Satyabrata Sahu, I.A.S Joint Secretary सत्यव्रत साहु, आई.ए.एस संयुक्त सचिव



भारत सरकार पेयजल एवं स्वच्छता मंत्रालय Government of India Ministry of Drinking Water and Sanitation

> Do: W-11027/02/2010-WQ Dated: January 22, 2014

Dear Madam/Sir

This Ministry had released a reference document called **Uniform Drinking Water Quality Monitoring Protocol** in February 2013. The protocol suggests strengthening drinking water quality monitoring system at various levels in all States. A copy of the Uniform Drinking Water Quality Monitoring Protocol was also sent to all the concerned States in 2012 for necessary action.

2. I am enclosing a Government order issued by the Rural Water Supply & Sanitation Department, Government of Andhra Pradesh indicating the important steps taken to strengthen their drinking water quality monitoring and surveillance system. You may like to take necessary action in this regard. I would also request you to send your concerned officials to visit and see the setting up and functioning of drinking water testing laboratories at various levels in Andhra Pradesh State.

With Regars.

Yours sincerely

[Satyabrata Sahu]

To,

The Principal Secretary/Secretary-in-charge of Rural Drinking Water of all the States.

ग्रामीण क्षेत्रों में पेयजल स्थायित्व एवं सम्पूर्ण स्वछता

Sustainable Drinking Water and Sanitation for all in Rural Areas

# **TOP PRIORITY**

Government of Andhra Pradesh
Rural Water Supply & Sanitation Department
Office of the Project Director,
State Water & Sanitation Mission,
HRD Buildings, SRTGN Bhavan, Errumanzil colony, Hyderabad – 82.

# Memo No. Chemist/SLL/SWSM/restructure- WQM&S/ 2012-13, Dt: 24/07/2012

Sub: SLL, SWSM, RWS&S, Hyderabad – Instructions for Testing of drinking water sources at the field level by using Field Testing Kits, Collection of Water Samples for all the drinking water sources – Job chart of the connected personnel – Instructions issued – Regd.

Ref: 1. Note orders issued by the Secretary, RWS&S Dept., Hyderabad.
2. Conference of Superintending Engineers, RWS&S with the Secretary, RWS&S Dept. and Chief Engineers, RWS&S on 19/07/2012.

All the Member Secretaries, DWSCs and Superintending Engineers, RWS&S in the state, are herewith informed that the Ministry of Drinking Water & Sanitation, G.O.I, New Delhi, has issued for RFD targets in the ranking system, for Water Quality Monitoring activities in the RWS&S, department, during the year 2012-13.

Keeping in view of the RFD targets and ranking system on the achievements of the targets, under the Water Quality Monitoring Activities in the RWS&S Dept., the Secretary, RWS&S Dept., has issued clear instructions and guidelines for the restructuring and reorganizing of the Water Quality Monitoring Activities in the Department.

The guide lines and instructions for restructuring and reorganizing of Water Quality monitoring activities in the RWS&S dept., is here with enclosed for taking necessary action.

All the Member Secretaries, DWSCs and Superintending Engineers, RWS&S, in the state are requested initiate the following activities immediately:

- A. Recruitment of Consultant to Water Quality Monitoring, on Contract basis, at the Circle office, on or before 5<sup>th</sup> August.
- B. Geographical Distribution of Mandals to the laboratories in the district for the sake of collection and testing of water samples only without disturbing the Administrative jurisdictions by 15<sup>th</sup> august, 2012, such that each laboratory should cover 3000 drinking water sources.

- C. Recruitment of Field Assistants (on contract basis) for testing of water samples at the Field Level in G.Ps and collection & transportation of water samples to the concerned laboratories by 15<sup>th</sup> August, 2012.
- D. All the sub- divisional Laboratories should be established and bring them in to functioning by recruiting the laboratory personnel on contract basis. Nominate the newly recruited Lab Chemist and Lab Microbiologist to the induction training programs in August, 2012. From 1<sup>st</sup> September, all the sub- divisional laboratories should be able to conduct the analysis of water samples.

