

APPENDICES

1. MEMBER LIST OF THE STUDY TEAM

Appendix 1

Members of the Team (Basic Design Study)

No	Name	Job Title	Occupation
1	Ms. SANO Keiko	Team Leader	Director, West and Central Africa Division 1, African Department, JICA
2	Mr. INOUE Hiromu	Project Management	Water Resources Management Division 2, Global Environment Department, JICA
3	Dr. YOSHIDA Kenji	Chief Consultant/ Groundwater Development	Yachiyo Engineering Co., Ltd.
4	Mr. ISHIKAWA Tsugio	Hydrogeology/Geophysical Survey 1	Mitsui Mineral Development Engineering CO., LTD.
5	Mr. YAMADA Tsuyoshi	Hydrogeology/Geophysical Survey 2	Mitsui Mineral Development Engineering CO., LTD.
6	Ms. KANEDA Megumi	Social Condition Survey/ Management for Operation & Maintenance of Facility	Yachiyo Engineering Co., Ltd.
7	Mr. SHIOMI Fumiaki	Equipment and Procurement Planning/Cost Estimation	Yachiyo Engineering Co., Ltd.

Members of the Team (Explanation of Draft Final Report)

No	Name	Job Title	Occupation
1	Mr. MIMA Kyojin	Team Leader	Resident Representative Nigeria Office JICA
2	Mr. TAKASHIMA Kiyofumi	Project Management	Water Resources Management Division 2, Global Environment Department, JICA
3	Dr. YOSHIDA Kenji	Chief Consultant/ Groundwater Development	Yachiyo Engineering Co., Ltd.
4	Mr. SHIOMI Fumiaki	Equipment and Procurement Planning/Cost Estimation	Yachiyo Engineering Co., Ltd.

2. SURVEY SCHEDULE

Appendix 2 Study Schedule

(1) Basic Design Study

Day	Date		Official Member		Consultant Team Member				
			Ms. Sano (Leader)	Mr. Inoue (Project Management)	Dr. Yoshida (Chief Consultant /Groundwater Development)	Mr. Ishikawa (Hydrogeology/ Geophysical Survey 1)	Mr. Yamada (Hydrogeology/ Geophysical Survey 2)	Ms. Kaneda Social Condition Survey/ Management for Operation & Maintenance of Facility	Mr. Shioiri (Equipment and Procurement Planning/ Cost Estimation)
1	28-Feb	Sat	Narita - Frankfurt	Narita - London			Narita - London		
2	1-Mar	Sun	Frankfurt - Abuja	London - Abuja. Preparation of Study, Negotiation with local consultants			London - Abuja. Preparation of Study, Negotiation with local consultants		
3	2-Mar	Mon	Courtesy calls on Embassy of Japan(EOJ), JICA Nigeria Office, NPC, Discussion with FMAWR, Abuja - Kano (by air)				Courtesy calls on Embassy of Japan, JICA Nigeria Office, NPC, Discussion with FMAWR, Abuja - Kano by Air		
4	3-Mar	Tue	Kano - Katsina (by car). Courtesy call on Katsina State MWR, RUWASSA, Discussion with RUWASSA				Kano - Katsina (by car). Courtesy call on Katsina State MWR, RUWASSA, Discussion with RUWASSA		
5	4-Mar	Wed	Disscussion with RUWASSA, Site Survey, Katsina - Kano (by car)				Discussion with C/P, Preparation of existing well survey	Discussion with C/P, Preparation of Social Condition Survey	
6	5-Mar	Thu	Kano - Bauchi (by car). Courtesy call on Bauchi State MWR, WATSAN Project, Discussion with WATSAN Project				Hydrogeological and existing well survey	Field survey, Data collection	
7	6-Mar	Fri	Disscussion with WATSAN Project, Site Survey				Hydrogeological and existing well survey	Field survey, Data collection	
8	7-Mar	Sat	Bauchi - Abuja (by car)				Hydrogeological and existing well survey	Field survey, Data collection	
9	8-Mar	Sun	Data Arrangement, Data Collection				Data collection	Data collection	
10	9-Mar	Mon	Abuja - London	Survey about RWSS	Narita - London		Hydrogeological and existing well survey	Field survey, Data collection	Narita - London
11	10-Mar	Tue	London - Narita		Data collection about Water Sector Development Plan (FMAWR)	London - Abuja, Preparation of survey and hydrogeological data collection(FMAWR)	Hydrogeological and existing well survey	Field survey, Data collection	London - Abuja, Market survey, Cost estimation for local materials
12	11-Mar	Wed			Abuja - Katsina (by car)		Hydrogeological and existing well survey	Field survey, Data collection	Abja - Katsina (by car)
13	12-Mar	Thu			Site survey (Groundwater development and RUWASSA capacity)	Discussion with C/P, Hydrogeological and geophysical survey(target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
14	13-Mar	Fri			Site survey (Groundwater development and RUWASSA capacity)	Hydrogeological and geophysical survey(target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Katsina - Kano (by car), Field survey (equipment and materials)
15	14-Mar	Sat			Data collection and analysis		Hydrogeological and existing well survey	Field survey, Data collection	Kano - Katsina (by car), Market and procurement survey
16	15-Mar	Sun			Data collection and analysis		Data collection, data arrangement		Katsina - Kaduna (by car)
17	16-Mar	Mon			Site survey (Groundwater development and RUWASSA capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
18	17-Mar	Tue			Site survey (Groundwater development and RUWASSA capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Kaduna - Katsina (by car), Field survey (equipment and materials)
19	18-Mar	Wed			Site survey (Groundwater development and RUWASSA capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Market and procurement survey
20	19-Mar	Thu			Meeting with RUWASSA, Team meeting, Data collection				
21	20-Mar	Fri			Katsina - Bauchi (by car), Meeting with WATSAN Project, Preparation of survey				
22	21-Mar	Sat			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
23	22-Mar	Sun			Data collection	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
24	23-Mar	Mon			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Market and procurement survey
25	24-Mar	Tue			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Market and procurement survey
26	25-Mar	Wed			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Market and procurement survey
27	26-Mar	Thu			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
28	27-Mar	Fri			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
29	28-Mar	Sat			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
30	29-Mar	Sun			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
31	30-Mar	Mon			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
32	31-Mar	Tue			Site survey (Groundwater development and WATSAN Project capacity)	Hydrogeological and geophysical survey,target villages)	Hydrogeological and existing well survey	Field survey, Data collection	Field survey (equipment and materials)
33	1-Apr	Wed			Meeting with WATSAN Project, Team meeting				
34	2-Apr	Thu			Bauchi - Abuja (by car), Data collection				
35	3-Apr	Fri			Data collection, preparation for field report	Abuja - London	Data collection, preparation for field report	Abuja - London	
36	4-Apr	Sat			Data collection	London - Narita	Data collection	London - Narita	
37	5-Apr	Sun			Data collection		Data collection		
38	6-Apr	Mon			Data collection, preparation for field report		Data collection, preparation for field report		
39	7-Apr	Tue			Data collection, Arrangement of survey result		Data collection, Arrangement of survey result		
40	8-Apr	Wed			Data collection, Arrangement of survey result		Data collection, Arrangement of survey result		
41	9-Apr	Thu			Explanation of field report and discussion with FMAWR		Explanation of field report and discussion with FMAWR		
42	10-Apr	Fri			Reporting to EOJ, JICA office		Reporting to EOJ, JICA office		
43	11-Apr	Sat			Data collection		Data collection		
44	12-Apr	Sun			Abuja - London		Abuja - London		
45	13-Apr	Mon			London - Narita		London - Narita		

(2) Explanation of Draft Final Report

Day	Date		Official Member		Consultant Team Member		
			Mr Mima (Resident Representative JICA Nigeria Office)	Mr. Takashima (Project Management)	Dr. Yoshida (Chief Consultant/Groundwater Development)	Mr. Shiomi (Equipment and Procurement Planning/Cost Estimation)	
1	23-Aug	Sun			Narita→London		
2	24-Aug	Mon			London→Abuja Courtesy call on FMAWR, Discussion with FMAWR		
3	25-Aug	Tue			Discussion with FMAWR about draft BD report		
4	26-Aug	Wed			Narita→London	Discussion with FMAWR, RUWASSA and WATSAN Project about draft BD report	
5	27-Aug	Thu	London→Abuja (Mr. Takashima), Courtesy calls on Embassy of Japan, JICA office and NPC, Discussion with FMAWR, NPC, RUWASSA and WATSAN Project about M/D				
6	28-Aug	Fri	Signing of M/D, Reporting to JICA Nigeria office				
7	29-Aug	Sat		Team meeting and arrangement documents			
8	30-Aug	Sun		Team meeting and arrangement documents			
9	31-Aug	Mon	Reporting to EOJ, supplemental survey				
10	1-Sep	Tue		Abuja→London	Data collection, supplemental survey		
11	2-Sep	Wed		London→Narita	Abuja→London		
12	3-Sep	Thu			London→Narita		

**3. LIST OF PARTIES CONCERNED
IN THE RECIPIENT COUNTRY**

Appendix 3. List of Parties Concerned in the Federal Republic of Nigeria

(Basic Design Study)

Institution/Organization	Name
Federal Ministry of Agriculture and Water Resources / FMWR)	
Director of Department of Water Supply & Quality Control	Dr. Salisu Abdulkummin
Deputy Director of Rural Water Supply	Engr. B. M. Tahir
Assistant Director of Rural Water Supply	Mr. Adetungi Idowu
Katsina State Ministry of Water Resources)	
Commissioner	Mr. Nashiru Muazu Danmusa
Katsina RUWASSA	
Executive Director	Alh Abubakar Gege
Assistant Director of Water Supply	Engr. Sani Magaji
Principal hydrogeologist	Mr. Aminu Tukur
Katsina LGA	
Safana LGA, Rural Water Supply Unit	Mr. Ahamed B
Rimi LGA, Director of Department of Works	Mr. Aliyu Manzo
Rimi LGA, Rural Water Supply Unit	Mr. Abu Kalla
Mashi LGA, Department of Works	Mr. Haruna D Ande
Sandamu LGA, Rural Water Supply Unit	Mr. Adamu Yarima
Zango LGA, Director of Department of Works	Mr. Aliyu Zubairu
Dutshin-ma LGA, Director of Department of Works	Mr. Abubakar Musa
Dutshin-ma LGA, Rural Water Supply Unit	Mr. Aliyu Usman
Malumfashi LGA, Director of Department of Works	Mr. Kabir Z Abubakar
Malmfashi LGA, Rural Water Supply Unit	Mr. Musa M Yandaki
Kafur LGA, Director of Department of Works	Mr. Shuaibu Garba
Kafur LGA, Rural Water Supply Unit	Mr. Umar M Lawal
Kankara LGA, Director of Department of Works	Mr. Ibrahim G Kankara
Bauchi State Ministry of Water Resources	
Commissioner	Pharm. B.B. Bukar
Bauchi WATSAN Project	
Project Manager	Mr. Garba Magaji
Director of Water Supply	Mr. Adamu Chinade
Information Officer	Mr. Yakubu Babangida
Hand Pump Installation	Mr. Baba Abudullahi
Community Mobilization	Mr. Ado Sabo

Institution/Organization	Name
Pricipal Technical officer	Mr. Bala Bala Asfullahi
Scientific Officer	Mr. Adamu Jabdi Dagauda
Bauchi LGA	
Gamawa LGA, Rural Water Supply Unit	Mr. Ahdbassan Bello Gololo
Bauchi LGA, Rural Water Supply Unit	Mr. Danlach B
Misau LGA, Rural Water Supply Unit	Mr. Ahmed S Turaia
Katagum LGA, Rural Water Supply Unit	Mr. Adamu Ladan Zakariya
Jama'are LGA, Rural Water Supply Unit	Mr. Tukur Mohammed
Tafawa Balewa LGA, Rural Water Supply Unit	Mr. Ahmed A Jaji
Alkaleri LGA, Rural Water Supply Unit	Mr. Baba Gaus
Bogolo LGA, Rural Water Supply Unit	Mr. Ramak M Kure
Shira LGA, Rural Water Supply Unit	Mr. Aminu Abdulleli
Ganjuwa LGA, Rural Water Supply Unit	Mr. Mudi Marala
Toro LGA, Rural Water Supply Unit	Mr. Garba Sale Tuler
Nungi LGA, Rural Water Supply Unit	Mr. Khadijat Musa
Itas Gadau LGA, Rural Water Supply Unit	Mr. Abdullah Yusuf
Warji LGA, Rural Water Supply Unit	Mr. Garubo Bello
UNICEF (Bauchi zone office)	
Officer in Charge/Health Specialist	Ms. Susan Ojomo
WASH officer	Mr. Bloye Ogunjobi
WASH specialist	Mr. Mohammed Kamfut
Embassy of Japan in Nigeria	
Deputy Head of Mission	Mr. Shigeru Hamano
First Secretary (Economic Cooperation)	Mr. Tomoyuki Oshino
JICA Nigeria Office	
Resident Representative of JICA Nigeria	Mr. Kyojin Mima
Assistant Resident Representative	Mr. Kuniaki Amatsu
Project Officer	Ms. Naoi Suwa

(Explanation on Draft Final Report)

Institution/Organization	Name
Federal Ministry of Agriculture and Water Resources / FMAWR	
Director of Department of Water Supply & Quality Control	Dr. Salisu Abdulkummin
Deputy Director of Rural Water Supply	Engr. B. M. Tahir
Assistant Director of Rural Water Supply	Mr. Adetungi Idown
Principal Technical Officer	Mr. K. Bello
Hydrogeolosist	Mr. K.E. Ogbonna.
National Planning Commission / NPC	
Director of Department of International Cooperation	Mrs. L. D. Bagaiya
Assistant Chief Planning Officer of Department of International Cooperation	Mr. U.S. Nwozuzu
Legal Department	
Assistant head adviser	Mr. N. W. Dady
Katsina RUWASSA	
Executive Director	Alh Abubakar Gege
Bauchi WATSAN Project	
Project Manager	Mr. Garba Magaji
Director of Water Supply	Mr. Adamu Chinade
Director of Community Mobilazation	Mr. Ado Sabo
National Water Resouces Institute	
Ag. Director (Research & Tech. Services)	Dr. Dogara Bashir
Head, Continuing Education Division	Dr. Martin O. Eduvie
Handpump Coordinator	Dr. Sylvester Gojim Sada
Kaduna WATSAN Project	
Programme Manager	Mr. James H. Yaro
Embassy of Japan in Nigeria	
Deputy Head of Mission	Mr. Shigeru Hamano
First Secretary (Economic Cooperation)	Mr. Jun Nishida
JICA Nigeria Office	
Resident Representative of JICA Nigeria (Team Leader)	Mr. Kyojin Mima
Assistant Resident Representative	Mr. Kuniaki Amatsu
Project Officer	Ms. Naoy Suwa

4. MINUTES OF DISCUSSIONS (M/D)

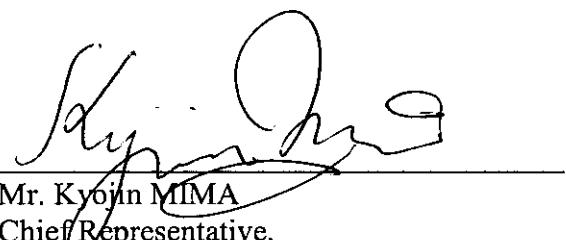
**MINUTES OF DISCUSSIONS
BASIC DESIGN STUDY ON "THE PROJECT FOR WATER SUPPLY IN BAUCHI AND
KATSINA STATES"
IN THE FEDERAL REPUBLIC OF NIGERIA**

In response to a request from the Government of the Federal Republic of Nigeria (hereinafter referred to as "Nigeria"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Equipment for Groundwater Development in Bauchi and Katsina States in Nigeria (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

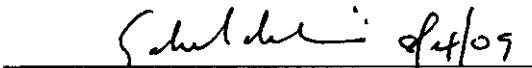
JICA sent to Nigeria the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Ms. Keiko SANO, Director, the West and Central Africa Division 1, the Africa Department, JICA and is scheduled to stay in the country from March 1 to April 12, 2009.

The Team has held series of discussions with concerned officials of the Governments of Nigeria and conducted a field survey in the study area.

In the course of discussions and field survey, both sides confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.


Mr. Kyojin MIMA
Chief Representative,
Japan International Cooperation Agency (JICA)
Nigeria Office

Abuja, April 8, 2009


Dr. Salisu Abdulkummin
Director,
Department of Water Supply, Quality
Control & Inspectorate,
Federal Ministry of Agriculture and Water
Resources, Federal Republic of Nigeria


Mal. Garba B. Magaji
Project Manager,
Water & Sanitation Project (WATSAN Project),
Bauchi State, Federal Republic of Nigeria


Mr. Abubakar M. Gege
Executive Director,
Rural Water Supply and Sanitation Agency
(RUWASSA),
Katsina State, Federal Republic of Nigeria

Witnessed by


Mr. U. S. Nwozuzu
Assistant Chief Planning Officer,
Department of International Cooperation
National Planning Commission
Federal Republic of Nigeria

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve access to safe and quality rural water supply and sanitation services in Bauchi and Katsina States by procurement of necessary equipment and materials for construction of hand pump boreholes.

2. Project Sites

The Nigerian side and the Team (hereinafter referred to as "the both sides") confirmed the requested sites of the Project were located in 14 LGAs (Local Government Area) in Bauchi State and 11 LGAs in Katsina State. Those project sites are shown in Annex-1.

3. Responsible and Implementing Agencies

(1) The Responsible Agency is the Federal Ministry of Agriculture and Water Resources (FMAWR).
(2) The Implementing Agencies of the Project are Bauchi State Water and Sanitation Project (WATSAN Project) and Katsina State Rural Water Supply and Sanitation Agency (RUWASSA). Organization charts of both WATSAN Project and RUWASSA are shown in Annex-2.

4. Requested Components of the Project

After discussions between the both sides, the items described in Annex-3 were finally requested by the Government of Nigeria.

The both sides confirmed that the appropriateness of the request would be examined in accordance with the further studies and analysis in Japan and the final components of the Project would be decided by the Japanese side.

5. Japan's Grant Aid Scheme

The Nigerian side understood that the Japan's Grant Aid Scheme and the necessary measures to be taken by the Nigerian side as explained by the Team and described in Annex-5, for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Schedule of the Study

- (1) The consultant members of the Team will proceed to further studies in Nigeria until April 12, 2009.
- (2) JICA will prepare the draft basic design report in English and dispatch a mission in order to explain its contents to FMAWR, Bauchi State WATSAN Project and Katsina State RUWASSA around September 2009.
- (3) In case that the contents of the report are accepted in principle by the Nigerian side, JICA will finalize the report and send it to the Nigerian side around January 2010.
- (4) The Nigerian side understands that execution of the Basic Design Study (hereinafter referred to as "the Study") does not necessarily imply the Japanese Government's commitment of the project implementation.

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7. Other Relevant Issues

(1) Inception Report

The contents of Inception Report, which the Team explained to the Nigerian side, was understood and accepted in principle by the Nigerian side.

(2) Arrangements for the Study

As a response to the request by the Team, the Nigerian side agreed to arrange necessary number of counterpart personnel for the study and provide all the data and information relevant to the Project for the smooth implementation of the study. The Nigerian side also agreed to provide an appropriate office space at both the Bauchi State WATSAN Project and Katsina State RUWASSA.

(3) Responsibility of each Agency concerning the Project

The FMAWR shall collaborate with National Planning Commission and other Federal bodies to facilitate the implementation of the Project in such areas as exemption from taxes and so on, while Bauchi State WATSAN Project and Katsina State RUWASSA shall take responsibility of operation and maintenance of equipment and materials which will be procured in the Project, and borehole construction through mobilization of Local Government Area (LGA)s.

(4) Rural Water Supply in Bauchi State and Katsina State

Bauchi State WATSAN Project has a plan to improve water supply coverage in rural area of Bauchi state from 42% to 71% by 2015. In order to attain above mentioned goal, Bauchi State WATSAN Project needs to construct 126 motorized boreholes and 2,830 hand pump boreholes and Baudhi State WATSAN Project explained that procured equipment and materials were to be used for construction of 143 hand pump boreholes as a part of their plan.

On the other hand, Katsina State RUWASSA is going to improve current water coverage of 38% to 100 % in 2015. Katsina State RUWASSA explained that they would construct 1,156 hand pump boreholes and 986 motorized boreholes, and rehabilitate 986 hand pump boreholes and 408 of motorized boreholes by 2015 in order to achieve their plan. Katsina State RUWASSA explained that they would utilize the procured equipment and materials for construction of 185 hand pump boreholes.

(5) Responsibilities with regard to borehole construction

The both sides agreed that the construction works of the hand pump boreholes should be executed by the Nigerian side i.e. Bauchi State WATSAN Project and Katsina State RUWASSA under the supervision of FMAWR. FMAWR will ensure periodic monitoring and evaluation of the Project in the respective State accordingly. In addition, followings were agreed between the both sides.

- The number of boreholes to be constructed by the Nigerian side using materials to be procured in the Project would be confirmed by the both sides based on the capabilities of each WATSAN Project/RUWASSA, referring to the result of the hydrogeological investigation and socio-economic survey in the Study. The construction period of the Project is put at 2 (two) years after deliveries of equipment and materials.
- The Nigerian side shall secure budget for the Project timely and submit (i) monthly reports of progress of the construction works to JICA Nigeria Office and FMAWR before the completion of construction works of agreed numbers of boreholes and (ii) quarterly reports for at least 3 (three) years after completion of construction works utilizing materials procured in the Project.

(6) Equipment and Materials requested for Procurement

The both sides agreed that the necessity of the equipment and materials requested by the Nigerian

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side as stated in Annex-3 should be examined from the view points of purpose of use, future project plan, technical and budgetary availability for operation and maintenance, conditions of the existing equipment, and so on.

The Team further explained that the type, quantity and specification of these equipment and materials would be determined based on the result of this Basic Design Study from the view point of appropriateness and easiness in maintenance.

(7) Screening of Sites for Borehole Construction and Existing Rural Water Supply Plan

Bauchi State WATSAN Project and Katsina State RUWASSA submitted the existing Rural Water Supply Plan which is shown in Annex-4.

The both sides agreed that the sites of boreholes on the list are to be examined taking into consideration criteria below;

- suitability for hand pump borehole (shallow water level and drilling depth)
- demographic condition
- assistance from Local Government Areas
- urgency in needs of water supply facilities
- existing water facilities
- accessibility
- hydrogeological conditions
- water quality (applying WHO guidelines)
- capacity for operation and maintenance of the facilities at community level
- willingness to pay for operation and maintenance of water supply facilities by community
- no overlaps of water projects by other donors
- sanitation and hygienic conditions

Among the criteria, emphasis would be placed on demographic condition, suitability for hand pump borehole and existing water facilities. And number of drilling sites and annual drilling plan should be examined in the Study taking into considerations of each WATSAN Project/RUWWASSA's capacity, budgetary conditions, hydrogeological conditions of each state, and so on.

(8) Operation and Maintenance of Facilities, Equipment and Materials

The water supply facilities constructed by the Nigerian side shall be properly operated and maintained by the respective communities and Local Government Areas with support by Bauchi State WATSAN Project and Katsina State RUWASSA. The equipment and materials procured according to the request from the Nigerian side shall be properly operated and maintained by Bauchi State WATSAN Project and Katsina State RUWASSA.

(9) Budgetary Allocation for the Project by the Nigerian side

The concrete amount of budget to be born by the Nigerian side for the Project including operation and maintenance cost shall be assessed through the Study and analysis by Japanese side.

The Nigerian side accepted and gave assurance that appropriate budgetary allocation would be put in place for the Project. Consequently, FMAWR shall provide counterpart fund to Bauchi State WATSAN Project and Katsina State RUWASSA for supply of spare parts for the hand pump boreholes in the respective state in addition to materials procured by the Japanese side.

The progress of the budgetary allocation and the total project cost to be born by the Nigerian side will be confirmed by the both sides and agreed in the draft final report of the Study.

(10) Storage for Construction Materials

The materials for the construction work to be procured on the request from the Nigerian side will be properly stored by each WATSAN Project/RUWASSA and the recipient Local Government Areas

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with support by each WATSAN Project/RUWASSA. The both sides agreed that the Nigerian side should make preparation for adequate stores to keep the materials before the commencement of the Project and its arrangement would be confirmed in the draft final report of the Study.

(11) Other undertakings of the Nigerian side

Although general undertakings of the both sides are shown in Annex-5, the Team emphasized the responsibilities of the Nigerian side to execute following matters and the Nigerian side agreed that.

1) Tax Payment

The Team explained that Value Added Tax, customs duties and any other taxes and fiscal levy charges in Nigeria arisen from the Project activities should be exempted.

The Nigerian side understood that and would take necessary measures for tax exemption, if any.

2) Necessary measures for Operation and Maintenance of facilities and equipments

The Nigerian side would take any necessary measures and allocate the necessary budget, if any, to operate and maintain the facilities and equipment which would be provided by the Project.

(12) Technical Assistance

The Nigerian side requested technical cooperation such as providing training for staff of Bauchi State WATSAN Project and Katsina State RUWASSA, and technical assistance as soft component in the Project.

The Team recognized the importance of capacity development of both community people and staff members of WATSAN Project/RUWASSA; so that the Team agreed to formulate capacity development plans for them during the Study period. The Team explained JICA was going to start a new technical cooperation project namely "Project for enhancing the function of the National Water Resources Institute (NWRI)" in JFY2009, and some training courses for technicians and engineers would be delivered by the project. The Team suggested the Nigerian side to make the best use of NWRI training programs for the capacity development of their staff.

(13) Avoidance of duplication with other projects.

The both side agreed that any of the component of equipment and materials would not be overlapped with any other project supported by other donor agencies, NGOs and Nigerian official organization(s).

(14) Safety and Security

The Nigerian side agreed to take measures to secure the safety of the member of the Team.

(15) Careful Handling of the Study Reports

The Team explained that certain information in both the draft and the final reports of the Study should be dealt with confidentially until the tender is closed when the Project proceeds to actual implementation stage, since disclosure of the information would affect fairness of tender procedure. The Nigerian side understood the sensitivity in dealing with the Study reports and agreed on careful handling of the reports for achieving fair tendering.

END

Annex-1: Target LGAs of the Project

Annex-2: Organization Chart of Bauchi and Katsina State RUWASSA.

Annex-3: Requested Components of the Project

Annex-4: Existing Rural Water Supply Plan

Annex-5 Japan's Grant Aid Scheme / Major Undertakings to be taken by Each Government

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Annex-1

Target Sites of the Project

No.	LGA	No. of Requested Boreholes
1	ALKALERI	11
2	BAUCHI	13
3	GAMAWA	9
4	GANJUWA	9
5	ITAS-GADAU	8
6	JAMA'ARE	13
7	KATAGUM	16
8	BOGORO	6
9	SHIRNA	8
10	MISAU	13
11	TAFAWA BALEWA	8
12	TORO	13
13	NINGI	8
14	WARJI	7
Total		143

Location of Target LGA in Bauchi State

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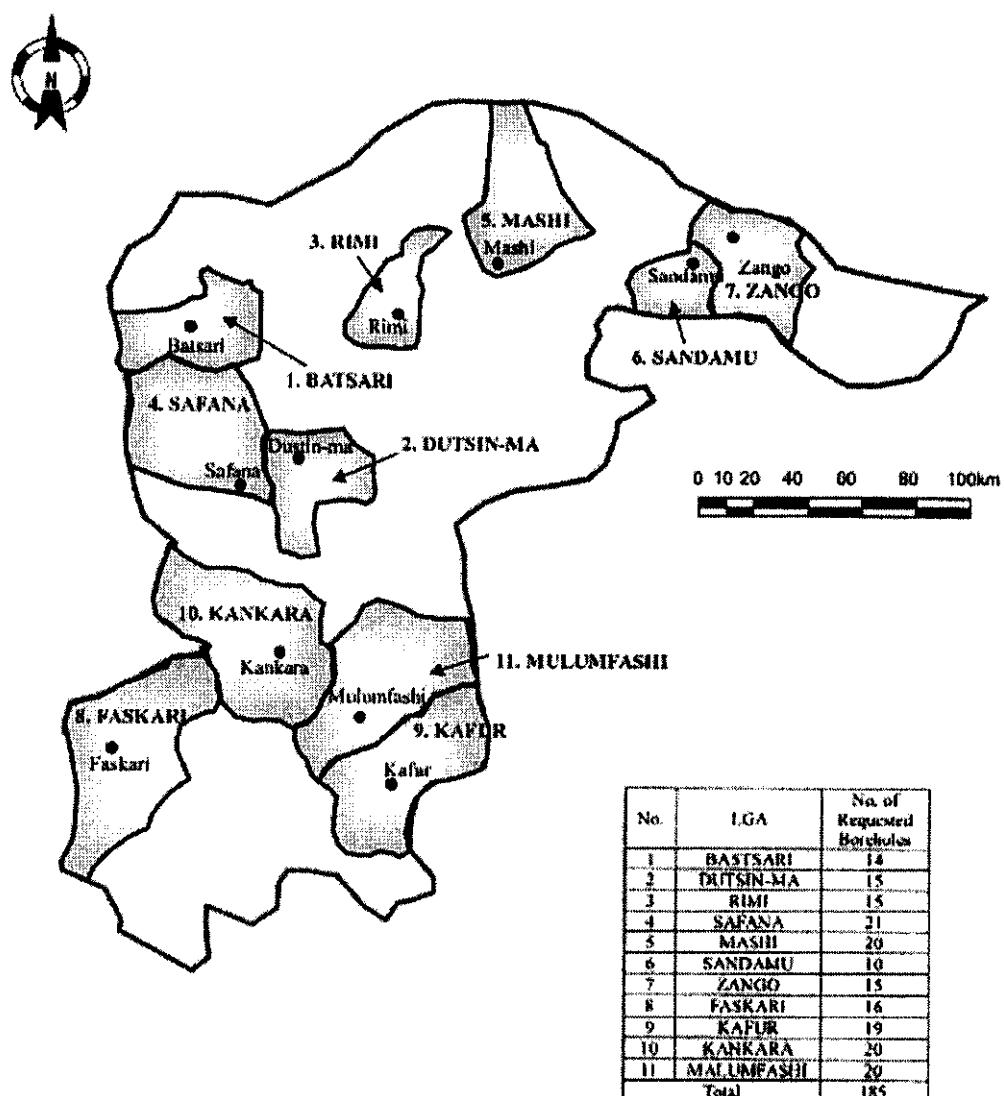
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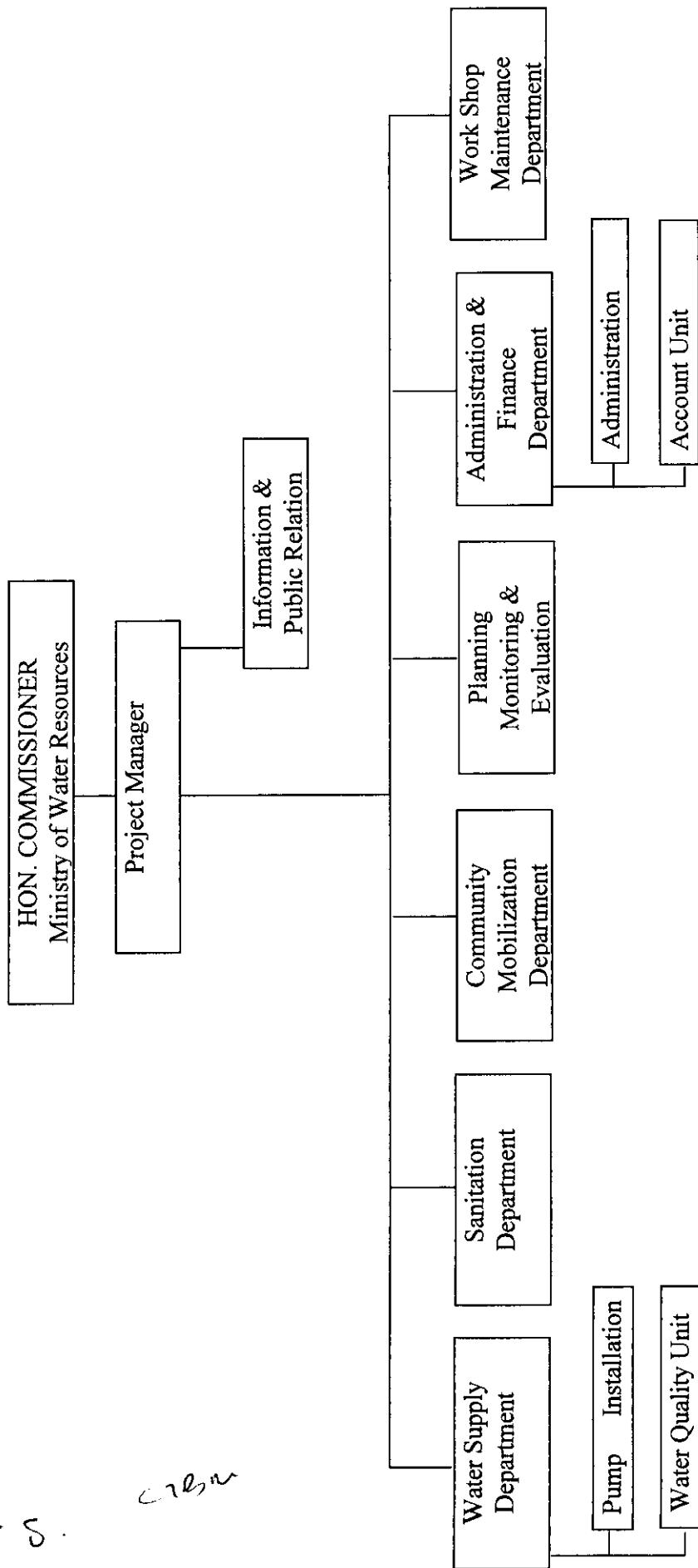
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Annex-1



Location of Target LGA in Katsina State

**ORGANIZATION STRUCTURE OF
BAUCHI STATE WATSAN PROJECT**



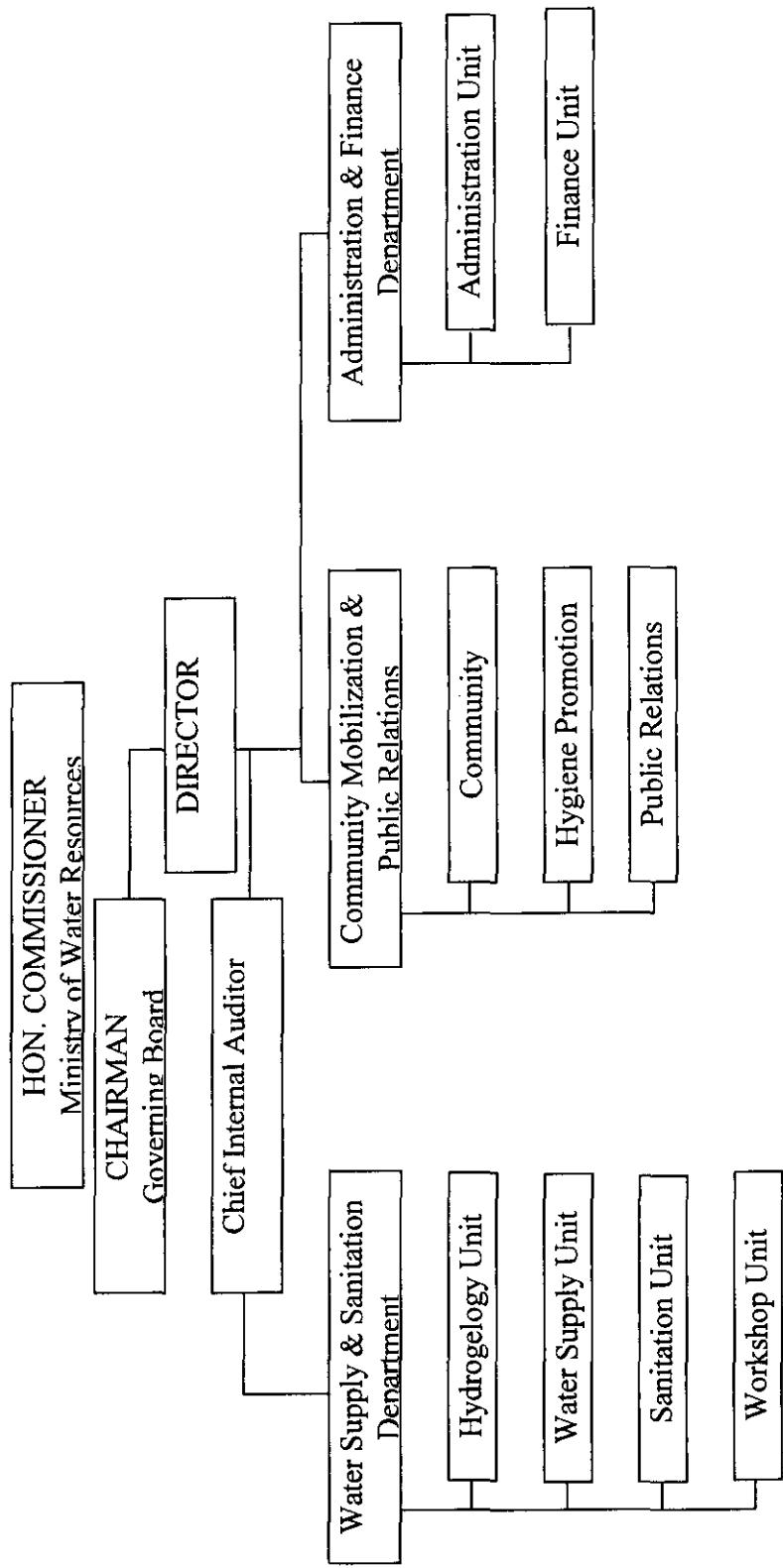
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ORGANISATION STRUCTURE OF
KATSINA STATE RUWASSA



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Annex-3

Requested Components of the Project**Bauchi State****List of Equipment and Materials Requested**

No.	Items	Features	Quantity
1	Drilling Rig	(1) Drilling Rig	1 unit
		(2) Standard Accessories and tools for Rig	1 lot
2	High Pressure Air Compressor		1 unit
3	Cargo Truck with Crane		1 unit
4	Water Tanker		1 unit
5	Geophysical Survey Equipment	(1) Electric Resistively Survey Instrument	1 unit
		(2) Electric Logging Instrument	1 unit
6	Pumping Test Equipment	(1) Submersible Pump	1 unit
		(2) Engine Generator	1 unit
		(3) Water Level Meter	1 unit
7	Water Analysis Equipment	(1) pH meter	1 unit
		(2) Do Apparatus	1 unit
		(3) Electrical Conductivity	1 unit
		(4) TDS/Temperature meter	1 unit
8	Hand pumps	(1) Hand pumps for deep wells (VLOM type Indian Mark III)	1 lot
		(2) Tools for repair by village level and LGA level	1 lot
9	Casing and Screen Pipes		1 lot

Katsina State**List of Equipment and Materials Requested**

No.	Items	Features	Quantity
1	Drilling Rig	(1) Drilling Rig	1 unit
		(2) Standard Accessories and tools for Rig	1 lot
2	High Pressure Air Compressor		1 unit
3	Cargo Truck with Crane		1 unit
4	Geophysical Survey Equipment	(1) Electric Resistively Survey Instrument	1 unit
		(2) Electric Logging Instrument	1 unit
5	Pumping Test Equipment	(1) Submersible Pump	1 unit
		(2) Engine Generator	1 unit
		(3) Water Level Meter	1 unit
6	Water Analysis Equipment		1 unit
7	Hand pumps	(1) Hand pumps for deep wells (VLOM type Indian Mark III)	1 lot
		(2) Tools for repair by village level and LGA level	1 lot
8	Casing and Screen Pipes		1 lot

Note: Details of each component will be examined through further studies in Japan.

