

No. Q-14018/40(HGM maps)/2012-DWS (Stat)

Government of India

Ministry of Drinking Water & Sanitation

9th Floor, Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi. Date: 9-09-2013.

To

Dr. G.V.A. Rama Krishna,
M/s Geosoft Systems,
402, Lalita Avenue, Dattanagar,
Behind Taj Mahal Hotel, Street No. 16,
Himayatnagar, Hyderabad-500029.

Subject: Study on Evaluation of usage and impact of using Hydro-geo-morphological (HGM) Maps on the quality of implementation of drinking water supply schemes in the districts where such maps are already available-reg.

Sir,

I am directed to convey the approval of the competent authority under rule-163 of GFR, 2005 for the study entitled "Evaluation of usage and impact of using Hydro-geo-morphological (HGM) Maps on the quality of implementation of drinking water supply schemes in the districts where such maps are already available" at an estimated cost of Rs 33,30,000/-only (Rupees Thirty three lakhs and thirty thousands only) on deposit works basis as per details indicated below:-

2. **Objective:** Study on Evaluation of usage and impact of using Hydro-geo-morphological (HGM) Maps on the quality of implementation of drinking water supply schemes in the districts where such maps are already available.
 - 2.1 **Project Cost:** Rs 33,30,000/- only (Rupees Thirty three lakhs and thirty thousands only).
 - 2.2 **Implementing Organization:** M/s Geosoft Systems, 402, Lalita Avenue, Dattanagar, Behind Taj Mahal Hotel, Street No. 16, Himayatnagar, Hyderabad – 500029.
 - 2.3 **Scope of Work:** As defined in the Terms of Reference (copy enclosed).
 - 2.4 **Time Schedule:** As defined in the Terms of Reference (copy enclosed).
3. The other terms and conditions of the said study are as under:-
 - i. All terms of reference on technical issues as per Annexure attached to the work order shall be followed. No diversion / deviation of work are allowed.
 - ii. The study has to be conducted as per standard procedures and using high quality equipment/tools.

- iii. Any liability, statutory or otherwise arising out of the said contract will be borne by M/s Geosoft and the Ministry of Drinking Water and Sanitation will not be responsible in that respect anyway.
 - iv. The Ministry of Drinking Water and Sanitation reserves the right to inspect the material/equipment used and study procedures being followed.
 - v. Inception report, draft report and final reports shall be submitted within the stipulated time as mentioned in the Annexure.
 - vi. The first installment funds shall be released subject to submission of performance bank guarantee amounting to 5% of the project cost.
 - vii. Subsequent releases will be made based on the physical progress made and submission of Utilization certificate/Audited Statement of Accounts.
4. Pay & Accounts Officer, Ministry of Drinking Water and Sanitation will be the Drawing and Disbursing Officer for this purpose. Release of funds shall be made to M/s Geosoft Systems based on the terms and conditions of the work order and subject to submission of bank details indicating name of the organization, name of the bank, branch details, bank branch code, bank account number, MICR code and IFSC code.
5. M/s Geosoft Systems (Hyderabad), herewith referred as the Agency will maintain separate audited accounts of the project. If it is found expedient to keep a part or whole of the grant in a bank account earning interest, the interest thus earned should be reported to the Ministry of Drinking Water and Sanitation and should be reflected in the Statement of expenditure. The interest thus earned will be treated as a credit to the institution to be adjusted towards further installment of the grant. Further, the Agency will maintain separate sub-set of accounts with regular bank reconciliation for calculation of interest earned and crediting it to the project account. The interest earned could be calculated based on the fund available, duration of funds availability and rate of interest being paid by the bank. The Agency should undertake to maintain the project specific sub-set of accounts and credit of interest to the project account towards close of the financial year or towards settlement of final accounts.
6. The accounts of the grantee Agency or Organization shall be open to inspection by Internal Audit of the Principal Office functioning under Chief Controller of Accounts of this Ministry, in terms of rule 211(i) of GFR, 2005.
7. The work order is issued under the delegated powers in consultation with the Integrated Finance Division vide their Dy. No. 347/IFD/12 dated 12/12/2012.
8. **Settlement of Disputes:**
- 8.1 Amicable Settlement: Performance of the contract is governed by the terms & conditions of the contract. In case of dispute rises between the parties regarding any matter under the contract, either Party of the contract may send a written Notice of Dispute to the other party. The Party receiving the Notice of Dispute will consider the Notice and respond to it in writing within 7 days after receipt. If that party fails to respond within 7 days, or the dispute cannot be amicably settled

