

## **TERMS OF REFERENCE FOR HYDROGEOLOGICAL/GEOPHYSICAL SURVEY**

**Location: Maiwut counties, South Sudan**

**Job Title: Hydro-geological/Geophysical Survey Consultant**

**Length of Consultancy: 10 days**

### **Background**

Samaritan's Purse is currently working in South Sudan, supporting communities affected by disasters like drought to recover from shocks by implementing essential lifesaving and resilience projects in Unity and Upper Nile states. The overall objective is to improve the resilience of rural communities and IDP households in **South Sudan**. The Specific objective is to reduce vulnerability and enhance livelihoods in rural **South Sudan** and internally displaced communities in **South Sudan**. The project has different layers of interventions necessary in building communities capacities to shocks and stresses in fragile contexts. Arrange of activities ranging from Recovery, rehabilitation and development of sustainable livelihood initiatives are implemented to respond to community needs and building their capacities to sustain these achievements. With USAID financial support Samaritan's Purse will implement drilling, equipping with provision of solar power supply to one water boreholes in Maiwut County in its 2021 to 2022 BHA budget. The purpose of the hydro-geological and Geophysical survey is to explore the possibility of identifying a groundwater source for the rural and urban centres/communities. The Survey will aim at evaluating the groundwater situation as it is, through collecting any available relevant data (e.g. drilling logs), evaluating data from the surrounding boreholes, carrying out field geophysical measurements and reviewing any available previous survey reports and to conduct the hydro-geological geophysical survey report which will be in accordance to the standards set by the SP, Donor, Government and community objectives for drilling a successful borehole that will provide sufficient water for domestic use. SP SS /TOR for hydrogeologist 2022. The consultancy firm is responsible to suggest and **recommend** the best suitable sites for the drilling of the borehole to minimize any technical errors rather the chosen site bring the most intended benefits like ensuring that the site have adequate and potable water. The consultant will further be required to recommend the exact depth of the each recommended borehole. To compile all the relevant reports including secondary data, practical experiences and information from the communities and other actors engaged in WASH activities in the two regions, share the thesis collected and present to **SP South Sudan**.

### **SCOPE OF WORK**

The consultancy firms are expected to use both secondary and primary data gathering in the Hydrogeological and Geophysical exercise in Maiwut county of Upper Nile state, Secondary data will involve desk study of available information/data on existing boreholes, drill logs, reports and maps while primary data will be obtained by carrying out Hydro-geophysical measurements within the study area using the necessary hydro-geological surveying equipment, use of Tetrameter SAS 1000, which distinguishes between clays and fresh water by use of Induced Polarization (IP) measurements is recommended for this assignment. The outcome of the consultancy will be a detailed Hydrogeological survey report and Geophysical interpretation data giving details of the findings and recommendations

### **SURVEY APPROACHES REQUIRED.**

The hydro-geological/geophysical investigations will be carried out in a multi-step approach:

- A. Desk study: Review of existing data, topographical maps, satellite images, existing studies and borehole site investigations in the area, geological reports and maps (if available), borehole and surface water records, etc.
- B. Hydro-geological fieldwork: Detailed reconnaissance survey of project area. (GPS coordinates/P-codes, water level measurements, condition of these boreholes, usage and performance where applicable) inspection of geological, geo-morphological and structural characteristics of the investigated area; verification of existing data and findings.
- C. Geophysical measurements: resistivity/IP profiling and vertical electrical/IP soundings.
- D. Analysis and interpretation data of hydro-geological and geophysical data.
- E. Compilation, analysis, and evaluation of the gathered data and information.
- F. Site selection and reporting.

#### **BOREHOLE SITING: GEOPHYSICAL & HYDRO-GEOLOGICAL SURVEYS.**

The borehole shall be sited with the aid of combined a hydro-geological and geophysical survey. Prior to the field investigations, a desk study shall be made of the available relevant information on hydrogeology, climate, existing water sources, drilling records and other sources for the proposed area **Samaritan's Purse South Sudan**/TOR for hydro geologist 2022.