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Ministry of Water Resources
National Water Commission
Water Sector Development Plan
2008-2015

Bauchi State Rural Water Supply Plan (2008-2015)

Year	Projected Rural Population Figure	Population with Access to Water Supply (%)	Estimated Production (Litters per day)	Production from Type of Scheme (Litters per Day)	Estimated Short Falls From Each Type of Scheme (Litters per Day)			No. of Boreholes to be Drilled Meet Short Fall No.	Total No. of Boreholes to be Drilled Annually
					M/pump	H/pump	M/pump		
2008	2,846,800	42.00%	29,891,400	8,967,420	20,923,980	-	-	-	-
2009	2,947,609	46.20%	34,044,884	10,213,465	23,831,419	1,246,045	2,907,439	15	337
2010	3,051,987	50.40%	38,455,036	11,536,511	26,018,525	1,323,046	3,087,106	16	357
2011	3,160,061	54.60%	43,134,833	12,940,450	30,194,383	1,403,939	3,275,858	17	379
2012	3,271,962	58.80%	48,097,841	14,429,352	33,668,488	1,488,902	3,474,105	18	402
2013	3,387,826	63.00%	53,358,260	16,007,478	37,350,782	1,578,126	3,682,294	19	426
2014	3,507,792	67.20%	58,930,906	17,679,272	41,251,634	1,671,794	3,900,852	20	451
2015	3,632,007	71.40%	64,831,325	19,449,398	45,381,928	1,770,126	4,130,294	21	478
					Total	126	2,830	2,956	

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Katsina State Rural Water Supply Plan (2008-2015)

Year	No. of Boreholes	Rehabilitation/Upgrading	Small Earth Dam (SSF)	Population	Coverage
2008	136	120	216	90	-
2009	153	135	216	90	-
2010	153	135	192	80	-
2011	136	120	192	80	-
2012	136	110	50	20	-
2013	153	128	45	20	2,013
2014	153	128	40	14	2,013
2015	136	110	35	14	2,013
Total	1,156	986	986	408	6,039
				3,181,800	100.00%
				2,830	2,956

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Annex-5

JAPAN'S GRANT AID

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as part of this realignment, JICA was reborn on October 1, 2008. After the reborn of JICA, following the GOJ, Grant Aid for General Project is extended by JICA.

Grant Aid is non-reimbursable fund to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japanese Grant Aid is conducted as follows-

- Preparatory Survey (hereinafter referred to as "the Survey")
 - the Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by The GOJ and JICA, and Approval by the Japanese Cabinet
- Determination of Implementation
 - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and a recipient country
- Implementation -Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide a basic document necessary for the appraisal of the Project by JICA and the GOJ. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA uses (a) registered consulting firm(s). JICA

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selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

The Report on the Survey is reviewed by JICA, and after the appropriateness of the Project is confirmed, JICA recommends the GOJ to appraise the implementation of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the E/N will be signed between the GOJ and the Government of the recipient country to make a plead for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

The consultant firm(s) used for the Survey will be recommended by JICA to the recipient country to also work on the Project's implementation after the E/N and the G/A, in order to maintain technical consistency.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex.

(6) "Proper Use"

The Government of recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to

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as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

(10) Social and Environmental Considerations

A recipient country must ensure the social and environmental considerations for the Project and must follow the environmental regulation of the recipient country and JICA socio-environmental guideline.

(End)

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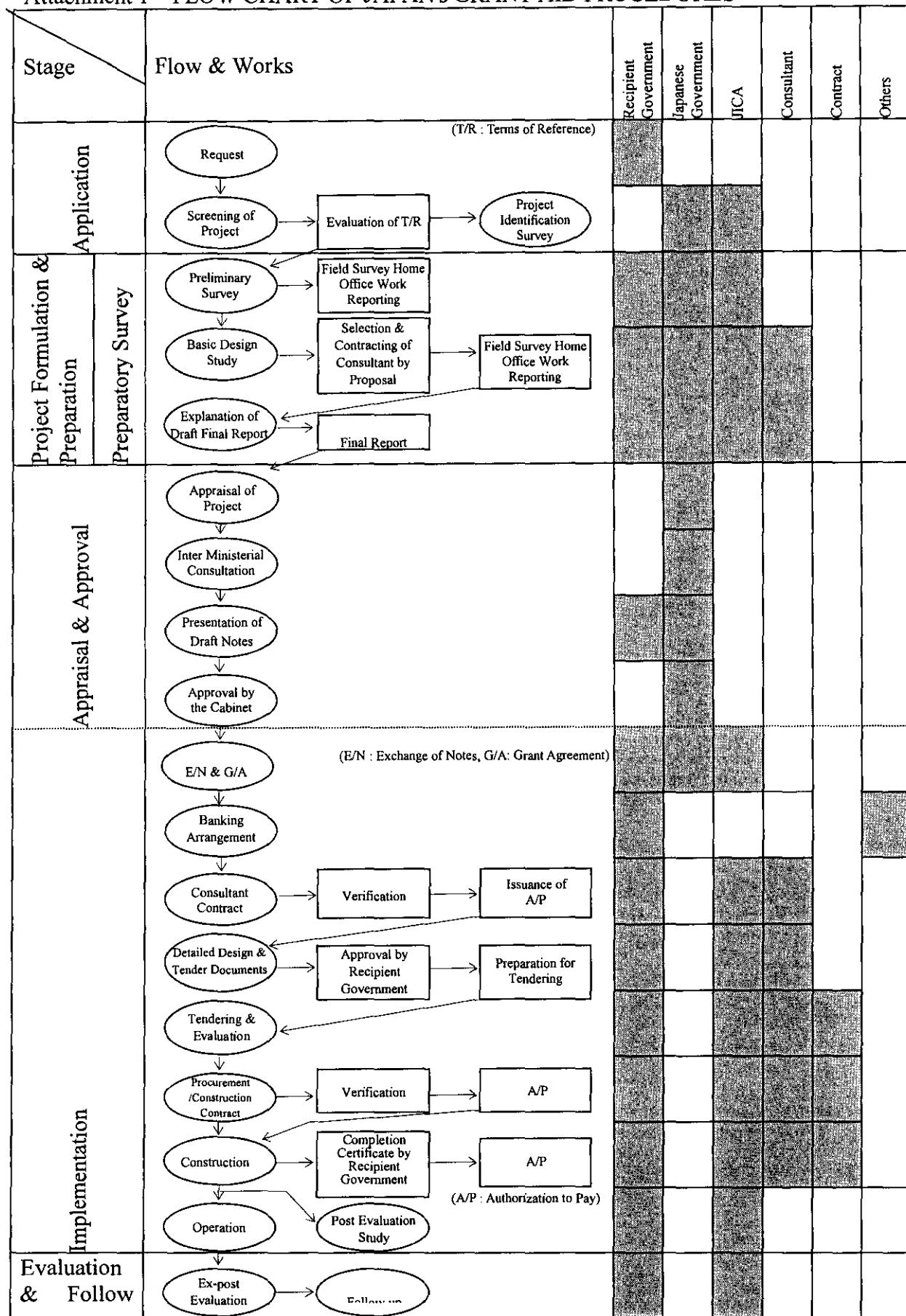
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Attachment 1 FLOW CHART OF JAPAN's GRANT AID PROCEDURES



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Annex

Major Undertakings to be taken by Each Government

NO	Items	To be covered by the Grant	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	(●)	(●)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

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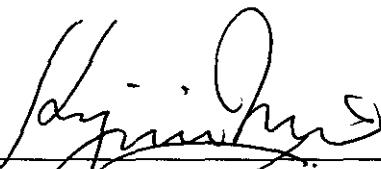
**MINUTES OF DISCUSSION
ON
BASIC DESIGN STUDY ON "THE PROJECT FOR WATER SUPPLY
IN BAUCHI AND KATSINA STATES" IN THE FEDERAL REPUBLIC OF NIGERIA
(EXPLANATION ON DRAFT FINAL REPORT)**

In March 2009, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Water Supply in Bauchi and Katsina States (hereinafter referred to as "the Project") to the Federal Republic of Nigeria (hereinafter referred to as "Nigeria") and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft final report of the study.

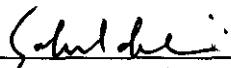
In order to explain and to consult the Nigerian side on the components of the draft final report, JICA dispatched to the Nigeria the Draft Report Explanation Team (hereinafter referred to as "the Team"), which was headed by Mr. Kyojin Mima, Chief Representative of JICA Nigeria Office, from August 23rd, 2009.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

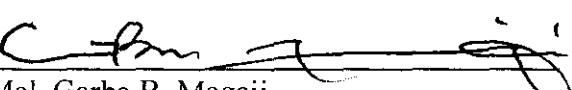
Abuja, 28th August, 2009



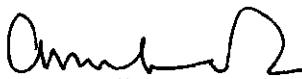
Mr. Kyojin Mima
Team Leader
Draft Report Explanation Team
Japan International Cooperation Agency
Japan



Dr. Salisu Abdulkummin
Director
Department of Water Supply, Quality
Control & Inspectorate,
Federal Ministry of Agriculture and Water
Resources, Federal Republic of Nigeria

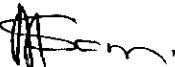


Mal. Garba B. Magaji
Project Manager
Water & Sanitation Project (WATSAN
Project)
Bauchi State, Federal Republic of Nigeria



Mr. Abubakar M. Gege
Executive Director
Rural Water Supply and Sanitation Agency
(RUWASSA)
Katsina State, Federal Republic of Nigeria

Witnessed by



Mr. U. S. Nwozuzu
Assistant Chief Planning Officer
Department of International Cooperation
National Planning Commission
Federal Republic of Nigeria

ATTACHMENT

1. Components of the Draft Report

The Nigerian side agreed and accepted in principle the components of the draft report explained by the Team.

2. Japan's Grant Aid scheme

The Nigerian side understood the scheme of Japan's Grant Aid and the necessary measures to be taken by the Nigerian side as explained by the Team and described in ATTACHMENT 7(3) of the Minutes of Discussions signed by both parties on 8th April, 2009 (hereinafter referred to as "the previous minutes").

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Nigerian side by December, 2009.

4. Other Relevant Issues

The following issues were discussed and confirmed by both sides.

(1) Components of the Project

Both sides agreed that the Project would be composed of the following components.

- Procurement of equipment and materials listed in **Annex -1**.
- "Soft Component" which is composed of 1) technical training for construction planning and data management and 2) strengthening of operation and maintenance system for water supply facilities.

Both side also agreed that the draft technical specification of the equipment listed in **Annex-1** is strictly confidential and should never be duplicated or released to other parties.

(2) Project Cost Estimate and Budgetary Arrangement

The Team explained to the Nigerian side the estimated project cost as attached in **Annex 2**. Both sides confirmed that this estimated cost was provisional and would be examined further by the Government of Japan for its final approval.

The Nigerian side reconfirmed to secure necessary counterpart budget for the project timely and adequately to cover the required amount of the cost, as promised in the previous minutes.

Furthermore, both sides confirmed that this estimated project cost is strictly confidential, and should never be duplicated or released to other parties.

(3) Rural Water Supply Plan in Bauchi State and Katsina State

Bauchi State Water and Sanitation Project (WATSAN Project) and Katsina State Rural Water Supply and Sanitation Agency (RUWASSA) have revised the plan, which was confirmed in Annex-4 of the previous minutes, as shown in **Annex-3**. Bauchi State WATSAN Project shall aim at constructing 1,676 boreholes by 2016, while Katsina State RUWASSA shall aim at constructing 868 boreholes by 2016. Both side confirmed that the procured equipment and materials would be utilized to attain the goals mentioned in the revised plan.

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(4) Responsibilities of the Borehole Construction Work

The Nigerian side promised that the borehole construction work shall be executed by Nigerian side as described in ATTACHMENT 7 (4) of the previous minutes. In the borehole construction, the Nigerian side shall be responsible for the procurement of the necessary equipment, materials, and labours which are not to be procured by Japanese side in the Project.

The Team explained the result of the survey for the selection of prioritized borehole to be constructed by using the procured equipment and materials, and both side agreed that one hundred sixty eight (168) borehole listed in **Annex-3-1** would be constructed by the Nigerian side within two (2) years after the procurement.

Both side agreed that, in case that the Nigerian side has unavoidable reasons such as dry holes at the target village(s), the alternative village(s) will be selected from the list of the remaining requested villages listed in **Annex-3-2**, based on advance mutual consultation between the Nigerian side and JICA.

After the abovementioned construction of 168 boreholes, Nigerian side promised that Bauchi State WATSAN Project and Katsina State RUWASSA shall continue to use the drilling rigs procured in the Project, in order to attain the goals mentioned in the plan in **Annex-4**.

(5) Progress Report on the Borehole Construction

The Nigerian side promised that Bauchi State WATSAN Project and Katsina State RUWASSA shall submit 1) monthly reports on the progress of the 168 borehole constructions and 2) quarterly reports on the progress other borehole constructions after the completion of 168 borehole constructions, to JICA Nigeria office and Federal Ministry of Agriculture and Water Resources (FMAWR) by using the format of progress report shown in **Annex-5**.

(6) Other undertakings of Nigerian side

The Team explained to the Nigerian side its undertakings as listed in **Annex-6**, and the Nigerian side understood and promised to execute them.

Nigerian side promised that FMAWR shall take necessary measures to facilitate project implementation, such as exemption of Value Added Tax, custom duties, and any other taxes and fiscal levy charges in Nigeria arising from the Project activities, collaborating with National Planning Commission (NPC) and other Federal bodies.

Both sides confirmed that the procured equipment and materials for the construction should be kept in adequate storage and Bauchi State WATSAN Project and Katsina State RUWASSA shall be responsible for the operation and maintenance. Both side confirmed that the equipment and materials shall be stored in warehouse in the premises of WATSAN Project in Bauchi state and RUWASSA headquarters store in Katsina state. Bauchi State WATSAN Project recognized that the storage construction has not been completed yet and promised to complete before the end of October, 2009.

(7) Capacity Development of Counterpart Staff

Both side recognized that continuous technical training for the concerned staff is necessary to complete the planned constructions by using the procured equipment. The Nigerian side promised to make best effort to enhance the capacity of the concerned technicians and engineers and expressed its willingness to make use of the trainings courses at the Rural Water Supply and

Sanitation Centre for Capacity Development (RWSSC) in the National Water Resources Institute (NWRI), when the JICA technical cooperation project is adopted and commenced.

(8) Safety and Security

The Nigerian side will ensure that necessary measures are taken for the safety and security of the Japanese nationals involved in the Project.

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List of Procured Equipment and Materials

No.	Items	Features	Unit	Quantity
1	Drilling Rig	<p>(1) Drilling Rig</p> <p>Hydraulically powered machine applicable to air/mud rotary drilling and down the hole drilling .</p> <p>Drilling capability: Not less than 100m with 6-1/4" to 10-5/8" borehole diameter with 4-3/4"OD drill pipe</p> <p>Mobilisation method: By truck mounted</p> <p>Truck specification: 4x4 or 6x4</p> <p>(2) Standard Accessories and tools for Rig</p>	lot	Bauchi: 1 Katsina: 1
2	High Pressure Air Compressor	<p>Supply air pressure: More than 2.1MPa (=20.5kg/cm²)</p> <p>Supply air volume: 11.3m³/min or more</p> <p>Mobilisation method: By truck mounted</p> <p>Truck specification: 4x4 or 6x4</p>	lot	Bauchi: 1 Katsina: 1
3	Cargo Truck with Crane	<p>Load capacity: More than 6.0ton</p> <p>Specification: 4x4, Diesel water cooling engine</p> <p>Length of carrier: More than 6.0m</p> <p>Crane capacity: 2.9ton (3.0ton)</p>	lot	Bauchi: 1 Katsina: 1
4	Pumping Test Equipment	<p>(1) Submersible motor pump: Diameter of 2.5". Discharge of 30 liters/min. 70m head (1.5kW/50Hz)</p> <p>(2) Engine generator: 5kVA</p> <p>(3) Water level meter: Measurable depth of 100m</p>	lot	Bauchi: 1 Katsina: 1
5	Water Analysis Equipment	Measurement items: pH, DO, EC, TDS and Temperature	set	Bauchi: 1 Katsina: 1
6	Geophysical Survey Equipment	<p>Electrical sounding instrument: Measurable depth 100m</p> <p>Measuring item: Apparent resistivity and spontaneous potential</p> <p>Measurable range: 0.1mV- 10V</p> <p>Accessory : Software for interpretation</p> <p>Others: Applicable for logging work for 100m depth borehole (with cab)</p>	set	Bauchi: 1 Katsina: 1
7	Hand Pump	<p>(1) Hand pump & maintenance kit: VLOM type, Indian Mark III (RUWATSAN 1)</p> <p>(2) Tools for repair by village level</p> <p>(3) Tools for repair by LGA level</p>	set set set	Bauchi: 76 Katsina: 92 Bauchi: 76 Katsina: 92 Bauchi: 8 Katsina: 5
8	Casing Pipe	Materials: Un-plasticised polyvinyl chloride Dimension: Diameter of 4" O.D. of 114.4mm, length of 3m Wall thickness: More than 5.5 mm Connection: Threading method	piece	Bauchi: 1,013 Katsina: 1,227
9	Screen Pipe	Materials: Un-plasticised polyvinyl chloride Dimension: Diameter of 4" O.D. of 114.4mm, length of 3m Wall thickness: More than 5.5 mm Connection: Threading method Opening ratio of 3% or more	piece	Bauchi: 253 Katsina: 307

Target Villages for Borehole Construction in Bauchi State
(64 Target Communities and 76 hand pump boreholes (8LGA))

NO	ID	LGA	Village	Population (2006)	Existent Borehole			No of Borehole	Geology	Estimated Drilling Depth(m)	Estimated Water Level(m)	Social Condition Evaluation
					Open Dug Well	Hand Pump Borehole	Motorized Borehole					
1	A-1	Alkalen	Yola Doka	1,853	8	1		1	Kern-Kern	40	20	B
2	A-2	"	Dan	892	4	2		1	Kern-Kern	40	20	B
3	A-3	"	Yashi	1,461	5	2		2	Kern-Kern	45	10	B
4	A-4	"	Guruntun	868	3	2		2	Kern-Kern	40	10	B
5	A-5	"	Kufa	1,318	4			1	Kern-Kern	50	20	B
6	B-1	Bauchi	Badakoshi	1,042	2			1	Basement	45	12	B
7	B-2	"	Bishi	3,506	3	1	1	2	Basement	40	10	B
8	B-3	"	Gokaru	2,894	6	1		2	Basement	50	15	B
9	B-4	"	Luda	1,144	3	2	1	1	Basement	45	12	B
10	B-5	"	Kundum	478	1	1		1	Basement	40	10	B
11	B-6	"	Gwaskwaram	582	2	2		1	Basement	40	10	B
12	B-7	"	Gokraim	830	3			1	Basement	40	10	B
13	B-8	"	Lugge	787	2	1		1	Basement	50	15	B
14	B-9	"	Sabon Gann Garkuw	693	3			1	Basement	45	12	B
15	B-10	"	Rehu	1,339	2			1	Basement	45	15	B
16	B-11	"	Gann Kadiri	1,008		1		1	Basement	45	15	B
17	G-1	Gamawa	Bullama	1,157	2	1		1	Chad	60	20	B
18	G-2	"	Raba-Raba	389	1			1	Chad	60	20	A
19	G-3	"	Bawan	341	3			1	Chad	60	20	B
20	G-4	"	Buskuwa	1,095	1			1	Chad	60	20	B
21	G-5	"	Garuwa	1,155	2	1		1	Chad	70	30	B
22	G-6	"	Katsinawa	945	3	1	1	1	Chad	60	20	B
23	G-7	"	Gavawa	1,103	2	2		1	Chad	60	20	B
24	G-8	"	Supa	1,137	1	1		1	Chad	60	20	B
25	G-9	"	Garin Kure	1,079	2			1	Chad	60	20	B
26	U-1	Ganyuwa	Zure	1,163	2			1	Basement	40	12	A
27	U-2	"	Wuro Bogga	1,116	1	1	1	1	Basement	35	12	B
28	U-3	"	Manga	963	5	1		1	Basement	40	12	A
29	U-4	"	Gurum	1,034	1	1		1	Basement	39	12	A
30	U-5	"	Lamba	942	3	2		1	Basement	40	15	A
31	U-6	"	Dutsen Kura	1,152	2			1	Basement	35	10	A
32	U-7	"	Daman guza	890	2	1		1	Basement	38	10	A
33	U-8	"	Deno	998	1			1	Basement	40	12	A
34	U-9	"	Wuro Nai	701	4			1	Basement	35	9	A
35	S-1	Shira	Lafiyari	1,234	2			1	Basement	45	15	B
36	S-2	"	Guidda	956	3			1	Basement	45	15	B
37	S-3	"	Kargo	948	4			1	Chad	50	15	B
38	S-4	"	Dogon dutse	1,595	5			1	Basement	45	12	B
39	S-5	"	Andubun	3,338	8	1		2	Chad	50	15	B
40	S-6	"	Yelwa	903	2	1		1	Chad	60	20	B
41	S-7	"	Yakasa	1,052	4			1	Chad	60	20	B
42	F-1	Tafawa Balewa	Banshi	688	1			1	Basement	45	12	A
43	F-2	"	Zwall	1,671	8	3	1	2	Basement	45	12	B
44	F-3	"	Gambar Lere	625	3	1		1	Basement	45	15	B
45	F-4	"	Sara	1,604	2	1		1	Basement	45	15	B
46	F-5	"	Shall	1,265	8	1	1	2	Basement	45	15	B
47	F-6	"	Waptang	1,459	4	2	1	1	Basement	35	12	B
48	T-1	Toro	Ribina	2,978	10	1		2	Basement	40	10	B
49	T-2	"	Pingu	1,585	5			1	Basement	35	12	B
50	T-3	"	Badikko	1,352	2			1	Basement	40	15	B
51	T-4	"	Lame	1,192	2	3	1	2	Basement	45	12	B
52	T-5	"	Zull	1,105	2	2		1	Basement	39	15	B
53	T-6	"	Rauta	1,346	3			1	Basement	40	12	B
54	T-7	"	Zaranda	4,803	1	1		2	Basement	45	15	B
55	T-8	"	Diriko	1,173	4			1	Basement	45	12	B
56	T-9	"	Gurungu	1,128	2			1	Basement	35	12	B
57	T-10	"	Panshanu	945	5	1		1	Basement	35	12	B
58	T-11	"	Geji	745	2	2		1	Basement	45	15	B
59	N-1	Ningi	Lumbu	2,141	10			1	Basement	45	15	B
60	N-2	"	Tambu	1,373	2			1	Basement	45	15	B
61	N-3	"	Ari	1,698	5	2	1	2	Basement	45	15	B
62	N-4	"	Guda	1,162	5	1		2	Basement	45	15	B
63	N-5	"	Tiffi	3,026	5	3	1	1	Basement	45	15	B
64	N-6	"	Samma	1,131	4	1		1	Basement	45	15	B
	Total				84,276			76				

A: Higher evaluation points
 B: High evaluation points
 C: Satisfied evaluation points

**Target Villages for Borehole Construction in Katsina State
(78 Target Communities and 92 hand pump boreholes (5LGA))**

NO	ID	LGA	Village	Population (2006)	Existent Borehole			No of Borehole	Geology	Estimated Drilling Depth(m)	Estimated Water Level(m)	Social Condition Evaluation
					Open Dug Well	Hand Pump Borehole	Motorized Borehole					
1	D-1	Dutsinma	Bagwadi Ward	4,500		1	1	1	Basement	45	11	B
2	D-2	"	Dabawa Ward	2,100	1	1		1	Basement	50	22	B
3	D-3	"	Dutsin-MA 'A'	4,750	2	1	1	2	Basement	45	13	B
4	D-4	"	Rewan Dorowa	1,700		1		1	Basement	40	16	B
5	D-5	"	Karofi 'A'	4,700	1	1	1	2	Basement	40	16	B
6	D-6	"	Karofi 'B'	4,800	1	1		2	Basement	40	18	B
7	D-7	"	Kuki 'A'	1,800	1			1	Basement	50	22	A
8	D-8	"	Turare	550	2			1	Basement	50	22	A
9	D-9	"	Kutawa	3,000		1		2	Basement	40	12	B
10	D-10	"	Shema	1,800	1	2		2	Basement	40	9	B
11	S-1	Safana	Yar' Jigawa	4,800	1	1	1	1	Basement	40	9	B
12	S-2	"	Kanomawa	1,800	1			1	Basement	40	6	B
13	S-3	"	Dole	450		1		1	Basement	45	18	B
14	S-4	"	Tsamiya	942		1		1	Basement	45	12	B
15	S-5	"	Baure	2,800	1	2	1	1	Basement	45	9	B
16	S-6	"	Saramraki	450		1		1	Basement	45	15	B
17	S-7	"	Babban Duhu	4,100		2		1	Basement	45	16	B
18	S-8	"	Kimfau	2,100		1		1	Basement	40	6	B
19	S-9	"	Madaddala	2,200	1	1		1	Basement	45	14	B
20	S-10	"	Saihawar Humo	250	1			1	Basement	45	14	A
21	S-11	"	Karafa	2,780		1	1	1	Basement	45	14	B
22	S-12	"	Sabon Dawa	855		1		1	Basement	45	14	B
23	S-13	"	Ummadau	2,200	1	1		1	Basement	45	18	B
24	S-14	"	Gann Waziri	860		1		1	Basement	45	17	B
25	S-15	"	Gann Tambani	2,780		1	1	1	Basement	45	16	B
26	S-16	"	Unguwar Rima	3,480	2	1		1	Basement	45	16	B
27	S-17	"	Gann Masau	1,455	2	1		1	Basement	45	16	B
28	S-18	"	Unu Korau	850		1		1	Basement	45	16	A
29	S-19	"	Dagarawa	1,100	2	1		1	Basement	45	16	B
30	S-20	"	Turkunawa	960	1	1		1	Basement	40	16	B
31	S-21	"	Bukurawa	865	1	1		1	Basement	40	19	B
32	M-1	Mash	Mashi Prn Sch	600				1	B S	45	22	B
33	M-2	"	Sabuwar Rijya(Majirji wa)	1,800	2	1		2	B Gundumi	45	20	B
34	M-3	"	Jigawa	1,100	1			2	B Gundumi	40	15	B
35	M-4	"	Karau	705		1		2	Gundumi B	45	19	B
36	M-5	"	Gallu	4,600	2	3		2	Basement	45	20	B
37	M-6	"	Tamillo 1	1,100	3			2	Sedimentary	50	18	B
38	M-7	"	Tamillo 2	1,100	1			1	Gundumi	50	18	B
39	M-8	"	Doguru	4,860	2			1	Gundumi	50	30	B
40	M-9	"	Sonkaya	4,350	2	1	1	2	Gundumi	55	30	B
41	M-10	"	Save	1,500		2		1	Gundumi	45	22	B
42	M-11	"	Bamle	4,300	2	1		2	Gundumi	50	34	B
43	F-1	Faskari	Tashir Ice	600				1	Basement	45	11	B
44	F-2	"	Unguwar Kurmi	1,800	2	1		1	Basement	45	11	B
45	F-3	"	Birnin Ruwa	1,100	1			1	Basement	45	12	B
46	F-4	"	Sullubawa	705		1		1	Basement	45	12	B
47	F-5	"	Zamfarawa	4,600	2	3		1	Basement	45	14	B
48	F-6	"	Tsuru	1,809	1	1		1	Basement	45	15	B
49	F-7	"	Doma	1,100	1			1	Basement	45	14	B
50	F-8	"	Yammalama	2,000	1	1		1	Basement	45	14	B
51	F-9	"	Unguwar Baso	2,800	1	1		1	Basement	45	14	B
52	F-10	"	Rewan Godiya	3,850	10	1	1	1	Basement	45	12	C
53	F-11	"	Bele	600				1	Basement	45	15	B
54	F-12	"	Danguda	1,800	2	1		1	Basement	45	14	B
55	F-13	"	Kagana	1,100	1			1	Basement	45	14	B
56	F-14	"	Unguwar Mike	705		1		1	Basement	45	14	B
57	F-15	"	Mafara	4,600	2	3		1	Basement	45	14	B
58	F-16	"	Margora	4,700	6	1	2	1	Basement	45	13	C
59	E-1	Kankara	Marabar Gurb	850		1		1	Basement	45	13	B
60	E-2	"	Gidan Bakki	2,860	2	1		1	Basement	45	9	B
61	E-3	"	Mai Sabulu	3,350	2	1	1	1	Basement	45	12	B
62	E-4	"	Mashigu	1,500		2		1	Basement	45	12	B
63	E-5	"	Abduwa	4,300	2	1		1	Basement	45	11	B
64	E-6	"	Gundawa	3,800	2			1	Basement	45	12	B
65	E-7	"	Danmarabu	1,350	2	1		1	Basement	40	13	B
66	E-8	"	Mabau	1,800	2	1		1	Basement	40	14	B
67	E-9	"	Bela	850		1		1	Basement	45	18	B
68	E-10	"	Barebari	220	1	1		1	Basement	45	17	B
69	E-11	"	Danmarke	1,800	2	1	1	1	Basement	45	13	B
70	E-12	"	Baraka	1,100	1			1	Basement	45	8	A
71	E-13	"	Salahawa	705		1		1	Basement	45	18	B
72	E-14	"	Abduwa	3,600	2	3		1	Basement	45	17	B
73	E-15	"	Tudu	3,700	10	2	1	1	Basement	45	14	B
74	E-16	"	Kabuke	1,800	2	1		1	Basement	45	14	B
75	E-17	"	Salihawa	1,105	1			1	Basement	45	17	A
76	E-18	"	UNG Naganda	712		1		1	Basement	45	16	B
77	E-19	"	UNG Turare	4,602	2	3		1	Basement	45	14	B

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List of remaining requested villages (Bauchi)
52 Communities and 63 hand pump boreholes (6 LGA)

NO	ID	LGA	Village	Population (2006)	Existent Borehole			No of Requested Borehole	Geology	Estimated Drilling Depth(m)	Estimated Water Level(m)	Social Condition Evaluation
					Open Dug Well	Hand Pump Borehole	Motipuze Borehole					
1	I-1	Itas-Gadau	Abdalawa	902	5	1	1	1	Chad	60	20	B
2	I-2	"	Duman	3,380	6	1		1	Chad	60	20	B
3	I-3	"	Bambai	923	1	1		1	Chad	60	20	B
4	I-4	"	Buzuwa	514	5	1		1	Chad	60	20	B
5	I-5	"	Gamscha	903	6	1		1	Chad	60	25	B
6	I-6	"	Gwarai	1,798	4	1		1	Chad	60	20	B
7	I-7	"	Magaryaya	3,669	7	1	1	1	Chad	60	20	B
8	I-8	"	Noman	2,183	8	1		1	Chad	60	20	B
9	J-1	Jama'are	Pango	855	3	1		1	Chad	50	15	B
10	J-2	"	Jurara	1,593	4	1		2	Chad	60	20	B
11	J-3	"	Kadawan	826	1			1	Chad	60	20	B
12	J-4	"	Jibbiri	1,039	1			1	Chad	60	20	B
13	J-5	"	Hanafari	4,375	7	2	3	2	Chad	60	20	B
14	J-6	"	Buzuzu	1,003	1			1	Chad	60	20	A
15	J-7	"	Daramshe	966	2			1	Chad	60	20	B
16	J-8	"	Dogon Daji	2,171	10	4	3	2	Chad	60	20	B
17	J-9	"	Digelji	994	2			1	Chad	60	20	B
18	J-10	"	Jagawa	1,032	1			1	Chad	60	20	A
19	K-1	Katagum	Chara-chara	2,625	25	2		2	Kemi-Kemi	50	15	B
20	K-2	"	Kare	680	2			1	Kemi-Kemi	50	15	A
21	K-3	"	Maloni	1,587	5	1	1	1	Kemi-Kemi	50	20	B
22	K-4	"	Jimbari	1,680	3	2	2	1	Kemi-Kemi	60	20	B
23	K-5	"	Barkeji	1,166	6	1	1	1	Kemi-Kemi	60	20	B
24	K-6	"	Bula Jaiye	685	3			1	Kemi-Kemi	60	20	B
25	K-7	"	Duhuwar Kura	1,226	2			1	Kemi-Kemi	50	15	B
26	K-8	"	Rivar Pafi	966	3	1		1	Kemi-Kemi	50	15	B
27	K-9	"	Yayu	4,538	6	1	1	2	Kemi-Kemi	50	12	B
28	K-10	"	Zinma	1,585	2			1	Kemi-Kemi	50	20	B
29	K-11	"	Bailako	1,091	3	1		1	Kemi-Kemi	60	20	B
30	K-12	"	Gorokewo	1,023	1	1		1	Kemi-Kemi	60	20	B
31	K-13	"	Ragwam	653	4	1		1	Kemi-Kemi	50	15	B
32	K-14	"	Zindi A	738	10	2		1	Kemi-Kemi	50	20	B
33	R-1	Bogoro	Boi	1,979	3	4		2	Basement	45	12	B
34	R-2	"	Bon Bakki	1,407	1			1	Basement	40	10	A
35	R-3	"	Gwaranga	1,785	2	1		1	Basement	50	12	A
36	R-4	"	Kunun Sarauta	1,023		1		1	Basement	45	12	A
37	R-5	"	Dinkin fate	679	1			1	Basement	35	12	A
38	M-1	Misau	Natsira	947	3			1	Basement	50	20	B
39	M-2	"	Zadawa	4,018	5	1		2	Kemi-Kemi	60	25	B
40	M-3	"	Betti	918	10	1		2	Kemi-Kemi	60	25	B
41	M-4	"	Galdimawo	514	1			1	Kemi-Kemi	60	20	B
42	M-5	"	Goliyo	1,063	3			1	Kemi-Kemi	60	20	B
43	M-6	"	Madakiri	1,396	5			1	Kemi-Kemi	60	20	B
44	M-7	"	Jarmari	1,391	7			2	Kemi-Kemi	60	20	B
45	M-8	"	Adari	1,021	2			1	Kemi-Kemi	60	20	A
46	M-9	"	Ajili	595	9	1		2	Kemi-Kemi	60	20	B
47	W-1	Wari	Aru	1,911	5	3		1	Basement	45	15	B
48	W-2	"	Baima	4,697	20	1		1	Basement	45	15	B
49	W-3	"	Dagu	1,199	6	3		1	Basement	45	15	B
50	W-4	"	Gabanga	1,192	10	3		1	Basement	45	15	B
51	W-5	"	Tiyim	969	6	2		2	Basement	45	15	B
52	W-6	"	Bunga	1,735	2	4		1	Basement	45	15	B
Total				79,808				63				

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List of remaining requested villages (Katsina)
82 Target Communities and 93 handpump boreholes (6LGA)

NO	ID	LGA	Village	Population (2006)	Existent Borehole			No of Requested Borehole	Geology	Estimated Drilling Depth(m)	Estimated Water Level(m)	Social Condition Evaluation
					Open Dug Well	Hand Pump Borehole	Motprize Borehole					
1	B-1	Batsari	Bakon Zabo	1,800				1	Basement	50	17	C
2	B-2	"	Dankar	3,000	1	1		1	Basement	55	16	C
3	B-3	"	Tulluwa	1,450	2	1		1	Basement	50	16	C
4	B-4	"	Kauyen Dan Baru	860		1		1	Basement	50	17	C
5	B-5	"	Garwa	2,780		1	1	1	Basement	50	16	C
6	B-6	"	Ruma	3,480	2	1		1	Basement	50	16	C
7	B-7	"	Mai Katanya	1,455	2	1		1	Basement	50	17	C
8	B-8	"	Kuma	860		1		1	Basement	50	18	C
9	B-9	"	Randa	1,350	2	1		1	Basement	50	19	B
10	B-10	"	Tashar Kwantangi	1,100	1			1	Basement	50	17	B
11	B-11	"	Kandawa	3,000	1	1	1	1	Basement	50	7	C
12	B-12	"	Tashar Kwantangi	1,450	2	1		1	Basement	50	18	C
13	B-13	"	Kadaju	450		1		1	Basement	45	19	C
14	B-14	"	Jambali	1,350	2	1		1	Basement	50	16	C
15	R-1	Rimi	Lamfa	1,800	1	1		1	Basement	45	14	B
16	R-2	"	Kadaju	900	3	1		1	Basement	35	7	B
17	R-3	"	Sabin-Magama	1,450	2	1		1	Basement	45	16	B
18	R-4	"	Hausawa	860		1		1	Basement	45	14	B
19	R-5	"	Abukur	1,200	2	1	1	1	Basement	40	14	B
20	R-6	"	Tudun Kadir	2,480	2			1	Basement	45	16	B
21	R-7	"	Remawa	1,100	2	1	1	1	Basement	50	25	B
22	R-8	"	Agira	860		1		1	Basement	45	19	B
23	R-9	"	Gunau	1,350	2	1		1	Basement	45	19	B
24	R-10	"	Mallamawa	1,860	2	1		1	Basement	45	17	B
25	R-11	"	Faruwa	1,250	1	1		1	Basement	45	16	B
26	R-12	"	Kurabau	2,100	1			1	Basement	45	16	B
27	R-13	"	Karni	4,750	2	1	1	1	Basement	45	14	B
28	R-14	"	Dogara	1,300		1		1	Basement	45	17	B
29	R-15	"	Tokawa	4,700	1	1		1	Basement	45	18	B
30	V-1	Sandamu	Kwasarawa	2,100	4			1	Gundumi	50	20	C
31	V-2	"	Katsaval	4,100	4		2	1	Gundumi	50	18	C
32	V-3	"	Daba	710		1		1	Gundumi	50	18	B
33	V-4	"	Dadin Kowa	640	1	1		1	Gundumi	50	20	B
34	V-5	"	Jar Kuka	1,800	2	1		1	Gundumi	50	20	C
35	V-6	"	Jan Bara	1,350	2	1		1	Gundumi	48	20	B
36	V-7	"	Maye	1,860	2	1		1	Gundumi	50	20	B
37	V-8	"	Janbaqi	2,000	1	1	1	1	Gundumi	50	20	B
38	V-9	"	Jiba	3,600		1	1	1	Gundumi	50	20	C
39	V-10	"	Fagore Fulani	910	2	1		1	Gundumi	45	18	C
40	Z-1	Zango	Yakubawa	650	1	1		1	Gundumi	50	27	B
41	Z-2	"	Gami	1,800		1		1	Gundumi	50	30	B
42	Z-3	"	Tarke	1,750	3			1	Gundumi	40	14	B
43	Z-4	"	Masassaka	1,800	1	1		1	Gundumi	45	18	B
44	Z-5	"	Aduwawa	1,400		1		1	Gundumi	50	20	B
45	Z-6	"	Koki	1,100	4			1	Gundumi	50	22	B
46	Z-7	"	Hangota	1,800	1	1		1	Gundumi	45	20	B
47	Z-8	"	Kirgi	1,400	1	1		1	Gundumi	45	20	B
48	Z-9	"	Kyakyawaya	850		1		1	Gundumi	50	25	B
49	Z-10	"	Dushi	1,100	3			1	Chad	65	38	B
50	Z-11	"	Rindi	1,350	2	1		1	Gundumi	55	30	B
51	Z-12	"	Dawan Madaka Gari	1,860	2	1		1	Gundumi	50	33	B
52	Z-13	"	Guordo	1,205	1			1	Gundumi	50	30	B
53	Z-14	"	Shawa	1,350	2	1		1	Gundumi	45	28	B
54	Z-15	"	Yandaka Fulani	1,860	2	1		1	Gundumi	50	30	B
55	K-1	Kafur	D/Kura Pn. Sch	400				1	Basement	40	9	B
56	K-2	"	Comm. Sec. sch	500		1		1	Basement	45	9	B
57	K-3	"	S//Kasa pri Sch	450				1	Basement	45	12	B
58	K-4	"	Yarkawari	2,700	1	1		1	Basement	45	13	B
59	K-5	"	Tsaujin Tinja	1,350	2	1		1	Basement	45	12	B
60	K-6	"	Unguwar Nashe	1,860	2	1		1	Basement	40	9	B
61	K-7	"	Takawa	850		1		1	Basement	40	9	B
62	K-8	"	Rigon	3,400	1	1	1	1	Basement	40	9	B
63	K-9	"	Daren Fada	1,800	2	1		1	Basement	40	9	B
64	K-10	"	Ung S/Hausawa	1,230	1			1	Basement	40	11	A
65	K-11	"	Kufan Sallau	706		1		1	Basement	40	11	B
66	K-12	"	Ung Lawal Mahang'i	2,600	2	1		1	Basement	40	9	B
67	K-13	"	UNG Bedi	1,809	1	1		1	Basement	40	12	B
68	K-14	"	UNG Shukau	1,100	3			1	Basement	40	12	A
69	K-15	"	Gidan Kesau	2,000	1	1		1	Basement	40	13	B
70	K-16	"	UNG Maitaba	2,800	1	1		1	Basement	40	12	B
71	K-17	"	Santar Arab	1,800		1		1	Basement	40	12	B
72	K-18	"	Kagadama	1,350	2	1		1	Basement	45	11	B
73	K-19	"	Bagari	1,860	2	1		1	Basement	45	11	B

