

## 24x7 AMRAVATI WATER SUPPLY SCHEME

Amravati city is located on longitude 77.45 & latitude 20.55. Amravati Municipal Corporation comprises of Amravati City, Badnera Municipality & adjoining 16 villages.

Amravati water supply scheme is maintained by MJP. The present scheme is designed for 95 MLD for 1<sup>st</sup> Stage & 156 MLD for 2<sup>nd</sup> Stage. 1<sup>st</sup> stage is commissioned in the year 1994. Population for the year 200 is 549510 souls & waters supplied at the rate of 120 LPCD in zone-wise manner for the period of 4-5 hrs per day.

Under Sujal Nirman Abhiyan it is decided to convert this water supply scheme into continuous water supply to the city.

Various activities carried out are listed below.

1. **Satellite Image** - "Quick Bird" Satellite image of Amravati city covering area 137 Sq. Km. is observed from NRSA Hyderabad.
2. **Base Map preparation.-** Digitization of image is carried out in "AutoCAD" software. Base map is prepared in DXF file format.
3. **Population Forecast** - Census data for last five decades is obtained & population forecast by Density method is carried out for the year 2011 for allocating initial demands in the model.
4. **Operation Zone** - Whole to part approach is adopted for 24x7 project of Amravati city. Entire city is divided into 16 operation zone. The capacities of existing ESR are verified for peak hours demand for a estimated population of the year 2011. It is observed that capacities 13 out of 16 ESR are adequate for 24x7 supply. Remaining three zones are rearranged as per demand. It is observed that Present infrastructure is sufficiently adequate to implement the 24x7 project. Present supply to the city is 74 MLD The present maximum pumping capacity is 95 MLD. Source of the scheme is Upper Wardha Dam having storage capacity of 614.80 Million cubic meter out of which 58.50 Million Cubic meter of water is reserved for Amravati city water supply.

5. **Hydraulic Model** - "WaterGems" software is used to build the hydraulic model of entire pipeline network from source to the distribution network up to consumer premises. The hydraulic model is prepared in house by the staff of the Division & Circle office Amravati. All pipelines along with ESR/GSR valve pumps etc. 810 KM length and 9226 Nos. pipes of all materials like CI DI, AC, PVC, HDPE, PSC & MS of diameters 15mm to 1600 mm dia Demands are allocated & model is tested. Entire model is now in working condition. 16 scenarios are created for operation zones. Each Zone is checked thoroughly by simulating the condition for 24x7 water supply.
  
6. **Preparation GIS** - Property survey of 125 properties of Amravati city is completed on the basis of base map prepared. The data obtained is verified for the proposed zones of Arjun Nagar & Sainagar. Verification for the data obtained for other zones is underway. Database comprising of 80 field giving various details about the property & 125 records (No. of properties) is now built. The base map is modified as per field verification in property survey. ARCGIS software is used for preparation of GIS. The model built in WaterGems & property database obtained is imported into ARCGIS software. Exact demands for domestic, Non-domestic & industrial are now available in GIS format called Geodatabase which is very useful for implementation of 24x7 projects. Thiessen Polygon & load builder facility in WaterGems software is utilized to allocate exact demands in the models.
  
7. **Pilot 24x7 Zone Arjun Nagar Zone** - Initially it is proposed to implement 24x7 water supply in Arjun Nagar Population of this zone is 18000 souls 2.0 MLD water was supplied for 2.5 hrs through a pipeline network of 24.38 km in this zone. After studying hydraulic model. The Arjun Nagar Zone is divided into three DMA's Pressure Gauges are also installed, data thus obtained will be utilized for calibration of the hydraulic model Hourly reading of all meters are recorded, as well as readings of domestic meters are recorded by CMU unit periodically. NRW is calculated. It is observed that it was 52%. There were seven stand-post in this area from which wastage was very significant IEC was carried out. The consumers were given separate connection. MJP is successful in converting 4 stand-posts and process of closing of other standpost is underway. The consumers in the region are asked to watch

out overflows from overhead tank and reduce leakages from house connections. Pipeline leakages are traced out and rectified. After this, readings are again taken & it is found that NRW is reduced to 22 %. The process is underway to reduce NRW up to 15% target.

8. **Requirement of funds** - For rehabilitation of old AC and PVC network and replacement / addition of new distribution pipe lines for adequate pressure, substantial funds will be required. Also for providing bulk meters, PRVs for pressure management and automation of system to some extent; adequate funds will be required.