All the Member Secretaries, DWSCs and Superintending Engineers, RWS&S, in the state are requested to implement the guidelines and instructions scrupulously without any deviation. The implementation of instructions will decide the fate of RFD targets – achievements on WQM&S activities. Any negligence in the implementation, will seriously affect the over all ranking of our state in RFD targets. Every month, during the conferences of Superintending Engineers, RWS&S, the Secretary, RWS&S Dept., will review the RFD targets & achievements on WQM&S activities.

Hence, they are requested to pay personal attention and issue proper instructions to the Executive Engineers, and Dy. Executive Engineers, RWS&S in their concerned districts and fix the responsibilities to all the category of staff at all levels, as described in the guidelines.

Encl: As said above.

Sd/-Project Director, SWSM, Hyderabad.

To All the Member Secretaries, DWSCs & Superintending Engineers, RWS&S in the state.

Copy submitted to the Secretary to the Government, RWS&S Dept., 8<sup>th</sup> floor, L Block, A.P. Secretariat, Hyderabad, for kind information.

Copy submitted to the Engineer-in- Chief, RWS&S Dept., Hyderabad, for kind information.

Copy to all the Executive Engineers, RWS&S Dept., in the State, for taking necessary action.

# Guidelines and instructions for restructuring of Water Quality monitoring activities in the RWS&S dept.,

Sub: SLL, SWSM, RWS&S, Hyderabad – Instructions for Testing of drinking water sources at the field level by using Field Testing Kits, Collection of Water Samples for all the drinking water sources – Job chart of the connected personnel – Instructions issued – Regd.

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All the Member Secretaries DWSCs & Superintending Engineers, RWS&S in the State are herewith informed that 171 Water Testing laboratories in the department, are monitoring periodically, the chemical and bacteriological quality of all the drinking water sources in the state. systems. In addition to this, the department is making arrangements to conduct the chemical quality tests (by using Field Testing Kits) once in a year and Bacteriological quality tests (by using the H2s vials) during Pre and Post monsoon seasons at the field level in the gram panchayats, to assess quality of all the drinking water in the rural habitations as per NRDWP guidelines and RFD targets. The GOI fixed RFD targets the following activities under water quality monitoring surveillance programme.

1. Testing of drinking water sources at the field level by using field test kits by both Bacteriological and Chemical tests for the year 2012-13.

Target fixed : 3,96,987 by using Field Test Kits (Chemical)

7,93,974 By using H2S vials (Pre monsoon and Post monsoon)

Points given :

2. Testing drinking water sources at the laboratory.

**Target fixed** : 5,10,000

Total laboratories : 170 (Each laboratory should test 3000 samples for

annum)

Points given : 4

In this connection, the following instructions and guidelines are issued for restructuring the water quality monitoring activities in the department to achieve the RFD targets.

A. Geographical Distribution of Mandals to the laboratories in the district for collection and testing of water samples:

There are 170 District/Division/Sub-division laboratories are functioning in the department. Every laboratory (either district level /division level / sub- division level) in the district should be allotted 5-8 mandals geographically (covering minimum of 3000 sources by each laboratory), without disturbing the administrative jurisdiction. Though some of the mandals fall under the jurisdiction of other sub- divisions, the laboratory in-

charge of particular sub- division, should be made responsible for making arrangements to get the water samples from these mandals to the his sub- divisional water testing laboratory, to cover the minimum no. of 3000 sources. The SE RWS&S convene a meeting with EEs, DEEs and fix jurisdictions immediately. The DEE /AEE/AE should kept incharge for the laboratory. The name and mobile no of the in-charges (Dy.E.Es) of the laboratory should be informed to this office.

# B. Consultant on Water Quality Monitoring at the RWS&S circle offices:

Vide GO MS. No: 1158 (RWS II) PR&RD Dated: 30-06-2012 permission was accorded to engage consultant, on contract basis, to look after the water quality monitoring activities in the district.

In each district, consultant for Water Quality Monitoring, should be taken on contract basis and should be placed at the RWS&S Circle office in every district. He should work under the control of Member Secretary, DWSC and Superintending Engineer, RWS&S of the district. The consultant should be selected by the committee with the three members (viz., the Member Secretary, DWSC & Superintending Engineer, RWS&S of the concerned district, Executive Engineer, RWS&S division of Head quarters and Chemist, State Level Laboratory, RWS&S, Hyderabad).