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List of remaining requested villages (Katsina)
 82 Target Communities and 93 handpump boreholes (6LGA)
 (continued)

No	ID	LGA	Village	Population (2006)	Existent Borehole			No of Requested Borehole	Geology	Estimated Drilling Depth(m)	Estimated Water Level(m)	Social Condition Evaluation
					Open Dug Well	Hand Pump Borehole	Private Borehole					
74	I-1	Malumfashi	Borindawa	728	2	1		1	Basement	40	16	B
75	I-2	"	Jallawa	1,350	2	1		1	Basement	45	14	B
76	I-3	"	Gero	1,860	2	1		1	Basement	45	11	B
77	I-4	"	Unguwar Maidoki	1,350	2	1		1	Basement	45	12	B
78	I-5	"	Unguwar Barro	1,860	2	1		1	Basement	45	11	B
79	I-6	"	Zango	850		1		1	Basement	45	9	B
80	I-7	"	Kauven Gabas	2,000	1	1		1	Basement	45	11	B
81	I-8	"	Yandoka	850		1		1	Basement	45	14	B
82	I-9	"	Gundurawa	2,500		1		1	Basement	50	15	B
83	I-10	"	Dogon Marke	850	2	1		1	Basement	50	14	B
84	I-11	"	Yandoka 2	2,550	2	1		1	Basement	50	12	B
85	I-12	"	Grave Yard M/Fashi	600	2			1	Basement	45	8	B
86	I-13	"	UNG Sale	850		1		1	Basement	45	11	B
87	I-14	"	Jigawa	850		1		1	Basement	40	26	B
88	I-15	"	Nasarawa	1,300	2			1	Basement	45	11	B
89	I-16	"	Unguwar Ahi	1,350	2	1		1	Basement	45	11	B
90	I-17	"	Unguwar Dada	1,860	2	1		1	Basement	40	11	B
91	I-18	"	Hayin Gada	3,480	2	1		1	Basement	40	12	B
92	I-19	"	Kwandawa	1,350	2	1		1	Basement	45	13	B
93	I-20	"	Katamna	1,860	2	1		1	Basement	45	19	B
Total				153,503				93				

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Bauchi State Rural Water Supply Plan

Year	Boreholes Construction				No of People to Benefit from Improved Capacity	Cummulative Population of those with Access	Total Projected Rural Population	Coverage %
	Hand Pump		Mot. Borehole					
	by JICA rig	by other rig and private companies	by other rig and private companies	Total				
					882,215	2,940,717	30	
2009		268	110	378	294,480	1,176,695	3,044,851	39
2010		268	110	378	294,480	1,471,175	3,152,672	47
2011	36	154	50	204	158,400	1,629,575	3,264,311	50
2012	40	150	50	200	158,400	1,787,975	3,379,904	53
2013	40	150	50	200	158,400	1,946,375	3,499,490	56
2014	40	150	50	200	158,400	2,104,775	3,623,514	58
2015	40	150	50	200	158,400	2,263,175	3,751,827	60
2016	40	150	50	200	158,400	2,421,575	3,884,683	62
	236	1440		520	1960			
		1676						

Katsina State Rural Water Supply Plan

Year	Boreholes Construction				No of People to Benefit from Improved Capacity	Cummulative Population of those with Access	Total Projected Rural Population	Coverage %
	Hand Pump		Mot. Borehole					
	by JICA rig	by other rig and private companies	by other rig and private companies	Total				
					2,099,314	4,198,627	50	
2009		168	112	280	650,700	2,750,014	4,317,850	64
2010		168	112	280	650,700	3,400,714	4,440,458	77
2011	42	40	40	122	196,300	3,597,014	4,566,548	79
2012	50	35	40	125	196,300	3,793,314	4,696,218	81
2013	50	35	40	125	196,300	3,989,614	4,829,517	83
2014	50	35	40	125	201,300	4,190,914	4,966,710	84
2015	50	35	40	125	201,300	4,392,214	5,107,743	86
2016	50	60	50	160	155,000	4,547,214	5,252,781	87
	292	576		474	1342			
		868						

*Am**Sam**Cham**Abubakar*

Format of Monthly Progress Report for Borehole Construction

ID	LGA	Community	Date	Depth (m)	Screen Position (m)	Yield (l/min)	S.W.L (m)	Pump Depth (m)	WASHCOM mobilized

Monthly/ Cumulative- Total

Month	Number of Borehole Drilled	Number of Pumps Installed	Success	Unsuccessful	Depth (m)	Casings (m)	
						Blind	Screen

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Undertakings of the Nigerian Side

(1) Construction of Borehole Facilities

Item	Obligations of Nigerian Side
Borehole Construction Work	<ul style="list-style-type: none"> • Mobilization of drilling rig, setting and dismantling, • Drilling, electrical logging, casing pipe installation, gravel packing, backfilling, cementing, pumping test, water quality analysis, finishing • Hand pump installation, platform construction • Necessary equipment & materials for construction such as fuel, bentonite, chemical agent, sand and gravel, reinforcement steel bar, lubricant, water, and cost of other consumables etc. • Vehicle, water tanker and labour expense for construction work. • Common temporary work expense • Site expenditure, etc
Borehole Construction Cost	<ul style="list-style-type: none"> • The cost for construction work and management.
Construction Period	<ul style="list-style-type: none"> • Preparation of construction schedule. • Completion of 76 boreholes construction in Bauchi state and 92 borehole construction in Katsina state within the period of two years. After that, continuous construction for four years. If the construction will not be completed, Nigerian side will take up the responsibility to complete the construction.
Siting	<ul style="list-style-type: none"> • Prior to commencement of construction, the siting for the drilling points will be conducted by Nigerian side.
Quantities of construction materials	<ul style="list-style-type: none"> • Nigeria side will be responsible for construction materials such as PVC casing & screen and hand pumps exceeding 76 sites in Bauchi and 92 sites in Katsina.
The method of delivery Materials	<ul style="list-style-type: none"> • Transportation of equipment & materials from RUWASSA office in Katsina and WATSAN Project office in Bauchi to each drilling site. • Management of the equipment and materials.
Quality control and Inspection	<ul style="list-style-type: none"> • Nigeria side will undertake the responsibility of quality control and compliance to specifications, etc.
Safety/ Security measures	<ul style="list-style-type: none"> • Responsible for any accident during construction. • Anti-theft measures of the equipment and materials at the sites.
Special Attention	<ul style="list-style-type: none"> • The progress report of the work shall report monthly to Japanese side.
Others	<ul style="list-style-type: none"> • Improvement of access road • Construction of fences around the boreholes.

(2) Others

- To provide necessary data and information for the implementation of the Project

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- To secure the construction sites for the Project, and to clear, level and reclaim them prior to the commencement of the construction.
- To provide office and counterparts free of charge to Japanese consultant.
- To bear the following fees to arising in accordance with the Banking Arrangement (B/A) and the Authorization to Pay (A/P)
- To ensure prompt unloading and customs clearance of the materials and equipment procured by the Project on arrival in Nigeria
- To exempt Japanese engineers from customs duties, internal taxes and other fiscal levies, which may be imposed in Nigeria with respect to the supply of products and services under the verified contracts
- To acquire number plate registration numbers for the vehicles procured in the Project
- To maintain and use properly and effectively the facilities constructed and equipment provided under the Project.
- To take the measures necessary for the safety and security of the Japanese engineers.
- To provide counterparts to the soft component activities as a working team, and to participate in the training workshop for RUWASSA and WATSAN Project staff
- To provide the participants of the soft component activities with daily allowance and accommodation

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5. RESULT OF GEOPHYSICAL SURVEY

Appendix 5

Geophysical Survey in Bauchi State

The purpose of the geophysical survey was to determine the hydrogeology and condition of aquifers in the target area. This survey was conducted by a local subcontractor. Then, the study team members provided technical observations and analyses for exploration. The geophysical survey covered 10 sites in each state. It should be noted that the geophysical survey mainly covered areas where there is no data on existing boreholes. The measuring method used in the survey is vertical electrical prospecting using the Schlumberger method. The center of the symmetrically arranged electrode system is in place, while the current, electrical potential and polarity intervals are varied to measure apparent resistivity. The apparent resistivity curve derived there is used to obtain the thickness of the level layers and their resistivity. In other words, current is transmitted through outer electrodes C1 and C2 that are installed on the measurement line, while electrodes P1 and P2 on the inside are used to measure differences in electrical potential (see Fig. 1).

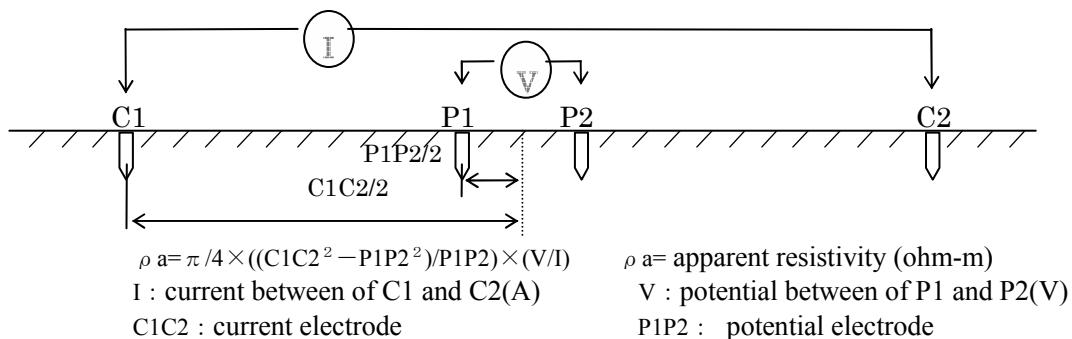


Fig.-1 Schlumberger Electrode Configurations

Geophysical surveys were made of 10 communities in 10 LGAs of Bauchi state. A total of 2 survey points were measured in each community.

(1) Instrumentation

This investigation consisted of a resistivity survey using an ABEM SAS300C terrameter. A terrameter is a portable microprocessor-controlled integrated receiver and transmitter which provides a direct digital read-out of resistance. This ABEM equipment is a simple surveying device that is widely used in exploration for groundwater in Africa.

(2) Result of an interpretation

The study team obtained and analyzed geophysical prospecting data from the subcontractor. The results are shown in Table 1. The resistivity structure shows 3 to 4 major layers. The upper layer is composed of topsoil or sand, the middle layer is weathered and the lower layer is hard bedrock. Layers that the analysis indicated had particularly low resistivity have high potential for groundwater. While the groundwater depth at the Lugge and Buskuwa communities was estimated to be 20m or deeper, nearly all the other groundwater depths were estimated to be 6m or less. Thus, the middle layers below a depth of 6 m are the most promising locations for aquifers. The average depth of groundwater by geological formation was assessed at 16m for Chad and Kerri-Kerri formations, and 13m for Basement complex, nearly the same. The analysis of data on existing boreholes produced essentially the same results as borehole, with the exception that the overall depth was shallower for groundwater in the Basement complex. The analysis results for the depth of groundwater in geological distributions in this geophysical survey essentially matched depth data on existing boreholes, which shows the validity of this survey.

Table 1 Results of The Geophysical Survey (Bauchi State)

LGA	Community	Geology	Survey No.		1st layer	2nd layer	3rd layer	4th layer	
Bauchi	Lugge	Basement	1	ρ_a	459	85	4050		
				Depth(m)	0.9	23			
	Buskuwa		2	ρ_a	91	31	54100		
				Depth(m)	1.1	8.3			
Gamawa	Chad		1	ρ_a	607	156	141	346	
				Depth(m)	3.7	11	20		
	Manga		2	ρ_a	155	140	565		
				Depth(m)	1.1	31			
Ganjuwa	Basement		1	ρ_a	15	52	460		
				Depth(m)	2.2	34			
	Itas-Gadau		2	ρ_a	21	17	917		
				Depth(m)	2.8	16			
Itas-Gadau	Chad		1	ρ_a	63	19	115		
				Depth(m)	4.0	9.3			
	Duhuwar Kura		2	ρ_a	97	6.6	692		
				Depth(m)	3.0	7.1			
Katagum	Kerri-Kerri		1	ρ_a	528	86	501		
				Depth(m)	6.4	18			
	Bogoro		2	ρ_a	6040	273	2410		
				Depth(m)	2.8	12			
Tafawa Balewa	Boi		1	ρ_a	70	31	11500		
				Depth(m)	1.1	9.6			
	Toro		2	ρ_a	69	57	661		
				Depth(m)	12	28			
Ningi	Bishi		1	ρ_a	258	139	2670		
				Depth(m)	1.2	9.9			
	Zull		2	ρ_a	375	39	58	6850	
				Depth(m)	1.1	9.2	16		
Warji	Guda		1	ρ_a	71	23	359		
				Depth(m)	7.1	8.0			
	Baima		2	ρ_a	737	22	710		
				Depth(m)	0.3	6.1			
	Basement		1	ρ_a	344	41	5400		
				Depth(m)	2.1	23			
	Basement		2	ρ_a	199	10	65600		
				Depth(m)	1.1	6.9			
	Basement		1	ρ_a	71	2.2	70	921	
				Depth(m)	3.0	4.0	15		
	Basement		2	ρ_a	87	117	10	1140	
				Depth(m)	2.0	3.9	8.3		

*Gray spaces indicate layers where groundwater may occur.

Geophysical Survey in Katsina State

The geophysical survey of Katsina state targeted 10 communities in 10 LGA, and 2 or 3 survey points were measured in each community.

(1) Instrumentation

The equipment used for the geophysical survey was ABEM SAS1000 terrameter

(2) Results of the analysis

According to a results of the analysis, the resistivity structure consisted of 3 to 4 layers, with high - low – high resistivity values from the surface downward. The second and third layers, where resistivity was low, may contain underground water. The depth to the water level is over 10 m below the surface. Especially deep areas of underground water are the Dushin-ma, Sandamu, Zango and Malumfashi LGAs. The Sandamu and Zango LGAs are located in the Gundumi formation, which generally has deep underground water. The estimated depth of groundwater in the Basement formation is 30m, and in the Gundumi formation is 40m. These averages are overall deeper than those in data on existing boreholes. Existing borehole data also Gundumi water levels as deeper than Basement water levels. Since we got the same results in geophysical survey, we can say that this will be an indispensable survey method in future development of groundwater.

Table 2 Results of The Geophysical Survey (Katsina State)

LGA	Community	Geology	Survey NO.		1st layer	2nd layer	3rd layer	4th layer
Bastsar	Kandawa	Basement	1	ρ_a	45	25	967	-
				Depth(m)	0.5	2.7	-	-
			2	ρ_a	61	14	1290	-
				Depth(m)	2.3	20	-	-
			3	ρ_a	947	67	24	986
				Depth(m)	0.3	7.4	20	-
Dushin-Ma	Turare	Basement	1	ρ_a	139	40	2020	-
				Depth(m)	5.7	76	-	-
			2	ρ_a	352	96	242	71
				Depth(m)	0.7	4.0	8.2	-
Rimi	Tudun Kadir	Basement	1	ρ_a	99	63	298	-
				Depth(m)	2.4	12	-	-
			2	ρ_a	655	76	192	-
				Depth(m)	0.4	11	-	-
Safana	Ummadau	Basement	1	ρ_a	12	21	11500	-
				Depth(m)	3.2	12	-	-
			2	ρ_a	1260	37	1400	-
				Depth(m)	0.9	21	-	-
Mashi	Doguru	Gundumi	1	ρ_a	751	121	1830	352
				Depth(m)	2.8	9.9	42	-
			2	ρ_a	1410	447	2310	546
				Depth(m)	2.1	20	57	-
Sandamu	Katsayal	Gundumi	1	ρ_a	1310	139	816	139
				Depth(m)	1.5	8.4	24	-
			2	ρ_a	700	248	924	94
				Depth(m)	2.9	15	33	-
Zango	Dushe	Gundumi	1	ρ_a	24900	115	2220	-
				Depth(m)	0.3	95	-	-
			2	ρ_a	221	79	116	357
				Depth(m)	0.6	37	43	-
Kafur	Gozaki	Basement	1	ρ_a	231	61	859	-
				Depth(m)	1.6	46	-	-
			2	ρ_a	220	71	32300	-
				Depth(m)	1.2	5.4	14	-
Kankara	Gundawa	Basement	1	ρ_a	529	43	2210	-
				Depth(m)	0.8	4.7	-	-
			2	ρ_a	530	25	1600	-
				Depth(m)	0.7	57	-	-
Malumfashi	Gundurawa	Basement	1	ρ_a	48	11	1450	-
				Depth(m)	4.9	18	-	-
			2	ρ_a	231	47	1330	-
				Depth(m)	2.1	55	-	-
			2	ρ_a	251	50	1740	-
				Depth(m)	1.8	34	-	-

*Gray spaces indicate layers where groundwater may occur.

Table 3 Measurement data

BAUCHI STATE		SCHL	400. 000	0. 000	1	934531. 000	March2009	1013286. 000	BASIC DESIGN STUDY	No.	1. 0000	78. 0000	RHO-A	0	SASS300
BAUCHI LGA	JICA					1	0			2	1. 5000	84. 0000			
BAUCHI STATE NIGERIA	BASIC DESIGN STUDY									3	2. 0000	65. 0000			
No.	SPACING									4	2. 5000	59. 0000			
1	1. 0000									5	3. 0000	48. 0000			
2	1. 5000									6	4. 0000	43. 0000			
3	2. 0000									7	5. 0000	38. 0000			
4	2. 5000									8	6. 5000	40. 0000			
5	3. 0000									9	8. 0000	44. 0000			
6	4. 0000									10	10. 0000	48. 0000			
7	5. 0000									11	13. 0000	51. 0000			
8	6. 5000									12	16. 0000	60. 0000			
9	8. 0000									13	20. 0000	76. 0000			
10	10. 0000									14	25. 0000	97. 0000			
11	13. 0000									15	30. 0000	124. 0000			
12	16. 0000									16	40. 0000	165. 0000			
13	20. 0000									17	50. 0000	224. 0000			
14	25. 0000									18	65. 0000	296. 0000			
15	30. 0000									19	80. 0000	346. 0000			
16	40. 0000									20	100. 0000	401. 0000			
DATASET: LUGGE1		NORTH:	1013286. 00	EAST:		934531. 00	ELEVATION:								
400. 00	LAYER	RESISTIVITY	THICKNESS	(meters)											
19	80. 0000	274. 0000													
20	100. 0000	387. 0000													
DATASET: LUGGE1		NORTH:	1013286. 00	EAST:		934531. 00	ELEVATION:								
400. 00	LAYER	RESISTIVITY	THICKNESS	(meters)											
1	4. 59917E+02	8. 83131E-01													
2	8. 45491E+01	2. 24808E+01													
3	4. 05815E+03														
DATASET: LUGGE2		SCHL	400. 000	0. 000	1	934531. 000	March2009	1013286. 000	BASIC DESIGN STUDY	No.	0. 000	1	934531. 000	1013286. 000	SASS300
JICA	BAUCHI LGA														
GAMAWA LGA															
BAUCHI STATE NIGERIA	BASIC DESIGN STUDY														
No.	SPACING														
1	1. 0000														

Table 3 Measurement data

DATASET: BUSKUWA1 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:			400.00			DATASET: BUSKUWA2 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:			400.00			DATASET: BUSKUWA2 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:					
	LAYER	RESISTIVITY	THICKNESS	(meters)		LAYER	RESISTIVITY	THICKNESS	(meters)		LAYER	RESISTIVITY	THICKNESS	(meters)		LAYER	RESISTIVITY	THICKNESS	(meters)		LAYER	RESISTIVITY	THICKNESS	(meters)		
2	1. 5000	506. 0000				1	6. 07393E+02	3. 75367E+00			1	1. 55552E+02	1. 09489E+00			1	1. 0000	15. 0000			JICA	GANJUWA LGA				
3	2. 0000	407. 0000				2	1. 56060E+02	7. 86763E+00			2	1. 40367E+02	2. 99206E+01			2	1. 5000	16. 0000			BAUCHI STATE NIGERIA	BASIC DESIGN STUDY	RHO-A			
4	2. 5000	386. 0000				3	1. 41361E+02	8. 32912E+00			3	5. 65880E+02				3	2. 0000	17. 0000			SAS300					
5	3. 0000	400. 0000				4	3. 46096E+02																			
6	4. 0000	371. 0000				5																				
7	5. 0000	419. 0000				6																				
8	6. 5000	305. 0000				7																				
9	8. 0000	291. 0000				8																				
10	8. 0000	373. 0000				9																				
11	10. 0000	324. 0000				10																				
12	13. 0000	255. 0000				11																				
13	16. 0000	188. 0000				12																				
14	20. 0000	200. 0000				13																				
15	25. 0000	189. 0000				14																				
16	30. 0000	175. 0000				15																				
17	50. 0000	183. 0000				16																				
18	65. 0000	254. 0000				17																				
19	80. 0000	363. 0000				18																				
20	100. 0000	373. 0000				19																				
21	130. 0000	341. 0000				20																				
22	160. 0000	278. 0000				21																				
23	200. 0000	300. 0000				22																				
DATASET: BUSKUWA1 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:			400.00			DATASET: BUSKUWA2 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:			400.00			DATASET: BUSKUWA2 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:					
LAYER			THICKNESS			(meters)			LAYER			THICKNESS			(meters)			LAYER			THICKNESS					
1			3. 75367E+00						1			1. 09489E+00						1			1. 0000					
2			7. 86763E+00						2			2. 99206E+01						2			1. 5000					
3			8. 32912E+00						3			5. 65880E+02						3			2. 0000					
4			8. 46096E+02																							
BUSKUWA2 SCHL			0.000			1			934531.00			1013286.000			March2009			1			934531.000					
JICA GAMAWA LGA BAUCHI STATE NIGERIA BASIC DESIGN STUDY No.			SPACING			1			SAS300			RHO-A			1			1			1. 0000					
1			174. 0000						1						0			0			0					
DATASET: BUSKUWA2 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:			400.00			DATASET: BUSKUWA2 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:			400.00			DATASET: BUSKUWA2 NORTH: 1013286.00 EAST:			934531.00 ELEVATION:					
LAYER			RESISTIVITY			THICKNESS			(meters)			LAYER			RESISTIVITY			THICKNESS			(meters)					
1			1. 55552E+02			1. 09489E+00			1			1. 55552E+02			1. 0000			1. 0000			1. 0000					
2			1. 40367E+02			2. 99206E+01			2			1. 40367E+02			1. 5000			1. 5000			1. 5000					
3			5. 65880E+02																							
MANGA1 SCHL			400. 000			1			934531. 000			1013286. 000			400. 000			0. 000			1					
JICA GAMAWA LGA BAUCHI STATE NIGERIA BASIC DESIGN STUDY No.			SPACING			1			SAS300			RHO-A			1			1			1					
1			174. 0000						1						1			17. 0000			17. 0000					

Table 3 Measurement data

DATASET : MANGA1		NORTH:	1013286.00 EAST:	934531.00 ELEVATION:		
400.00	LAYER	RESISTIVITY	THICKNESS	(meters)		
15	40.000	55.0000				
16	50.000	68.0000				
17	80.0000	88.0000				
18	100.0000	110.0000				
DATASET : MANGA2		NORTH:	1013286.00 EAST:	934531.00 ELEVATION:		
400.00	LAYER	RESISTIVITY	THICKNESS	(meters)		
1	1.49005E+01	2.22841E+00				
2	5.20582E+01	3.21032E+01				
3	4.60910E+02					
JICA		SCHL	400.000	0.000	1	934531.000
GANJUWA LGA						March2009
BAUCHI STATE NIGERIA						1
BASIC DESIGN STUDY						0
No.	SPACING	RHO-A				SASS300
1	1.0000	24.0000				
2	1.5000	22.0000				
3	2.0000	22.0000				
4	2.5000	21.0000				
5	3.0000	21.0000				
6	4.0000	20.0000				
7	5.0000	18.0000				
8	8.0000	22.0000				
9	10.0000	18.0000				
GWARAI1		SCHL	400.000	0.000	1	934531.000
JICA						March2009
ITAS-GADAU LGA						1
BAUCHI STATE NIGERIA						0
BASIC DESIGN STUDY						SASS300
No.	SPACING	RHO-A				
1	1.0000	50.0000				
2	1.5000	55.0000				
3	2.0000	57.0000				
4	2.5000	58.0000				
5	3.0000	56.0000				
6	4.0000	76.0000				
7	5.0000	70.0000				
8	6.5000	78.0000				
9	8.0000	37.0000				
10	10.0000	35.0000				
11	13.0000	33.0000				
12	16.0000	34.0000				
13	20.0000	62.0000				
14	80.0000	67.0000				

Table 3 Measurement data

DATASET: GWARA11 NORTH: 1013286.00 EAST: 400.00 ELEVATION: 934531.00			DATASET: GWARA12 NORTH: 1013286.00 EAST: 400.00 ELEVATION: 934531.00		
LAYER	RESISTIVITY	THICKNESS (meters)	LAYER	RESISTIVITY	THICKNESS (meters)
1	6.27238E+01	4.02910E+00	1	9.79802E+01	3.07358E+00
2	1.92362E+01	5.34463E+00	2	6.59930E+00	4.10387E+00
3	1.15966E+02		3	6.92839E+02	
GWARA12	SCHL	400.000	0.000	1	934531.000
JICA	ITAS-GADAU LGA				March2009
BAUCHI STATE NIGERIA					1
BASIC DESIGN STUDY					0
No.	SPACING	RHO-A	No.	SPACING	RHO-A
1	1.0000	103.0000	1	1.0000	453.0000
2	1.5000	95.0000	2	1.5000	436.0000
3	2.0000	89.0000	3	2.0000	514.0000
4	2.5000	86.0000	4	2.5000	610.0000
5	3.0000	87.0000	5	3.0000	542.0000
6	4.0000	75.0000	6	4.0000	570.0000
7	5.0000	61.0000	7	5.0000	477.0000
8	8.0000		8	8.0000	446.0000
9	10.0000	34.0000	9	10.0000	423.0000
10	13.0000	19.0000	10	13.0000	300.0000
11	16.0000	18.0000	11	16.0000	242.0000
12	20.0000	36.0000	12	20.0000	191.0000
13	25.0000		13	25.0000	156.0000
14	30.0000		14	30.0000	191.0000
15	40.0000		15	40.0000	175.0000
16	50.0000	24.0000	16	50.0000	224.0000
17	65.0000	39.0000	17	65.0000	278.0000
18	80.0000	31.0000	18	80.0000	321.0000
19	100.0000		19	100.0000	293.0000
20	130.0000		20	130.0000	248.0000
21	160.0000		21	160.0000	482.0000
KURA1	SCHL	400.000	0.000	1	934531.000
JICA	KATAGUM DUHUMAR LGA				March2009
BAUCHI STATE NIGERIA					1
BASIC DESIGN STUDY					0
No.	SPACING	RHO-A	No.	SPACING	RHO-A
1	1.0000	453.0000	1	1.0000	453.0000
2	1.5000	436.0000	2	1.5000	436.0000
3	2.0000	514.0000	3	2.0000	514.0000
4	2.5000	610.0000	4	2.5000	610.0000
5	3.0000	542.0000	5	3.0000	542.0000
6	4.0000	570.0000	6	4.0000	570.0000
7	5.0000	477.0000	7	5.0000	477.0000
8	8.0000		8	8.0000	
9	10.0000		9	10.0000	
10	13.0000		10	13.0000	
11	16.0000		11	16.0000	
12	20.0000		12	20.0000	
13	25.0000		13	25.0000	
14	30.0000		14	30.0000	
15	40.0000		15	40.0000	
16	50.0000		16	50.0000	
17	65.0000		17	65.0000	
18	80.0000		18	80.0000	
19	100.0000		19	100.0000	
20	130.0000		20	130.0000	
21	160.0000		21	160.0000	
KURA1	NORTH:	400.00	1013286.00	EAST:	934531.00
JICA	NORTH:	400.00	1013286.00	EAST:	934531.00

Table 3 Measurement data

Table 3 Measurement data

BAUCHI STATE NIGERIA BASIC DESIGN STUDY			0	SASS300
No.	SPACING	RHO-A		
1	1.0000	115.0000		
2	1.5000	55.0000		
3	2.0000	52.0000		
4	2.5000	56.0000		
5	3.0000	73.0000		
6	4.0000	58.0000		
7	5.0000	73.0000		
8	6.5000	66.0000		
9	8.0000	76.0000		
10	10.0000	76.0000		
11	13.0000	78.0000		
12	16.0000	72.0000		
13	20.0000	74.0000		
14	25.0000	69.0000		
15	30.0000	69.0000		
16	40.0000	97.0000		
17	50.0000	83.0000		
18	65.0000	128.0000		
19	80.0000	154.0000		
20	100.0000	171.0000		
DATASET: B012			NORTH:	1013286.00 EAST:
400.00			934531.00 ELEVATION:	934531.00 ELEVATION:
LAYER			400.00	400.00
1	6.88649E+01	1.25406E+01	LAYER	RESISTIVITY
2	5.72000E+01	1.57618E+01		THICKNESS
3	6.61431E+02		(meters)	(meters)
DATASET: BASH1			JICA	
400.00			TAFAWA BALEWA LGA	
LAYER			BAUCHI STATE NIGERIA	
1	400.000	0.000	BASIC DESIGN STUDY	
2	934531.000	1013286.000	No.	SPACING
3	March2009	1	1	RHO-A
DATASET: BASH2				
400.00				
LAYER				
1	2.58611E+02	1.21110E+00		
2	1.39302E+02	8.77253E+00		
3	2.67281E+03			
DATASET: BASH1				
400.00				
LAYER				
1	400.000	0.000		
2	934531.000	1013286.000	No.	
3	March2009	1	1	
DATASET: BASH2				
400.00				
LAYER				
1	1.0000	367.0000		
2	1.5000	267.0000		
3	2.0000	199.0000		
4	2.5000	151.0000		
5	3.0000	127.0000		

Table 3 Measurement data

DATASET: BASHI2 NORTH: 1013286.00 EAST: 934531.00 ELEVATION: 400.00			DATASET: ZULL1 NORTH: 1013481.00 EAST: 934442.00 ELEVATION: 400.00		
LAYER	RESISTIVITY	THICKNESS (meters)	LAYER	RESISTIVITY	THICKNESS (meters)
1	3.75921E+02	1.06979E+00	1	7.12585E+01	7.18084E+00
2	3.97565E+01	8.19293E+00	2	2.30800E+01	7.44370E-01
3	1.21616E+02	3.87994E+00	3	3.59959E+02	
4	5.85403E+01	2.76295E+00	ZULL2	SCHL	400.000 0.000 1
5	6.85626E+03		JICA TORO LGA BAUCHI STATE NIGERIA BASIC DESIGN STUDY No.	1	934531.000 March2009
ZULL1	SCHL	400.000 0.000 1	1013481.000 March2009	1	1013286.000 March2009
JICA TORO LGA BAUCHI STATE NIGERIA BASIC DESIGN STUDY No.	1	0	0	1	0
1	1.0000 SPACING	64.0000 RHO-A	1	1.0000 SPACING	139.0000 RHO-A
2	1.5000	67.0000	2	1.5000	38.0000
3	2.0000	67.0000	3	2.0000	31.0000
4	2.5000	56.0000	4	2.5000	24.0000
5	3.0000	57.0000	5	3.0000	28.0000
6	4.0000	67.0000	6	4.0000	23.0000
7	5.0000	77.0000	7	5.0000	18.0000
			8	6.5000	26.0000
			9	8.0000	39.0000
			10	10.0000	42.0000

Table 3 Measurement data

Table 3 Measurement data

DATASET: GUDA2		NORTH: 1102493.00 EAST:		932100.00 ELEVATION:			
LAYER	RESISTIVITY	THICKNESS	(meters)				
1	1. 99158E+02	1. 13836E+00				2. 27446E+00	9. 30636E-01
2	1. 03152E+01	5. 81278E+00				3. 1. 20419E+02	6. 8872E+00
3	6. 56946E+04					4. 7. 02551E+01	3. 99747E+00
						5. 9. 21361E+02	
BAIMA1		SCHL	400. 000	0. 000	1	946741. 000	1107233. 000
JICA	WARJI LGA	BAUCHI STATE NIGERIA	BASIC DESIGN STUDY	No.	SPACING	RHO-A	
			SASS300				
1	1. 0000	101. 0000	RHO-A				
2	1. 5000	69. 0000					
3	2. 0000	47. 0000					
4	2. 5000	51. 0000					
5	3. 0000	54. 0000					
6	4. 0000	65. 0000					
7	5. 0000	48. 0000					
8	6. 5000	61. 0000					
9	8. 0000	27. 0000					
10	10. 0000	21. 0000					
11	13. 0000	21. 0000					
12	16. 0000	21. 0000					
13	20. 0000	21. 0000					
14	25. 0000	32. 0000					
15	30. 0000	56. 0000					
16	40. 0000	100. 0000					
17	50. 0000	130. 0000					
18	80. 0000	162. 0000					
19	100. 0000	247. 0000					
20	130. 0000	179. 0000					
DATASET: BAIMA2		NORTH:	1107674. 00 EAST:	946741. 00 ELEVATION:			
ELEVATION:	400. 00			400. 00	LAYER	RESISTIVITY	THICKNESS
					1	8. 77717E+01	2. 00154E+00
LAYER	RESISTIVITY	THICKNESS	(meters)		2	1. 17524E+02	1. 85371E+00
1	7. 10005E+01	3. 04027E+00			3	1. 00168E+01	4. 46331E+00

Table 3 Measurement data

Table 3 Measurement data

DATASET: KANDAWA2 NORTH: 1295527.00 EAST: 726571.00 ELEVATION: 0.00				DATASET: KANDAWA3 NORTH: 1295511.00 EAST: 726640.00 ELEVATION: 416.00			
LAYER RESISTIVITY THICKNESS (meters)				LAYER RESISTIVITY THICKNESS (meters)			
1	6.19506E+01	2.37164E+00	0	SAS1000	1	9.47016E+02	2.99747E-01
2	1.42144E+01	1.82484E+01		RHO-A	2	6.74085E+01	7.13150E+00
3	1.28948E+03				3	2.47761E+01	1.22502E+01
KANDAWA3	SCHL	416.000	0.000	1	726640.000	1295511.000	KANDAWA3
JICA	BATSARI LGA	1	March2009	1	416.000	1	JICA
KATSINA STATE NIGERIA	BASIC DESIGN STUDY SPACING	0	SAS1000	0	9.47016E+02	2.99747E-01	BATSARI LGA
No.					6.74085E+01	7.13150E+00	KATSINA STATE NIGERIA
1	1.0000	136.0000	RHO-A	3	2.47761E+01	1.22502E+01	
2	2.0000	48.0000		4	9.86347E+02		
3	3.0000	44.0000					
4	5.0000	48.0000					
5	6.0000	47.0000					
6	6.0000	52.0000					
7	8.0000	49.0000					

Table 3 Measurement data

BASIC DESIGN STUDY		SAS1000			
No.	SPACING	RHO-A			
1	1.0000	136.0000			
2	2.0000	48.0000			
3	3.0000	44.0000			
4	5.0000	48.0000			
5	6.0000	47.0000			
6	6.0000	52.0000			
7	8.0000	49.0000			
8	10.0000	47.0000			
9	10.0000	48.0000			
10	15.0000	38.0000			
11	20.0000	35.0000			
12	30.0000	42.0000			
13	40.0000	54.0000			
14	40.0000	65.0000			
15	50.0000	70.0000			
16	60.0000	76.0000			
17	70.0000	97.0000			
18	80.0000	109.0000			
19	80.0000	115.0000			
20	90.0000	129.0000			
21	100.0000	149.0000			
22	110.0000	161.0000			
23	130.0000	198.0000			
24	140.0000	200.0000			
25	150.0000	204.0000			
26	200.0000	237.0000			
DATASET: KANDAWA3 NORTH:		1295511.00 EAST:	726640.00 ELEVATION:		
416.00	LAYER	RESISTIVITY	THICKNESS	(meters)	
19				80.0000	46.0000
20				90.0000	49.0000
21				100.0000	60.0000

Table 3 Measurement data

DATASET: TURARE1 NORTH: 1232755.00 EAST: 749401.00 ELEVATION:
 13.00 LAYER RESISTIVITY THICKNESS (meters)
 1 1.39621E+02 5.72172E+00
 2 4.09823E+01 7.02947E+01
 3 2.02195E+03

DATASET: TURARE2 NORTH: 1232815.00 EAST: 749424.00 ELEVATION:
 13.00 LAYER RESISTIVITY THICKNESS (meters)
 1 1.39621E+02 5.72172E+00
 2 4.09823E+01 7.02947E+01
 3 2.02195E+03

JRARE2 SCHL 508.000 0.000 1 749424.000 1232815.000
 JICA
 DUTSIN-MA LGA
 KATSINA STATE NIGERIA
 BASIC DESIGN STUDY
 SAS1000

No.	SPACING	RHO-A	TUDUN1	SCHL	510.000	0.000	1	769346.000	1288333.000
1	1.0000	305.0000	JICA					March2009	
2	2.0000	209.0000	RIMI LGA					1	
3	3.0000	149.0000	KATSINA STATE NIGERIA					0	
4	5.0000	111.0000	BASIC DESIGN STUDY					SAS1000	
5	6.0000	120.0000	No.	SPACING					
6	6.0000	122.0000	1	1.0000					
7	8.0000	156.0000	2	2.0000					
8	10.0000	174.0000	3	3.0000					
9	10.0000	163.0000	4	5.0000					
10	15.0000	145.0000	5	6.0000					
11	20.0000	123.0000	6	6.0000					
12	30.0000	107.0000	7	8.0000					
13	40.0000	92.0000	8	10.0000					
14	40.0000	73.0000	9	10.0000					
15	50.0000	66.0000	10	15.0000					
16	60.0000	66.0000	11	20.0000					
17	70.0000	67.0000	12	30.0000					

Table 3 Measurement data

Table 3 Measurement data

UMMADAU2				DATASET: UMMADAU1 NORTH: 1258705.00 EAST: 732612.00 ELEVATION: 512.00				DATASET: UMMADAU2 NORTH: 1258783.00 EAST: 732592.00 ELEVATION: 518.00			
No.	Layer	Resistivity	Thickness (meters)	No.	Layer	Resistivity	Thickness (meters)	No.	Layer	Resistivity	Thickness (meters)
3	3.0000	13.0000		1	1.0000	488.0000		1	1.0000	488.0000	
4	5.0000	16.0000		2	2.0000	436.0000		2	2.0000	436.0000	
5	6.0000	18.0000		3	3.0000	159.0000		3	3.0000	159.0000	
6	6.0000	18.0000		4	5.0000	30.0000		4	5.0000	30.0000	
7	8.0000	20.0000		5	6.0000	25.0000		5	6.0000	25.0000	
8	10.0000	22.0000		6	6.0000	30.0000		6	6.0000	30.0000	
9	10.0000	21.0000		7	8.0000	26.0000		7	8.0000	26.0000	
10	15.0000	26.0000		8	10.0000	31.0000		8	10.0000	31.0000	
11	20.0000	32.0000		9	10.0000	28.0000		9	10.0000	28.0000	
12	30.0000	40.0000		10	15.0000	31.0000		10	15.0000	31.0000	
13	40.0000	63.0000		11	20.0000	40.0000		11	20.0000	40.0000	
14	40.0000	58.0000		12	30.0000	56.0000		12	30.0000	56.0000	
15	50.0000	71.0000		13	40.0000	62.0000		13	40.0000	62.0000	
16	60.0000	83.0000		14	40.0000	91.0000		14	40.0000	91.0000	
17	70.0000	100.0000		15	50.0000	86.0000		15	50.0000	86.0000	
18	80.0000	110.0000		16	60.0000	48.0000		16	60.0000	48.0000	
19	90.0000	124.0000		17	70.0000	44.0000		17	70.0000	44.0000	
20	100.0000	142.0000		18	80.0000	236.0000		18	80.0000	236.0000	
21	110.0000	151.0000		19	90.0000	184.0000		19	90.0000	184.0000	
DATASET: UMMADAU1 NORTH: 1258705.00 EAST: 732612.00 ELEVATION: 512.00				20	100.0000	177.0000		20	100.0000	177.0000	
DATASET: UMMADAU2 NORTH: 1258783.00 EAST: 732592.00 ELEVATION: 518.00				21	110.0000	236.0000		21	110.0000	236.0000	
JICA SAFANA LGA KATSINA STATE NIGERIA BASIC DESIGN STUDY SAS1000				DOGORU1 SCHL 443.000 0.000 1 800658.000 March2009				DOGORU1 SCHL 443.000 0.000 1 800658.000 March2009			