within 15 days following the response of that party, clause 8.2 as given below shall become applicable.

- 8.2 Arbitration : In the case of dispute arising upon or in relation to or in connection with the contract between the Employer and the Consultant, which has not been settled amicably, any party can refer the dispute for Arbitration under (Indian) Arbitration and Conciliation Act, 1996. Such disputes shall be referred to an Arbitral Tribunal consisting of sole arbitrator appointed by the Secretary of the Ministry of Drinking Water and Sanitation. The Arbitration and Conciliation Act, 1996 and any statutory modification or re-enactment thereof, shall apply to these arbitration proceedings.
- 8.3 Arbitration proceedings shall be held at Delhi and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.
- 8.4 The decision of the arbitrator shall be final and binding upon both parties. The expenses of the arbitrators as determined by the arbitrator shall be shared equally by the Employer and the Consultant. However, the expenses incurred by the party itself. All arbitration awards shall be in writing and shall State the reasons for the award.

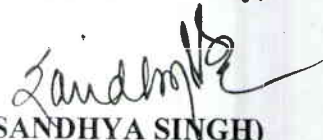
9. **Liquidated Damages:**

- 9.1 The parties hereby agree that due to negligence of act of any party, if the other party suffer losses, damages the quantification of which may be difficult, and hence the amount specified hereunder shall be construed as reasonable estimate of the damages and the consultant party agree to pay such liquidated damages, as defined hereunder as per the provisions of this Contract.
- 9.2 The amount of liquidated damages under this Contract shall not exceed 50% of the total value of the contract.
- 9.3 The liquidated damages shall be applicable under following circumstances:
- (a) Penalty @ 5% of the released amount will be imposed on the Consultant in the event of the delay up to one (1) month in submission of Report as per schedule until extended by the Employer and after two months additional penalty @ 1% for each fortnight period.
 - (b) If the Report is not acceptable to the Employer as mentioned in Clause 6.3 (c) of the Technical Bid document of the tender, and defects are not rectified to the satisfaction of the Employer within 15 days of the receipt of the notice, the consultant shall be liable for Liquidated Damages for an amount equal to 1% of released amount for every fortnight or part thereof for the delay.

10. A formal letter of acceptance along with an Agreement (on notarized non-judicial stamp paper worth Rs 100) as mentioned in Annexure-VII of the technical bid document of the tender, duly signed by the authorized signatory may be submitted to this Ministry. In order to release the first installment funds of 10% of the project cost, the Agency shall furnish a performance Guarantee, in the form of Bank Guarantee for an amount equal to 5% of the total cost of the project, which shall remain valid for a period of 60 days beyond the date of completion of all contractual obligations.

Encl: As above.

Yours Sincerely,



(SANDHYA SINGH)

Joint Director

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Email: sandhya.singh@nic.in

Copy to:

- 1) PS to Secretary (DWS).
- 2) PS to JS (Water).
- 3) TD (Nic) & Guard file.