#### **Qualifications & Experience:**

➤ Post graduate in chemistry/ Microbiology with Computer knowledge and should have minimum 5-8 yrs experience in the field of Water Analysis in RWS&S laboratories. Expertise in conducting the training programs and workshops on water quality monitoring activities at various levels( G.P./ mandal/ district level).

#### **Job Chart:**

- > To assist the Superintending Engineer, RWS&s in Geographical Distribution of Mandals to the laboratories in the district for collection and testing of water samples without disturbing the administrative jurisdiction.
- > To assist the Superintending Engineer, RWS&s related to Water Quality Monitoring & Surveillance Activities in the District.
- > To monitor the Field Testing of all the drinking water sources as per NRDWP guidelines.
- > To visit periodically and monitor the functioning of all the laboratories in the districts.

- > To assist in furnishing the voucher wise particulars, audited statements and Utilization certificates related to the expenditure incurred towards Water Quality Monitoring activities in the districts To get all the information related to Water Quality Monitoring, in the district from the laboratories as well as from the Field.
- > To guide the Engineers in water quality related issues.
- > To conduct all types of training programs, at the Mandal level & G.P. level, related to Water Quality monitoring & Surveillance, in the district.
- > To submit required information from the district to the State Level Laboratory.
- > To Monitor the functions of all the laboratories in the district.
- > To Monitor the entry status of Water Quality Data in the Online Monitoring systems.
- > To monitor the FTK test results, laboratory tests and entry of results on online monitoring system to achieve the month wise RFD targets.
- To fix the RFD targets for each laboratory for laboratory test results and each mandal for FTK Test results and communicate the targets to the concerned Dy. E.Es , RWS&S, for taking necessary action to meet the targets.
- > Review the achievement of RFD targets in the district, for every 15 days.

#### Remuneration:

Rs. 20,000/- per month. Remuneration will be paid as per the targets fixed.

The following districts where the regular Asst.Chemist/ Jr.Water Analysts are working was kept in charge to look after the water quality monitoring activities in addition to the regular duties.

Nizamabad : Sri E.Narasimha Reddy, Asst. Chemist

Ranga Reddy : Sri G. Ravidranath, Junior Water Analyst

**East Godavari** : Sri V. Panasa Ramana, Junior Water Analyst

Guntur : Sri K. Bhaskarsastry Water Analyst

The appointment of consultant, in the remaining districts, should be completed. The names of the persons may be intimated to this office.

# C. Testing of drinking water sources at the field level by using Field Testing Kits & collection and transportation of water samples to the laboratories:

Department of Drinking Water Supply, Ministry of Rural Development, G.O.I, launched the National Rural Drinking Water Quality Monitoring & Surveillance Program (NRDWQM&SP) during the year 2005-06. Under this program, Multi parameter

(Chemical) Water Testing Field Kits were distributed to all the Gram Panchayats (one kit per each G.P.) to test the eight important chemical parameters in the drinking water, at the field by the G.P. level coordinators and Bacteriological Water Testing Field Kits (H2S vials) have been supplied & delivered to all the gram panchayats in the state, for screening all the drinking water sources in gram panchyats for bacteriological quality. Before distributing the above said Field Test Kits, 1,01,959 Grass root level workers were trained on "Water quality monitoring by usage of Field Test Kits" at the the Gram Panchayat level. The refill packs chemical reagents in all the Field Test Kits will be provided to bring them in to functioning.

All the **3,96,987** drinking water sources in the state, will be tested for chemical quality by using the field test kits (once in a year). Bacteriological quality drinking water sources at the field level using with H2S vials during the pre monsoon (February, March, April and May and June)and post monsoon seasons (October, November, December and January). As the field testing was not done at the Gram panchayat level and the test results are not available in the department, the department is not meeting the targets and so the following alternative is proposed.

A person may be taken on contract basis for Testing the Water Samples at the field level in the Gram panchayats as per the NRDWP norms, collect and transport the water samples to the concerned laboratory. He is designated as Field Assistant.

**Qualification of the Field Assistant** 

: Intermediate in science.