Table 3 Measurement data

Table 3 Measurement data

DATASET : DOGORU2		NORTH:	1315315.00	EAST:	800352.00	ELEVATION:	443.00	LAYER	RESISTIVITY	THICKNESS	(meters)
19	80.0000	1080.0000					10	15.0000	246.0000		
20	90.0000	1072.0000					11	20.0000	308.0000		
21	100.0000	1034.0000					12	30.0000	360.0000		
22	110.0000	1100.0000					13	40.0000	363.0000		
23	130.0000	930.0000					14	40.0000	323.0000		
24	140.0000	916.0000					15	50.0000	357.0000		
25	150.0000	935.0000					16	60.0000	359.0000		
26	200.0000	989.0000					17	70.0000	319.0000		
							18	80.0000	267.0000		
							19	80.0000	276.0000		
							20	90.0000	250.0000		
							21	100.0000	282.0000		
							22	110.0000	283.0000		
							23	120.0000	213.0000		
							24	130.0000	268.0000		
							25	140.0000	184.0000		
							26	150.0000	186.0000		
KATSAYA1		SCHL	490.000	0.000	1	843700.000	1294448.000	DATASET : KATSAYA1 NORTH: 1294448.00 EAST: 843700.00 ELEVATION: 490.00			
JICA		SANDAMU LGA	1	March2009		LAYER RESISTIVITY THICKNESS (meters)					
KATSINA STATE NIGERIA		0	SAS1000		1 1.30586E+03 1.55710E+00						JICA
BASIC DESIGN STUDY		RHO-A			2 1.39800E+02 6.91412E+00						SANDAMU LGA
No.	SPACING				3 8.16688E+02 1.58260E+01						KATSINA STATE NIGERIA
1	1.0000	1779.0000			4 1.39066E+02						BASIC DESIGN STUDY
2	2.0000	918.0000									No. SPACING
3	3.0000	792.0000									RHO-A
4	5.0000	430.0000									
5	6.0000	308.0000									
6	6.0000	316.0000									
7	8.0000	230.0000									
8	10.0000	224.0000									
9	10.0000	206.0000									

Table 3 Measurement data

			3	9.24358E+02	1.83146E+01	
			4	9.47809E+01		
1	1. 0000	733. 0000				
2	2. 0000	572. 0000				
3	3. 0000	539. 0000				
4	5. 0000	515. 0000				
5	6. 0000	450. 0000	DUSHE1	SGHL	439. 000	
6	6. 0000	407. 0000	JICA		0. 000	
7	8. 0000	338. 0000	ZANGO LGA		1	
8	10. 0000	302. 0000	KATSINA STATE NIGERIA		0	
9	10. 0000	309. 0000	BASIC DESIGN STUDY		SASS1000	
10	15. 0000	269. 0000	No.	SPACING	RHO-A	
11	20. 0000	271. 0000	1	1. 0000	944. 0000	
12	30. 0000	300. 0000	2	2. 0000	57. 0000	
13	40. 0000	314. 0000	3	3. 0000	66. 0000	
14	40. 0000	298. 0000	4	5. 0000	59. 0000	
15	50. 0000	343. 0000	5	6. 0000	56. 0000	
16	60. 0000	338. 0000	6	6. 0000	73. 0000	
17	70. 0000	319. 0000	7	8. 0000	67. 0000	
18	80. 0000	307. 0000	8	10. 0000	64. 0000	
19	80. 0000	381. 0000	9	10. 0000	87. 0000	
20	90. 0000	216. 0000	10	15. 0000	66. 0000	
21	100. 0000	290. 0000	11	20. 0000	61. 0000	
22	110. 0000	311. 0000	12	30. 0000	68. 0000	
23	120. 0000	177. 0000	13	40. 0000	72. 0000	
24	130. 0000	311. 0000	14	40. 0000	93. 0000	
25	140. 0000	188. 0000	15	50. 0000	107. 0000	
26	150. 0000	188. 0000	16	60. 0000	116. 0000	
			17	70. 0000	119. 0000	
			18	80. 0000	124. 0000	
			19	80. 0000	134. 0000	
490. 00	LAYER	RESISTIVITY	THICKNESS	(meters)		
	1	7. 00409E+02	2. 96330E+00		20	90. 0000
	2	2. 48430E+02	1. 19450E+01		21	100. 0000
					22	110. 0000
					23	120. 0000

DATASET : KATSAYA2 NORTH: 1294367. 00 EAST: 843712. 00 ELEVATION:

490. 00

Table 3 Measurement data

Table 3 Measurement data

No.	SPACING	RH0-A	DUSHE3			NORTH:	EAST:	ELEVATION:
			DATA SET:	LAYER	RESISTIVITY	THICKNESS	(meters)	
7	8. 0000	74. 0000						
8	10. 0000	63. 0000						
9	10. 0000	70. 0000						
10	15. 0000	57. 0000						
11	20. 0000	55. 0000						
12	30. 0000	62. 0000						
13	40. 0000	67. 0000						
14	40. 0000	72. 0000						
15	50. 0000	81. 0000						
16	60. 0000	89. 0000						
17	80. 0000	100. 0000						
18	80. 0000	96. 0000						
19	90. 0000	119. 0000						
20	100. 0000	130. 0000						
21	110. 0000	140. 0000						
22	120. 0000	151. 0000						
23	130. 0000	159. 0000						
24	140. 0000	143. 0000						
25	150. 0000	167. 0000						
430. 00	LAYER	RESISTIVITY	THICKNESS	(meters)				
	1	2. 31013E+02	1. 57458E+00					
	2	6. 19501E+01	4. 45473E+01					
	3	8. 59141E+02						
GOZAKI1	SCHL	629. 000	0. 000	1	764338. 000	115829. 000		
JICA					March2009			
KAFUR LGA					1			
KATSINA STATE NIGERIA					0			
BASIC DESIGN STUDY					SAS1000			
430. 00	LAYER	RESISTIVITY	THICKNESS	(meters)				
	1	2. 20335E+02	1. 21854E+00					
629. 00								
DATA SET: GOZAKI1	NORTH:	115829. 00	EAST:	764338. 00	ELEVATION:	764338. 00		

Table 3 Measurement data

Table 3 Measurement data

DATASET: GUNDAWA1 NORTH: 1202846.00 EAST: 751438.00 ELEVATION: 562.00				DATASET: GUNDWA2 NORTH: 1203020.00 EAST: 751737.00 ELEVATION: 562.00			
LAYER	RESISTIVITY	THICKNESS (meters)		LAYER	RESISTIVITY	THICKNESS (meters)	
1	5.30202E+02	6.95251E-01		1	4.84900E+01	4.94002E+00	
2	2.45164E+01	5.69532E+01		2	1.14335E+01	1.31864E+01	
3	1.60387E+03			3	1.45019E+03		
GUNDWA2	SCHL	562.000	0.000	1	751737.000	1203020.000	
JICA				MARCH2009			
KANKARA LGA				1			
KATSINA STATE NIGERIA				0			
BASIC DESIGN STUDY				SAS1000			
No.	SPACING	RHO-A		GUNDURA1	SCHL	629.000	0.000
1	1.0000	45.0000		JICA			1
2	2.0000	47.0000		MALUMFASHI LGA			1
3	3.0000	50.0000		KATSINA STATE NIGERIA			0
4	5.0000	46.0000		BASIC DESIGN STUDY			SAS1000
5	6.0000	43.0000		No.	SPACING	RHO-A	
6	6.0000	51.0000		1	1.0000	188.0000	
7	8.0000	40.0000		2	2.0000	142.0000	
8	10.0000	36.0000		3	3.0000	124.0000	
9	10.0000	38.0000		4	5.0000	91.0000	
10	15.0000	30.0000		5	6.0000	73.0000	
				6	6.0000	73.0000	

Table 3 Measurement data

BASIC DESIGN STUDY				SAS1000
No.	SPACING	RHO-A		
7	8. 0000	52. 0000		
8	10. 0000	44. 0000		
9	10. 0000	44. 0000		
10	15. 0000	38. 0000		
11	20. 0000	36. 0000		
12	30. 0000	38. 0000		
13	40. 0000	38. 0000		
14	40. 0000	48. 0000		
15	50. 0000	49. 0000		
16	60. 0000	56. 0000		
17	70. 0000	63. 0000		
18	80. 0000	68. 0000		
19	80. 0000	73. 0000		
20	90. 0000	80. 0000		
21	100. 0000	86. 0000		
22	110. 0000	94. 0000		
23	130. 0000	96. 0000		
24	140. 0000	111. 0000		
25	150. 0000	120. 0000		
26	200. 0000	165. 0000		
DATASET : GUNDURA1 NORTH: 1192100. 00 EAST: 775634. 00 ELEVATION: 629. 00				
LAYER	RESISTIVITY	THICKNESS (meters)		
1	2. 31402E+02	2. 13331E+00		
2	4. 71506E+01	5. 29647E+01		
3	1. 32529E+03			
GUNDURA2 SCHL	605. 000	0. 000	1	775622. 000
				1192018. 000
				March2009
JIGA				
MALUMFASHI LGA	1			
KATSINA STATE NIGERIA	0			
DATASET: GUNDURA2 NORTH:	1192018. 00 EAST:	775622. 00 ELEVATION:	605. 00	
LAYER	RESISTIVITY	THICKNESS (meters)		

Table 3 Measurement data

1	2. 51896E+02	1. 79121E+00
2	5. 02766E+01	3. 25603E+01
3	1. 74421E+03	

Table4 Result of Geophysical Survey(Bauchi State)

	:overburden,weathered layer
	:dry layer, base rock
	:low resistivity layer (groundwater potential)

LGA	Village	Geology	No.	coordinates	Parameter	Layers				
						L1	L2	L3	L4	L5
Bauchi	Lugge	Basement	1	N10° 09.652' E09° 41.584'	Resistivity(Ohm-m) Depth(m)	459 0.9	85 23	4050 -		
			2	N10° 09.605' E09° 41.688'	Resistivity(Ohm-m) Depth(m)	91 1.1	31 8.3	54100 -		
Gamawa	Buskuwa	Chad	1	N11° 41.461' E10° 32.067'	Resistivity(Ohm-m) Depth(m)	607 3.7	156 11	141 20	346 -	
			2	N11° 41.519' E10° 32.093'	Resistivity(Ohm-m) Depth(m)	155 1.1	140 31	565 -		
Ganjuwa	Manga	Basement	1	N10° 51.154' E10° 18.314'	Resistivity(Ohm-m) Depth(m)	15 2.2	52 34	460 -		
			2	N10° 51.154' E10° 18.434'	Resistivity(Ohm-m) Depth(m)	21 2.8	17 16	917 -		
Itas-Gadau	Gwarai	Chad	1	N11° 49.061' E09° 54.104'	Resistivity(Ohm-m) Depth(m)	63 4.0	19 9.3	115 -		
			2	N11° 48.928' E09° 54.249'	Resistivity(Ohm-m) Depth(m)	97 3.0	6.6 7.1	692 -		
Katagum	Duhuwarkura	Kerri-Kerri	1	N11° 45.415' E10° 10.131'	Resistivity(Ohm-m) Depth(m)	528 6.4	86 18	501 -		
			2	N11° 44.028' E10° 10.228'	Resistivity(Ohm-m) Depth(m)	6040 2.8	273 12	2410 -		
Bogoro	Boi	Basement	1	N09° 35.511' E09° 30.314'	Resistivity(Ohm-m) Depth(m)	70 1.1	31 9.6	11500 -		
			2	N09° 33.360' E09° 30.008'	Resistivity(Ohm-m) Depth(m)	69 12.0	57 28	661 -		
Tafawabalewa	Bashi	Basement	1	N09° 49.116' E09° 28.733'	Resistivity(Ohm-m) Depth(m)	258 1.2	139 9.9	2670 -		
			2	N09° 49.135' E09° 28.672'	Resistivity(Ohm-m) Depth(m)	375 1.1	39 9.2	121 13	58 16	6850 -
Toro	Zull	Basement	1	N10° 13.481' E09° 34.442'	Resistivity(Ohm-m) Depth(m)	71 7.1	23 8.0	359 -		
			2	N10° 13.286' E09° 34.531'	Resistivity(Ohm-m) Depth(m)	737 0.3	22 6.1	710 -		
Ningi	Guda	Basement	1	N11° 02.259' E09° 32.085'	Resistivity(Ohm-m) Depth(m)	344 2.1	41 23	5400 -		
			2	N11° 02.493' E09° 32.100'	Resistivity(Ohm-m) Depth(m)	199 1.1	10 6.9	65600 -		
Warji	Baima	Basement	1	N11° 07.674' E09° 46.954'	Resistivity(Ohm-m) Depth(m)	71 3.0	2.2 4.0	120 11	70 15	921 -
			2	N11° 07.233' E09° 46.741'	Resistivity(Ohm-m) Depth(m)	87 2.0	117 3.9	10 8.3	1140 -	

Table 4 Result of Geophysical Survey(Katsina State)

	:overburden,weathered layer
	:dry layer, base rock
	:low resistivity layer (groundwater potential)

LGA	Village	Geology	No.	coordinates	Parameter	Layers			
						L1	L2	L3	L4
Bastsar	Kandawa	Basement	1	N12° 57.465' E07° 16.381'	Resistivity(Ohm-m) Depth(m)	45 0.5	25 2.7	967 -	
			2	N12° 57.316' E07° 15.943'	Resistivity(Ohm-m) Depth(m)	61 2.3	14 20	1290 -	
			3	N12° 57.307' E07° 15.984'	Resistivity(Ohm-m) Depth(m)	947 0.3	67 7.4	24 20	986 -
Dushin-Ma	Turare	Basement	1	N12° 19.653' E07° 29.641'	Resistivity(Ohm-m) Depth(m)	139 5.7	40 76	2020 -	
			2	N12° 19.689' E07° 29.654'	Resistivity(Ohm-m) Depth(m)	352 0.7	96 4.0	242 8.2	71 -
Rimi	Tudun Kadir	Basement	1	N12° 48.200' E07° 41.608'	Resistivity(Ohm-m) Depth(m)	99 2.4	63 12	298 -	
			2	N12° 35.223' E07° 41.654'	Resistivity(Ohm-m) Depth(m)	655 0.4	76 11	192 -	
Safana	Ummadau	Basement	1	N12° 35.223' E07° 19.567'	Resistivity(Ohm-m) Depth(m)	12 3.2	21 12	11500 -	
			2	N12° 35.270' E07° 19.555'	Resistivity(Ohm-m) Depth(m)	1260 0.9	37 21	1400 -	
Mashi	Doguru	Sedimentary	1	N13° 09.237' E08° 00.395'	Resistivity(Ohm-m) Depth(m)	751 2.8	121 9.9	1830 42	352 -
			2	N13° 09.189' E08° 00.211'	Resistivity(Ohm-m) Depth(m)	1410 2.1	447 20	2310 57	546 -
Sandamu	Katsayal	Sedimentary	1	N12° 56.669' E08° 26.220'	Resistivity(Ohm-m) Depth(m)	1310 1.5	139 8.4	816 24	139 -
			2	N12° 56.620' E08° 26.227'	Resistivity(Ohm-m) Depth(m)	700 2.9	248 15	924 33	94 -
Zango	Dushe	Sedimentary	1	N12° 59.198' E08° 36.792'	Resistivity(Ohm-m) Depth(m)	24900 0.3	115 95	2220 -	
			2	N12° 59.201' E08° 36.877'	Resistivity(Ohm-m) Depth(m)	221 0.6	79 37	116 43	357 -
			3	N12° 59.228' E08° 36.916'	Resistivity(Ohm-m) Depth(m)	231 1.6	61 46	859 -	
Kafur	Gozaki	Basement	1	N11° 34.974' E07° 38.603'	Resistivity(Ohm-m) Depth(m)	220 1.2	71 5.4	32300 14	
			2	N11° 27.496' E07° 38.626'	Resistivity(Ohm-m) Depth(m)	529 0.8	43 4.7	2210 -	
Kankara	Gundaw	Basement	1	N12° 01.708' E07° 30.863'	Resistivity(Ohm-m) Depth(m)	530 0.7	25 57	1600 -	
			2	N12° 01.182' E07° 31.042'	Resistivity(Ohm-m) Depth(m)	48 4.9	11 18	1450 -	
Malumfashi	Gundurawa	Basement	1	N11° 55.260' E07° 45.380'	Resistivity(Ohm-m) Depth(m)	231 2.1	47 55	1330 -	
			2	N11° 55.260' E07° 45.373'	Resistivity(Ohm-m) Depth(m)	251 1.8	50 34	1740 -	

6. RESULT OF EXISTING BOREHOLE SURVEY

Appendix 6

1 Existing Boreholes Survey

The survey of existing boreholes was conducted to get more information about the boreholes, to check the water quality at project sites, and to know the present situation of boreholes which were drilled during the RUWASSA / WATSAN Project.

The survey was carried out in 14 LGAs of Bauchi state and 11 LGAs of Katsina state. There was a total of 29 investigation sites in Bauchi state and 29 in Katsina state. The survey sites were selected from an area with little hydrogeological information. The types of boreholes include motorized, hand pump boreholes and open dug wells. Investigation items are the type and design of the boreholes and water quality.

Table 1 List of The Surveyed Villages

Bauchi state		Katsina state	
LGA	Village	LGA	Village
Bauchi	Lugge, Bishi	Rimi	Tudun Kadir, Abukur, Lamba
Alkaleri	Yashi, Dan	Mashi	Jigawa, Tamilo
Bogoro	Boi, Gwaranga	Safana	Babban Duhu, Kinfo
Tafawa Balewa	Zwall, Waptang	Batsari	Bakon Zabo, Kandawa
Toro	Ribina, Zull	Faskari	Maigora, Ruan Godiya,
Ganjuwa	Manga, Wuronai	Sandamu	Katsayal, Kwasarawa
Warji	Gabanga, Dagu	Zango	Dushe, Tarke, Yakubawa
Ningi	Tifi, Guda	Dutsin-Ma	Shema, Kutawa
Gamawa	Gayawa, Buskuwa	Kafur	Gozaki, Rigoji
Misau	Zadawa, Ajili	Malumfashi	Hayin Gada, Dogon Marke
Katagum	Duhuwar Kura, Chara Chara	Kankara	Mabai, Danmarke
Shira	Yalwa, Kango		
Jama'are	Dogon Daji, Kadawan		
Itas-Gadau	Buzawa, Bambai		

Study results for each state are explained below.

1.1 Result of Boreholes Survey in Bauchi State

(1) Borehole type and design

Survey items included the locations of boreholes (measured by GPS), borehole design (drilling year, total depth, drilling diameter, screen position), static water level and geology. The results of borehole type and design survey are summarized in Table 2 below. Most of these data were obtained from the WATSAN Project, but some data were obtained from interviews with local residents. Results of the survey of each borehole are shown in Table 3.

Table 2 Summary of Boreholes Design Survey in Bauchi State

Item	Hand pump borehole(23 boreholes)	Dug well(6 wells)
Drilling depth (m)	31 - 41	-
Drilling diameter (inches)	6	-
Casing diameter (inches)	4	-
Screen position (m)	14 - 40	-
Screen length (m)	3 - 12	-
Static water level (m)	5 - 27	7 - 30

Table 3 Boreholes Type and Design (Bauchi State)

No.	ID	LGA	Village	Date March	Location		Drilling year	Eleva-tion	Sealing cond.	Well depth	Drilling diameter	Casing diameter	Screen position	Water level	Well Type	Pumping rate L/min.
					Latitude(N)	Longitude(E)										
1	B-8	Bauchi	Lugge	22	10 ° 9.482 '	9 ° 41.489 '	1984	574	good	31	6	4	19-31	7	IM II	25
2	B-2	Bauchi	Bishi	22	10 ° 15.070 '	10 ° 5.476 '	1985	495	good	41	6	4	27-39	5	IM III	30
3	A-5	Alkaleri	Yashi	22	10 ° 3.327 '	10 ° 16.779 '	2008	358	good	35	6	4	18-29	17	IM II	15
4	A-2	Alkaleri	Dan	22	9 ° 52.487 '	10 ° 10.514 '	2007	480	good	34	6	4	24-34	14	IM II	20
5	R-1	Bogoro	Boi	23	9 ° 33.674 '	9 ° 30.125 '	2003	771	good	40	6	4	28-40	18	IM II	24
6	R-3	Bogoro	Gwaranga	23	9 ° 38.825 '	9 ° 35.542 '	2007	704	good	36	6	4	30-36	27	IM II	25
7	F-2	Tafawa Balew	Zwall	23	9 ° 50.321 '	9 ° 28.559 '	1983	663	good	24	6	4	18-24	16	IM II	15
8	F-6	Tafawa Balew	Waptang	23	9 ° 49.180 '	9 ° 26.578 '	2003	701	good	30	6	4	14-29	12	IM II	30
9	T-1	Toro	Ribina	24	10 ° 4.659 '	9 ° 4.514 '	1984	941	good	32	6	4	21-30	8	IM II	27
10	T-5	Toro	Zull	24	10 ° 13.401 '	9 ° 4.421 '	2003	688	good	30	6	4	18-21	6	IM III	26
11	U-3	Ganjjuwa	Manga	24	10 ° 51.114 '	10 ° 18.324 '	-	484	-	-	-	-	-	9	dug well	-
12	U-9	Ganjjuwa	Wuronai	24	10 ° 33.439 '	10 ° 8.600 '	-	550	-	-	-	-	-	7.4	dug well	-
13	W-4	Watji	Gabanga	25	11 ° 13.617 '	9 ° 47.396 '	2008	440	good	40	6	4	24-36	7.4	IM II	27
14	W-3	Watji	Dagu	25	11 ° 7.689 '	9 ° 44.686 '	1983	447	good	35	6	4	21-33	8	IM III	29
15	N-5	Ningi	Tifi	25	11 ° 3.906 '	9 ° 33.543 '	2007	496	good	31	6	4	19-31	6	IM III	28
16	N-4	Ningi	Guda	25	10 ° 59.842 '	9 ° 34.052 '	1983	479	good	32	6	4	15-27	7	IM II	30
17	G-7	Gamawa	Gayawa	26	11 ° 51.576 '	10 ° 31.975 '	-	383	-	-	-	-	-	30	dug well	-
18	G-4	Gamawa	Buskuwa	26	11 ° 41.480 '	10 ° 32.069 '	1983	397	good	40	6	4	28-40	10	IM III	26
19	M-2	Misau	Zadawa	26	11 ° 27.158 '	10 ° 22.122 '	1989	433	good	30	6	4	15-27	7	IM II	27
20	M-9	Misau	Ajili	26	11 ° 19.301 '	10 ° 30.309 '	1983	425	good	29	6	4	16-28	5	IM II	30
21	K-7	Katagum	Duhuwar Kura	27	11 ° 45.211 '	10 ° 10.155 '	-	386	-	-	-	-	-	15	dug well	-
22	K-1	Katagum	Chara Chara	27	11 ° 42.261 '	10 ° 10.379 '	2006	406	good	36	6	4	24-36	9	IM II	29
23	S-6	Shira	Yalwa	27	11 ° 30.952 '	10 ° 5.11 '	-	434	-	-	-	-	-	7	dug well	-
24	S-3	Shira	Kango	27	11 ° 29.151 '	10 ° 9.201 '	1995	425	good	37	6	4	22-34	7	IM II	30
25	I-4	Itas-Gadau	Buzawa	29	11 ° 46.094 '	9 ° 42.437 '	2004	388	good	39	6	4	30-39	9	IM II	29
26	I-2	Itas-Gadau	Bambal	29	11 ° 45.024 '	9 ° 44.454 '	2006	396	good	41	6	4	27-39	11	IM II	28
27	J-1	Jama'are	Pango	29	11 ° 45.570 '	9 ° 48.027 '	1982	405	good	35	6	4	17-29	7	IM III	30
28	J-9	Jama'are	Digeliji	29	11 ° 41.737 '	9 ° 51.707 '	1982	411	good	37	6	4	21-33	8	IM III	30
29	J-5	Jama'are	Hanafari	30	11 ° 35.705 '	9 ° 53.306 '	-	400	-	-	-	-	-	26	dug well	-

1) Condition of existing boreholes

According to interviews with local residents, 30 % of the hand pumps are not working. They have broken down or have dried up with poor yield of water. On the other hand, some of the villages have installed a water tank and water-distributing network but waiting for the motorized borehole to be commissioned.

In this survey, the deepest borehole was 41m in depth and was located at Bishi, Bauchi LGA.

The static water level ranges from 5m to 30m. The deepest static water level is a dug well in the Chad formation in Gayawa, Gamawa LGA.

2) Capacity of the hand pumps

The investigated boreholes were equipped with an India Mark II or III type hand pump, which have the capacity of pumping water up to about 40m. Most of static water levels of the study site are less than 20m in depth. Therefore, it is thought that such hand pumps can be used in those areas.

3) Water quality

Water quality analysis of boreholes and dug wells was carried out in parallel with the survey of existing boreholes. The water quality survey items were water temperature, odor, taste, chromaticity, electric conductivity, pH, Fe, F, Mn, NO₃, colon bacillus and NH₄. The final 6 items (Fe, F, Mn, NO₃, colon bacillus and NH₄) were measured with pack test kits.

The results of the water quality survey are summarized in Table 4 below. The measurements obtained at each point are shown in Table 5.

Table 4 Summary of Water Quality Survey in Bauchi State

Parameter	SON standard	Hand pump borehole (22 boreholes)	Dug well (6 wells)
Temperature (°C)	-	25.3 - 30.1	25.7 - 30.2
EC (mS/m)	100	1.96 - 57.2	3.49 - 35.8
pH	6.5 - 8.5	5.68 - 7.22	6.21 - 7.43
Odor	-	Odorless	Odorless
Taste	Normal	None or salty	None or salty
Chromaticity	-	Cleared or brown	cleared,
Fe (mg/L)	0.3	Less than 0.5 - 2.0	Less than 0.5
F (mg/L)	1.5	0 - 2	0 - 0.4
Mn (mg/L)	0.2	Less than 0.5 - 1.0	Less than 0.5
NO ₃ (mg/L)	50	Less than 1 - more than 45	10 - more than 45
Colon bacillus (number)	0	0 - 6	0 - more than 30
NH ₄ (mg/L)	-	Less than 0.2 - 0.5	Less than 0.2 - 0.5

Table 5 Testing of water quality of existing wells(Bauchi State)

No.	ID	LGA	Village	Date March	Location		Well Type	Temp. °C	EC mS/m	pH	Odor Taste	chromaticity	Fe mg/L	F mg/L	Mn mg/L	NO ₃ mg/L	Coliforms mg/L	NH ₄ mg/L	Geology
					Latitude(N)	Longitude(E)													
1	B-8	Bauchi	Lugge	22	10 ° 9.482 '	9 ° 41.489 '	IM II	28.2	7.60	6.56	odorless	none cleared	<0.05	0.8	<0.5	1	1	<0.2	Basement
2	B-2	Bauchi	Bishi	22	10 ° 15.070 '	10 ° 5.476 '	IM III	29.5	12.60	7.05	odorless	none cleared	0.05	0.0	<0.5	45	0	<0.2	Basement
3	A-5	Alkaleri	Yashi	22	10 ° 3.327 '	10 ° 16.779 '	IM II	30.2	7.18	6.10	odorless	none brown	0.70	1.1	1	3	0	0.2	Keri Keri F.
4	A-2	Alkaleri	Dan	22	9 ° 52.487 '	10 ° 10.514 '	IM II	29.8	9.04	6.55	odorless	none cleared	1.00	0.6	<0.5	18	0	0.2	Keri Keri F.
5	R-1	Bogoro	Boi	23	9 ° 33.674 '	9 ° 30.125 '	IM II	28.4	57.20	6.60	odorless	salty cleared	<0.05	0.8	<0.5	>45	0	0.5	Basement
6	R-3	Bogoro	Gwaranga	23	9 ° 38.825 '	9 ° 35.542 '	IM II	29.4	13.69	7.34	odorless	none cleared	<0.05	1.5	<0.5	2	0	<0.2	Basement
7	F-2	Tafawa Balew	Zwall	23	9 ° 50.321 '	9 ° 28.559 '	IM II	28.8	27.50	6.90	odorless	none cleared	<0.05	0.6	<0.5	45	0	<0.2	Basement
8	F-6	Tafawa Balew	Waptang	23	9 ° 49.180 '	9 ° 26.578 '	IM II	28.3	41.90	7.07	odorless	salty cleared	<0.05	1.5	<0.5	33	6	<0.2	Basement
9	T-1	Toro	Ribina	24	10 ° 4.659 '	9 ° 4.514 '	IM II	25.5	14.84	7.13	odorless	none cleared	<0.05	0	<0.5	<1	4	0.2	Basement
10	T-5	Toro	Zull	24	10 ° 13.401 '	9 ° 4.421 '	IM III	29.0	17.08	6.91	odorless	none cleared	0.30	0.8	<0.5	5	0	0.2	Basement
11	U-3	Ganjuwa	Manga	24	10 ° 51.114 '	10 ° 18.324 '	dug well	28.5	35.80	7.05	odorless	salty cleared	<0.05	0.4	<0.5	25	13	0.2	Basement
12	U-9	Ganjuwa	Wuronai	24	10 ° 33.439 '	10 ° 8.600 '	dug well	26.8	17.01	7.08	odorless	none cleared	<0.05	0	<0.5	>45	13	<0.2	Basement
13	W-4	Warji	Gabanga	25	11 ° 13.617 '	9 ° 47.396 '	IM II	28.5	20.70	7.11	odorless	salty cleared	0.50	2.0	<0.5	<1	0	0.2	Basement
14	W-3	Warji	Dagu	25	11 ° 7.689 '	9 ° 44.686 '	IM III	25.3	9.44	7.02	odorless	none cleared	1.00	0.8	<0.5	1	0	0.4	Basement
15	N-5	Ningi	Tifi	25	11 ° 3.906 '	9 ° 33.543 '	IM III	30.0	18.86	6.50	odorless	salty cleared	0.50	0.6	<0.5	>45	0	0.2	Basement
16	N-4	Ningi	Guda	25	10 ° 59.842 '	9 ° 34.052 '	IM II	28.6	12.51	6.95	odorless	none cleared	0.10	0.2	<0.5	5	0	<0.2	Basement
17	G-7	Gamawa	Gayawa	26	11 ° 51.576 '	10 ° 31.975 '	dug well	30.2	15.85	6.32	odorless	none cleared	0.05	0	<0.5	>45	>30	0.2	Chad
18	G-4	Gamawa	Buskuwa	26	11 ° 41.480 '	10 ° 32.069 '	IM III	30.1	3.02	5.72	odorless	sour cleared	<0.05	0	<0.5	5	0	<0.2	Chad
19	M-2	Misau	Zadawa	26	11 ° 27.158 '	10 ° 22.122 '	IM II	29.5	11.42	6.87	odorless	none cleared	0.40	0.4	<0.5	>45	0	0.2	Basement
20	M-9	Misau	Ajili	26	11 ° 19.301 '	10 ° 30.309 '	IM II	29.7	24.60	7.22	odorless	salty cleared	0.30	0.6	<0.5	10	0	0.2	Basement
21	K-7	Katagum	Duhuwar Kura	27	11 ° 45.211 '	10 ° 10.155 '	dug well	29.4	3.49	6.39	odorless	none cleared	<0.05	0	<0.5	10	>30	0.2	Chad
22	K-1	Katagum	Chara Chara	27	11 ° 42.261 '	10 ° 10.379 '	IM II	29.8	1.96	5.68	odorless	sour cleared	<0.05	0	<0.5	7	2	<0.2	Chad
23	S-6	Shira	Yalwa	27	11 ° 30.952 '	10 ° 5.11 '	dug well	25.7	27.90	6.21	odorless	none opaque	<0.05	0	<0.5	>45	7	0.2	Basement
24	S-3	Shira	Kango	27	11 ° 29.151 '	10 ° 9.201 '	IM II	29.4	30.3	6.64	odorless	salty cleared	<0.05	0	<0.5	>45	0	<0.2	Basement
25	I-4	Itas-Gaddau	Buzawa	29	11 ° 46.094 '	9 ° 42.437 '	IM II	29.1	33.10	6.54	odorless	none cleared	<0.05	0.0	<0.5	7	0	<0.2	Chad
26	I-2	Itas-Gaddau	Bambai	29	11 ° 45.024 '	9 ° 44.454 '	IM II	30.1	9.93	6.34	odorless	none cleared	2.00	0.4	<0.5	45	0	0.5	Chad
27	J-1	Jama'are	Pango	29	11 ° 45.570 '	9 ° 48.027 '	IM III	30.1	3.78	5.95	odorless	none cleared	1	0.4	<0.5	3	3	0.3	Chad
28	J-9	Jama'are	Digeliji	29	11 ° 41.737 '	9 ° 51.707 '	IM III	29.7	21.4	7.09	odorless	none cleared	0.5	0.4	<0.5	10	0	0.2	Chad
29	J-5	Jama'are	Hanafari	30	11 ° 35.705 '	9 ° 53.306 '	dug well	29.3	29.6	7.43	odorless	salty cleared	<0.05	0	<0.5	>45	>30	0.5	Chad

over value of SON

The values of pH, Fe, Mn, NO₃, colon bacillus obtained in this study are above the SON standard. It is thought that the pH and Fe, and Mn content derived from rocks and soil. pH values were found to be less than 6.5 in the northern part of the state such as in the Katagum, Shira and Itas-Gadau LGAs. It seems that those areas are geologically part of the Chad formation. Fe concentration is likely to be high in the Kerri-Kerri and Chad formations. F content is little bit high in the Gavanga Warji LGA, and Mn content is a little high in the Yashi, Alkaleli LGA. Contamination from NO₃, and colon bacillus appears to have derived from contamination of ground water by human activities including the application of fertilizer on farms, and the discharge of sewage and livestock waste near the borehole sites. The contamination of NO₃ and colon bacillus is due to the poor sanitation around the water supply site.

1.2 Result of Boreholes Survey in Katsina State

(1) Borehole type and design

This survey was carried out with the same method used in Bauchi state. The results of the borehole type and design surveys are summarized below in Table 6. Detailed results of the survey and individual borehole data are shown in Table 7.

Table 6 Summary of Boreholes Design Survey in Katsina State

Item	Motorized borehole (7 boreholes)	Hand-pump borehole (11 boreholes)	Dug well/other (10 wells & 1 stream)
Drilling depth (m)	51 - 59	17 - 36	(10 - 57)
Drilling diameter (inches)	6.5 - 7	6.5 - 7	-
Casing diameter (inches)	4 - 6	5 - 6	-
Screen position (m)	22 - 50	18 - 39	-
Screen length (m)	13 - 15	9 - 12	-
Static water level (m)	16 - 31	6 - 29	4 - 56

Table 7 Boreholes Type and Design (Katsina State)

No.	ID	LGA	Village	Date March	Location		Drilling year	Eleva- tion	Sealing cond.	Well depth	Drilling diameter	Casing diameter	Screen position	Water level	Well Type	Pumping rate L/min.
					Latitude(N)	Longitude(E)										
1	R-6	Rimi	Tudun Kadir	5	12 ° 48.299 '	7 ° 41.442 '	1961	516	none	10	-	-	-	-	19	dug
2	R-6	Rimi	Tudun Kadir	5	12 ° 48.144 '	7 ° 41.489 '	1989	520	none	14	-	-	-	-	12	dug
3	R-5	Rimi	Abukur	5	12 ° 52.137 '	7 ° 39.718 '	2007	510	good	36	6 1/2	5	26-35	28	hand	15
4	R-5	Rimi	Lamfa	5	12 ° 50.301 '	7 ° 40.534 '	1966	530	good	22	-	-	-	-	17	dug
5	M-3	Mashi	Jigawa	6	13 ° 0.392 '	7 ° 57.006 '	1965	494	good	19	-	-	-	-	19	dug
6	M-3	Mashi	Jigawa	6	13 ° 0.137 '	7 ° 57.336 '	-	488	good	-	-	-	-	-	-	stream
7	M-6	Mashi	Tamilo	6	13 ° 5.377 '	7 ° 59.059 '	1987	499	good	36	-	-	-	-	34	dug
8	M-6	Mashi	Tamilo	6	13 ° 5.466 '	7 ° 59.167 '	2004	498	good	49	7	6	22-28	40-49	16	solar
9	S-7	Safana	Babban Duhu	7	12 ° 40.303 '	7 ° 15.104 '	2004	464	good	45	6 1/2	6	32-44	29	hand	43
10	S-8	Safana	Kinfo	7	12 ° 38.121 '	7 ° 8.702 '	2004	520	good	40	6 1/2	6	18-21	30-39	18	hand
11	B-1	Batsari	Bakon Zabo	7	12 ° 45.676 '	7 ° 13.808 '	2005	478	good	51	6 1/2	6	29-38	44-50	31	solar
12	B-11	Batsari	Kandawa	8	12 ° 57.016 '	7 ° 16.028 '	-	419	good	-	-	-	-	-	-	solar
13	F-16	Faskari	Maigora	9	11 ° 33.336 '	7 ° 1.449 '	1979	660	good	-	-	4	-	-	-	solar
14	F-10	Faskari	Ruwani Godiya	9	11 ° 43.492 '	7 ° 14.567 '	2004	604	good	-	-	5	-	-	-	solar
15	F-10	Faskari	Ruwani Godiya	9	11 ° 43.471 '	7 ° 14.580 '	2005?	612	good	17	-	-	-	-	14	hand
16	V-2	Sandamu	Kaisyayal	10	12 ° 56.147 '	8 ° 26.388 '	2004	494	good	-	-	-	-	-	-	solar (70)
17	V-1	Sandamu	Kwasarawa	10	13 ° 0.327 '	8 ° 23.485 '	2003	492	good	-	-	-	-	-	-	motor
18	Z-10	Zango	Dushe	10	12 ° 59.194 '	8 ° 36.790 '	1970?	442	good	57	-	-	-	-	56	dug
19	Z-3	Zango	Tarke	10	13 ° 0.720 '	8 ° 29.530 '	1970?	469	good	17	-	-	-	-	15	dug
20	Z-1	Zango	Yakubawa	11	13 ° 4.368 '	8 ° 29.407 '	1960	481	good	37	-	-	-	-	35	dug
21	D-10	Dutsin-Ma	Shema	12	12 ° 31.432 '	7 ° 31.865 '	1990?	563	good	24	-	-	-	-	12	hand (12)
22	D-9	Dutsin-Ma	Kutawa	12	12 ° 23.700 '	7 ° 26.651 '	2008	514	good	65	-	-	-	-	-	hand (18)
23	K-2	Kafur	Gozaki	13	11 ° 27.482 '	7 ° 38.573 '	2006	635	none	5	-	-	-	-	4	dug
24	K-8	Kafur	Rigoji	13	11 ° 42.155 '	7 ° 44.612 '	1991	602	good	-	-	-	-	-	6	hand
25	I-18	Malumfashi	Hayin Gada	13	11 ° 46.613 '	7 ° 36.086 '	2006	626	good	30	-	-	-	-	-	hand (63)
26	I-10	Malumfashi	Dogon Marke	13	11 ° 40.625 '	7 ° 30.408 '	2006	655	good	-	-	-	-	-	16	hand
27	I-10	Malumfashi	Dogon Marke	13	11 ° 40.629 '	7 ° 30.462 '	1980	655	none	-	-	-	-	-	16	dug
28	E-8	Kankara	Mabai	14	11 ° 51.450 '	7 ° 20.145 '	2006	569	good	28	7	6	16-27	17	hand	20
29	E-11	Kankara	Dannarke	14	11 ° 57.375 '	7 ° 27.166 '	2000	600	good	-	-	-	-	-	24	hand

1) Condition of the existing boreholes

Some solar motorized boreholes were observed. The recently installed pumps were mostly in good working condition. However, some of them were not working well due to motor stoppage or breakdown of the solar panel or the pump which is installed in the boreholes. According to local residents who conducted site surveys, about 30 % of the hand pumps were not working, due to breakdown of the pump, broken platform, or very poor water yield. Furthermore, residents say that little attention is given to maintenance of the boreholes, and even easily fixable pumps are abandoned due to a lack of repair tools.