(SANDHYA SINGH)

Joint Director

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Terms of Reference and Technical Sanction for the Study on Evaluation of usage and impact of using Hydro-geo-morphological (HGM) Maps on the quality of implementation of drinking water supply schemes in the districts where such maps are already available

1. Purpose of the study

The principal purpose of the study is to assess the impact of using HGM maps on

- i. the improvement in efficiency of implementation of groundwater based drinking water supply schemes,
- ii. site selection for groundwater recharge/ rainwater harvesting structures, and designs thereof.
- iii. planning and preparation of rural water supply schemes

2. Methodology

Ten States for which HGM maps have been prepared and provided in the Phase-I and II shall be taken up for evaluation studies. The number of districts in various States shall be as per the following pattern :

○ Kerala	2
○ Chhattisgarh	2
○ Jharkhand	2
○ Himachal Pradesh	2
○ Orissa	3
○ Gujarat	3
○ Karnataka	4
○ Madhya Pradesh	4
○ Rajasthan	4
○ Andhra Pradesh	4
TOTAL	30

The districts in States shall be selected one each in district having maximum, minimum and mean number of boreholes drilled, giving priority to over exploited blocks in these districts.

In each District, three locations will be selected at random for conducting detailed studies where borehole sites and /or sustainability structures have been constructed.

Borehole logging and aquifer performance tests shall be done @ 2 borehole sites per State.

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Thus total 90 locations (3 locations per District in 30 Districts) will be studied. In these, 20 locations will be studied with Aquifer performance tests and Borehole logging (at the rate of 2 locations per State for 10 States)

Additional criteria for selection of locations for studies:

- The locations selected for study should be those which have been drilled or the sustainability structure has been constructed within last 2 years.
- The borehole should be at least 500 m away from an irrigation source.

These locations will be subjected to various tests by the agency as outlined below.

The agency will have to perform the following tasks to assess the impact of use of HGM maps:

- a) Location: Recording the location of the borewell / sustainability structure giving Latitudes and Longitudes, and plotting it in the topo-sheet of the area.
- b) Dimensions: Size of the structure such as length, width, depth and diameter etc.
- c) Recording the Year of construction of the structure.
- d) Getting information on the rainfall pattern of the area, recording and analyzing the rainfall pattern for the last 10 years.
- e) Studying the HGM maps used for the location/ design of the structure, and getting feedback on the understanding of these maps by the Geologists / Engineers concerned.
- f) Getting a feedback from the Geologists / Engineers concerned on usefulness of the HGM maps for improvements in decision making on selection/design of the sites.
- g) Recording the number of borewells/ sustainability structures selected and designed using HGM maps.
- h) Assessment of correctness on selection of sites and design of the specific structures based on micro-watershed approach.
- i) Getting the details of and studying the report of the Geophysical investigation carried out at site for locating and designing the structures.
- j) Getting the details of and studying the maps and data used besides HGM maps to locate the sites and design the structures.
- k) Recording the static level on the date of the study, getting information on, and recording the static level before the construction of the structures.
- l) Getting the information from Piezometers in the region fitted with AWLR, on the trend of the water level for the past three years.
- m) Carrying out borehole logging and aquifer performance tests as per the site selection procedure outlined at para 3.5 and 3.7 in the tender technical bid

document, and analyzing the data in terms of improvement in saturation of the strata.

- n) One ongoing drilling site may be selected in the district, and its logging will be done by the agency. The proposed yield and the groundwater depth as given in the HGM maps shall be tallied with the actual field conditions.
- o) Collecting groundwater samples, analyzing them for quality, and comparing the results with the previous data available on groundwater quality in the region before commissioning of the structures.
- p) Collecting and analyzing the data available on the success rate of the borewells drilled after using HGM maps.

3. Role of Ministry of Drinking Water & Sanitation

- The Ministry shall co-ordinate between the States and the evaluating agency.
- The Ministry will direct the activities of the agency in terms of advice on methodology, techniques, and data collection.
- The Ministry will review the field work by making field visits on randomly selected study sites. This shall include but not limited to checking of veracity of procedures adapted on at least randomly selected 10 % sites where the boreholes are to be tested, and any other study site decided to be visited.
- The Ministry will review the progress of the work from time to time.

Instrumentation: The agency should have latest instrumentation for

- Borehole loggers for sub surface logging
- All equipments for aquifer performance tests
- Handheld GPS and laptops
- SOI toposheets for all 90 locations to be studied

Mobility: The agency should have sufficient resources for travelling to remote areas, transportation of test teams, and for working in remote areas.