#### The job chart of the Field Assistant:

- ❖ To Test of all the drinking water sources in the gram pnachayats (once in year for Chemical parameters and twice in year for bacteriological quality) at the field level by using the field test kits, also test residual free chlorine and record the test results in the register at the G.P. office.
- ❖ To Collect of water samples from all the drinking water sources in all the habitations and transport the samples to the laboratory. (minimum 300 samples per month)
- ❖ To get the acknowledgement, of sample collection and Field testing form Spl. Officer/Sarpunch/ Village Secretary /VWSC or Ward Member of the Gram panchayat and submit the acknowledgement to the Dy. E.E. of the concerned sub- division.
- ❖ The Field test results (both chemical and H2S vials test results) should be reported to the concerned attached laboratory
- ❖ To collect the water samples from the Scheme sources (every quarter) the transport them to the Laboratory for Bacteriological testing.
- ♦ He should have his own conveyance and transportation facility. No Travelling charges will be paid.

**a.** Target no. of samples: 300 samples per month (minimum).

minimun) tion : Ps 35/- ner sample

b. Remuneration : Rs.35/- per sample.

(For chemical testing with FTK & bacteriological testing with H2S vial and Collection & transportations

of sample to the laboratory).

: Rs. 20 /- per sample. (For bacteriological testing with H2S vial and

Collection & transportations of sample to the laboratory)

# (The remuneration should limited to 300 samples per month per each Field Assistant)

# D. Water Quality Monitoring - Water Testing Laboratories:

Each laboratory to test minimum 3600 samples per annum.

#### I. Sub-Divisional Laboratories:

The following tests should be conducted at Sub-Divisional Laboratory.

Chemical : 1.

: 1. pH , 2. Electrical conductivity/Total dissolved solids.

3. Total Alkalinity 4. Chlorides 5. Total Hardness

6. Fluoride 7. Nitrate 8. Iron 9. Sulphate

**Bacteriological** 

: MPN/100ml and E.coli/ 100ml.

Target samples

: 3000 chemical and 600 bacteriological per annum

Laboratory Personnel

: Each sub-divisional lab should have the following

Personnel.

S.No	Designation	No.of persons	Required qualification
1	Chemist	One	B.Sc with chemistry. Should have computer knowledge.
2	Microbiologist	One	B.Sc Microbiology or B.Sc with BZC, Should have computer knowledge
3	Helper	One	10 th Class as minimum qualification

## Job Chart of the laboratory personnel:

# Chemist/Microbiologist:

- He will be technical in-charge of the sub divisional laboratory.
- ❖ To test nine chemical and two bacteriological samples parameters for the samples, collected and handover by the outsource person.
- To guide the Field Assistant person for collection of water samples at field level.
- To train the Field Assistant (contract) /anganawadi worker/Asha worker for usage of Field test kit.
- Collect the Field Test Kit results, done by the Field Assistant (Contract).

- Minimum 300 samples ( out of which 50 samples for bacteriological tests) should be tested per month.
- He /She should maintain three registers i.e Sample receive register, Chemical analysis register and observation note book.
- Contamination samples should be intimated to Sarpanch/village secretary/ MDO, through the Laboratory in-charge (Dy.E.E./ AEE/AE), for taking necessary action.
- Every 15 days the lab test results and Field testing results will be communicated to concern Division laboratory.
- Chemist should keep the all the instruments in the chemical laboratory in working conditions. He has to prepare all the required chemical reagents, solutions, etc, in the chemical laboratory. All the equipment, glassware, instruments should be kept clean.
- Microbiologist should keep all the equipment in the bacteriological room clean. He has to prepare the required media, agar and other solution, and keep the Sterile water sample collection bottles, test tubes ready to testing.
- In the absence of Chemist, the Microbiologist should conduct both the Chemical and Bacteriological tests. In the absence of Microbiologist, the chemist should conduct both Microbiological and chemical tests.

**Remuneration:** Remuneration will be paid as per prevailing SSR , specified by the SWSM, Hyderabad.

#### **In-charge sub- division Laboratory:**

- Dy.E.E.of the subdivision should be incharge of the laboratory.
- ❖ The name of the laboratory in-charge ( Dy.E.E) should be intimated to this office.

#### Responsibility:

- ❖ He has to ensure that samples from all the sources in all habitations should be collected (in the allotted jurisdiction mandals) and tested in the laboratory.
- ❖ He has to ensure that field level testing with FTK(Chemical) one time and bacteriological testing with H2S vials – two times, as per the RFD targets given the S.E. RWS&S.
- He should ensure that that minimum no. of 300 samples per month, should be tested at the field level and transported to the concerned laboratory, by each Field Assistant.
- He should submit the requirement of ready to use chemical reagents for instruments (HACH), Refill packs of chemical reagents in FTKs and H2S vials as per the RFD targets, to this office through the concerned S.Es, RWS&S.