The deepest borehole is a hand pump borehole in Kutawa village, Datsin-Ma LGA.

According to the data of RUWASSA, 3 of 6 boreholes were installed screen at 2 sections. Depth of the shallow part is about 20 to 30m and deeper part is about 40 to 50m in depth.

The depth of the static water level ranged from 4 to 34 m. The deepest static water level is 56 m in depth in the Chad formation area, Dushe village, Zango LGA.

In the investigated villages, the hand pumps installed were India Mark II or III, which have the capacity to pump water up from 40 m in depth. Most of the static water is less than 40 m from the surface. This water level indicates that hand pumps are suitable in those survey areas.

2) Capacity of the hand pumps

The investigated boreholes were equipped with an India Mark II or III type hand pump, which have the capacity of pumping water up to about 40m. Most of static water levels of the study site are less than 40m in depth. Therefore, it is thought that such hand pumps can be used in those areas.

3) Water quality

The water quality survey also followed the same method as that in Bauchi state. The results of the water quality survey are summarized below in Table 8. Values of the measurements taken at each site are shown in Table 9.

Table 8 Summary of Water Quality Survey in Katsina State

Parameter	SON Standard	Motorized borehole (7 boreholes)	Hand -pump borehole (11 boreholes)	Dug well/other (10 wells ,1 stream)
Temperature (°C)	-	24.2 - 32.1	27.3 - 30.1	22.7 - 29.8
EC (mS/m)	100	2.85 - 52.40	11.06 - 115.0	2.37 - 29.80
pH	6.5 - 8.5	6.23 - 7.77	6.38 - 7.23	5.64 - 7.47
Odor	-	Odorless	Odorless	Odorless
Taste	Normal	None	None, salty	None
Chromaticity	-	Cleared	Cleared, opaque	Cleared, brown
Fe (mg/L)	0.3	Less than 0.05	Less than 0.05 - 1.50	Less than 0.05 - 0.10
F (mg/L)	1.5	0	0 - 1.5	0 - 1.5
Mn (mg/L)	0.2	Less than 0.5	Less than 0.5 - 0.5	Less than 0.5 - 0.5
NO ₃ (mg/L)	50	Less than 1 - more than 45	1-more than 45	1 - more than 45
Colon bacillus (number)	0	0 - 1	0-more than 30	0 - more than 30
NH ₄ (mg/L)	-	Less than 0.2 - 0.2	Less than 0.2 - 0.2	Less than 0.2 - 5.0

Table 9 Testing of water quality of existing wells(Katsina State)

No.	ID	LGA	Village	Date March	Location	Well Type	Temp. °C	EC mS/m	pH	Odor	Taste	croma-ticity	Fe mg/L	F mg/L	Mn mg/L	NO ₃ mg/L	NH ₄ mg/L	Geology	
								100.00	6.5-8.5			0.30	1.5	0.2	50	0			
1	R-6	Rimi	Tudun Kadir	5	12 ° 48.299 '	7 ° 41.442 '	dug well	29.3	16.96	7.10	odorless	none cleared	<0.05	0.8	0.5	20	>30	0.5 Basement	
2	R-6	Rimi	Tudun Kadir	5	12 ° 48.144 '	7 ° 41.489 '	dug well	29.1	10.61	7.20	odorless	none cleared	<0.05	1.5	<0.5	1	4	0.5 Basement	
3	R-5	Rimi	Abukur	5	12 ° 52.137 '	7 ° 39.718 '	hand	29.2	12.44	6.66	odorless	none cleared	<0.05	1.5	<0.5	15	0	<0.2 Basement	
4	R-5	Rimi	Lamba	5	12 ° 50.301 '	7 ° 40.534 '	dug well	28.4	5.26	6.06	odorless	none cleared	<0.05	0	<0.5	10	27	<0.2 Basement	
5	M-3	Mashi	Jigawa	6	13 ° 0.392 '	7 ° 57.006 '	dug well	28.0	15.44	7.21	odorless	none cleared	<0.05	0	<0.5	45	>30	0.5 Gundumi F.	
6	M-3	Mashi	Jigawa	6	13 ° 0.137 '	7 ° 57.336 '	stream	28.8	3.60	7.11	odorless	none brown	0.05	0	0.5	2	>30	0.2 Gundumi F.	
7	M-6	Mashi	Tamilo	6	13 ° 5.377 '	7 ° 59.059 '	dug well	29.7	2.37	6.08	odorless	none cleared	0.05	0	<0.5	5	7	0.2 Gundumi F.	
8	M-6	Mashi	Tamilo	6	13 ° 5.466 '	7 ° 59.167 '	solar	31.6	2.85	6.23	odorless	none cleared	<0.05	0	<0.5	<1	1	<0.2 Gundumi F.	
9	S-7	Safana	Babban Duhu	7	12 ° 40.303 '	7 ° 15.104 '	hand	29.7	34.70	7.23	odorless	none cleared	<0.05	0	<0.5	<1	1	0.2 Basement	
10	S-8	Safana	Kinfo	7	12 ° 38.121 '	7 ° 8.702 '	hand	29.4	11.56	6.87	odorless	none cleared	<0.05	0	<0.5	20	0	<0.2 Basement	
11	B-1	Batsari	Bakon Zabo	7	12 ° 45.676 '	7 ° 13.808 '	solar	30.5	36.90	7.77	odorless	none cleared	<0.05	0	<0.5	30	0	<0.2 Basement	
12	B-11	Batsari	Kandawa	8	12 ° 57.016 '	7 ° 16.028 '	solar	32.1	18.16	7.53	odorless	none cleared	<0.05	0	<0.5	5	0	<0.2 Basement	
13	F-16	Faskari	Maigora	9	11 ° 33.336 '	7 ° 1.449 '	solar	28.0	7.20	7.41	odorless	none cleared	<0.05	0	<0.5	5	0	<0.2 Basement	
14	F-10	Faskari	Ruwani Godiya	9	11 ° 43.492 '	7 ° 14.567 '	solar	28.2	52.40	7.20	odorless	none cleared	<0.05	0	<0.5	>45	0	<0.2 Basement	
15	F-10	Faskari	Ruwani Godiya	9	11 ° 43.471 '	7 ° 14.580 '	hand	27.3	115.00	6.62	odorless	none particle	<0.05	0	<0.5	>45	>30	<0.2 Basement	
16	V-2	Sandamu	Kaisayal	10	12 ° 56.147 '	8 ° 26.388 '	solar	24.2	3.67	6.89	odorless	none cleared	<0.05	0	<0.5	15	0	0.2 Gundumi F.	
17	V-1	Sandamu	Kwasarawa	10	13 ° 0.327 '	8 ° 23.485 '	motor	27.9	3.03	6.41	odorless	none cleared	<0.05	0	<0.5	5	0	<0.2 Gundumi F.	
18	Z-10	Zango	Dushe	10	12 ° 59.194 '	8 ° 36.790 '	dug well	29.3	28.60	7.47	odorless	none s. opaque	<0.05	0	<0.5	30	>30	<0.2 Gundumi F.	
19	Z-3	Zango	Tarki	10	13 ° 0.720 '	8 ° 29.530 '	dug well	29.8	8.38	5.64	odorless	none cleared	0.05	0	<0.5	45	10	<0.2 Gundumi F.	
20	Z-1	Zango	Yakubawa	11	13 ° 4.368 '	8 ° 29.407 '	dug well	28.9	5.98	6.48	odorless	none s. opaque	0.10	0	<0.5	10	>30	5.0 Gundumi F.	
21	D-10	Dutsin-Ma	Shema	12	12 ° 31.432 '	7 ° 31.865 '	hand	29.0	26.3	7.03	odorless	none cleared	0.10	1.5	0.5	1	0	<0.2 Basement	
22	D-9	Dutsin-Ma	Kutawa	12	12 ° 23.700 '	7 ° 26.651 '	hand	30.1	21.1	6.99	odorless	none cleared	<0.05	0.4	<0.5	8	0	0.2 Basement	
23	K-2	Kafur	Gozaki	13	11 ° 27.482 '	7 ° 38.573 '	dug well	22.7	12.99	7.44	odorless	none brown	<0.05	1.5	<0.5	2	5	0.2 Basement	
24	K-8	Kafur	Rigoji	13	11 ° 42.155 '	7 ° 44.612 '	hand	28.5	19.62	6.52	odorless	none cleared	<0.05	0	<0.5	45	0	0.2 Basement	
25	I-18	Malumfashi	Hayin Gada	13	11 ° 46.613 '	7 ° 36.086 '	hand	27.6	41.20	6.66	odorless	none s. opaque	1.50	1.0	<0.5	>45	0	0.2 Basement	
26	I-10	Malumfashi	Dogon Marke	13	11 ° 40.625 '	7 ° 30.408 '	hand	28.8	97.60	6.38	odorless	salty	cleared	1.00	0.8	<0.5	>45	0	0.5 Basement
27	I-10	Malumfashi	Dogon Marke	13	11 ° 40.629 '	7 ° 30.462 '	dug well	26.4	29.80	6.94	odorless	none brown	<0.05	0.2	<0.5	>45	0	0.2 Basement	
28	E-8	Kankara	Mabai	14	11 ° 51.450 '	7 ° 20.145 '	hand	28.2	11.06	6.88	odorless	none cleared	<0.05	0	<0.5	20	0	<0.2 Basement	
29	E-11	Kankara	Danmarkar	14	11 ° 57.375 '	7 ° 27.166 '	hand	27.9	17.52	6.84	odorless	none cleared	0.05	0	<0.5	20	0	<0.2 Basement	

over value of SON

According to the survey, the Fe, Mn, NO₃ and colon bacillus values were above the SON standard.

It seems that Fe and Mn derived from rocks and soil while NO₃ and colon bacillus derived from contamination from human activities such as the discharge of sewage and livestock waste close to the boreholes and hand dug wells as well as the application of fertilizer to farmlands.

Furthermore, the pH value was below the SON standard low at the Gundumi formation site .

1.3 Analysis of The Existing Boreholes in Bauchi State

(1) Existing borehole data

Records of existing boreholes in Bauchi state are shown in Table 13

The upper part of the table shows LGAs excavated 2 years after procurement of machinery, while the middle part shows LGAs excavated 5 years after procurement of machinery. The bottom part shows the results for existing boreholes by each type of geology.

The detailed results of existent boreholes are shown in the Attachment. The study team, together with the staff of the WATSAN Project, will collect and organize existing documentation on boreholes, and then analyze the hydrogeological conditions (groundwater locations, aquifer depths, hydrogeological features, etc.) in the target area.

Table 10 LGAs Excavated 2 Years after Procurement of Machinery (Bauchi State)

No.	LGA	Static Water Level(m)	Pumping Test Rate(Lpm)	Pumping Water Level(m)	Yield (Lpm)	Drilling Depth(m)	Hand pump setting(m)
1	Alkaleri	26.3	51.9	30.3	324.9	55.9	37.1
2	Bauchi	10.4	34.3	17.9	50.9	32.4	22.5
3 -	Gamawa/ Zaki	23.5	52.0	28.3	256.2	66.9	34.3
4 -	Ganjuwa/ Darazo	28.0	39.0	34.0	175.0	59.0	41.0
9	Shira	12.6	29.1	19.7	117.0	37.9	26.6
8 11	Bogoro/ Tafawa Balewa	9.6	22.7	17.4	42.5	35.2	24.1
12	Toro	6.5	36.2	13.2	65.1	28.1	16.3
13 14	Ningi/ Warji	8.2	26.8	15.9	75.0	30.2	20.2
	Average	17.3	38.1	23.6	155.1	46.6	29.4

Table11 LGAs Excavated 5 Years after Procurement of Machinery (Bauchi State)

No.	LGA	Static Water Level(m)	Pumping Test Rate(Lpm)	Pumping Water Level(m)	Yield (Lpm)	Drilling Depth(m)	Hand pump setting(m)
5 7	Itas-Gadau/ Katagum	19.9	35.7	26.0	117.3	44.7	30.7
6	Jama'are	19.3	29.3	27.0	95.0	48.0	31.2
8 11	Bogoro/ Tafawa Balewa	9.6	22.7	17.4	42.5	35.2	24.1
10	Misau	28.9	35.1	34.1	185.1	55.1	39.4
13 14	Ningi/ Warji	8.2	26.8	15.9	75.0	30.2	20.2
	Average	18.3	30.9	25.0	112.0	43.8	30.1

Table12 Results for Existing Boreholes by Each Type of Geology(Bauchi State)

Geology	Static Water Level(m)	Pumping Test Rate(Lpm)	Pumping Water Level(m)	Yield (Lpm)	Drilling Depth(m)	Hand pump setting(m)
Sedimentary	26.3	51.9	30.3	324.9	55.9	37.1
Chad	20.2	40.2	26.1	167.7	52.7	31.6
Kerri-Kerri	28.9	35.1	34.1	185.1	55.1	39.4
Basement	14.2	32.3	21.3	96.6	39.8	26.6
Average	18.3	37.1	25.1	151.3	47.3	30.6

Table 13 Existing Borehole Data(Bauchi State, 1974~1988)

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1	GAMAWA	MAINAKO	61NE-1	2 2 83	23.5 —	27.5	29	12.74	64	15.14	200 22
2	GAMAWA	HANAKASHI	61NE-2	3 2 83	24 —	28	48	17.57	69	23.59	50 25
3	GAMAWA	HANAKASHI	61NE-2		40 —	48					
4	GAMAWA	ARIKI	61NE-3	4 2 83	67 —	73	75	14.94	90	16.24	>400 28
5	GAMAWA	GARFUWARI	61NE-4	5 2 83	33 —	37	53	16.98	72	18.62	>400 22
6	GAMAWA	GARFUWARI	61NE-4		49 —	53					
7	GAMAWA	KUDUBAN	61NE-5	7 2 83	63 —	64.5	71.5	15.47	60	18.53	>400 25
8	GAMAWA	BULTURI	61NE-6	9 2 83	74 —	77	79	10.91	90	11.95	>400 22
9	GAMAWA	MAIMA	61NE-7	11 2 83	75 —	78	80	11.08	72	13.15	>400 16
10	GAMAWA	GAUYA	61NE-8	11 2 83	67 —	68.5	71	12.97	12	33.51	20 31
11	GAMAWA	KUJJIN	61NE-9	14 2 83	75 —	78	95	21.71	90	22.06	>400 28
12	GAMAWA	KUBIDIYA	61NE-10	15 2 83	53 —	56	56	13.72	90	14.31	>400 19
13	GAMAWA	DAYA	61NE-11	5 3 83	52.5 —	54	63	25.2	60	28.71	330 46
14	GAMAWA	DAYA	61NE-11		59.5 —	61					
15	GAMAWA	KATABJI	61NE-12	8 3 83	38 —	42	42	11.21	72	14.21	>400 16
16	GAMAWA	AGWAN	61NE-13	8 3 83	43 —	51	53	9.86	72	11.66	>400 16
17	GAMAWA	SABON GARI	61NE-14	10 3 83	50 —	54	54	10.09	72	14.12	>400 19
18	GAMAWA	ZANGO	61NE-15	15 3 83	62 —	74	101	17.16	72	17.54	>400 22
19	GAMAWA	BAJUWA	61NE-16	18 3 83	66 —	74	65	12.11	72	12.49	>400 31
20	GAMAWA	AGOOGUMMA	61NE-17	19 3 83	55 —	63	66	9.77	72	10.32	>400 31
21	GAMAWA	KASKINDIM	61NE-18	22 5 85	40 —	44	53	16.85	68	18.18	>400 22
22	GAMAWA	SABO KUWA	61NE-19	22 5 85	47 —	51	54	20.28	65	22.93	>400 25
23	GAMAWA	SARADUGUM	61NE-20	23 5 85	42 —	46	46	11.09	72	11.6	>400 16
24	GAMAWA	GSS KATAGUM	61NE-21	23 5 85	85.5 —	90	90	17.29	68	18.39	>400 25
25	GAMAWA	KIZIR	61NE-22	23 5 85	35.5 —	43.5	45	15.36	68	16.65	>400 22
26	GAMAWA	KORE	61NE-23	30 5 85	51 —	59	60	14.35	69	14.89	>400 25
27	GAMAWA	GURKA	61NW-1	7 2 83	44 —	52	52	10.68	72	12.19	>400 16
28	GAMAWA	TADIRE	61NW-2	12 2 83	57 —	60	60	11.99	72	14.49	>400 16
29	GAMAWA	GARIN GAM	61NW-3	14 2 83	63 —	66	63	14.72	72	16.15	>400 22
30	GAMAWA	SUTUWA	61SE-1	2 2 83	42 —	50	50	8.83	44	15.42	170 19
31	GAMAWA	SANDIGALAU	61SE-2	6 2 83	46 —	54	54	23.3	32	32.97	50 34
32	GAMAWA	KAMEME	61SE-3	12 2 83	54 —	58	58	14.48	20	20.42	95 25
33	GAMAWA	BIRKINCHA	61SE-4	14 2 83	51 —	59	59	25.71	12	37.04	18 43
34	GAMAWA	GUMAI	61SE-5	15 2 83	48 —	52	52	24.59	30	25.61	>400 28
35	GAMAWA	ZANTERI	61SE-6	18 2 83	60.5 —	64.5	66	24.64	20	25.06	>400 28
36	GAMAWA	GATTATTARA	61SE-7	19 2 83	63.5 —	65	110	25.82	12	30.84	65 58
37	GAMAWA	GATTATTARA	61SE-7		88.5 —	90					
38	GAMAWA	GANDU	61SE-8	21 2 83	68 —	72	77	23.84	32	24.12	>400 28
39	GAMAWA	GYAULORI	61SE-9	22 2 83	51.5 —	55.5	56	26.41	72	26.6	>400 31
40	GAMAWA	KWALCHALAR	61SE-10	16 3 83	49 —	55	53	24.68	12	43.19	12 49
41	GAMAWA	KWADAMM	61SE-11	17 3 83	49.5 —	57.5	64	24.83	72	25.31	>400 28
42	GAMAWA	DAUSHE	61SE-12	19 3 83	64 —	72	72	23	60	23.35	>400 28
43	GAMAWA	GALIJRI	61SE-13	22 3 83	62 —	70	87	23.55	20	40.75	30 43
44	GAMAWA	KARAKICAB	61SE-14	23 3 83	88 —	91	91	19.23	32	19.8	>400 25
45	GAMAWA	GANGAWA	61SE-16	25 3 83	89 —	92	92	21.53	24	26.47	225 31
46	GAMAWA	GARA	61SE-17	28 3 83	52 —	60	60	10.96	72	11.69	>400 31
47	GAMAWA	SABOYI	61SE-18	29 3 83	72 —	84	84	27.54	28	47.8	40 49
48	GAMAWA	KANKALERI	61SE-19	31 3 83	42 —	50	42	26.5	60	29.13	250 40
49	GAMAWA	DAFSAMARI	61SE-20	2 4 83	71 —	74	89	26.47	20	34.8	75 31
50	GAMAWA	DAFSAMARI	61SE-20		80 —	83					
51	GAMAWA	SAKWA	61SE-21	27 5 85	51.5 —	54.5	60	11.32	12	45.43	10 46
52	GAMAWA	KUTUNAS	61SE-22	28 8 87	46 —	52	60	10.26	45	17.3	160 19
53	GAMAWA	GARGANEMI	61SE-23	30 8 87	40 —	43	53	25.1	51	26.05	>400 34
54	GAMAWA	GARGANEMI	61SE-23		47 —	51					
55	GAMAWA	SUFA	61SE-24	31 8 87	70 —	73	77	23.33	49	27.34	>400 31
56	GAMAWA	MAINARI	61SE-25	6 9 87	34 —	37	53	28.5	53	33.34	42 40
57	GAMAWA	MAINARI	61SE-25		50 —	53					
58	GAMAWA	BUKURUMI	61SE-26	11 9 87	53.5 —	56.5	57	25.52	57	25.82	>400 34
59	GAMAWA	MAKAWA	61SW-1	2 2 83	30 —	38	38	25.38	8	29.71	6 31
60	GAMAWA	MURMUR	61SW-2	3 2 83	44 —	52	52	23.98	8	30.31	18 43
61	GAMAWA	BARWAJU	61SW-3	3 2 83	30 —	34	41	17.16	72	19.33	310 22
62	GAMAWA	BARWAJU	61SW-3		37 —	41					
63	GAMAWA	WAREKI	61SW-4	4 2 83	32 —	40	40	26.79	36	30.58	30 34
64	GAMAWA	YELWA	61SW-5	9 2 83	48 —	51	90	26.2	40	31	125 34
65	GAMAWA	YELWA	61SW-5		88.5 —	90					
66	GAMAWA	JIGAWA	61SW-6	10 2 83	33 —	37	60	21.38	60	22.54	>400 25
67	GAMAWA	CHACHARAN	61SW-8	24 5 85	41.5 —	47.5	50	21.01	12	40.49	10 48
68	GAMAWA	CHIBIYAYI	61SW-9	28 5 85	37 —	43	43	17.93	70	18.29	>400 25
69	GAMAWA	BAGAM	62NW-1	15 2 83	70.5 —	73.5	75	20.16	72	25.48	>400 31
70	GAMAWA	MASAJE	62NW-2	17 2 83	72.5 —	75.5	79	24.8	60	25.37	>400 31
71	GAMAWA	LADARI	62NW-3	21 2 83	65 —	68	87	37.3	48	37.75	>400 40
72	GAMAWA	JILLAH	62NW-4	23 2 83	109 —	112	114	18.64	60	24.42	>400 28
73	GAMAWA	KESEWA YEMMA	62NW-5	22 2 83	49 —	52	53	31.05	60	32.52	>400 37
74	GAMAWA	BULANNA	62NW-6	25 2 83	133 —	136	138	14.63	72	20.55	>400 64
75	GAMAWA	KESEWA DOLI	62NW-7	24 2 83	51 —	55	56	41.08	48	42.81	200 46
76	GAMAWA	KADI KADI	62NW-8	26 2 83	104 —	107	107	18.46	72	21.16	>400 28
77	GAMAWA	KOKORA	62NW-9	27 2 83	118 —	121	123	17.94	72	20.2	>400 64
78	GAMAWA	TUMBI	62NW-10	27 2 83	60 —	63	63	41.7	45	51.83	60 52
79	GAMAWA	TIKIRUE	62NW-11	3 3 83	50 —	53	54	16.81	72	23.78	240 43
80	GAMAWA	MASAJE	62NW-12	17 2 83	72.5 —	75.5	79	24.8	60	25.37	>400 31
81	GAMAWA	SHAKAM BATA	62NW-12	7 3 83	45.5 —	47	48	34.49	48	36.67	150 43
82	GAMAWA	DAMODI	62NW-13	24 5 85	61 —	64	64	30.4	24	41.61	45 46
83	GAMAWA	KAWA	62NW-14	25 5 85	49 —	52	56	37.95	32	38.92	255 46
84	GAMAWA	JABERE	62NW-15	28 5 85	93 —	97.5	90	20	40	26.77	300 31
85	GAMAWA	JAURO SANJI	62NW-16	30 5 85	91 —	95.5	96	26.8	32	39.34	115 43
86	GAMAWA	BONAMARI	62NW-17	12 9 87	53 —	56	59	38.58	41	40.54	180 46
87	GAMAWA	BOGAWO	62NW-18	15 9 87	104 —	107	113	17.08	68	17.69	>400 25
88	GAMAWA	NGELKORE	62NW-19	17 9 87	80 —	83	89	28.78	72	31.45	>400 37
89	GAMAWA	MAJIMBA	62SE-1	10 3 83	54.5 —	57.5	68	23.97	55	33.88	110 40
90	GAMAWA	GARIN MALLAM	62SE-2	18 3 83	32 —	36	36	19.53	72	20.19	>400 22
91	GAMAWA	KARAKAFCI	62SE-3	18 3 83	36 —	40	40	20.35	72	20.59	>400 25
92	GAMAWA	MASHUWA	62SE-4	19 9 87	32 —	35	36.5	19.12	72	19.12	>400 28
93	GAMAWA	IGARIN FARI	62SE-5	11 10 87	33.5 —	39.5	31	19.42	75	19.56	>400 28
94	GAMAWA	BSADP GAWAWA DEVELOPMENT AREA	62SW-1	26 1 83	88 —	91	93	19.75	315	34.29	480
95	GAMAWA	BUNDUJARU	62SW-2	22 2 83	53 —	56	58	38.14	32	40.5	140 46
96	GAMAWA	RABA RABA	62SW-3	3 3 83	73.5 —	75	76	22.56	12	37.66	30 43
97	GAMAWA	GADIDOWA	62SW-4	8 3 83	49.5 —	51	58	44.07	40	45.31	130 52
98	GAMAWA	GADIDOWA	62SW-4		56.5 —	58					
99	GAMAWA	KEKENO	62SW-5	11 3 83	50 —	54	57	47.02	40	47.75	100 52
100	GAMAWA	DAF									

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)			DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)		
110	GAMAWA	BUDMIRI	62SW-14	24	5	85	53.5	—	59.5	66	29.24	40	38.32	70	43
111	GAMAWA	JADORI	62SW-15	24	5	85	66	—	72	72	30.96	45	40.04	120	43
112	GAMAWA	MALUMRI	62SW-16	28	5	85	66	—	72	72	29.25	40	37.69	120	43
113	GAMAWA	YARMARI	62SW-17	30	5	85	54	—	60	72	34.3	28	45	35	49
114	GAMAWA	AMARCARI	62SW-18	3	6	85	46.5	—	54.5	60	28.5	12	37.21	16	43
115	GAMAWA	MARANA	62SW-19	7	6	85	48	—	54	56	26.04	32	30.8	100	37
116	GAMAWA	GURBANA	62SW-20	8	6	85	44	—	48	52	26.22	32	26.56	>400	31
117	GAMAWA	GESHI	62SW-21	10	6	85	65.5	—	70	72	22.55	20	27.57	120	31
118	GAMAWA	TAUNDE	62SW-22	11	10	87	43.5	—	49.5	51	30.21	29	36.01	45	40
119	GAMAWA	KAFIN LARABAWA	84NE-2	13	8	82	28	—	34	34	29.42	40	29.63	40	31
120	GAMAWA	BURDUSU	84NE-7	9	2	83	43	—	47	47	32.3	45	33.16	380	37
121	GAMAWA	ALANGAWARI	84NE-8	10	2	83	34	—	38	38	30.25	60	30.35	>400	34
122	GAMAWA	KAGUMMA	84NE-9	12	2	83	47	—	53	54	30.44	12	38.82	15	46
123	GAMAWA	RAGWARAM FATTA	84NE-11	15	2	83	38	—	42	43	28.12	72	28.4	>400	31
124	GAMAWA	BAGALU	84NE-12	18	2	83	38	—	42	42	28.26	72	28.66	>400	31
125	GAMAWA	BAMBURURI	84NE-14	23	2	83	38	—	42	42	30.3	72	30.51	>400	34
126	GAMAWA	GAFURAWA	84NE-15	24	2	83	32	—	36	36	24.99	72	25.26	>400	28
127	GAMAWA	LUGAGU	84NE-20	15	3	83	116	—	117.5	156	71.27	8	94.62	11	100
128	GAMAWA	LUGAGU	84NE-20				150.5	—	152						
129	GAMAWA	JARWA	84NE-23	4	6	85	44	—	50	52	30.56	60	30.62	>400	34
130	GAMAWA	MARKADERI	84NE-25	5	6	85	49	—	53.5	54	23.93	32	25.33	350	34
131	GAMAWA	MAMUDARI	84NW-10	14	2	83	50	—	54	54	35.03	72	39.57	160	43
132	GAMAWA	DALMARI	85NE-1	23	6	83	32	—	38	38	24.47	72	25.8	>400	31
133	GAMAWA	TARMASUWA	85NE-2	23	6	83	22	—	28	28	18.87	72	19.04	300	22
134	GAMAWA	ZINDIWA	85NE-3	24	6	83	18	—	22	24	15.73	30	15.86	210	19
135	GAMAWA	SANDAWAI	85NE-4	25	6	83	32	—	36	36	27.67	30	27.74	>400	31
136	GAMAWA	KURAN JEJI	85NE-8	4	6	85	19.5	—	25.5	26	18.91	50	19.08	120	22
137	GAMAWA	GANALBOJI	85NW-1	21	2	83	43	—	47	54	30	72	30.19	>400	34
138	GAMAWA	KESA	85NW-2	16	3	83	66	—	70	72	18.8	102	34.6	200	37
139	GAMAWA	KATSINAWA	85NW-3	13	5	83	28	—	32	32	21.43	72	21.6	>400	25
140	GAMAWA	RAGA	85NW-4	14	5	83	36	—	42	42	31.55	45	31.61	>400	34
141	GAMAWA	GAYAWA	85NW-5	16	5	83	35.5	—	44	44	34.72	8	34.82	40	40
142	GAMAWA	AIDO	85NW-6	16	5	83	45	—	51	51	37.72	12	38.11	150	40
143	GAMAWA	SAMO	85NW-7	7	6	85	45.5	—	53.5	54	36.48	53	36.9	>400	40
144	GAMAWA	DACHUWA	85NW-8	8	6	85	33	—	39	54	32.55	32	32.6	30	37
145	GAMAWA	YABA	85NW-9	22	9	87	52	—	55	59	14.37	72	15.57	>400	22
146	GAMAWA	BUSKUWA	85SW-4	9	4	83	37	—	41	48	25.35	72	26.19	>400	29
147	GAMAWA	BAKORI	85SW-8	12	4	83	42.5	—	46.5	48	28.72	72	29.38	>400	34
148	JAMA' ARE	MABAI	83NE-13	18	1	84	56	—	60	62	13.4	32	13.6	>400	19
149	JAMA' ARE	SABON SARA	83NE-24	10	5	85	32	—	40	42	5.63	20	16.31	30	25
150	JAMA' ARE	BILKICHERI	83NE-25	11	5	85	33	—	43	48	13.9	20	18.38	55	25
151	JAMA' ARE	GIJINA	83NE-26	14	5	85	30	—	34	34	25.39	65	28.72	55	28
152	JAMA' ARE	MAJIYA	83NE-27	14	5	85	19	—	23	24	16.58	32	17.14	90	22
153	JAMA' ARE	BUZAWA	83NW-1	23	5	83	16	—	20	40	6.89	72	7.68	>400	13
154	JAMA' ARE	GAMBARIN-KWARI	83NW-2	11	1	84	32	—	40	42	9.58	32	16.32	75	28
155	JAMA' ARE	DURU	83NW-3	31	1	84	43	—	51	51				84	25
156	JAMA' ARE	SABON KAFI	83SE-1	6	5	83	70	—	78	76	29.23	4	66.84	4	76
157	JAMA' ARE	JURARA	83SE-2	28	5	83	34	—	42	42	30.16	10	36.07	10	40
158	JAMA' ARE	KESUWO	83SE-3	31	5	83	57	—	65	66	25.78	12	36.02	25	43
159	JAMA' ARE	ALLAH YAJI	83SE-7	4	6	83	32	—	40	37	20.62	12	31.63	12	37
160	JAMA' ARE	KUNJUNRI	83SE-8	6	6	83	42.5	—	54	54	20.82	8	39.14	9	52
161	JAMA' ARE	JAMA' RE FARM SERVICE CENTRE	83SE-9	22	12	83	41	—	53	50	7.91	72	40.36	50	
162	JAMA' ARE	KARYANDA	83SE-10	10	1	84	37	—	45	31	33.06	12	36.98	8	43
163	JAMA' ARE	DEGELJI	83SE-11	11	1	84	34.5	—	44	44	36.26	8	41.26	8	43
164	JAMA' ARE	GARIN-BABANI	83SE-12	13	1	84	67	—	71	71	38.63	20	43.88	75	55
165	JAMA' ARE	YANGAMAI	83SE-13	14	1	84	36	—	40	44	25.17	12	32.56	12	49
166	JAMA' ARE	YANGAMAI	83SE-13				53	—	61						
167	JAMA' ARE	MARMANJI	83SE-14	21	1	84	47.5	—	51.5	44	38.24	12	44.81	12	49
168	JAMA' ARE	BELABELI	83SE-15	24	1	84	44	—	52	53	23.06	20	29.53	45	37
169	JAMA' ARE	LARIYE	83SE-16	24	1	84	36	—	44	44	25.03	12	29.3	20	34
170	JAMA' ARE	MARKE	83SE-17	25	1	84	57	—	65	66	35.39	20	42.65	40	49
171	JAMA' ARE	KAMAKU	83SE-18	26	1	84	37	—	45	45	16.87	20	21.61	60	28
172	JAMA' ARE	(DR)GIDAN FULANI OLDI	83SE-18B	16	5	85	29	—	37	—	15.3	20	25.91	15	25
173	JAMA' ARE	BAKI	83SE-19	26	1	84	42	—	50	51	39.16	12	40.56	18	49
174	JAMA' ARE	SAMBOWALSAM	83SE-30	26	4	85	39	—	47	48	9.94	65	16.59	200	22
175	JAMA' ARE	GUDA	83SE-31	10	5	85	45	—	53	54	23	20	31.36	36	40
176	JAMA' ARE	MASAMA	83SE-32	14	5	85	33	—	41	42	25.39	12	28.72	20	34
177	JAMA' ARE	BODINGA	83SE-33	16	5	85	32	—	44	53	15.92	20	19.04	70	25
178	JAMA' ARE	ALIYE	83SE-34	24	7	87	21	—	24	43	23.17	12	22.43	12	34
179	JAMA' ARE	ALIYE	83SE-34				35	—	41						
180	JAMA' ARE	RARUM	83SE-35	25	7	87	21	—	27.7	31	7.55	12	12.02	25	19
181	JAMA' ARE	GONGO	83SE-36	25	7	87	21	—	24	66.5	6.83	72	8.63	350	16
182	JAMA' ARE	GONGO	83SE-36				56	—	65						
183	JAMA' ARE	BOGGE JEDA	83SE-37	27	7	87	42	—	48	50	35.83	11	39.7	12	46
184	JAMA' ARE	GILAR	83SE-38	28	7	87	17	—	20	47	9.71	75	10.02	>400	16
185	JAMA' ARE	GILAR	83SE-38				39	—	42						
186	JAMA' ARE	SURAWA	83SE-39	28	7	87	19	—	22	28	14.82	20	16.32	35	22
187	JAMA' ARE	MAFUDI	83SE-40	30	7	87	24	—	27	48	11.76	11	13.41	55	22
188	JAMA' ARE	MAFUDI	83SE-40				37	—	46						
189	JAMA' ARE	PATISKE	83SE-41	30	7	87	53.5	—	59.5	61	21.98	20	27.49	80	34
190	JAMA' ARE	YOLA	83SE-45	14	8	87	14	—	17	37.5	5.98	42	6.08	>400	13
191	JAMA' ARE	YOLA	83SE-45				30	—	36						
192	JAMA' ARE	GALDIMARI	84SW-31	7	2	84	37	—	47	46	10.46	70	22.69	110	25
193	JAMA' ARE	KAGADAMA	84SW-32	8	2	84	40	—	48	48	15.32	36	25.63	60	31
194	JAMA' ARE	GADARAMA	84SW-37	3	5	85	51.5	—	59.5	60	17.33	90	19.77	>400	22
195	JAMA' ARE	CHANGANAWA II	84SW-41	3	5	85	63.5	—	67.5						