4. Performance Indicators:

The performance indicators for the impact assessment are

- i. Proper understanding of HGM maps by the Geologists / Engineers of the implementing agency (Give rating from 1 to 10)
- ii. Use of HGM maps in an effective manner by the Geologists/ Engineers (Give rating 1 to 10)

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The performance indicators for the impact assessment are

- i. Proper understanding of HGM maps by the Geologists / Engineers of the implementing agency (Give rating from 1 to 10)
- ii. Use of HGM maps in an effective manner by the Geologists/ Engineers (Give rating 1 to 10)

- g. Officers/ officials interacted with
- h. Whether HGM maps are available – Yes /No, if yes, the condition of such maps
- i. Whether HGM maps are available but not used (reasons thereof)
- j. Whether HGM maps are not available (reasons thereof)

6. Timeline:

- i) **Commencement of work :** Within 15 days from the date of signing of contract
- ii) **Inception Report :** within 30 days from the date of signing of contract

The agency is supposed to submit the proposed course of action before starting the fieldwork. This should include their travel plan, Districts selected for study, schedule of visit and studies. MDWS may suggest amendments to these plans which will be binding on the agency.

- iii) **First Draft report:** within 90 days from the date of signing of contract

The agency shall present a first draft report on their site visits, and present the data collected in the field. MDWS may direct the agency at this point of time to modify the strategy of data collection, if the field data is not of the expected quality. The draft report if found suitable, shall be approved by the Ministry. If the draft report submitted by the Consultant to the Ministry is not found acceptable from data analysis point of view, the Ministry will mention the reasons thereof, and the Consultant shall revise the report and resubmit the same. If in case, the Ministry finds certain field data missing or wrongly done, the Consultant have to redo the field work to that extent as informed by the Ministry. The timeframe for submission of second/subsequent draft reports shall be maximum of 15 days from the date of intimation by the Ministry in case of clarifications on data analysis and maximum of 30 days if field survey is also to be redone.

- iv) **Final report:** within 7 days from the approval of the draft report.

The agency shall submit the final report comprising of all the information as detailed in deliverables below.

7. Deliverables: Final report

Contents: Final Report should contain

1. Entire field data collected by the agency,
2. Secondary data collected from various sources in the course of study,
3. Test results, their interpretations, and analysis,
4. Maps, site photographs, and the acquired data,

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5. Evaluation: location specific, State wise, and overall evaluation based on "performance indicators" given in Section 4 above.
 6. Conclusions; and suggestions and recommendations on use of HGM maps for drinking water supply projects
 7. The report shall be presented to the Ministry of Drinking Water and Sanitation in the form of a power point presentation containing the salient features of the report, findings, and recommendations.

Submission: Final report to be submitted in a soft copy in a pen drive and in 20 hard copies.

8. Terms of Payment

(a)	Advance payment (1 st Installment) to the extent of 10% of the approved cost	After signing of contract, delivery of Performance Guarantee* and development of survey tools and procurement of resources , release of advance payment shall be made against a Bank Guarantee for the advance.
(b)	2 nd installment of 30% of the approved cost	After completion of field work and submission of first draft report
(c)	3 rd installment of 30% of the approved cost	On submission of revised draft report and acceptance of the draft report by the Ministry
(d)	4 th /Final installment of 30% of the approved cost	Final installment of 30% on successful completion of the assignment to the satisfaction of this Ministry in accordance with TOR.

* Performance Guarantee: The Bidder shall furnish a Performance Guarantee, in the form of Bank Guarantee for an amount equal to 5% of the total cost of the project, which shall remain valid for a period of 60 days beyond the date of completion of all contractual obligations.

Earnest Money Deposit (EMD) shall be refunded to you on receipt of Performance Guarantee.

P. P. Nagrath

(P.P.Nagrath)
Deputy Secretary to the Government of India
Tel : 2436 4518