## **II. District / Division Level Laboratories:**

Each laboratory at the district/ division level should have one lab. Chemist, one Microbiologist, two lab. Assistants , and one helper. One of the lab. Assistant should act as data entry operator and upload the test results of all the water samples tested in the divisional laboratory, sub-divisional laboratories and the test results of the field test kits under the jurisdiction of the division. The other laboratory assistant, should assist

the Chemist/ Microbiologist in the analysis and collect as and when required for random checking of test results.

S.No	Designation	No.of persons	Required qualification
1	Chemist	One	M.Sc/B.Sc with chemistry. Should have computer knowledge.
2	Microbiologist	One	M.Sc/B.Sc Microbiology or B.Sc with BZC, Should have computer knowledge.
3.	Lab. Assistant	One	Intermediate with science.
4.	Lab. Asst./Data Entry Operator	One	Any graduation with computer knowledge.
5.	Helper	One	10 th Class as minimum qualification

# Job Chart of the laboratory personnel:

## Chemist/Microbiologist:

- He /She will technical in-charge of the district/divisional laboratory.
- The chemist / Microbiologist should verify the test results obtained from the subdivisional laboratories for their correctness. If anything went wrong with the results of any sample, the water sample form that particular source should be obtained and tested. He/She should hold responsibility for the test results, up loaded in the WATER SOFT.
- In the district/ division level laboratories, where regular sample collectors are working, water samples should collected randomly, in the jurisdiction of division, for cross verification of test results, as per the directions of the water quality monitoring consultant in the circle office.
- To test the Water samples in the laboratory for the following 14 physico chemical parameters and 2 bacteriological parameters, for the samples, collected and handover by the Field Assistant.

## Chemical

: 1. Colour, 2. Odour, 3. Turbidity, 4. pH , 5. Electrical conductivity/Total dissolved solids, 6. Total Alkalinity 7. Chlorides 8. Total Hardness, 9. Calcium, 10. Fluoride, 11. Nitrite, 12. Nitrate 13. Iron, 14. Sulphate

#### Bacteriological : MPN co

- : MPN coliform/100ml and E.coli/ 100ml.
- To test the water treatment chemicals Viz., Alum, Bleaching powder, liquid Chlorine etc.,
- To train the Field Assistant /anganawadi worker/asha worker for usage of Field test kit.
- Collect the Field Test Kit results, done by the outsource person .
- Minimum 300 samples (out of which 50 samples for bacteriological tests) should be tested per month.

- He /She should maintain three registers i.e Sample receive register, Chemical analysis register and observation note book.
- Contamination samples should be intimated to Sarpanch/village secretary/ MDO, through the Laboratory in-charge (Dy.E.E./ AEE/AE), for taking necessary action.
- Chemist should keep the all the instruments in the chemical laboratory in working conditions. He has to prepare all the required chemical reagents, solutions, etc, in the chemical laboratory. All the equipment, glassware, instruments should be kept clean.
- Microbiologist should keep all the equipment in the bacteriological room clean. He has to prepare the required media, agar and other solution, and keep the Sterile water sample collection bottles, test tubes ready to testing.
- ❖ In the absence of Chemist, the Microbiologist should conduct both the Chemical and Bacteriological tests. In the absence of Microbiologist, the chemist should conduct both Microbiological and chemical tests.
- By 5<sup>th</sup> every month, all the test results ( both laboratory test results and FTK test results) should be uploaded in the Online Monitoring System (WATER SOFT)

#### Remuneration

: Remuneration will be paid as per prevailing SSR specified by the SWSM, Hyderabad.

# **In-charge sub- division Laboratory:**

- Dy.E.E.of the subdivision should be in-charge of the laboratory.
- The name of the laboratory in-charge ( Dy.E.E) should be intimated to this office.