The field investigations MUST be undertaken by a senior hydro-geologist, assisted by highly qualified hydro-geologists. The senior hydro-geologist will be responsible for planning, execution and interpretation of all geophysical data, reporting and selection of the most suitable site for drilling.

The site for selected development shall be marked with a concrete marker, shown in a picture plate and indicated on a sketch map to be included in the final report. The report will review the existing literature and other relevant information, such as drilling logs, satellite images, etc. The report shall include all field data, interpretations and justifications, hydro-geological evaluations, conclusions and recommendations relating to the investigated area. In addition, appropriate maps, diagrams and data plots shall be presented. Of considerable importance will be an objective assessment of the applicability and success of the methods applied.

#### **REPORTING.**

The final report to be submitted to Samaritan's Purse to the WASH PM in Maiwut or WASH TL in Juba whichever is found appropriate. The outline table of contents of the final report will be as follows:

- | Introduction, review of previous studies and environmental background
- | Geology and hydrogeology (incl. Inventory of boreholes and other water points)
- | Methods of investigations, including Geophysical Techniques
- | Detailed resistivity/IP survey (Wenner & VES) to delineate the productive aquifer
- | Aquifer potential; sustainable yield & Water quality
- | Proposed drilling site (GPS- coordinate together with Boma and Payam names)

| Detail design of the borehole and bill of quantities for the drilling site.

| Proposed drilling method, and its applicability

| Environmental impact and protection

| Conclusion and recommendations

| Social analysis of the beneficiaries including gender analysis

| Recommends sustainability of the project including exit strategy

Recommendations will be given on the most suitable site for borehole drilling, the required depth, water quality, design and installation details, and other relevant aspects. Based on the available hydro-geological and geophysical data, an assessment of the anticipated chances of success shall be made for each individual site.

The hydro-geological report will give a detailed map delineating the investigated area, geology, aquifer properties (where known), location of measurements, and recommended drilling site. In addition, pictures taken during the actual field activity shall be included in the report. All geophysical data, including its interpretation will be produced as an appendix to the final report.

#### **SP South Sudan /TOR for hydro geologist 2022 REQUIREMENTS NEEDED FOR BIDDING**

The Consultant is required to provide the following

1. Technical proposal on how the assignment will be conducted
2. Appropriate timelines to perform the assignment
3. Financial proposal indicating the cost rates and other charges applicable
4. CVs of the lead Consultant who should have minimum of 10 years of work experience in Hydrogeology/Borehole drilling/ground water prospecting activities preferably in South Sudan
5. CVs of other assisting hydro-geologists
6. Proven field technical and field experience of Consultant (attach recent hydrogeological report that you ever done)
7. Consultancies performed in the last 3 years especially in South Sudan with reference letters for each hydro-geological surveys consultancy.
8. Proof of availability of all the equipment and instruments required to perform the survey.
9. Availability to perform the assignment at the earliest possible time.
10. The consultant is willing to take and work within the existing insecure context of South Sudan
11. The consultant must have the ability to employ the needed tools, equipment's and manpower to accomplish the task within the agreed time frame.

## How to apply

Qualified consultancy firms are invited submit bid documents as per above requirement, to The Tender Committee Samaritan's Purse South Sudan (SP SS) Juba Head Office, Deadline for submission of bids is ..... January 2022 by 4.00pm Juba Time. Late submission of bids will not be accepted. Any clarification shall be sought through the email address ..... SPSS/TOR for hydro geologist 2022 Attach these documents:

- 1 Annex 1 - Technical proposal including work plan
- 2 Annex 2 - Financial proposal, completed stamped
- 3 Annex 3 – Supplier Information Form Signed & stamped
- 4 Annex 4– Samaritan's Purse Conflict of interest, Signed &stamped
- 5 Annex 5– Valid registration certificate