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)		DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
220	KATAGUM	GYARA	83NE-16	19 1 84	62	—	70	9.14	32	22.55	90	28
221	KATAGUM	BAUSHE JEJI	83NE-17	21 1 84	40	—	52	52	11.93	12	23.35	20
222	KATAGUM	BAUSHE KURAN	83NE-18	23 1 84	41.5	—	49.5	52	12.71	12	20.25	30
223	KATAGUM	MALLAM YAU	83NE-19	23 1 84	38	—	50	54	10.5	32	20.56	60
224	KATAGUM	YAYARI	83NE-20	26 1 84	27	—	35	36	8.89	20	14.02	50
225	KATAGUM	KIRBILI	83NE-21	27 1 84	34	—	42	42	17.69	12	24.33	20
226	KATAGUM	TIRAWA-TAURA	83NE-22	29 1 84	42	—	50	50	19.9	13	29.69	20
227	KATAGUM	KATSINA WA	83NE-23	31 1 84	41	—	49	52	11.4	13	25	42
228	KATAGUM	DANI	83NE-28	30 9 87	46	—	52	53	14.94	72	15.82	>400
229	KATAGUM	GATAR	83NE-29	30 9 87	27	—	30	52	24.36	62	25.42	110
230	KATAGUM	GATAR	83NE-29		45	—	48					
231	KATAGUM	GASA KOLI	83NE-30	5 10 87	46	—	52	53	13.13	20	24.09	30
232	KATAGUM	ARAMA	83NE-31	6 10 87	47	—	50	54	19.01	68	21.62	>400
233	KATAGUM	GARADO	83NE-32	6 10 87	35	—	37	60	11.77	68	17.52	190
234	KATAGUM	GARADO	83NE-32		49	—	52					
235	KATAGUM	BAMBEL	83SW-1	20 5 83	29	—	37	37	12.83	8	24.05	10
236	KATAGUM	BAMBAL YAMMA	83SW-2	26 1 84	22	—	30	30	9.89	13	14.58	25
237	KATAGUM	DAFUWA	83SW-3	28 1 84	35	—	43	45	8.21	20	17.12	40
238	KATAGUM	GIDAN AMAR	83SW-4	30 1 84	38	—	48	50	8.31	20	20.08	35
239	KATAGUM	KUMO EAST	83SW-5	3 2 84	43	—	53	54	14.29	12	29.26	16
240	KATAGUM	GIZIRE GANA	84NE-1	10 8 82	29	—	37	37	26.6	40	27.75	45
241	KATAGUM	KANJAWA	84NE-3	25 9 82	28	—	36	36	27.66	60	29.92	20
242	KATAGUM	GARIN BURAJI	84NE-4	4 10 82	34	—	42	41	32.79	50	38.58	20
243	KATAGUM	LIZAI	84NE-5	6 10 82	36	—	42	42	26.84	70	33.4	67
244	KATAGUM	BARKEJI	84NE-6	12 10 82	56	—	63	63	35.06	50	35.36	>400
245	KATAGUM	GIZIRI	84NE-10	30 5 85	24	—	32	36	20.88	49	21.72	120
246	KATAGUM	KANADERI	84NE-13	22 2 83	57	—	65	65	39.95	12	49.17	14
247	KATAGUM	DUNARI	84NE-16	24 2 83	80.5	—	82	89	49.32	4	66.88	8
248	KATAGUM	DUNARI	84NE-16		87.5	—	89					
249	KATAGUM	JIMBARI	84NE-17	25 2 83	58.5	—	63	63	34.66	12	48.03	15
250	KATAGUM	GWADAGUM	84NE-18	27 2 83	61	—	69	69	40.14	8	60.88	8
251	KATAGUM	YOLA	84NE-19	12 3 83	72	—	73.5	85.4	44.64	8	75.6	8
252	KATAGUM	YOLA	84NE-19		76	—	77.5					
253	KATAGUM	BAKATAMARI	84NE-21	19 5 83	62	—	66	67	51.12	12	53.42	40
254	KATAGUM	G.S.S. MADARA	84NE-22	4 6 85	25	—	60	55	24.27	32	29.03	30
255	KATAGUM	GALDIMARI	84NE-24	5 6 85	47	—	64	65	26.27	12	34.98	20
256	KATAGUM	KATURI	84NE-26	7 6 85	39.5	—	47	47	25.2	32	27.5	135
257	KATAGUM	BAGASHABBE	84NE-27	10 6 85	76.5	—	82.5	83	56.52	18	65.49	28
258	KATAGUM	ABBARI	84NW-1	9 8 82	77	—	85	85	21.6	40	28.92	210
259	KATAGUM	MELLEMIDIGE	84NW-2	15 8 82	17	—	21	22	12.84	20	13.34	37
260	KATAGUM	KASHURI	84NW-3	24 9 82	28	—	36	36	24.82	80	25.66	200
261	KATAGUM	LAFIYA	84NW-4	15 10 82	18	—	22	24	12.52	52	13.19	300
262	KATAGUM	BABU GUCHI	84NW-5	23 1 84	46	—	54	54	13.83	65	28.02	100
263	KATAGUM	SHARIFURI	84NW-6	24 1 84	26	—	30	30	12.16	80	12.92	>400
264	KATAGUM	GARI MALLUM	84NW-7	24 1 84	42	—	50	50	13.86	80	14.42	>400
265	KATAGUM	WALAI	84NW-8	29 5 85	47	—	55	56	11.53	73	12.96	>400
266	KATAGUM	NOMARI	84NW-9	29 5 85	28	—	36	40	26.94	40	27.22	50
267	KATAGUM	ZUBULCHI	84NW-11	26 7 87	18	—	21	38	6.76	75	7.96	>400
268	KATAGUM	ZUBULCHI	84NW-11		30	—	33					
269	KATAGUM	ATAFOWA	84NW-12	27 7 87	28	—	34	36	15.02	65	15.48	>400
270	KATAGUM	KUBUWA GANA	84NW-13	26 8 87	45	—	57	63	31.21	20	40	21
271	KATAGUM	ATAWARI	84NW-14	12 10 87	29	—	32	56	17.01	62	17.63	>400
272	KATAGUM	ATAWARI	84NW-14		51	—	54					
273	KATAGUM	BUSKURI	84SE-1	18 8 82	18	—	24	22	11.99	14	12.92	60
274	KATAGUM	GAMBAKI	84SE-2	19 8 82	16	—	20	20	11.72	20	12.7	58
275	KATAGUM	DUGANDE	84SE-4	28 8 82	36	—	40	40	31.85	36	32.57	140
276	KATAGUM	SABUWAR DAGARO	84SE-5	30 8 82	42	—	46	41	31.9	144	35.08	310
277	KATAGUM	GANJI	84SE-10	15 10 82	25	—	33	36	18.29	30	22.27	36
278	KATAGUM	SALERI	84SE-12	30 10 82	25	—	34	34	11.95	20	22.53	17
279	KATAGUM	BSADP CHINADE FARM SERVICE CENTER	84SE-13	1 4 83	38.5	—	41	41	11.54	40	30	40
280	KATAGUM	GANGAI	84SE-14	6 4 83	32.5	—	40.5	42	10.14	12	21.63	16
281	KATAGUM	ZINDI	84SE-15	7 4 83	45	—	48	48	28.85	72	32.19	34
282	KATAGUM	YOLAWO	84SE-17	9 5 83	22.5	—	30.5	30	21.08	20	21.93	20
283	KATAGUM	LARISKI	84SE-18	10 5 83	32	—	36	36	27.67	32	28.18	180
284	KATAGUM	GORON KAWO	84SE-19	11 5 83	32	—	36	36	30.49	12	30.95	25
285	KATAGUM	JUGGA	84SE-20	19 5 83	28	—	36	36	28.41	20	28.87	20
286	KATAGUM	NEW TEACHERS TRAINING COLLEGE AZARE	84SE-21	27 5 84	46.5	—	54	55	24.31	22	45.31	20
287	KATAGUM	ALBABA	84SE-22	23 4 85	43	—	51	54	12.69	32	20.03	90
288	KATAGUM	CHINBILAU	84SE-23	22 4 85	15.5	—	23.5	24	7.47	32	9.7	80
289	KATAGUM	BACCHIRI	84SE-25	24 4 85	41	—	47	48	34.44	51	35.72	195
290	KATAGUM	TATTIJE	84SE-26	9 6 85	34	—	42	42	24.07	62	26.38	185
291	KATAGUM	GABAI	84SE-27	23 8 87	42	—	48	52	28.93	12	31.9	35
292	KATAGUM	MADANGALA	84SW-1	27 7 82	21	—	25	25	12.45	20	19	18
293	KATAGUM	DUFUA	84SW-2	28 7 82	28	—	36	36	16.25	8	25.73	8
294	KATAGUM	TUDUN WADA	84SW-3	12 8 82	36	—	48	48	23.36	8	31.58	8
295	KATAGUM	CHILANKORI	84SW-4	5 8 82	44	—	54	54	30.24	20	44.44	13
296	KATAGUM	CHOKEL CHARCHARA	84SW-5	14 8 82	27	—	32	42	21.6	40	28.92	28
297	KATAGUM	BAMGAZA	84SW-6	16 8 82	28	—	36	36	23.48	20	27.91	14
298	KATAGUM	FATARA	84SW-7	17 8 82	23	—	27	36	21.53	20	23.66	15
299	KATAGUM	FATARA	84SW-7		32	—	36					
300	KATAGUM	BUBARI	84SW-8	2 9 82	27	—	33	32	24.03	20	24.58	65
301	KATAGUM	BOKKI	84SW-9	4 9 82	49	—	54	54	32.95	47	46.31	40
302	KATAGUM	KUJURU	84SW-11	9 10 82	18	—	24	24	13.42	20	15.76	27
303	KATAGUM	BARWA	84SW-12	9 10 82	23	—	27	26	18.38	90	21.08	87
304	KATAGUM	BIDIR	84SW-13	12 10 82	28	—	36	36	28.6	32	30.21	100
305	KATAGUM	BAGAR	84SW-14	9 10 82	17	—	21	32	15.97	8	24.78	8
306	KATAGUM	BAGAR	84SW-14		25	—	32					
307	KATAGUM	MAGONSHI	84SW-15	13 10 82	23	—	30	30	20.86	52	20.97	>400
308	KATAGUM	RAGWAM	84SW-16	14 10 82	21	—	27	27	17.52	40	18.04	190
309	KATAGUM	GOBURAWA	84SW-17	14 10 82	37	—	45	48	36.7	8	40.58	11
310	KATAGUM	MADANGALA OSCHARDBSADP	84SW-19	24 9 82	18.5	—	20	32	13.46	40	15.5	75
311	KATAGUM	MADANGALA OSCHARDBSADP	84SW-19		22	—	25.5					
312	KATAGUM	BSADP NORTHERN ZONE H.Q.	84SW-20	6 10 82	36.5	—	41	41	31.31	51	33	80
313	KATAGUM	GOSAMAI	84SW-21	15 10 82	15	—	19	21	11.98	14	12.91	32
314	KATAGUM	BAGATA	84SW-23	18 10 82	41	—	45	45	24.92	12	34	14
315	KATAGUM	KWANJIN	84SW-26	22 10 82	19	—	23	27	19.66	96	20	50
316	KATAGUM	BSADP DUHUN KURA RESEARCH STATION	84SW-28	12 5 83	29	—	31.5	38	25.94	72	26.7	150
317	KATAGUM	BSADP DUHUN KURA RESEARCH STATION	84SW-28		33.8							

S.No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..		SCREEN INTERVAL(m)		DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
331	KATAGUM	MADIRI	85SW-6			25.5 — 30.5		30	9.64	72	9.96	>400	13
332	KATAGUM	BASURI	85SW-7	12	4	83	22.5	— 30.5	30	14.29	12	16.21	25
333	KATAGUM	RABBI-BABBA	85SW-11	23	5	83	20	— 24	24	14.97	65	19.9	45
334	KATAGUM	DANGO	85SW-31	25	4	85	20	— 30	31	16.12	69	16.5	>400
335	KATAGUM	BULTORI	85SW-32	25	4	85	25	— 29	34	16.12	69	30.65	>400
336	KATAGUM	DAGAROS	85SW-34	23	9	87	43	— 46	46.5	29.94	60	30.12	37
337	KATAGUM	MASAKU	107NE-12	3	11	82	19.5	— 27.5	27	5.98	20	11.38	35
338	KATAGUM	HIRNA HORARE	107NE-25	6	4	83	46	— 54	54	14.44	12	26.23	20
339	KATAGUM	JALAGE	107NE-26	7	4	83	28	— 36	36	9.19	72	15.73	150
340	KATAGUM	GABO	107NE-31	15	4	83	15	— 19	19	7.27	20	8.54	90
341	MISAU	GARGAWA	85NE-5	27	6	83	46	— 50	50	27.81	72	30.12	34
342	MISAU	GARIN MAMMAN	85NE-6	27	6	83	30	— 36	36	24.7	72	26.69	150
343	MISAU	TAIYU	85NE-7	29	6	83	56	— 60	60	25.3	72	25.82	>400
344	MISAU	MINCHIKA	85SE-1	15	6	83	90	— 91.5	100	64.33	60	64.73	70
345	MISAU	MINCHIKA	85SE-1				96.5	— 98					
346	MISAU	MUZUWA	85SE-2	17	6	83	80	— 82.5	82.5	45.81	40	45.96	>400
347	MISAU	LUMBO	85SE-3	18	6	83	52	— 60	56	44.45	40	45.37	230
348	MISAU	GARIN BOBO	85SE-4	20	6	83	100.5	— 102	110	85.89	25	86.02	>400
349	MISAU	GARIN BOBO	85SE-4				107.5	— 109					
350	MISAU	FAGARAY	85SE-5	20	6	83	75.5	— 78	64	62.12	40	62.29	>400
351	MISAU	MADOWAI	85SE-6	20	6	83	41	— 45	45	24.97	72	26.69	>400
352	MISAU	BULUS	85SE-7	22	6	83	58	— 62	62	29.31	70	29.59	>400
353	MISAU	BARU DAJADAWI	85SE-8	22	6	83	83	— 84.5	100.5	68.15	40	68.33	>400
354	MISAU	BARU DAJADAWI	85SE-8				99	— 100.5					
355	MISAU	JALE	85SE-9	21	6	83	26	— 34	34	19.79	60	20.1	>400
356	MISAU	TALE	85SE-10	24	6	83	63	— 64.5	84	58.56	40	58.73	>400
357	MISAU	TALE	85SE-10				74.5	— 76					
358	MISAU	LELE	85SE-11	24	6	83	36	— 48	48	38.86	60	38.98	60
359	MISAU	DEWO	85SE-12	25	6	83	51.5	— 59.5	60	47.88	40	48.02	>400
360	MISAU	AZEKU	85SE-13	25	6	83	44	— 52	52	35.78	72	35.98	>400
361	MISAU	FESHINGO	85SE-14	25	6	83	39.5	— 47.5	48	33.24	72	33.6	>400
362	MISAU	BALADIWAI	85SE-15	25	6	83	57	— 60	60	38.89	60	39.79	>400
363	MISAU	BANJINE	85SE-16	27	6	83	44	— 48	48	29.45	72	30.04	>400
364	MISAU	GADAMA	85SE-17	28	6	83	52	— 56	60	27.73	72	30.11	>400
365	MISAU	JANDA	85SE-19	21	9	87	90	— 93	107	73.02	37	73.86	>400
366	MISAU	JANDA	85SE-19				104	— 107					
367	MISAU	JANGAR	85SE-20	23	9	87	99	— 102	102	67.32	28	67.43	>400
368	MISAU	BULADAWAI	85SE-21	26	9	87	81	— 84	86	48.71	44	48.92	>400
369	MISAU	GWAWURUA	85SE-22	29	9	87	99	— 102	102	71.63	27	71.82	>400
370	MISAU	GARIN KWATAM	85SE-23	4	10	87	46.5	— 52.5	54	33.43	43	35.39	190
371	MISAU	BSADP DUMBAM DEV AREA H.Q.	85SW-9	20	5	83	23.5	— 28	28	16.99	40	20.3	55
372	MISAU	BADA KOSHI	85SW-10	21	5	83	38	— 42	42	29.16	40	29.32	>400
373	MISAU	GARIN GALADIMA	85SW-12	25	5	83	72.5	— 74	84	53.99	36	54.3	>400
374	MISAU	GARIN GALADIMA	85SW-12				79.5	— 81					
375	MISAU	GARIN BAYIWA	85SW-13	25	5	83	50	— 54	54	39.69	40	40.03	>400
376	MISAU	KAFIN ZAKA	85SW-14	26	5	83	82.5	— 87	90	56.52	60	56.65	>400
377	MISAU	MASILLE	85SW-15	26	5	83	37	— 41	42	28.74	60	29.13	>400
378	MISAU	YANDO DAHUWA	85SW-16	11	6	83	75.5	— 78	78	73.21	4	73.24	200
379	MISAU	NINGO	85SW-17	11	6	83	39	— 47	47	27.21	60	29.54	220
380	MISAU	YANTOKU	85SW-18	13	6	83	81.5	— 83	90	66.37	20	68.96	350
381	MISAU	YANTOKU	85SW-18				88.5	— 90					
382	MISAU	YAME	85SW-19	13	6	83	27.5	— 35.5	38	27.22	40	27.62	40
383	MISAU	DAMIYO	85SW-20	14	6	83	77	— 78.5	108	62.07	40	62.54	>400
384	MISAU	DAMIYO	85SW-20				102.5	— 104					
385	MISAU	YAYARIN FULANI	85SW-21	15	6	83	30	— 38	38	28.81	12	28.87	140
386	MISAU	ZARARA	85SW-22	16	6	83	85.5	— 87	94	56.61	60	56.8	>400
387	MISAU	ZARARA	85SW-22				92.5	— 94					
388	MISAU	GARUZA	85SW-23	17	6	83	39	— 47	47	35.32	40	35.45	>400
389	MISAU	WAHUI	85SW-24	18	6	83	42	— 50	50	36.02	40	36.27	>400
390	MISAU	BAUNA	85SW-25	20	6	83	30	— 38	38	25.77	40	27.22	80
391	MISAU	JURBANA	85SW-26	22	6	83	20	— 24	30	18.02	20	18.57	50
392	MISAU	DANFISA COLLEGE	85SW-30	24	4	85	33.5	— 41.5	—	22.89	65	23.34	>400
393	MISAU	GANJUWA	85SW-33	9	6	85	22.5	— 30.5	35	17.26	68	18.78	160
394	MISAU	TULUTULU	85SW-35	25	9	87	71	— 74	74	60.66	27	61.1	>400
395	MISAU	DIRI	85SW-36	25	9	87	51	— 57	57	42.13	48	42.28	>400
396	MISAU	WAKILI	85SW-37	7	10	87	45.5	— 51.5	53	26.97	72	27.21	>400
397	MISAU	YUBADE	107NE-4	17	9	82	22	— 30	30	10.1	12	21.54	12
398	MISAU	MALLUMJUE	107NE-9	29	10	82	18	— 26	26	7.43	8	14.65	10
399	MISAU	DAMATA	107NE-13	4	11	82	18	— 26	26	7.96	12	12.56	18
400	MISAU	ALAKO	107NE-16	5	11	82	12	— 16	16	8.37	17	10.89	19
401	MISAU	GELTANNI	107NE-17	8	11	82	23	— 31	31	15.43	30	25.71	15
402	MISAU	WALIYAN GABAS	107NE-18	9	11	82	35	— 46	45	20.15	16	29.47	20
403	MISAU	ABAYAWO	107NE-19	9	11	82	29	— 37	37	8.79	8	34.58	8
404	MISAU	DANFISA	107NE-20	11	11	82	27	— 31	59	16.97	10	44.43	10
405	MISAU	DANFISA	107NE-20				35	— 39					
406	MISAU	DANFISA	107NE-20				55	— 59					
407	MISAU	BETI	107NE-21	12	11	82	29	— 37	37	11.39	12	25.97	12
408	MISAU	BANGERATI	107NE-22	12	11	82	30	— 36	36	11.73	28	20.19	40
409	MISAU	JARMARI	107NE-24	15	11	82	37.5	— 45.5	47	12.19	12	36.74	12
410	MISAU	CHOGORO	107NE-27	13	4	83	24	— 30	30	14.92	12	22.16	12
411	MISAU	KARE BARKEJE	107NE-28	13	4	83	15	— 19	19	8.16	4	11.84	8
412	MISAU	DASKO	107NE-29	14	4	83	24	— 28	28	17.13	32	17.88	200
413	MISAU	JABAL YAN	107NE-30	15	4	83	26	— 30.5	30	14.21	24	19.87	35
414	MISAU	DIRFA JABALLAYA	107NE-32	18	4	83	30.5	— 36.5	36.5	21.34	20	28.13	18
415	MISAU	BUWAKO	107NE-33	20	4	83	21	— 25	60				49
416	MISAU	BUWAKO	107NE-33				50	— 58					
417	MISAU	RIGAR YAVU	107NE-34	20	4	83	29	— 35	35	17.66	20	24.07	25
418	MISAU	FAGURDI	107NE-35	21	4	83	41	— 45	45	14.8	32	34.14	30
419	MISAU	GAMBALA GABAS	107NE-36	22	4	83	31.5	— 39.5	39.5	8.99	20	19.85	30
420	MISAU	SIRKO	107NE-37	28	4	83	26	— 34	41	17.03	4	20.19	15
421	MISAU	SIRKO	107NE-37				37	— 41					
422	MISAU	AFTAKA	107NE-38	29	4	83	22.5	— 30.5	30	12.55	12	16.58	20
423	MISAU	FADANGU	107NE-39	29	4	83	19	— 27	27	10.23	12	19.2	12
424	MISAU	GUDBORI	107NE-40	29	4	83	36.5	— 44.5	44.5	12.03			

S.No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
440	MISAU	BADAWERE	107NE-56	8	10	87	24	—	30	43	10.83
441	MISAU	GARIN DOKA	108NE-7	13	6	83	84.5	—	87.5	88	70.93
442	MISAU	GANJI	108NE-8	16	6	83	101	—	104	108	80.13
443	MISAU	CHABAI	108NW-1	13	11	82	63	—	75	75	22.28
444	MISAU	ZINDI	108NW-2	15	11	82	27	—	33	33	10.71
445	MISAU	RIGAR GANJI	108NW-11	18	4	83	50	—	54	70	35.7
446	MISAU	RIGAR GANJI	108NW-11				62	—	70		
447	MISAU	DIGGERI	108NW-12	22	4	83	26	—	30	30	19.8
448	MISAU	ELDEWO	108NW-13	22	4	83	50	—	54	54	34.73
449	MISAU	GINA FULANI	108NW-14	24	4	83	26	—	30	30	13.81
450	MISAU	GUGUL IN	108NW-15	25	4	83	27	—	31	36	17.78
451	MISAU	WURO WULUBE	108NW-16	26	4	83	21	—	29	29	14.11
452	MISAU	DONGA	108NW-17	27	4	83	30	—	34	42	20.37
453	MISAU	DONGA	108NW-17				38	—	42		
454	MISAU	GADURAM GARIN	108NW-18	27	4	83	35.5	—	41.5	42	25.06
455	MISAU	AJALI TOWA	108NW-19	28	4	83	35.5	—	41.5	42	15.19
456	MISAU	ALANGAWARI	108NW-20	30	4	83	26	—	30	30	11.79
457	MISAU	WURO BUNDU	108NW-21	30	4	83	29	—	37	37	28.74
458	MISAU	GWARAM	108NW-23	4	5	83	16	—	20	20	6.09
459	MISAU	GALAWA	108NW-24	23	5	83	26	—	30	30	11.67
460	MISAU	SARMA	108NW-25	23	5	83	32.5	—	37	48	24.97
461	MISAU	YALWA	108NW-26	27	5	83	79	—	82	82	61.06
462	MISAU	FARI RAWA	108NW-37	9	10	87	28.5	—	34.5	36	16.22
463	SHIRA	ANDUBUN	83SE-5	2	6	83	29	—	33	33	18.51
464	SHIRA	GOYA	83SE-6	4	6	83	45	—	49	49	9.25
465	SHIRA	KAF IN-GARA	83SE-20	27	1	84	38	—	43	43	10.28
466	SHIRA	SHUWARI	83SE-21	28	1	84	33	—	41	41	22.2
467	SHIRA	ZUBO	83SE-22	4	2	84	21	—	24	24	13.48
468	SHIRA	DANGO	83SE-23	6	2	84	31	—	35	35	11.94
469	SHIRA	GIJINARI	83SE-24	9	2	84	40.5	—	48.5	22	12.06
470	SHIRA	YERIMARI	83SE-25	10	2	84	22	—	30	42	13.31
471	SHIRA	GAGIDIBA	83SE-26	10	2	84	44	—	52	53	8.5
472	SHIRA	BELI	83SE-27	11	2	84	38	—	46	41	12.71
473	SHIRA	ABARBATO	83SE-28	12	2	84	32.5	—	40.5	42	9.35
474	SHIRA	JALKATARI	83SE-29	13	2	84	25	—	33	33	13
475	SHIRA	GUMA	83SE-42	31	7	87	21	—	25	26	7.33
476	SHIRA	KAMAKU	83SE-43	2	8	87	28	—	40	43	17.23
477	SHIRA	BONO	83SE-44	10	8	87	47	—	50	51.5	18.65
478	SHIRA	KA'EL	83SE-46	15	8	87	41.5	—	47.5	49	25.54
479	SHIRA	ZIRAMI	84SE-3	21	8	82	32	—	36	36	12.76
480	SHIRA	GABASMAWO	84SE-6	9	9	82	20	—	24	24	13.3
481	SHIRA	FAGUJI	84SE-7	10	9	82	20	—	28	28	10.86
482	SHIRA	KIMARI	84SE-8	14	9	82	24	—	32	32	15.1
483	SHIRA	KOGGA	84SE-11	19	10	82	32	—	40	43	12.45
484	SHIRA	HAUTANGO	84SE-16	6	5	83	28	—	36	36	17.97
485	SHIRA	LAFIYA ZARAMI	84SE-24	23	4	85	28	—	36	37	16.59
486	SHIRA	GANDUHA	84SW-10	8	9	82	34	—	42	42	28.35
487	SHIRA	BANGAYAZA	84SW-18	15	10	82	36	—	42	42	28.33
488	SHIRA	KOROWA UZUM	84SW-22	16	10	82	11	—	15	25	10.47
489	SHIRA	KOROWA UZUM					21	—	25		
490	SHIRA	UZUM	84SW-24	19	10	82	36	—	40	40	22.44
491	SHIRA	GOBIROWA	84SW-25	20	10	82	27	—	35	35	21.92
492	SHIRA	IBBAWO	84SW-27	30	10	82	40.5	—	48.5	49	34.04
493	SHIRA	DARAJIYA	84SW-29	6	2	84	23	—	27	27	18.62
494	SHIRA	SHIYAN	84SW-30	7	2	84	30	—	38	38	18.69
495	SHIRA	TUFFERI	84SW-33	8	2	84	45	—	53	54	19.05
496	SHIRA	GALDIMARIYEL	84SW-34	10	2	84	23	—	31	32	16.06
497	SHIRA	ALHAJARI	84SW-35	11	2	84	28	—	36	36	14.55
498	SHIRA	GADAULE	84SW-36	20	4	85	38	—	48	49	22.47
499	SHIRA	DALLI	84SW-40	4	5	85	28	—	40	42	19.18
500	SHIRA	ISAWA	84SW-45	6	5	85	31	—	47	55	16.06
501	SHIRA	KAKKAKI	84SW-51	21	8	87	42	—	66	68	20.27
502	SHIRA	GURMIN	106NE-1	30	5	83	35	—	37	54	7.95
503	SHIRA	KUDAWA	106NE-2	29	1	84	41	—	49	49	14.6
504	SHIRA	SAWE	106NE-3	30	1	84	27	—	35	43	7.33
505	SHIRA	ADAHIA	106NE-4	31	1	84	22.5	—	30.5	30	6.97
506	SHIRA	BUKUL	106NE-5	31	1	84	19	—	25	25	6.64
507	SHIRA	BALI JAM	106NE-6	31	1	84	23	—	31	31	6.3
508	SHIRA	DAGO DUTSE	106NE-7	3	2	84	16.5	—	24.5	24	1.99
509	SHIRA	JATTAM	106NE-8	7	2	84	20	—	28	24	14.19
510	SHIRA	KLINGO	106NE-9	8	2	84	34	—	43	48	10.94
511	SHIRA	AJANGARA	106NE-10	6	5	85	18	—	30	30	11.74
512	SHIRA	LANGIAMA	106NE-11	7	5	85	17.5	—	25.5	35	14.39
513	SHIRA	BAKATUMA	106NE-14	11	5	85	31	—	35	45	11.44
514	SHIRA	BAKATUMA	106NE-14				39	—	42		
515	SHIRA	GIDAN FULANI	106NE-15	11	8	87	28.5	—	31.5	37	18.15
516	SHIRA	BAFFARU	106NE-16	19	8	87	27	—	35.5	36	14.15
517	SHIRA	KAROWA	107NE-1	12	7	82	31	—	39	39	20.28
518	SHIRA	ZABI	107NE-2	13	9	82	36	—	44	48	13.05
519	SHIRA	AUYAKARI	107NE-3	16	9	82	34	—	38	38	10.6
520	SHIRA	GALDIMARI	107NE-5	18	9	82	28	—	32	32	18.1
521	SHIRA	ABUNARI	107NE-6	21	10	82	31	—	37	39	24.18
522	SHIRA	YANDURE	107NE-7	27	10	82	27	—	31	31	19.81
523	SHIRA	KAROWA NO-1	107NE-8	28	10	82	32	—	40	40	
524	SHIRA	SABON SARA	107NE-10	30	10	82	28	—	36	36	15.79
525	SHIRA	JADE	107NE-11	3	11	82	28	—	36	36	20.83
526	SHIRA	CHINKANI TSOHUWA	107NE-14	4	11	82	22	—	26	26	20.41
527	SHIRA	KAROWA NO-2	107NE-15	9	5	83	23	—	28	30	10.88
528	SHIRA	JARMAWO	107NE-23	16	11	82	18	—	25	28	11.42
529	SHIRA	TSAFI NO.1	107NW-1	23	6	82	19	—	25	25	9.71
530	SHIRA	LUGADA	107NW-2	24	6	82	16	—	24	24	5.4
531	SHIRA	GARANYA	107NW-3	25	6	82	22	—	30	30	13.36
532	SHIRA	JUGUDU	107NW-4	26	6	82	16	—	24	24	11.43
533	SHIRA	DOGUWA	107NW-5	2	7	82	19	—	23	23	11.63
534	SHIRA	BADUWARE	107NW-6	3	7	82	14	—	22	22	9.8
535	SHIRA	TUMFAFI	107NW-7	6	7	82	30	—	34	33.5	19.6
536	SHIRA	WUROLADE	107NW-8	8	7	82	37	—	41	41	21.58
537	SHIRA	GABURGO	107NW-9	13	7	82	22	—	30	30	12.91
538	SHIRA	NASARAWA	107NW-10	15	7	82	12.5	—	20	37	6.82
539	SHIRA	NASARAWA	107NW-10				28	—	36		
540	SHIRA	TSAFI NO.2	107NW-11	17	7	82	35	—	43	43	8.45
541	SHIRA	BAGE	107NW-12	18	7	82	19	—	27	28	9.8
542	SHIRA	GANJWO	107NW-13	21	10	82	21	—	29	29	20.89
543	SHIRA	LAFIYAWO	107NW-14	3	11	82	25	—	37	37	23.49
544	SHIRA	GAZA	107NW-15	5	11	82	17	—	25	25	9.99
545	SHIRA	BANGIRE	107NW-16	3	2	84	45	—	49.5	50	8.03
546	SHIRA	JAKA	107NW-17	5	2	84	24	—	32	32	6.27
547	SHIRA	NAHUCE	107NW-18	6	2	84	26.5	—	30.5	30	5.73
548	SHIRA	TAGWAYE	107NW-19	15	4	85	24	—	32	36	14.05
549	SHIRA	BACCIRI	107NW-20	16	4	85	21	—	28	30	14.72
550	SHIRA	KURBA	107NW-21	16	4	85	29	—	41	43	14.68
551	SHIRA	TARAWO	107NW-22	17	4	85	30	—	42	44	5.45
552	SHIRA	SORODO	107NW-23	18	4	85	34	—	49	52	22.86
553	SHIRA</										

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
560	SHIRA	KAYA KAYA	107SE-16	5 10 87	46 — 49	57	19.66	12	31.98	17	43
561	SHIRA	KAYA KAYA	107SE-16		51 — 54						
562	SHIRA	YELWA	107SW-1	9 11 82	26 — 30	30	20.07	12	27.68	10	28
563	DARAZO	BUNGA	106SW-11	8 5 84	17.5 — 25.5	26	9.99	80	14.87	90	19
564	DARAZO	KAWARI	106SW-13	10 5 84	12 — 20	20	8.97	8	11.2	8	13
565	DARAZO	ANGUWA D I GAWA	106SW-14	11 5 84	20 — 28	29	10.35	12	16.97	13	19
566	DARAZO	DARAZO AGRIC TRAINING SCHOOL	107SE-1	6 11 82	13.5 — 15	26	9.6	90	11.2	100	
567	DARAZO	DARAZO AGRIC TRAINING SCHOOL	107SE-1		15 — 26						
568	DARAZO	KORATIN	107SE-2	6 11 82	28 — 36	36	20.21	8	24.12	12	31
569	DARAZO	WUROFUNA QUARTER	107SE-3	8 11 82	26 — 30	30	17.17	32	27.55	20	28
570	DARAZO	SAUKE QUARTER	107SE-4	8 11 82	25 — 33	33	13.31	24	19.6	32	28
571	DARAZO	CHIKAUJE	107SE-5	10 11 82	52 — 60	60	20.21	92	20.22	>400	25
572	DARAZO	GANGALAWAI	107SE-6	13 11 82	28 — 35	60	15.53	92	15.54	>400	19
573	DARAZO	GANGALAWAI	107SE-6		52 — 60						
574	DARAZO	ALHAJI JIBIR QUARTER	107SE-8	10 11 82	29 — 33	33	14.9	12	23.27	14	28
575	DARAZO	LAGO TA YAMMA	107SE-9	13 11 82	38 — 46	46	12.79	20	25.85	25	31
576	DARAZO	LAGO TA GABAS	107SE-10	25 11 82	24.5 — 26	48	22.96	8	27.43	10	31
577	DARAZO	LAGO TA GABAS	107SE-10		31.5 — 33						
578	DARAZO	ZAGO QUARTER	107SE-11	26 4 82	22 — 26	26	7.25	8	17.21	10	22
579	DARAZO	KANYA	107SE-12	27 11 82	12 — 16	18	7.1	24	10.97	22	13
580	DARAZO	SABU	107SE-13	19 1 83	37 — 41	41	41	16	39.32	10	37
581	DARAZO	GUDUGUL	107SE-14	7 7 87	29.5 — 38.5	40	13.06	33	18.78	60	22
582	DARAZO	ANGUWAR KATSINAWA	107SE-15	8 7 87	20 — 23	—	11.29	21	14.92	35	19
583	DARAZO	WURODOLE	107SE-17	8 2 88	45.5 — 62	67.5	15.89	19	28.74	30	34
584	DARAZO	WURODOLE	107SE-17		64 — 66						
585	DARAZO	YELWA	108NE-1	25 11 82	89 — 92	150	66.16	60	66.19	>400	73
586	DARAZO	YELWA	108NE-1		98 — 101						
587	DARAZO	JUFULLU DAMAGARI	108NE-2	27 11 82	88 — 92.5	102	76.97	48	77.22	>400	82
588	DARAZO	JUFULLU DAMAGARI	108NE-2		98.5 — 101.5						
589	DARAZO	DEMUREN FULANI	108NE-3	1 12 82	57 — 60	70	64.43	72	64.86	300	55
590	DARAZO	DEMUREN FULANI	108NE-3		67 — 70						
591	DARAZO	SHUDI	108NE-4	2 12 82	78.5 — 80	100	86.22	40	86.47	>400	91
592	DARAZO	SHUDI	108NE-4		85.5 — 87						
593	DARAZO	SHUDI	108NE-4		98 — 99.5						
594	DARAZO	DOSHO FULANI	108NE-5	3 12 82	70 — 73	80	64.43	72	64.86	>400	70
595	DARAZO	DOSHO FULANI	108NE-5		78 — 79.5						
596	DARAZO	KAUGAMA	108NE-6	6 12 82	57.5 — 59	66	49.6	36	49.79	>400	55
597	DARAZO	KAUGAMA	108NE-6		64.5 — 66						
598	DARAZO	PAPA UNG IBRAHIM	108NE-9	3 4 85	107 — 113	114	68.04	65	68.31	>400	82
599	DARAZO	LANZAI	108NE-10	4 4 85	82.5 — 87	83	58.35	85	58.59	>400	70
600	DARAZO	LANZAI	108NE-11	10 4 85	77 — 81	82	64.3	32	64.54	>400	73
601	DARAZO	JAURO ZAKAR	108NE-12	9 9 87	98 — 101	102	74.22	51	74.58	>400	82
602	DARAZO	BAGUBA	108NW-3	16 11 82	36 — 40	42	29.3	54	29.54	>400	37
603	DARAZO	GATSANGA	108NW-4	18 11 82	21.5 — 25.5	28	16.77	54	17.45	>400	22
604	DARAZO	WAHU	108NW-5	17 11 82	22 — 26	27	17.29	54	18.28	190	22
605	DARAZO	NAHUTA	108NW-6	17 11 82	17.5 — 24.5	28	16.47	56	16.86	100	22
606	DARAZO	TAGAJE	108NW-7	18 11 82	30.5 — 38.5	38	33.24	24	33.7	20	34
607	DARAZO	SAUKE	108NW-8	18 11 82	38 — 46	48	38.17	48	38.45	40	43
608	DARAZO	GARIN DANDE	108NW-9	20 11 82	31 — 35	36	23.17	54	23.38	>400	31
609	DARAZO	GWANGWARO	108NW-10	27 11 82	74 — 75.5	84	74.53	28	75.08	50	82
610	DARAZO	GWANGWARO	108NW-10		81 — 84						
611	DARAZO	SADE FARM SERVICECENTRE	108NW-22	30 4 83	48 — 52	60	47.11	40	47.22	150	55
612	DARAZO	MAGUME	108NW-27	28 3 85	27 — 35.5	36	22.75	65	23.23	>400	28
613	DARAZO	ZANKWADA	108NW-28	29 3 85	94 — 97	99	72.96	20	76.65	80	82
614	DARAZO	ZANON MANYA	108NW-29	30 3 85	43 — 47	47	34.6	55	35.04	>400	40
615	DARAZO	MALLAM FARI	108NW-30	30 3 85	61 — 64	72	53.01	92	53.5	>400	58
616	DARAZO	MALLAM FARI	108NW-30		69.5 — 71						
617	DARAZO	GARIN DIDI	108NW-31	2 4 85	42 — 46	47	32.5	57	32.87	>400	37
618	DARAZO	JIRO	108NW-32	9 4 85	27 — 33	36	17.91	68	18.19	>400	25
619	DARAZO	GARIN MANUJE	108NW-33	11 7 87	94 — 100	108	49.69	29	51.51	>400	58
620	DARAZO	FULATARAN	108NW-34	13 7 87	29.5 — 32.5	36	20.97	85	21.25	>400	28
621	DARAZO	LAGON WAHU	108NW-35	14 7 87	41.5 — 47.5	54	23.27	64	23.5	>400	31
622	DARAZO	HAMZA PRIMARY SCHOOL	108NW-36	6 9 87	52.5 — 58.5	60	47.57	31	47.69	>400	52
623	DARAZO	JAURO YUGUOA	108SE-1	3 12 82	39.5 — 41	60	34.24	90	34.87	>400	37
624	DARAZO	JAURO YUGUOA	108SE-1		56 — 57.5						
625	DARAZO	SABON GARII	108SE-2	6 12 82	51.5 — 53	60	15.48	90	17.02	>400	25
626	DARAZO	SABON GARII	108SE-2		56.5 — 59.5						
627	DARAZO	GARIM ABARE	108SE-3	9 12 82	72 — 76.5	78	61.66	72	62.33	>400	67
628	DARAZO	ZOBA	108SE-13	4 4 85	44 — 48	48	22.4	65	22.68	>400	31
629	DARAZO	ALIYA PAPA	108SE-14	10 4 85	39 — 43	47	21.72	47	21.86	>400	25
630	DARAZO	PAPA	108SE-16	15 4 85	52 — 60	—	33.7	55	34.1	>400	40
631	DARAZO	MAI UNGUWAR BUNGU	108SE-17	13 9 87	86 — 89	108	67.08	53	69.2	330	76
632	DARAZO	MAILAFTYA	108SE-18	17 9 87	48.5 — 54.5	52	21.63	72	21.87	>400	28
633	DARAZO	KAFIN DEBAN	108SW-1	15 11 82	49.5 — 57.5	57	21.94	12	32.52	20	34
634	DARAZO	JABERI	108SW-2	15 11 82	60 — 68	68	57.78	36	59.87	25	61
635	DARAZO	GARKA	108SW-3	16 11 82	53 — 61	61	38.73	16	52.23	12	54
636	DARAZO	GAKKULAN AUDI	108SW-4	17 11 82	76 — 88	90	74.68	32	75.36	30	79
637	DARAZO	YUBUNGA	108SW-5	22 11 82	64.5 — 68	99	54.95	36	55.05	>400	67
638	DARAZO	YUBUNGA	108SW-5		96 — 97.5						
639	DARAZO	GAKKASHI	108SW-6	23 11 82	64.5 — 66	56	57.08	36	58.01	200	64
640	DARAZO	GAKKULAN GANLUWA	108SW-7	24 11 82	65.5 — 68.5	80	54.11	4	79	4	79
641	DARAZO	GAKKULAN GANUWA	108SW-7		77 — 80						
642	DARAZO	TSANGAYARI	108SW-9	20 12 82	62 — 65	72	57.58	32	57.95	250	61
643	DARAZO	TSANGAYARI	108SW-9		70.5 — 72						
644	DARAZO	KORKOR	108SW-10	21 12 82	82.5 — 60.5	61	49.49	40	49.58	>400	58
645	DARAZO	KAIGAMARI	108SW-11	24 12 82	81 — 84	102	49.36	72	49.67	>400	58
646	DARAZO	KAIGAMARI	108SW-11		95 — 96.5						
647	DARAZO	KOLI BAJJI	108SW-12	5 1 83	67.5 — 72	75.7	56.52	40	57.45	370	64
648	DARAZO	RUGAN TAUDE KUDA	108SW-13	3 4 85	55.5 — 60	61	47.7	20	52.19	24	58
649	DARAZO	BOIN	108SW-14	12 4 85	28 — 40	43	20.58	12	25.78	12	34
650	DARAZO	FESHINGO	108SW-16	13 2 88	36 — 56	57.5	32.48	18	33.72	35	43
651	DARAZO	CENTRAL ZONE HEADQUARTERS BH#1	128NE-1	25 4 82	21 — 33	34	7.2	76	12.71	150	
652	DARAZO	CENTRAL ZONE HEADQUARTERS BH#2	128NE-2	29 4 82	18.5 — 29	37	9.88	55	14.52	70	
653	DARAZO	MIYA FARM SERVICE CENTRE	128NE-3	15 4 84	20 — 26	26	4.55	20	13.01	25	
654	DARAZO	KUMIN DANKUSA	128NE-4	12 5 84	30 — 38	38	15.12	8	18.31	26	31
655	DARAZO	JIMBIN	128NE-5	15 5 84	17.5 — 23.5	25	10	32	14.23	40	16
656	DARAZO	SIRI ZURUHU	128NE-6	18 5 84	23 — 33	33	4.9	12	12.16	20	19
657	DARAZO	SIRI BABA	128NE-7	19 5 84	19 — 25	25	5.53	32	8.56	150	19
658	DARAZO	GADAN MAIWA FARM SERVICE CENTRE	128NW-1	25 4 84	16 — 23.5	30	8.86	40	10.12	150	
659	DARAZO	BAWA	129NW-2	15 5 84	23 — 31	31	9.41	20	13.5	46	