#### **Responsibility of Laboratory In-charge:**

- He has to ensure that samples from all the sources in all habitations should be collected (in the allotted jurisdiction mandals) and tested in the laboratory.
- ❖ He has to ensure that field level testing with FTK(Chemical) one time and bacteriological testing with H2S vials – two times, as per the RFD targets given the S.E. RWS&S.
- He should ensure that that minimum no. of 300 samples per month, should be tested at the field level and transported to the concerned laboratory, by each out sourcing person.
- He should ensure that minimum no. of 300 samples per month, should be tested at the each laboratory and the laboratory test results and Field test results should be up loaded by the data entry operator (one of the laboratory assistant at divisional laboratory) in the online monitoring system every onth.

#### DISTRIBUTION OF FUNDS & PAYMENT STRUCTURE.

Funds towards the Operation & maintenance of all the water testing laboratories (viz., District/ division and sub- division level) and remuneration of Field Assistant will be transferred to the Member secretary, DWSC, & Superintending Engineer, RWS&S, of

the concerned District. The funds will be transferred under the 3% NRDWP – WQMSP funds, which is earmarked to water quality monitoring activities.

# Action to be taken by the Member Secretary, DWSC & Superintending RWS&S:

- All the Member Secretaries, DWSCs & Superintending Engineers, RWS&S, have to distribute the Mandals to the laboratories in the district, Geographically, for collection and testing of water samples without disturbing the administrative jurisdiction of the sub- divisions, such that each laboratory should cover 3000 sources (minimum).
- All the Dy.EEs, RWS&S should be made responsible for FTK testing, collection
   & transportation of water samples by out sourcing person.
- ❖ All the Laboratory In- Charges, should be made responsible for testing water samples received.
- All the Computers, allotted to the laboratories, should be placed at the laboratories.
- All the District/Divisional laboratories should have internet connection facility to update the water quality data every month. The monthly internet connection charges and peripherals, should be met from the MIS Activity of NRDWP support fund.
- ❖ A separate Bank account to be maintained for the Water Quality Monitoring Activities.
- ❖ A separate Cash book should be maintained.
- All the voucher wise particulars, audited statements and Utilization certificates related to the expenditure incurred towards Water Quality Monitoring activities, under this head of accounts, in the districts, should be submitted to this office by 30<sup>th</sup> April, 2013.
- Remuneration to consultant ( at the Circle office) to paid at the circle office.
- The Remuneration, to the all the laboratory personnel, working in all the district/ division level and sub- division level, laboratories and the Field Assistants, should be paid at the circle office, duly obtaining the pass orders from the concerned Executive Engineers.
- During the review meetings of the Circle, the targets and achievements for laboratory test results in all the laboratories and FTK test results in the district, should be included in the agenda.

# Action to be taken by the Executive engineers, RWS&S Divisions:

- The Executive Engineers, RWS&S, have to ensure that arrangements to be made to conduct the FTK testing of all the sources in the division as per the NRDWP norms and collection and transporting of 300 samples to the attached laboratory, by the Field Assistants.
- They have to ensure that each laboratory (division/ sub- division level) should get and test 300 samples (minimum) per month.
- They have to ensure that all the Laboratory test results (from all the subdivisional and divisional laboratories) should be uploaded in the online monitoring system by 5<sup>th</sup> every month without fail, at the divisional laboratory by the one of the lab. Assistant (designated as data entry operator). The name of the data entry operator should be informed to this office.
- They have to ensure that the bills raised by the Dy.EEs, for the payment of remuneration to the Field Assistants( for FTK testing and collection & transportation of water samples to the laboratory) and laboratory personnel.
- They have to ensure that the pass orders for the bills to be submitted to the Superintending Engineer, RWS&S of the district, by 5<sup>th</sup> of every month for payment.

#### Action to the taken by the Dy. Executive Engineers, RWS&S, sub-divisions:

- They have to rise the bills for the payment remuneration to the Field Assistants (Contract persons) for FTK testing and collection & transportation of water samples to the laboratory) and laboratory personnel and submit them to the concerned Executive Engineers, RWS&S divisions.
- ❖ They have to ensure that all the laboratory staff and Field Assistants should get their remuneration, by 10<sup>th</sup> the every month, without fail.
- ❖ They have to submit the requirement of all the laboratory consumables, refill packs of chemical reagents for FTKs and H2S vials to the Circle office, in time.

Sd/-Project Director, SWSM, Hyderabad.