training needs and the methodologies for building and updating the capacity of the staff.

The limited availability of regular employees could not able to cope up with the O&M issues in the maintenance of the water supply in Tadipatri Municipality. Due to the shortage of staff, the Municipality is outsourcing from the service agencies as contract workers. The workers hired do not possess adequate academic/technical skills in the operation of the systems but also leads to legal complications. Therefore, to achieve the safety of the staff and equipment the staff involved in the O&M is to be improved with required skills and tools to the O&M staff for the growth of the organization.

An elaborate training programme by the expert agencies/institutions like DLTC, ITI or NAC can be offered at least on yearly basis in the activities of pipe fitting, Electrician, Pump Mechanic Filter bed operation winding of motors and NRW/UFW control, pollution control etc. till the O&M system is upgraded to reach a reliable and sustainable state.

WORKS IMPLEMENTED TO REDUCE WATER LOSSES AT VARIOUS LOCATIONS IN TADIPATRI MUNICIPALITY:



Tadipatri Municipality has taken up the initiatives :

- Rehabilitation of existing old pipelines.
- Arresting water pipe leakage by repairing and changing of pipes.
- Repairs and replacement of Sluice Valves, pump sets, motors etc,
- Providing bulk flow meters at critical points to assess the water losses
- Identify and regularize illegal connections
- Carry out energy audit
- Metering of supply of water
- Creating awareness among the public



Photographs of few works done in arresting the water leakages in Tadipatri Municipality