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
670	DARAZO	NABAYI	129NE-3		45 — 49					120	85
671	DARAZO	KAHUN	129NE-4	9 12 82	84.5 — 86	94	20.1	48	81.38		
672	DARAZO	KAHUN	129NE-4		92.5 — 94						
673	DARAZO	TSANGAYIRI	129NE-5	13 12 82	63.5 — 65	72	61.79	10	64.09	10	70
674	DARAZO	TSANGAYIRI	129NE-5		70.5 — 72						
675	DARAZO	BAKUNAWA	129NE-6	15 12 82	98.5 — 101.5	107	33.1	12	74.86	13	91
676	DARAZO	SHADARI	129NE-7	16 12 82	37 — 45	45	15.36	12	38.84	10	40
677	DARAZO	BULAMARI	129NE-8	22 12 82	85 — 86.5	100	30.23	40	36.35	250	43
678	DARAZO	BULAMARI	129NE-8		92 — 95						
679	DARAZO	JIMIN	129NE-9	5 1 83	88.5 — 93	93	37.13	12	51.6	30	55
680	DARAZO	BSADP AGRO-SERVICE CENTER DARAZO	129NE-10	5 5 83	39.5 — 42	45	32.13	36	36.11	42	
681	DARAZO	MARGA	129NE-11	20 3 85	26 — 30	30	7.8	36	8.54	>400	13
682	DARAZO	YELWA DARAZO	129NE-12	16 4 85	17 — 29	30	12.34	69	15.29	80	19
683	DARAZO	GANJUWA	129NW-1	10 12 82	18.5 — 22.5	23	3.24	8	17.43	8	19
684	DARAZO	MARBUNI	129NW-2	13 12 82	28 — 32	32	3.55	20	24.5	16	28
685	DARAZO	GORONDO	129NW-3	16 5 84	16 — 22	22	9.69	12	14.82	17	19
686	DARAZO	GYADIWI	129NW-4	16 5 84	20 — 26	26	16.98	8	20.04	8	22
687	DARAZO	BURI BURI	129SE-1	7 1 83	60 — 63	64	49.17	52	49.48	>400	58
688	DARAZO	KEDIYA	129SE-2	8 1 83	28 — 32	34	13.72	20	18.74	40	28
689	DARAZO	GUNGURA	129SE-10	22 3 85	31 — 43	45	19.25	12	33.76	10	40
690	DARAZO	GILLIRI	129SW-1	4 6 82	25 — 33	34	6.48	4	11.72	9	28
691	DARAZO	KUBI	129SW-2	5 6 82	11 — 19	19	6.75	9	10.94	9	16
692	DARAZO	ZALANGA	129SW-3	7 6 82	14 — 21.5	22	4.75	72	8.28	130	18
693	DARAZO	DEBEN KASUWA	129SW-4	8 6 82	9 — 13	13	2.81	48	9.08	30	10
694	DARAZO	WAILO	129SW-5	7 12 82	18 — 22	22	3.12	54	9.72	55	16
695	DARAZO	LOYI	129SW-6	18 3 85	19 — 31	31	19.05	12	21.2	30	28
696	DARAZO	SAMNI	129SW-7	19 3 85	31.5 — 43.5	46	11.1	20	19.84	32	25
697	DARAZO	GERE KASA	129SW-8	25 6 87	18 — 27	29	7.37	12	9.26	45	16
698	DARAZO	KAMPANI FULANI	129SW-9	25 6 87	21.5 — 30.5	32	5.07	32	16.1	30	19
699	DARAZO	GERE GABBA	129SW-10	6 2 88	25 — 72	73.5	10.63	13	17.8	18	25
700	DARAZO	KAFIN BUBA	130NW-1	16 12 82	52 — 60	60	46.78	40	46.83	>400	49
701	DARAZO	SABON GARJI	130NW-2	22 12 82	29 — 35	35	25.44	52	25.71	>400	31
702	DARAZO	YAUTARI SABUWA	130NW-3	24 12 82	45.5 — 48	77	38.12	40	38.2	>400	46
703	DARAZO	YAUTARI SABUWA	130NW-3		70.5 — 72						
704	DARAZO	TAUYA	130NW-5	3 1 83	20 — 27	30	17.52	54	18.73	75	25
705	DARAZO	KAZUBA	130NW-12	14 1 83	32 — 40	40	30.57	72	30.91	220	37
706	DARAZO	UNGUWAR GARAGARU	130NW-14	19 1 83	60 — 61.5	86	43.61	60	44.78	>400	52
707	DARAZO	UNGUWAR GARAGARU	130NW-14		67 — 68.5						
708	DARAZO	UNGUWAR GARAGARU	130NW-14		79.5 — 81						
709	DARAZO	KABOZO	130NW-16	21 1 83	88 — 89.5	102	81.52	24	81.61	>400	85
710	DARAZO	KABOZO	130NW-16		95 — 96.5						
711	DARAZO	WURO BUNDO	130NW-17	27 3 85	83.5 — 89.5	93	66.35	32	66.53	>400	70
712	DARAZO	UNGWAR DALLOL	130NW-18	27 3 85	72.5 — 77	78	66.48	32	66.67	>400	70
713	DARAZO	BAGURUM	130NW-25	18 4 85	35 — 47	48	31.88	72	32.08	>400	37
714	DARAZO	MALLURIN TUDU	130NW-34	17 11 87	97 — 103	108	58.31	80	58.94	>400	67
715	DARAZO	SHUWARI	130NW-35	22 11 87	48 — 54	54	19.91	110	20.46	>400	28
716	DARAZO	GAWA	150NW-2	16 3 85	28 — 36	36	8.19	32	13.44	85	19
717	NINGI	KATSINAWA	104SE-2	15 5 84	25 — 33	33	15.65	40	17.57	130	25
718	NINGI	KURMI	104SE-3	21 5 84	15 — 23	26	8.31	40	12.11	50	16
719	NINGI	RUWAN KANKI	105NE-1	3 5 84	12 — 20	21.5	2.98	20	6.21	38	16
720	NINGI	SILLIYA	105NE-2	5 3 88	21 — 33	33	5.38	12	13.51	16	24
721	NINGI	KAFFINN/LEMO	105NW-1	19 5 84	15 — 25	25	10.54	20	13.57	21	19
722	NINGI	SHUWAKI	105NW-2	4 3 88	17 — 25	25	3.56	25	13.88	20	18
723	NINGI	BALMA	105SE-1	8 5 84	24 — 30	30	13.06	28	18.82	26	25
724	NINGI	GWANDABI	105SW-1	17 5 84	15 — 18	25	12.49	32	18.21	75	19
725	NINGI	ZANGAI	105SW-2	26 2 88	31.5 — 43.5	46	5.68	45	17.85	70	18
726	NINGI	ZAZIKA	106NW-1	2 5 84	14 — 20	17	9.83	8	13.46	8	16
727	NINGI	RUMBA	106SE-1	24 4 84	19.5 — 29.5	31	9.59	20	14.44	28	19
728	NINGI	TUYA	106SE-2	23 4 84	17 — 25	26	6.93	8	12.3	12	19
729	NINGI	BURA	106SE-3	26 4 84	12.5 — 16.5	17.5	8.72	12	9.66	10	13
730	NINGI	KADALE KANAWA	106SE-4	30 4 84	23 — 31	31	6.08	12	13.91	18	19
731	NINGI	ARU	106SE-5	29 4 84	16 — 24	25	2.1	12	11.07	58	16
732	NINGI	LAFIA QUARTER	106SE-6	1 5 84	7.5 — 15.5	17	5.88	20	6.67	33	13
733	NINGI	GABANGA	106SE-7	30 4 84	11 — 19	19	6.03	12	11	10	13
734	NINGI	BAIMA TSAMIYA	106SE-8	3 5 84	11.5 — 19.5	21	6.84	4	8.74	10	16
735	NINGI	SOSAYE	106SE-9	5 5 84	16.5 — 24.5	24	4.6	32	7.08	100	13
736	NINGI	MUDA	106SE-10	22 4 85	19 — 27	27	9.95	20	12.86	40	19
737	NINGI	ARDU HASSAN	106SE-11	23 4 85	11.5 — 19.5	22	9.26	12	13.28	10	16
738	NINGI	NINGI CAMP	106SW-1	9 5 84	39 — 48	49	13.08	70	24.07	115	
739	NINGI	MARASUWA	106SW-2	4 5 84	15 — 25	25	6	20	15.15	14	19
740	NINGI	GWAM	106SW-3	4 5 84	14 — 20	20	4.9	20	6.29	90	13
741	NINGI	DALAJI	106SW-4	5 5 84	17 — 25	25	5.7	20	6.45	210	16
742	NINGI	GULULU	106SW-5	5 5 84	18 — 27	29	9.17	8	15.96	8	19
743	NINGI	DANKOMI	106SW-6	5 5 84	11.5 — 19.5	20	3.13	12	4.19	65	13
744	NINGI	TUDUN WADA	106SW-7	7 5 84	16 — 28	31	7	12	10.14	24	16
745	NINGI	TIFFI	106SW-8	5 5 84	17 — 23	30	9.91	20	13.49	27	16
746	NINGI	TUBAKO	106SW-9	7 5 84	34 — 40	40	15.45	12	20.49	30	25
747	NINGI	BADAYESU	106SW-10	8 5 84	16 — 24	24	6.12	40	6.91	350	13
748	NINGI	RUMBU	106SW-12	9 5 84	13 — 19	20	6.34	32	8.02	85	16
749	NINGI	GUDA	106SW-15	14 5 84	18 — 26	32	3.41	8	14.97	10	22
750	NINGI	ARI	106SW-16	15 5 84	36.5 — 44.5	45	15.8	80	21.83	190	25
751	NINGI	SIRI	106SW-17	21 5 84	27 — 35	35	7.71	20	22.45	18	31
752	NINGI	ZADANG	106SW-18	22 5 84	34 — 42	54	7.5	8	23.44	10	43
753	NINGI	ZADANG	106SW-18		50 — 54						
754	NINGI	GIDAN BAKI	106SW-19	22 5 84	15 — 19	19	6.22	20	12.96	18	18
755	NINGI	GANGARA	106SW-20	23 5 84	24 — 32	32	5.97	12	14.02	18	30
756	NINGI	FADINA	106SW-21	23 5 84	22 — 30	30	5.43	32	12.6	50	28
757	NINGI	TSANGA	106SW-22	25 5 84	16 — 25	25	8.3	20	9.7	77	19
758	NINGI	UNGUWAN SHAMARI	106SW-23	28 5 84	17 — 29	29	7.07	12	14.4	12	25
759	NINGI	NINGI PROP. ORCHARD SITE	106SW-24	29 5 84	21 — 26	26	5.65	80	17.2	65	
760	NINGI	NINGI GOVT SECONDARY SCHOOL	106SW-25	18 2 85	16 — 28	36	10.6	21	16.35	16	31
761	NINGI	BUNGA	106SW-26	24 4 85	24 — 30	33	12.74	20	15.6	55	19
762	NINGI	YAYARI	106SW-27	10 5 85	20 — 30	30	5.6	20	16.28	18	19
763	NINGI	TASHAR MAJE	106SW-28	26 2 88	29.5 — 35.5	37	10.37	37	21.29	45	21
764	NINGI	TIFFI ZIDANI	106SW-29	26 2 88	28 — 32	36	9.29	30	25.54	25	27
765	NINGI	GASINA	106SW-30	28 8 88	10 — 21	32	3.42	52	5.69	105	12
766	NINGI	GURDOUBA	106SW-31	29 2 88	35.5 — 59.5	61	7.35	25	30.64	20	30
767	NINGI	HARDO CHENDO	106SW-32	5 3 88	27.5 — 35.5	34	11.49	72	14.26	290	18
768	NINGI	TUDUN JARKOYA	126NE-1	7 4 84	20 — 24	25	7.23	78	10.13	240	19
769	NINGI	TIBSHI	126NE-2	5 3 88	17.5 — 28.5						

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
781	BAUCHI	DURUM	128SE-3	9 3 85	11 — 19	19	5.7	20	11.36	12	16
782	BAUCHI	BSADO H.Q.	149NE-1	17 4 82	17.5 — 42.5	44	7.12	20	16.29	25	
783	BAUCHI	WUNTIN DADA	149NE-2	29 5 82	10 — 14	14	5.5	40	9.83	30	10
784	BAUCHI	BSADP H.Q.	149NE-3	8 12 82	26 — 41	42	3.55	214	27.8	170	
785	BAUCHI	GWALLAMEJI	149NE-5	25 2 85	14 — 18	40	3.88	34	31.15	14	37
786	BAUCHI	GWALLAMEJI	149NE-5		36 — 40						
787	BAUCHI	BOJINJI	149NE-6	14 3 85	9 — 25	29	8.75	12	19.41	12	25
788	BAUCHI	ZUNTU	149NE-7	15 3 85	13 — 21	25	5.52	60	14.1	36	16
789	BAUCHI	ZANFARA	149NE-8	16 3 85	13 — 25	25	12.56	12	17.42	12	24
790	BAUCHI	TIRWUN	149NE-9	19 3 85	13 — 25	25	6.2	32	10.5	35	16
791	BAUCHI	MAUMO	149NE-10	27 1 88	23 — 32	34	11.94	37	18.21	45	22
792	BAUCHI	KULUNTUM	149NW-5	22 5 82	16 — 20	20	8.9	12	12.42	17	16
793	BAUCHI	GEJI NO.1	149NW-6	27 5 82	11 — 15	15	7.8	40	9.12	70	10
794	BAUCHI	MIRI	149NW-7	28 5 82	10 — 18	18	7.05	12	8.71	15	17
795	BAUCHI	KUNDUM	149NW-8	1 6 82	25 — 29	29	5.85	30	23.2	23	19
796	BAUCHI	KUSI	149NW-9	13 3 85	20.5 — 28.5	29	6.2	32	12.33	50	13
797	BAUCHI	BURNAWA	149NW-10	15 3 85	18 — 30	31	5.6	20	13.35	22	16
798	BAUCHI	YEYERI(UNGUWAR KANAWA)	149NW-11	12 6 87	13.5 — 25.5	27	3.86	71	10.8	60	13
799	BAUCHI	LAFIYARI	149NW-13	18 2 88	25 — 34.5	36	12.94	65	19.68	80	21
800	BAUCHI	LIMAN KATAGUM AGRO-SERVICE CENTRE	149SE-1	10 5 83	40.5 — 45	55	6.56	50	26.46	60	
801	BAUCHI	TUDAN WADA	149SE-2	4 3 84	19 — 27	28	13.88	20	18.37	15	22
802	BAUCHI	HAMMA DADA	149SE-3	5 3 84	15 — 23	25	13.8	75	14.52	90	16
803	BAUCHI	DIN	149SE-4	5 3 84	22 — 30	30	15.69	20	18.91	25	22
804	BAUCHI	GAKAL	149SE-5	6 3 84	29 — 33	34	16.93	72	19.7	215	22
805	BAUCHI	MUNSAL	149SE-6	7 3 84	23.5 — 31.5	33	18.82	12	24.3	10	28
806	BAUCHI	BIRSHI	149SE-7	20 3 85	27 — 39	41	8.47	50	16.6	80	25
807	BAUCHI	DONJARAWA	149SE-8	25 2 85	19.5 — 27.5	30	13.12	13	18.64	10	25
808	BAUCHI	KIR BAKIN KASUWA	149SE-9	26 2 85	21 — 27	28	22.45	20	23.95	24	25
809	BAUCHI	BAKAL	149SE-10	28 2 85	22 — 26	27	9.53	46	17.93	48	22
810	BAUCHI	JAGUR	149SE-11	27 2 85	18 — 26	26	9.1	70	14.8	75	19
811	BAUCHI	BUTA KUNGAL	149SE-12	28 2 85	28 — 36	36	11.4	72	15	230	19
812	BAUCHI	BARKIN KOGI	149SE-13	4 3 85	22 — 30	30	8.1	34	13.16	65	16
813	BAUCHI	LUTI	149SE-14	1 3 85	13 — 21	25	5.8	12	9.69	15	16
814	BAUCHI	YAMRET	149SE-15	5 3 85	21 — 32	32	5.8	34	17.86	30	22
815	BAUCHI	GOSKWARAM DAGUM	149SE-16	5 3 85	15.5 — 19.5	23	6.5	12	12.24	13	19
816	BAUCHI	LUDA	149SE-17	6 3 85	24 — 30	30	9.9	72	15.6	125	19
817	BAUCHI	BIRNIN GANYE	149SE-18	7 3 85	23 — 29	29	18.44	32	19.47	100	22
818	BAUCHI	WURO TAFAWA	149SE-19	8 3 85	15.5 — 19.5	28	4.3	12	11.97	10	25
819	BAUCHI	LIMAN KATAGUM HEALTH CENTRE	149SE-20	8 3 85	28.5 — 44.5	45	16.07	12	22.52	16	34
820	BAUCHI	SABON KAURA	149SE-21	11 3 85	28 — 44	44	14.3	20	22.16	25	40
821	BAUCHI	JITAR	149SE-22	11 3 85	20 — 32	32	14.7	32	18.39	32	22
822	BAUCHI	WUROWASE	149SE-23	18 3 85	10 — 18	20	5.67	79	8.94	75	13
823	BAUCHI	WURO GOBO	149SE-24	7 6 87	10 — 16.5	18	2.19	21	9.43	15	16
824	BAUCHI	KANGARA	149SE-25	9 6 87	31.5 — 42.5	44	10.89	10	19.99	15	31
825	BAUCHI	LOBEL	149SE-26	20 1 88	29.5 — 41.5	43	14.84	12	19.01	30	28
826	BAUCHI	KIRBAN JANLI	149SE-27	17 2 88	26 — 32	32	19.04	63	21.05	150	27
827	BAUCHI	SABON SARA	149SE-28	18 2 88	20.5 — 28.5	30	13.54	39	16.04	75	21
828	BAUCHI	PONGA	149SW-10	4 3 84	33 — 39	40	24	20	28.72	25	31
829	BAUCHI	KADAGE(LUGGE)	149SW-12	10 3 84	19 — 31	31	7.05	75	17.44	60	19
830	BAUCHI	BULI	149SW-13	26 2 85	15 — 23	25	6.41	75	8.4	225	16
831	BAUCHI	BORAM DUTSI	149SW-14	28 2 85	17.5 — 29.5	30	6.9	35	14.23	35	19
832	BAUCHI	BALURDE	149SW-15	12 3 85	9 — 19	19	4.4	12	9.18	10	16
833	BAUCHI	BARAM TAFUWA	149SW-18	15 7 87	20 — 23	24.5	4.61	20	7.41	75	13
834	BAUCHI	JINKIRA	150NW-3	19 3 85	13 — 19	23	10.2	12	12.69	10	16
835	BAUCHI	TAKA LAFIYA	150NW-4	20 3 85	22 — 30	30	7.2	75	15.47	95	19
836	BAUCHI	ZUN KUWO	150NW-5	21 3 85	26 — 42	49	13.05	12	22.05	12	31
837	BAUCHI	BADOKOSHII	150SW-6	7 1 85	16 — 24	24	9.73	52	12.65	78	16
838	BAUCHI	KWALAG	150SW-8	7 1 85	10 — 18	19	9.45	32	11.26	10	16
839	BAUCHI	YOLA DOKA	150SW-11	9 1 85	18 — 28	29	12.15	20	16.75	18	23
840	BAUCHI	MUNYAGAL	150SW-13	12 1 85	21 — 33	37	22.84	20	24.21	18	28
841	BAUCHI	BALANSHI	150SW-15	13 3 85	9 — 17	19	12.42	12	13.09	45	16
842	BAUCHI	GURUNTUM	150SW-16	12 2 88	41 — 53	54	22.42	33	30.33	55	33
843	BAUCHI	ZUNGUR	170NE-6	5 3 84	29 — 41	41	13.59	12	31.68	10	37
844	BAUCHI	DADIN KOWA	170NE-7	6 3 84	28 — 36	36	21.13	12	31.35	10	34
845	BAUCHI	TARGAL KANAWA	170NE-8	7 3 84	19.5 — 23.5	24	11.42	32	17.49	25	22
846	BAUCHI	GIGERA	170NE-11	7 3 84	32 — 43	43	17.22	20	28.64	15	31
847	BAUCHI	WURO YAMEL	170NE-12	7 3 84	27 — 39	43	13.85	8	23.46	10	37
848	BAUCHI	BURUM	170NE-14	8 3 84	21 — 25	25	16.85	8	18.54	10	24
849	BAUCHI	TAMUNGAS	170NE-17	9 3 85	28 — 36	36	13.45	32	17.84	75	31
850	BAUCHI	SABON GIDA BADAS	170NE-18	9 3 85	27.5 — 39.5	44	11.7	12	20.39	15	34
851	BAUCHI	JAWURAN NEW MUN	170NE-19	19 1 88	16.5 — 22.5	23	3.25	33	10.68	40	13
852	BAUCHI	ANGUWAN KANAWA	170NE-20	20 1 88	20 — 26	27.5	8.91	21	12.36	47	19
853	BAUCHI	GWALAM	170NE-21	21 1 88	12 — 13	31.5	2.51	21	17.32	10	25
854	BAUCHI	GWALAM	170NE-21		14 — 21						
855	BAUCHI	GWALAM	170NE-21		21 — 26						
856	BAUCHI	GIDAN KABA	170NE-23	23 1 88	25.5 — 31.5	33	15.08	45	22.22	45	25
857	BAUCHI	JAMDA	170NE-24	25 1 88	26.5 — 35.5	37	5.62	13	21.34	12	31
858	BAUCHI	DUNGEL	170NE-26	20 2 88	40.5 — 53	54.5	21.81	20	32.72	23	39
859	DASS	LUKSHI	148SE-6	9 3 84	17 — 25	25	10.84	80	15.17	75	19
860	DASS	ZUMBUL	148SE-8	10 3 84	26 — 34	34	13.32	8	18.16	15	31
861	DASS	POLCHI(BAZALI)	148SE-9	12 3 84	14 — 22	22	7.81	20	10.69	30	14
862	DASS	DUTSEN KURA	148SE-10	13 3 84	12 — 20	20	5	32	7.68	60	16
863	DASS	KWALLAH	148SE-18	8 3 85	11 — 19	19	5.56	12	10.27	10	16
864	DASS	MBAL	148SE-19	9 3 85	11 — 19	19	3.2	32	5.87	65	16
865	DASS	DUMBA	148SE-20	19 6 87	16 — 25	—	3.46	21	11.15	20	16
866	DASS	BAGAS	148SE-21	19 1 88	40 — 49	50.5	4.4	32	14.15	80	16
867	DASS	DOTT	149SW-2	11 2 84	12 — 20	25	3.99	20	6.79	40	10
868	DASS	BOSU	149SW-3	24 2 84	17 — 21	25	17.17	12	18.19	10	19
869	DASS	BAGEL	149SW-4	25 2 84	9 — 11	11	6.34	32	9.25	22	10
870	DASS	PEGIN MATO	149SW-7	29 2 84	17 — 25	23	7.01	12	9.74	30	16
871	DASS	BUNU DABANDAT	149SW-20	12 6 87	28 — 38	39.5	3.55	71	8.55	240	13
872	DASS	BAJAR	149SW-21	17 6 87	17.5 — 29.5	31	2.34	71	8.08	130	10
873	DASS	KAGADAMA	149SW-22	20 6 87	6.5 — 9.5	31	3.95	10	5.77	10	10
874	DASS	PEGI DARMAN	149SW-23	15 1 88	23.5 — 29.5	31	5.21	32	13.3	50	16
875	DASS	DOT	149SW-26	19 2 88	30.5 — 38.5	40	2.09	30	21.04	30	21
876	DASS	BAW	169NE-8	28 2 84	13 — 21	23	3.5	12	13.18	10	19
877	DASS	BARAZA	169NE-12	9 3 84	22.5 — 30.5	31	8.74	75	13.97	130	19
878	DASS	DURR	169NE-13	9 3 84	21 — 29	29	6.17	12	16.52	14	25
879	DASS										

S./No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
890	DASS	BASHI	170NW-11	22 2 84	22 — 30	30	9.21	8	15.59	15	27
891	DASS	NAHUTA	170NW-12	22 2 84	12 — 20	24	8.16	12	9.28	30	16
892	DASS	BANGIM	170NW-14	24 2 84	9 — 13	13	4.17	12	6.06	22	11
893	DASS	GARAM	170NW-18	28 2 85	32 — 44	45	3.95	12	23.05	12	31
894	DASS	PITMAN	170NW-19	4 3 85	36 — 48	49	17.23	20	22.17	52	37
895	DASS	GADIYA	170NW-20	5 3 85	20 — 40	40	21.23	37	22.25	>400	37
896	DASS	TALLARAN	170NW-21	5 3 85	27 — 39	42	8.8	20	25.72	15	39
897	DASS	GAJIWAL	170NW-23	15 6 87	15 — 29	—	3.45	12	5.65	40	13
898	DASS	DIMSIM(DINGSIM)	170NW-24	17 6 87	23 — 32	36	4.27	21	8.13	70	13
899	TAFAWA BALEWA	DAJIN	149SW-5	27 2 84	15 — 19	27	10.42	8	14.84	8	25
900	TAFAWA BALEWA	DAJIN	149SW-6	27 2 84	11 — 17	18	8.58	12	10.64	12	13
901	TAFAWA BALEWA	GASO	149SW-8	29 2 84	19 — 29	35	13.6	12	20.3	10	28
902	TAFAWA BALEWA	UNGUWAR TSMIYA	149SW-9	29 2 84	16.5 — 20.5	36	12.5	12	15.45	12	22
903	TAFAWA BALEWA	UNGUWAR TSMIYA	149SW-9	28.5	34.5	—	—	—	—	—	—
904	TAFAWA BALEWA	WURO JINBANI	149SW-11	4 3 84	21 — 31	31	16.23	8	19.36	9	28
905	TAFAWA BALEWA	LIRR/JIRR	149SW-19	10 6 87	22 — 34	35.5	11.01	70	17.27	85	19
906	TAFAWA BALEWA	SHIRA TAWA	149SW-25	19 2 88	20.5 — 32.5	36.5	10.89	12	15.05	20	24
907	TAFAWA BALEWA	ZANGO	169NE-1	19 2 84	6 — 14	14	2.74	20	5.9	18	7
908	TAFAWA BALEWA	GOASHE	169NE-2	25 2 84	27 — 35	35	12.6	20	17.15	40	22
909	TAFAWA BALEWA	TAFARE	169NE-3	25 2 84	11 — 19	19	1.79	12	14.24	10	16
910	TAFAWA BALEWA	ZWAL	169NE-4	27 2 84	11 — 19	18	6.27	30	9.94	30	13
911	TAFAWA BALEWA	GONGO	169NE-5	27 2 84	10 — 18	18	3.2	78	14.41	35	16
912	TAFAWA BALEWA	KARDAM	169NE-6	27 2 84	8 — 14	18	3.86	12	8.39	10	13
913	TAFAWA BALEWA	GORI	169NE-7	28 2 84	17 — 25	25	5.27	20	15.32	16	19
914	TAFAWA BALEWA	BURGEL	169NE-9	29 2 84	17 — 25	25	5.12	15	15.16	12	19
915	TAFAWA BALEWA	KUNDUM	169NE-10	29 2 84	17 — 29	31	8.1	12	13.22	15	19
916	TAFAWA BALEWA	KUTARU	169NE-22	15 1 88	26 — 35	42	14.74	12	19.85	20	25
917	TAFAWA BALEWA	GOASHE	169NE-24	15 1 88	29.5 — 35.5	37	13.47	21	19.67	40	25
918	TAFAWA BALEWA	BOI	169SE-1	6 4 83	26 — 34	34	8.83	12	19.81	13	25
919	TAFAWA BALEWA	GAMBERE LERE	169SE-2	6 4 83	15 — 19	19	5.17	32	10.7	35	13
920	TAFAWA BALEWA	SABON LAYI	169SE-3	7 4 83	15 — 19	19	7.95	32	14.17	30	13
921	TAFAWA BALEWA	LIGURI	169SE-4	8 4 83	44 — 48	48	16.66	40	31.67	50	40
922	TAFAWA BALEWA	TAPSHIN	169SE-5	9 4 83	14 — 22	22	5.7	40	8.5	80	13
923	TAFAWA BALEWA	FADAN TAPSHIN	169SE-6	11 4 83	21 — 25	25	4.85	18	17	19	19
924	TAFAWA BALEWA	YUNG	169SE-7	13 4 83	13 — 17	21	5.7	34	9.12	50	13
925	TAFAWA BALEWA	UNGAWAN RIMI	169SE-8	14 4 83	14.5 — 18.5	18.5	5.82	30	8.55	65	13
926	TAFAWA BALEWA	SARA	169SE-9	18 2 84	15.5 — 27.5	30	2.61	12	7	25	15
927	TAFAWA BALEWA	SIGIWIN BULLI	169SE-10	20 2 84	12 — 20	25	8.53	12	16.66	10	22
928	TAFAWA BALEWA	MARTIN GIJJA	169SE-11	20 2 84	13 — 21	21	6.32	32	8.92	60	13
929	TAFAWA BALEWA	DAGULIN BAUCHI	169SE-12	21 2 84	17 — 25	25	4.94	12	7.08	45	16
930	TAFAWA BALEWA	MALIMA	169SE-13	21 2 84	13 — 21	21	3.79	32	7.14	60	10
931	TAFAWA BALEWA	RAPAWA	169SE-14	23 2 84	28 — 35.5	37	6.62	20	12.45	50	16
932	TAFAWA BALEWA	MURNIO	169SE-15	24 2 84	22.5 — 30.5	31	5.5	12	11.97	22	19
933	TAFAWA BALEWA	LERE HEALTH CENTRE	169SE-16	8 3 85	25 — 37	37	11.35	29	19.61	22	28
934	TAFAWA BALEWA	TUNARI	169SE-17	20 1 88	25 — 31	52	4.05	12	14.08	17	34
935	TAFAWA BALEWA	TUNARI	169SE-17	—	35 — 38	—	—	—	—	—	—
936	TAFAWA BALEWA	TUNARI	169SE-17	—	46 — 49	—	—	—	—	—	—
937	TAFAWA BALEWA	NUM GAGARA	169SE-18	21 1 88	20 — 30	35	3.39	11	10.08	19	19
938	TAFAWA BALEWA	RUGAN BIRNI	169SE-19	23 1 88	22.5 — 40.5	43	13.09	21	21.28	16	25
939	TAFAWA BALEWA	GABGEL	169SW-1	24 2 84	12 — 20	20	3.74	32	10.94	25	13
940	TAFAWA BALEWA	JUWA	169SW-2	17 1 88	23.5 — 29.5	31	7.37	55	10.72	185	16
941	TAFAWA BALEWA	BOTO	169SW-3	18 1 88	19.5 — 25.5	—	5.37	48	10.27	95	—
942	TAFAWA BALEWA	KAYARDIA	170NE-1	18 4 83	26.5 — 30.5	30	9.69	12	12.98	45	25
943	TAFAWA BALEWA	DUGURIYEL	170NE-2	20 4 83	50 — 54	54	17.78	20	25.32	60	31
944	TAFAWA BALEWA	SABON GIDA	170NE-3	21 4 83	16 — 20	52	9.06	8	16.36	8	37
945	TAFAWA BALEWA	SABON GIDA	170NE-3	—	44 — 52	—	—	—	—	—	—
946	TAFAWA BALEWA	BATAL	170NE-4	22 4 83	64 — 72	73	20.96	12	42.79	16	42
947	TAFAWA BALEWA	GWARDIN	170NE-5	22 4 83	11 — 13	17	8.31	12	9.77	18	13
948	TAFAWA BALEWA	JEMBIL	170NE-9	6 3 84	17 — 23	24	12.1	72	19.81	30	22
949	TAFAWA BALEWA	MARGALAM	170NE-13	8 3 84	20 — 28	29	15.3	32	16.96	65	19
950	TAFAWA BALEWA	KUNSTAR	170NE-22	22 1 88	16 — 22	23.5	4.12	35	14.88	27	16
951	TAFAWA BALEWA	GITAL	170NW-1	15 4 83	29 — 37	37	6.45	8	21.11	8	34
952	TAFAWA BALEWA	TAFAWA BALEWA AGRO-SERVICE CENTRE	170NW-2	16 4 83	32.5 — 43.5	46	4.11	92	17.6	130	—
953	TAFAWA BALEWA	BAMUA	170NW-3	16 4 83	18 — 22	42	6.73	8	18.6	8	37
954	TAFAWA BALEWA	BAMUA	170NW-3	—	30 — 34	—	—	—	—	—	—
955	TAFAWA BALEWA	BAMUA	170NW-3	—	38 — 42	—	—	—	—	—	—
956	TAFAWA BALEWA	FOLON TULU	170NW-4	17 4 83	29 — 37	41	16.81	12	21.38	22	28
957	TAFAWA BALEWA	GWALLERA	170NW-5	19 4 83	20 — 24	24	9.85	4	14.3	8	22
958	TAFAWA BALEWA	BALL	170NW-6	19 4 83	18 — 26	26	2.82	8	13.67	8	25
959	TAFAWA BALEWA	MASHIYAN KUKA	170NW-7	26 4 83	40 — 48	72	13.8	8	34.02	8	64
960	TAFAWA BALEWA	MASHIYAN KUKA	170NW-7	—	68 — 72	—	—	—	—	—	—
961	TAFAWA BALEWA	LIM	170NW-8	27 4 83	36 — 40	48	11.29	8	20.78	14	37
962	TAFAWA BALEWA	LIM	170NW-8	—	44 — 48	—	—	—	—	—	—
963	TAFAWA BALEWA	SHALL	170NW-13	23 2 84	31 — 39	39	10.16	32	17.18	65	19
964	TAFAWA BALEWA	BULA	170NW-15	27 2 84	22 — 30	30	13.02	20	17.13	30	25
965	TAFAWA BALEWA	YOKA BAPATE	170NW-16	28 2 84	34 — 46	46	13.94	12	25.14	15	34
966	TAFAWA BALEWA	GOV'T GIRLS SECONDARY SCH	170NW-17	30 4 84	21 — 29	34	6.96	40	15.67	45	19
967	TAFAWA BALEWA	BUNDUT	170NW-22	13 6 87	26 — 40	42	18.5	12	21.39	25	28
968	TAFAWA BALEWA	MONTOKSHI	170NW-25	16 1 88	21 — 27	30	14.63	33	17.81	45	22
969	TAFAWA BALEWA	BAR	170NW-26	20 2 88	20 — 42	42	9.59	20	20.51	26	27
970	TAFAWA BALEWA	DULL	170SE-1	12 4 83	29 — 33	33	10.18	20	25.15	20	28
971	TAFAWA BALEWA	TAKI	170SE-2	12 4 83	37 — 41	41	13.91	12	29.96	12	34
972	TAFAWA BALEWA	BALA	170SE-3	13 4 83	21 — 25	25	5.3	12	9.12	35	19
973	TAFAWA BALEWA	DULL	170SE-4	14 4 83	27 — 31	31	8.56	8	11.38	35	25
974	TAFAWA BALEWA	YOLA NORA	170SE-5	28 4 83	42 — 50	50	7.82	8	15.68	25	34
975	TAFAWA BALEWA	KATBALLA	170SE-6	29 4 83	28.5 — 36.5	38	22.54	8	25.94	10	34
976	TAFAWA BALEWA	DULL HEALTH CENTRE	170SE-7	6 3 85	18 — 30	31	15.53	20	16.84	26	25
977	TAFAWA BALEWA	LUSA	170SW-1	21 3 83	22 — 26	55	5.15	8	20.38	8	40
978	TAFAWA BALEWA	LUSA	170SW-1	—	31 — 35	—	—	—	—	—	—
979	TAFAWA BALEWA	LUSA	170SW-1	—	41 — 45	—	—	—	—	—	—
980	TAFAWA BALEWA	MWARI	170SW-2	27 3 83	29 — 45	121	4.55	12	24.84	12	28
981	TAFAWA BALEWA	BAR AREWA	170SW-3	30 3 83	45.5 — 49.5	50	13.93	45	32.62	55	43
982	TAFAWA BALEWA	DINKUM USUMAN	170SW-4	31 3 83	23 — 27	27	9.33	12	19.17	12	25
983	TAFAWA BALEWA	TUDUN WADA	170SW-5	31 3 83	7 — 11	13	3.65	20	6.36	20	7
984	TAFAWA BALEWA	DUNGA	170SW-6	6 4 83	21 — 25	25	4.95	4	14.09	7	22
985	TAFAWA BALEWA	BALL LUSA	170SW-7	7 4 83	26 — 30	30	17.37	60	20.84	105	25
986	TAFAWA BALEWA	RUGAN JAURO	170SW-8	7 4 83	23 — 31	31	14.23	12	18.14	20	25
987	TAFAWA BALEWA	GIZAKI	170SW								

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
890	DASS	BASHI	170NW-11	22 2 84	22 — 30	30	9.21	8	15.59	15	27
891	DASS	NAHUTA	170NW-12	22 2 84	12 — 20	24	8.16	12	9.28	30	16
892	DASS	BANGIM	170NW-14	24 2 84	9 — 13	13	4.17	12	6.06	22	11
893	DASS	GARAM	170NW-18	28 2 85	32 — 44	45	3.95	12	23.05	12	31
894	DASS	PITMAN	170NW-19	4 3 85	36 — 48	49	17.23	20	22.17	52	37
895	DASS	GADIYA	170NW-20	5 3 85	20 — 40	40	21.23	37	22.25	>400	37
896	DASS	TALLARAN	170NW-21	5 3 85	27 — 39	42	8.8	20	25.72	15	39
897	DASS	GAJIWAL	170NW-23	15 6 87	15 — 29	—	3.45	12	5.65	40	13
898	DASS	DIMSIM(DINGSIM)	170NW-24	17 6 87	23 — 32	36	4.27	21	8.13	70	13
899	TAFAWA BALEW	DAJIN	149SW-5	27 2 84	15 — 19	27	10.42	8	14.84	8	25
900	TAFAWA BALEW	DAJIN	149SW-6	27 2 84	11 — 17	18	8.58	12	10.64	12	13
901	TAFAWA BALEW	GASO	149SW-8	29 2 84	19 — 29	35	13.6	12	20.3	10	28
902	TAFAWA BALEW	UNGUWAR TSMIYA	149SW-9	29 2 84	16.5 — 20.5	36	12.5	12	15.45	12	22
903	TAFAWA BALEW	UNGUWAR TSMIYA	149SW-9		28.5 — 34.5						
904	TAFAWA BALEW	WURO JINEBANI	149SW-11	4 3 84	21 — 31	31	16.23	8	19.36	9	28
905	TAFAWA BALEW	LIRR(JIRR)	149SW-19	10 6 87	22 — 34	35.5	11.01	70	17.27	85	19
906	TAFAWA BALEW	SHIRA TAWA	149SW-25	19 2 88	20.5 — 32.5	36.5	10.89	12	15.05	20	24
907	TAFAWA BALEW	ZANGO	169NE-1	19 2 84	6 — 14	14	2.74	20	5.9	18	7
908	TAFAWA BALEW	GOASHE	169NE-2	25 2 84	27 — 35	35	12.6	20	17.15	40	22
909	TAFAWA BALEW	TAFARE	169NE-3	25 2 84	11 — 19	19	1.79	12	14.24	10	16
910	TAFAWA BALEW	ZWAL	169NE-4	27 2 84	11 — 19	18	6.27	30	9.94	30	13
911	TAFAWA BALEW	GONGO	169NE-5	27 2 84	10 — 18	18	3.2	78	14.41	35	16
912	TAFAWA BALEW	KARDAM	169NE-6	27 2 84	8 — 14	18	3.86	12	8.39	10	13
913	TAFAWA BALEW	GORI	169NE-7	28 2 84	17 — 25	25	5.27	20	15.32	16	19
914	TAFAWA BALEW	BURGEL	169NE-9	29 2 84	17 — 25	25	5.12	15	15.16	12	19
915	TAFAWA BALEW	KUNDUM	169NE-10	29 2 84	17 — 29	31	8.1	12	13.22	15	19
916	TAFAWA BALEW	KUTARU	169NE-22	15 1 88	26 — 35	42	14.74	12	19.85	20	25
917	TAFAWA BALEW	GOASHE	169NE-24	15 1 88	29.5 — 35.5	37	13.47	21	19.67	40	25
918	TAFAWA BALEW	BOI	169SE-1	6 4 83	26 — 34	34	8.83	12	19.81	13	25
919	TAFAWA BALEW	GAMBERE LERE	169SE-2	6 4 83	15 — 19	19	5.17	32	10.7	35	13
920	TAFAWA BALEW	SABON LAYI	169SE-3	7 4 83	15 — 19	19	7.95	32	14.17	30	13
921	TAFAWA BALEW	LIGURI	169SE-4	8 4 83	44 — 48	48	16.66	40	31.67	50	40
922	TAFAWA BALEW	TAPSHIN	169SE-5	9 4 83	14 — 22	22	5.7	40	8.5	80	13
923	TAFAWA BALEW	FADAN TAPSHIN	169SE-6	11 4 83	21 — 25	25	4.85	18	17	17	19
924	TAFAWA BALEW	YUNG	169SE-7	13 4 83	13 — 17	21	5.7	34	9.12	50	13
925	TAFAWA BALEW	UNGAWAN RIMI	169SE-8	14 4 83	14.5 — 18.5	18.5	5.82	30	8.55	65	13
926	TAFAWA BALEW	SARA	169SE-9	18 2 84	15.5 — 27.5	30	2.61	12	7	25	15
927	TAFAWA BALEW	SIGIWIN BULLI	169SE-10	20 2 84	12 — 20	25	8.53	12	16.66	10	22
928	TAFAWA BALEW	MARTIN GIJA	169SE-11	20 2 84	13 — 21	21	6.32	32	8.92	60	13
929	TAFAWA BALEW	DAGULIN BAUCHI	169SE-12	21 2 84	17 — 25	25	4.94	12	7.08	45	16
930	TAFAWA BALEW	MALIMA	169SE-13	21 2 84	13 — 21	21	3.79	32	7.14	60	10
931	TAFAWA BALEW	RAPAWA	169SE-14	23 2 84	28 — 35.5	37	6.62	20	12.45	50	16
932	TAFAWA BALEW	MURNO	169SE-15	24 2 84	22.5 — 30.5	31	5.5	12	11.97	22	19
933	TAFAWA BALEW	LERE HEALTH CENTRE	169SE-16	8 3 85	25 — 37	37	11.35	29	19.61	22	28
934	TAFAWA BALEW	TUNARI	169SE-17	20 1 88	25 — 31	52	4.05	12	14.08	17	34
935	TAFAWA BALEW	TUNARI	169SE-17		35 — 38						
936	TAFAWA BALEW	TUNARI	169SE-17		46 — 49						
937	TAFAWA BALEW	NUM GAGARA	169SE-18	21 1 88	20 — 30	35	3.39	11	10.08	19	19
938	TAFAWA BALEW	RUGAN BIRNI	169SE-19	23 1 88	22.5 — 40.5	43	13.09	21	21.28	16	25
939	TAFAWA BALEW	GABELGEL	169SW-1	24 2 84	12 — 20	20	3.74	32	10.94	25	13
940	TAFAWA BALEW	JUWA	169SW-2	17 1 88	23.5 — 29.5	31	7.37	55	10.72	185	16
941	TAFAWA BALEW	BOTO	169SW-3	18 1 88	19.5 — 25.5	—	5.37	48	10.27	95	
942	TAFAWA BALEW	KAYARDA	170NE-1	18 4 83	26.5 — 30.5	30	9.69	12	12.98	45	25
943	TAFAWA BALEW	DUGURIYEL	170NE-2	20 4 83	50 — 54	54	17.78	20	25.32	60	31
944	TAFAWA BALEW	SABON GIDA	170NE-3	21 4 83	16 — 20	52	9.06	8	16.36	8	37
945	TAFAWA BALEW	SABON GIDA	170NE-3		44 — 52						
946	TAFAWA BALEW	BATAL	170NE-4	22 4 83	64 — 72	73	20.96	12	42.79	16	42
947	TAFAWA BALEW	GWARDIN	170NE-5	22 4 83	11 — 13	17	8.31	12	9.77	18	13
948	TAFAWA BALEW	JEMBIL	170NE-9	6 3 84	17 — 23	24	12.1	72	19.81	30	22
949	TAFAWA BALEW	MARGALAM	170NE-13	8 3 84	20 — 28	29	15.3	32	16.96	65	19
950	TAFAWA BALEW	KUNSAR	170NE-22	22 1 88	16 — 22	23.5	4.12	35	14.88	27	16
951	TAFAWA BALEW	GITAL	170NW-1	15 4 83	29 — 37	37	6.45	8	21.11	8	34
952	TAFAWA BALEW	TAFAWA BALEWA AGRO-SERVICE CENTRE	170NW-2	16 4 83	32.5 — 43.5	46	4.11	92	17.6	130	
953	TAFAWA BALEW	BAMUJA	170NW-3	16 4 83	18 — 22	42	6.73	8	18.6	8	37
954	TAFAWA BALEW	BAMUJA	170NW-3		30 — 34						
955	TAFAWA BALEW	BAMUJA	170NW-3		38 — 42						
956	TAFAWA BALEW	FOLON TULU	170NW-4	17 4 83	29 — 37	41	16.81	12	21.38	22	28
957	TAFAWA BALEW	GWALLERA	170NW-5	19 4 83	20 — 24	24	9.85	4	14.3	8	22
958	TAFAWA BALEW	BALI	170NW-6	19 4 83	18 — 26	26	2.82	8	13.67	8	25
959	TAFAWA BALEW	MASHIYAN KUKA	170NW-7	26 4 83	40 — 48	72	13.8	8	34.02	8	64
960	TAFAWA BALEW	MASHIYAN KUKA	170NW-7		68 — 72						
961	TAFAWA BALEW	LIM	170NW-8	27 4 83	36 — 40	48	11.29	8	20.78	14	37
962	TAFAWA BALEW	LIM	170NW-8		44 — 48						
963	TAFAWA BALEW	SHALL	170NW-13	23 2 84	31 — 39	39	10.16	32	17.18	65	19
964	TAFAWA BALEW	BULA	170NW-15	27 2 84	22 — 30	30	13.02	20	17.13	30	25
965	TAFAWA BALEW	YOKA BAPATE	170NW-16	28 2 84	34 — 46	46	13.94	12	25.14	15	34
966	TAFAWA BALEW	GOVT GIRLS SECONDARY SCH.	170NW-17	30 4 84	21 — 29	34	6.96	40	15.67	45	19
967	TAFAWA BALEW	BUNDUT	170NW-22	13 6 87	26 — 40	42	18.5	12	21.39	25	28
968	TAFAWA BALEW	MONTOKSHI	170NW-25	16 1 88	21 — 27	30	14.63	33	17.81	45	22
969	TAFAWA BALEW	BAR	170NW-26	20 2 88	20 — 42	42	9.59	20	20.51	26	27
970	TAFAWA BALEW	DULL	170SE-1	12 4 83	29 — 33	33	10.18	20	25.15	20	28
971	TAFAWA BALEW	TAKI	170SE-2	12 4 83	37 — 41	41	13.91	12	29.96	12	34
972	TAFAWA BALEW	BALA	170SE-3	13 4 83	21 — 25	25	5.3	12	9.12	35	19
973	TAFAWA BALEW	DULL	170SE-4	14 4 83	27 — 31	31	8.56	8	11.38	35	25
974	TAFAWA BALEW	YOLA NORA	170SE-5	28 4 83	42 — 50	50	7.82	8	15.68	25	34
975	TAFAWA BALEW	KATBALLA	170SE-6	29 4 83	28.5 — 36.5	38	22.54	8	25.94	10	34
976	TAFAWA BALEW	DULL HEALTH CENTRE	170SE-7	6 3 85	18 — 30	31	15.53	20	16.84	26	25
977	TAFAWA BALEW	LUSA	170SW-1	21 3 83	22 — 26	55	5.15	8	20.38	8	40
978	TAFAWA BALEW	LUSA	170SW-1		31 — 35						
979	TAFAWA BALEW	LUSA	170SW-1		41 — 45						
980	TAFAWA BALEW	MWARI	170SW-2	27 3 83	29 — 45	121	4.55	12	24.84	12	28
981	TAFAWA BALEW	BAR AREWA	170SW-3	30 3 83	45.5 — 49.5	50	13.93	45	32.62	55	43
982	TAFAWA BALEW	DINKUM USUMAN	170SW-4	31 3 83	23 — 27	27	9.33	12	19.17	12	25
983	TAFAWA BALEW	TUDUN WADA	170SW-5	31 3 83	7 — 11	13	3.65	20	6.36	20	7
984	TAFAWA BALEW	DUNGA	170SW-6	6 4 83	21 — 25	25	4.95	4	14.09	7	22
985	TAFAWA BALEW	BALL LUSA	170SW-7	7 4 83	26 — 30	30	17.37	60	20.84	105	25
986	TAFAWA BALEW	RUGAN JAURO	170SW-8	7 4 83	23 — 31	31	14.23	12	18.14	20	25
987	TAFAWA BALEW	GIZAKI	170SW-9	8 4 83	30 — 38	40	4.25	12	17.94	16	28
988	TAFAWA BALEW	MOL MOL	170SW-10	9 4 83	37 — 45						

S.No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL.	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1000	TORO	JAMA'AR AHMADU	126SE-5	5 4 84	20 — 28	29	6.21	80	11.06	160	13
1001	TORO	TAMA	127SW-1	6 4 84	29 — 37	37	4.96	80	14.76	135	16
1002	TORO	RUHU	127SW-2	6 4 84	15 — 19	19	3	80	75	16	16
1003	TORO	TULU	127SW-3	7 4 84	11 — 19	19	4.58	80	6.85	150	10
1004	TORO	SABON GARI	127SW-4	8 4 84	18 — 24	25	6.95	20	10.69	40	19
1005	TORO	DAWA	147NE-1	13 2 84	10 — 18	20	2.83	12	5.52	22	10
1006	TORO	DAWA	147NE-2	15 3 84	34 — 38	79	5.97	12	18.72	18	28
1007	TORO	DAWA	147NE-2		70 — 78						
1008	TORO	RIRIWAN DAUMA	147NE-3	26 3 84	14 — 22	25	6.25	20	10.23	28	13
1009	TORO	WUNDI	147NE-4	28 3 84	14 — 22	25	8.16	8	13.91	8	19
1010	TORO	RAFIN GURA	147NE-5	28 3 84	18 — 26	25	4.87	32	11.74	45	16
1011	TORO	YAGI	147NE-6	6 4 84	35 — 47	48	7.22	32	19.54	50	25
1012	TORO	KWABI	147NE-7	6 4 84	22 — 32	33	5.32	32	11.56	60	16
1013	TORO	ASHURU	147NE-8	7 4 84	15 — 19	19	11.26	13	12.48	30	16
1014	TORO	NARABI	147SE-1	21 3 84	8.5 — 13.5	18	4.15	80	7.06	90	11
1015	TORO	TUMU	147SE-2	22 3 84	13.5 — 17.5	18	4.15	80	7.06	90	11
1016	TORO	SABON GARIN NARABI	147SE-3	9 4 84	9 — 12	12	4.82	13	6.27	22	10
1017	TORO	TAKA DIL'U	148NE-1	17 5 82	11 — 19	18	6.02	20	12.13	12	16
1018	TORO	BAHAGO	148NE-2	6 2 88	17 — 26	25	9.03	14	16.99	9	25
1019	TORO	LARA	148NE-3	8 2 88	19.5 — 28.5	29	12.72	24	16.16	35	22
1020	TORO	SAMINAKAN GWA	148NW-1	24 3 84	11 — 15	18	4.02	32	6.58	60	10
1021	TORO	GUKKA	148NW-2	26 3 84	19.5 — 23.5	24	6.68	12	11.4	22	19
1022	TORO	LAME	148NW-3	27 3 84	15 — 21	24	8.94	35	12.32	45	16
1023	TORO	GADUN JEJI	148NW-4	27 3 84	11 — 19	19	4.08	12	8.83	14	16
1024	TORO	PINGEL	148NW-5	5 4 84	10.5 — 18.5	18	5.94	12	12.3	10	16
1025	TORO	UNGUWAR TSAMIYA	148NW-6	11 4 84	13 — 21	21	6.12	8	10.5	10	19
1026	TORO	GUMAU DEVELOPMENT AREA HQ	148NW-7	14 4 84	21.8 — 25	25	5.32	52	11.52	50	
1027	TORO	GUMAU DEVELOPMENT AREA HQ	148NW-7		13.7 — 21.8						
1028	TORO	BANGWALE	148NW-8	19 2 88	22 — 37	37	11.72	36	12.98	205	18
1029	TORO	SANGERE	148NW-9	9 2 88	22 — 34	37	10.08	23	15.8	35	21
1030	TORO	SHAU	148NW-10	16 2 88	25.5 — 34.5	36	4.41	72	12.15	135	12
1031	TORO	JEMAA	148SE-1	6 5 82	9 — 13	13.5				10	10
1032	TORO	GIRSILI	148SE-2	8 5 82	17 — 30	30	12.51	30	17.23	20	16
1033	TORO	WESTERN ZONE HQ NO.2	148SE-3	16 5 83	23 — 43	45	12.82	12	19.75	12	
1034	TORO	WESTERN ZONE HQ NO.2	148SE-4	17 5 83	25 — 37	37	14.68	90	17	150	
1035	TORO	WESTERN ZONE HQ NABORDO	148SE-5	18 2 84	38 — 50	60	18.2	20	35.77	16	
1036	TORO	LAUKI	148SE-7	10 3 84	17 — 23	32	5.69	13	13.43	22	22
1037	TORO	LAUKI	148SE-7		26 — 30						
1038	TORO	YAKANAJI	148SE-11	12 3 84	19.5 — 23.5	24	9.7	20	14.72	25	19
1039	TORO	GALAGAM	148SE-12	13 3 84	15 — 23	23	6.65	32	9.49	65	19
1040	TORO	BUKKA	148SE-13	13 3 84	26 — 36	36	2.77	32	15.68	40	25
1041	TORO	GOLJODU	148SE-14	21 3 84	24 — 32	32	5.43	12	15.3	16	25
1042	TORO	SUTUMI	148SE-15	22 3 84	10 — 16	19	2.91	80	10.98	50	13
1043	TORO	TAKA BUMDU	148SE-16	24 3 84	14 — 22	23	6.05	8	10.59	10	19
1044	TORO	RINJIM BUKUR	148SE-17	13 4 84	15 — 20	20	10.07	20	11.79	40	16
1045	TORO	MADUGU	148SE-22	28 1 88	22 — 31	33	14.29	36	17.78	55	22
1046	TORO	JAMBIL	148SE-23	28 1 88	19.5 — 28.5	31	4.81	75	10.64	130	13
1047	TORO	PEGI	148SE-24	4 2 88	17 — 23	25	8.36	35	14.82	30	19
1048	TORO	YARAN	148SE-25	9 2 88	24 — 33	3.5	12.34	35	21.93	30	24
1049	TORO	KOCHYEL	148SE-26	12 2 88	33.5 — 44.5	44.6	6.17	76	8.8	>400	12
1050	TORO	BUTIYEL	148SW-1	22 3 84	23.5 — 31.5	32	5.3	12	8.33	50	16
1051	TORO	RIBINA	148SW-2	23 3 84	9 — 13	13	3.81	82	7.83	70	10
1052	TORO	DANBAKO	148SW-3	23 3 84	10.5 — 18.5	19	1.39	20	4.37	45	10
1053	TORO	JAJAWAL	148SW-4	23 3 84	4.5 — 12.5	20	3.27	13	5.34	10	10
1054	TORO	SALAMIA	148SW-5	23 3 84	14 — 22	22	3.1	32	10.13	35	13
1055	TORO	BADIKKO	148SW-6	24 3 84	13 — 19	19	6.08	32	9.54	45	13
1056	TORO	BALO	148SW-7	26 3 84	11.5 — 15.5	16	2.38	34	5.99	60	10
1057	TORO	KAYAURIN	148SW-8	27 3 84	9 — 13	14	2.38	20	4.39	50	10
1058	TORO	TILAL FULANI	148SW-9	28 3 84	7 — 15	17	4.41	32	6.85	24	10
1059	TORO	BAKIN KOGI	148SW-10	29 3 84	8 — 14	15	5.55	20	8.28	12	13
1060	TORO	TUDUN WADA	148SW-11	10 4 84	10.5 — 14.5	15	0.71	72	6.58	80	13
1061	TORO	GOLADA	148SW-12	11 4 84	16.5 — 21.5	22	2.85	76	7.82	150	13
1062	TORO	DAWARDE	148SW-13	12 4 84	13.5 — 21.5	22	1.38	8	6.01	15	19
1063	TORO	GAJAULE	148SW-14	12 4 84	9 — 13	14	4.96	20	5.04	>400	10
1064	TORO	BABUJAYI	148SW-15	12 4 84	7 — 13	13	4.14	75	6.28	70	10
1065	TORO	DAGUM	148SW-16	4 2 88	25 — 29.5	31	6.07	76	9.77	270	13
1066	TORO	GANYE	148SW-17	5 2 88	23 — 27.5	29	4.65	80	8.07	300	13
1067	TORO	TUDUN	148SW-18	6 2 88	22.5 — 31.5	33	4.09	50	10.53	100	13
1068	TORO	MAKEREA	149NW-1	12 5 82	12 — 20	19	4.68	12	10.81	10	16
1069	TORO	GEJI NO.2	149NW-2	19 5 82	16 — 20	20	5.12	12	8.36	28	13
1070	TORO	FELLUN ABBA	149NW-3	20 5 82	14 — 18	18	5.45	20	8.03	45	13
1071	TORO	FELUN HABE	149NW-4	21 5 82	16 — 20	21	14.5	12	15.71	10	16
1072	TORO	CHALIN KANAWA	149NW-12	4 2 88	30 — 33	43	22.2	16	25.9	25	34
1073	TORO	CHALIN KANAWA	149NW-12		35.5 — 41.5						
1074	TORO	ZARANDA	149SW-1	18 5 82	9 — 14	14					10
1075	TORO	BICHIKI	149SW-16	13 3 85	31 — 43	43	13.9	20	20.57	35	25
1076	TORO	ZULL	149SW-17	14 3 85	23 — 31	31	13.6	32	20.59	30	25
1077	TORO	KANWAYA	149SW-24	26 1 88	26.5 — 35.5	37	17.76	36	20.13	90	25
1078	TORO	ZAKCHI	169NE-11	10 3 84	32 — 40	40	6.1	20	16.14	35	28
1079	TORO	GANDI	169NE-14	12 3 84	13 — 21	21	5.29	13	10.26	14	19
1080	TORO	ZARI	169NE-14	14 3 84	13 — 21		5.03	20	7.66	40	19
1081	TORO	KUFAI	169NW-1	16 2 88	11 — 18	21	4.64	72	8.55	80	12
1082	AKKO	GARIN KOSHI	132SW-1	7 11 83	17 — 21	22	7.53	12	13.56	14	19
1083	AKKO	SABON KUBO	132SW-2	8 11 83	24 — 28	30	7.81	20	12.88	45	19
1084	AKKO	WURO DOLE	151NE-3	13 2 85	91.5 — 96	96	55.35	130	58.6	>400	61
1085	AKKO	GOKARU	151SE-1	9 5 84	27.5 — 35.5	36	12.95	20	25.88	16	28
1086	AKKO	KALTANGA GONA	151SW-2	31 1 85	52 — 56	70	17.35	65	17.71	>400	22
1087	AKKO	KALTANGA GONA	151SW-2		62 — 70						
1088	AKKO	TAI	151SW-3	4 2 85	104 — 110	111	47.47	30	47.55	>400	64
1089	AKKO	WURO JABA	152NE-7	17 10 83	18 — 22	22	10.45	20	12.08	65	16
1090	AKKO	WURO LULE	152NE-8	18 10 83	18.5 — 22.5	51	6.93	40	8.5	200	16
1091	AKKO	ZAMBUK	152NE-11	24 10 83	44 — 50	51	13.55	32	22.83	75	28
1092	AKKO	KINAFIA	152NE-12	24 10 83	78 — 81	81	28.74	32	36.28	145	40
1093	AKKO	NGARE	152NE-13	25 10 83	30 — 34	36	20.11	20	22.91	50	28
1094	AKKO	DIFA	152NE-14	26 10 83	25 — 29	32	18.63	12	25.56	10	31
1095	AKKO	APPA GWANI	152NE-15	26 10 83	32 — 36	36	26.53	12	26.9	105	31
1096	AKKO	GWANI	152NE-18	27 10 83	31 — 35	36	20.42	32	23.03	95	28
1097	AKKO	KWAHAL	152NE-19	27 10 83	31 — 35	33	19.45	32	20.83	85	25
1098	AKKO	LUBO	152NE-20	28 10 83	25 — 33	33					

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S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL.			SCREEN INTERVAL(m)		DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1100	AKKO	LIBBITI	152NE-22	28	10	83	50	—	54	38.3	12	41.7	30	49
1101	AKKO	JAJARI JODOYO	152NE-25	29	10	83	34.5	—	38.5	30	23.34	32	27.72	60
1102	AKKO	LAKKAU	152NE-26	29	10	83	13	—	17	17	7.32	32	9.48	60
1103	AKKO	GUGAN	152NE-27	29	10	83	17.5	—	21.5	22	6.57	40	8.05	200
1104	AKKO	GARIN MALLAM MAUDE	152NE-29	31	10	83	56	—	60	60	14.8	32	22.74	115
1105	AKKO	GARIN ABDULAHII	152NE-30	31	10	83	22.5	—	30.5	30	8.99	40	11.23	170
1106	AKKO	KWADON	152NE-31	15	11	83	22	—	24	40	9.09	72	10.02	>400
1107	AKKO	KWADON	152NE-31				27.5	—	29.5					
1108	AKKO	GADAWO	152NE-32	15	11	83	26	—	30	30	3.56	72	4.03	>400
1109	AKKO	DANAJE	152NE-33	18	11	83	34	—	37	39	13.72	50	14.31	>400
1110	AKKO	SABON GARI	152NE-34	21	11	83	28	—	32	34	9.8	32	17.5	50
1111	AKKO	KANAWA	152NE-35	27	11	83	27	—	31	31	22	36	23.17	105
1112	AKKO	SHUNGUYEL	152NE-36	27	11	83	21.5	—	25.5	27	11.62	40	134.11	180
1113	AKKO	DANGAR JAURO	152NE-37	28	11	83	32	—	36	30	11.29	72	16.45	200
1114	AKKO	ARDO SALATU	152NE-38	30	11	83	28	—	32	36	11.89	72	13.12	>400
1115	AKKO	GULMARI	152NE-39	9	12	83	32	—	36	36	21.91	20	22.34	350
1116	AKKO	BAURE	152NE-40	15	9	84	20	—	24	24	4.57	60	5.49	>400
1117	AKKO	DUMBE	152NE-46	15	12	84	13	—	19	36	12.46	20	13.65	10
1118	AKKO	GARIN ALH. ABDU	152NE-54	29	10	87	30	—	31.5	36	15.93	53	21.96	90
1119	AKKO	GARIN ALH. ABDU	152NE-54				32.5	—	34.5					
1120	AKKO	GWANIN GABAS	152NE-59	29	11	87	62	—	66.5	84	40.53	15	52.63	20
1121	AKKO	KUNJI	152NE-61	30	11	87	28.5	—	34.5	36	5.22	131	6.13	>400
1122	AKKO	GIDAM	152NW-13	25	11	83	18	—	22	24	10.96	40	12.97	100
1123	AKKO	KALTANGO	152NW-14	26	11	83	48	—	50	24	11.01	40	19.2	125
1124	AKKO	KALTANGO	152NW-14				54.5	—	56.5					
1125	AKKO	NONO	152SE-1	16	11	83	28	—	36	30	8.75	12	15.78	22
1126	AKKO	GARIM MALLAM ISA	152SE-2	17	11	83	21.5	—	27.5	12	5.65	32	11.21	65
1127	AKKO	HAUKAN ZAMA	152SE-3	18	11	83	77	—	80	82	7.8	12	26.81	30
1128	AKKO	LANO	152SE-4	19	11	83	29	—	35	35	16.58	32	19.22	105
1129	AKKO	LANO ILLAILA	152SE-5	21	11	83	16.5	—	24.5	25	10.64	32	12.04	90
1130	AKKO	MUNDUL TUKUR	152SE-6	21	11	83	64	—	72	72	56.38	20	59.68	35
1131	AKKO	GARIN TAIFIDA	152SE-7	22	11	83	43	—	51	43	22.83	32	29.63	65
1132	AKKO	JIGAWAN KAWO	152SE-8	22	11	83	74	—	75.5	83	50.73	12	56.74	30
1133	AKKO	JIGAWAN KAWO	152SE-8				81	—	82.5					
1134	AKKO	NANO S/KUDO	152SE-9	24	11	83	21.5	—	29.5	30	8.84	32	11.33	110
1135	AKKO	DANGEZA	152SE-10	23	11	83	51	—	55	55	42.3	20	44.44	60
1136	AKKO	GARIN WANZAMAI	152SE-11	24	11	83	36	—	42	42	22.48	20	26.14	50
1137	AKKO	HAMMADU BULTANGO	152SE-12	25	11	83	39	—	45	45	31.52	36	34.71	55
1138	AKKO	GARIN TAIFIDA FARM	152SE-13	26	11	83	48	—	51	51	33.2	50	46.22	40
1139	AKKO	KIDDA	152SE-14	26	11	83	67	—	73	75	56.26	12	61	20
1140	AKKO	SHILO GARIN WAZIRI	152SE-15	28	11	83	18	—	26	26	15.53	16	16.15	>400
1141	AKKO	GARIN CHIROMA	152SE-16	28	11	83	66	—	70	70	46.92	40	50.62	145
1142	AKKO	WUDIL	152SE-17	28	11	83	29	—	37	39	8.54	8	23.86	10
1143	AKKO	DAMPAMI	152SE-18	30	11	83	17	—	21	21	11.98	36	13.81	70
1144	AKKO	JAURO BURA	152SE-19	1	12	83	40	—	48	21	28.68	24	32.5	50
1145	AKKO	WURO BELA	152SE-20	1	12	83	54	—	58	60	32.15	36	32.9	>400
1146	AKKO	KUNUWAL	152SE-21	1	12	83	20	—	24	24	12.13	36	12.54	>400
1147	AKKO	JENNEWO	152SE-22	2	12	83	22	—	26	33	16.3	36	17.79	100
1148	AKKO	KASHALLARI	152SE-23	7	12	83	27	—	31	35	23.04	12	24.12	30
1149	AKKO	GOKARU JAURO SAMBO	152SE-24	8	12	83	26	—	30	30	12.1	82	15.47	240
1150	AKKO	DAKAMNA	152SE-25	8	12	83	69	—	71	80	11.84	12	38.65	20
1151	AKKO	WURO BARAYA	152SE-26	9	12	83	24	—	28	28	9.47	82	9.91	>400
1152	AKKO	KEMBU SARKE	152SE-27	8	12	83	23	—	28	29	15.77	32	18.1	22
1153	AKKO	MODIBBO ABBA	152SE-28	9	12	83	30	—	36	36	23.58	32	25.57	70
1154	AKKO	KUBAT	152SE-29	10	12	83	27	—	31	33	18.89	20	21.49	45
1155	AKKO	WURO MALLAMI	152SE-30	10	12	83	31	—	35	35	20.09	12	20.75	130
1156	AKKO	BOLTONGO	152SE-31	11	12	83	30	—	34	34	17.59	40	18.85	260
1157	AKKO	YOLDE BOKKI	152SE-32	11	12	83	32	—	36	29	24.94	20	25.76	110
1158	AKKO	JAURO KWAIKI	152SE-33	20	12	83	47	—	51	51	33.39	40	34.4	>400
1159	AKKO	JALINGO	152SE-34	12	9	84	34	—	38	38	23.33	32	28.75	45
1160	AKKO	KUMOYEL	152SE-35	14	9	84	96	—	102	102	57.79	12	74.8	82
1161	AKKO	GARIN BAKARI	152SE-36	25	9	84	36	—	42	48	31.93	20	32.48	105
1162	AKKO	DANGEZA	152SE-37	5	11	87	13	—	18	19.5	6.36	20	9.36	30
1163	AKKO	YERIMA SHEHU	152SE-38	11	12	87	73.5	—	78	82	9.22	75	12.22	>400
1164	AKKO	KUFA	152SE-39	10	12	87	94	—	100	102	9.61	12	38.39	25
1165	AKKO	JAURO BULA	152SE-40	18	12	87	60	—	63	74	36.95	51	40.88	210
1166	AKKO	JAURO BULA	152SE-40				68.5	—	71.5					
1167	AKKO	WURO KUNJI	152SE-41	19	12	87	74	—	77	—	37.09	29	43.35	120
1168	AKKO	CHABBAL	152SW-1	24	9	83	15.5	—	19.5	19	7.57	20	9.2	70
1169	AKKO	CHABBAL FARM	152SW-2	24	9	83	63.5	—	67	67.5	37.1	20	63.82	15
1170	AKKO	TABRA	152SW-3	10	11	83	22.5	—	23.5	36	3.1	20	10.33	35
1171	AKKO	TABRA	152SW-3				25	—	27.5					
1172	AKKO	PANDAYA ARDO	152SW-4	14	11	83	47	—	51	52	34.53	32	35.99	180
1173	AKKO	KALSHIWGI	152SW-5	30	11	83	16	—	20	24	5.15	36	7.83	110
1174	AKKO	BARRI	152SW-6	1	12	83	16	—	24	24	5.98	32	9.1	75
1175	AKKO	GARKO	152SW-7	7	12	83	20	—	28	30	14.81	36	15.2	300
1176	AKKO	MAIDUGU	152SW-8	8	12	83	16	—	20	30	11.01	36	13	22
1177	AKKO	MAIDUGU	152SW-8				26	—	30					
1178	AKKO	BARAMBU HORARE	152SW-9	9	12	83	28	—	36	36	12.32	20	22.21	23
1179	AKKO	LEMBI	152SW-10	10	12	83	25	—	33	18	17.71	36	20.21	70
1180	AKKO	GAMAWA	152SW-11	11	12	83	42	—	50	50	20.26	36	26.33	90
966	AFAWA BALEWA	GOVT GIRLS SECONDARY SCH	170NW-17	30	4	84	21	—	29	34	6.96	40	15.67	45
1181	AKKO	NAINAWA	152SW-12	12	12	83	16	—	24	24	10.4	36	12.1	90
1182	AKKO	GUJUBA	152SW-13	13	12	83	20	—	26	20	8.57	36	10.35	155
1183	AKKO	JAURO TUKUR	152SW-14	13	12	83	20	—	24	24	7.26	12	9.5	50
1184	AKKO	ZANGE BELLO	152SW-15	13	12	83	26	—	30	30	9.55	40	11.08	300
1185	AKKO	PANDAYA JABBI	152SW-16	14	12	83	18.5	—	26.5	30	10.4	16	13.53	30
1186	AKKO	LERGO	152SW-17	14	12	83	16.5	—	24.5	24	11.9	28	12.96	80
1187	AKKO	LUGGEREWO												

S.No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1200	AKKO	WADE	153NW-2	4 11 83	19.5 — 23.5	24	5.42	20	16.2	20	19
1201	AKKO	GADAM WADE	153NW-3	5 11 83	58.5 — 66.5	67	31.13	8	44.72	12	64
1202	AKKO	SHINGA	153NW-4	7 11 83	20.5 — 28.5	28	7.36	20	15.42	22	19
1203	AKKO	GARIN ALHAJI MANU SHINGA	153NW-5	8 11 83	22.5 — 30.5	30	4.06	32	14.35	40	19
1204	AKKO	DUKUL TERA	153NW-6	9 11 83	24 — 30	30	16.18	12	23.92	12	28
1205	AKKO	MALLAMAWA	153NW-7	9 11 83	40 — 48	48	24.98	20	37.52	16	40
1206	AKKO	JAGARGARI	153NW-8	11 11 83	27.5 — 35.5	36	19.8	36	21.59	105	25
1207	AKKO	HOREM GARI	153NW-9	13 12 83	40 — 48	48	14.97	12	38.6	15	40
1208	AKKO	KALO	153NW-10	17 11 84	22 — 30	30	6.91	8	19.99	10	28
1209	AKKO	SHINGA HEALTH	153NW-11	20 2 85	28 — 37	37	6.34	65	19.07	75	23
1210	AKKO	DAMINA	153NW-12	30 10 87	31.5 — 40.5	42	22.26	60	22.99	>400	31
1211	AKKO	KUKOWA KOLAM	153SW-1	9 11 83	16 — 24	27	4.56	16	16.31	12	22
1212	AKKO	JIGAWAN YAMU	153SW-2	10 11 83	44 — 52	52	38.77	20	40.23	50	43
1213	AKKO	JAURU GOTEL	153SW-3	12 11 83	31 — 39	39	5	24	19.23	30	25
1214	AKKO	KUNNOMA	153SW-4	12 11 83	52 — 60	60	44.13	32	44.95	200	49
1215	AKKO	PATA	153SW-5	14 11 83	22 — 30	28	9.76	32	14.73	55	19
1216	AKKO	JIGAWAN LANO	153SW-6	16 11 83	50 — 54	48	18.62	36	30.44	65	16
1217	AKKO	SHIMEL	153SW-7	19 11 83	32.5 — 36.5	37	27.36	32	27.94	225	31
1218	AKKO	DAGON KAWO	153SW-8	10 12 83	67 — 75	76	43.1	20	53.53	30	64
1219	AKKO	NAFUTA	153SW-13	5 11 87	27 — 30	34	5.72	12	19.36	13	31
1220	AKKO	TIRWURMA	153SW-14	7 11 87	58 — 61	64	21.77	14	35.83	25	43
1221	AKKO	JARAWA	153SW-15	13 11 87	62 — 65	73	34.6	20	41.71	55	46
1222	AKKO	JARAWA	153SW-15		70 — 73						
1223	AKKO	GARIN GADE	172NE-1	5 6 84	26 — 30	33	15.84	20	22.43	22	25
1224	AKKO	KESU ARDU	172NE-2	6 6 84	22 — 26	27	15.38	32	17.98	56	22
1225	AKKO	BARRI	172NE-3	7 6 84	19.5 — 23.5	24	12.14	20	13.71	66	19
1226	AKKO	SIRATIWO YAMMA	172NE-4	8 6 84	20 — 23	24	10.7	40	12.44	150	19
1227	AKKO	LAYARI	172NE-5	9 6 84	20 — 26	28	9.79	12	12.39	34	19
1228	AKKO	WURO BUNOU	172NE-6	18 6 84	53 — 59	60	13.9	32	28.35	60	31
1229	AKKO	PANDA	173NE-17	7 11 84	19 — 27	27	13.14	32	17.51	30	22
1230	AKKO	DONGOL	173NW-8	6 6 84	19 — 25	26	10.9	12	16.13	14	22
1231	AKKO	FANGURU	173NW-9	7 6 84	15 — 19	34	4.34	12	15.5	11	22
1232	AKKO	FANGURU	173NW-9		23 — 29						
1233	AKKO	GUDA LAMIDO	173NW-10	11 6 84	22 — 28	28	6.94	12	10.9	32	19
1234	AKKO	KASHERE	173NW-11	13 6 84	38 — 46	47	9.16	20	28.28	22	37
1235	AKKO	SIRATIWO GABAS	173NW-12	14 6 84	20 — 24	27	14.05	28	14.23	>400	19
1236	AKKO	GAUNDARE	173NW-13	15 6 84	29.5 — 33.5	35	17.92	12	21.2	30	28
1237	AKKO	KOWARGOL	173NW-14	16 6 84	37 — 41	42	23.82	72	25.4	>400	31
1238	AKKO	PANDI COLA	173NW-15	16 6 84	37 — 41	42	12.85	12	17.77	42	25
1239	AKKO	GARIN BABA JABU	173NW-16	19 6 84	19 — 23	24	12.48	20	15.65	30	19
1240	AKKO	SABON GARIN TUMU	173NW-17	21 6 84	19 — 23	24	14.1	12	16.65	16	22
1241	AKKO	ZABIN KANI	173NW-20	22 6 84	14 — 20	20	10.3	8	13.44	8	19
1242	AKKO	GARIN JAUROWAL	173NW-22	25 6 84	20 — 24	25	9.52	12	11.23	52	19
1243	ALKALERI	SHONGO	129SE-4	31 1 85	27 — 35	36	20.04	55	26.83	40	28
1244	ALKALERI	BURE	129SE-5	4 2 85	17 — 25	25	6.42	20	18.03	12	22
1245	ALKALERI	DEWU	129SE-6	4 2 85	50 — 54	55	10.65	68	11.01	>400	16
1246	ALKALERI	BOLI	129SE-7	5 2 85	32 — 40	42	5.1	75	5.51	>400	13
1247	ALKALERI	GUZA	129SE-8	7 2 85	55 — 58	60	42.39	130	46.88	255	55
1248	ALKALERI	GULA	129SE-9	9 2 85	64 — 67	64	17.2	62	18.1	>400	25
1249	ALKALERI	KAFIN IYA	129SE-11	6 7 87	46.5 — 58.5	60	8.69	75	9.01	>400	16
1250	ALKALERI	HARDO BAWA	129SE-12	7 7 87	58 — 64	65.5	5.91	60	6.32	>400	13
1251	ALKALERI	WURO GUMBAL	129SE-13	13 11 87	67 — 71.5	72	44.43	90	44.85	>400	52
1252	ALKALERI	KALOMA	150NE-1	21 12 83	70 — 78	78	63.27	15	63.28	>400	70
1253	ALKALERI	KIRFI HEALTH CENTRE	150NE-2	7 6 84	66.5 — 72.5	75	21.31	72	24.25	>400	28
1254	ALKALERI	ALKALERI FARM SERVICE CENTER	150NE-3	18 2 85	47 — 50	50	20.66	210	23.25	>400	
1255	ALKALERI	LANDO	150NE-4	16 1 85	30 — 38	22	27.62	32	28.04	125	34
1256	ALKALERI	KAFIN IBRAHIM	150NE-5	18 1 85	60 — 72	72	67	32	67.65	240	70
1257	ALKALERI	FELUFELU	150NE-6	19 1 85	23 — 30	30	18.8	72	18.92	>400	22
1258	ALKALERI	BADAWAIRE	150NE-7	21 1 85	60 — 68	72	46.55	52	48.05	325	52
1259	ALKALERI	GALAWO	150NE-8	21 1 85	82 — 85	84	63.8	30	65.72	198	73
1260	ALKALERI	JAGALWA	150NE-9	22 1 85	72 — 75	90	58.06	120	59.24	>400	67
1261	ALKALERI	SHAISSKA	150NE-10	23 1 85	84 — 90	96	82.52	20	84.83	12	88
1262	ALKALERI	SHINDI GAWO	150NE-11	24 1 85	59 — 62	72	53.25	20	53.81	144	58
1263	ALKALERI	BABA	150NE-12	24 1 85	20 — 24	36	12.32	180	19.53	134	19
1264	ALKALERI	BABA	150NE-12		30 — 36						
1265	ALKALERI	WURO MADAIDI	150NE-13	25 1 85	41 — 45	46	37.17	32	37.46	300	40
1266	ALKALERI	ZAWANI	150NE-14	26 1 85	31 — 35	36	24.42	60	25.04	>400	28
1267	ALKALERI	TAURE	150NE-15	26 1 85	75.5 — 84	84	59.67	20	66.67	40	70
1268	ALKALERI	BENI	150NE-16	29 1 85	26 — 30	30	18.74	65	20.57	180	22
1269	ALKALERI	KAGANO	150NE-17	31 1 85	63.5 — 67.5	69	51.34	30	61.57	200	67
1270	ALKALERI	KAGANO	150NE-17		67.5 — 69						
1271	ALKALERI	SHARABA	150NE-18	5 2 85	25 — 29	29	21.94	200	24.59	160	25
1272	ALKALERI	BSAADP FSC KIRFI	150NE-19	7 2 85	32 — 46	54	24.98	180	26.42	>400	34
1273	ALKALERI	MAINARI(ARAWA)	150NE-20	13 2 85	82.5 — 88.5	90	59.65	130	61.31	>400	76
1274	ALKALERI	MAIDMADIRI	150NE-21	25 6 87	34 — 36	48	31.7	32	32.1	130	37
1275	ALKALERI	MAIDMADIRI	150NE-21		38 — 42						
1276	ALKALERI	W.A.T.CALKALERI	150NE-22	27 6 87	88 — 94	96	45.13	45	45.58	>400	52
1277	ALKALERI	GORONDO	150NE-23	30 6 87	90 — 93	102	49.15	40	49.61	>400	58
1278	ALKALERI	BADARA	150NE-24	2 7 87	37.5 — 49.5	51	23.16	63	23.44	>400	31
1279	ALKALERI	NAINAWA	150NE-25	13 11 87	56 — 61	65	24.81	96	27.8	>400	34
1280	ALKALERI	FELTUN	150NE-26	14 11 87	66 — 72	77	28.2	96	32.39	>400	37
1281	ALKALERI	GUMBALWA	150NE-27	6 2 88	20 — 21	42	19.39	65	19.66	100	28
1282	ALKALERI	GUMBALWA	150NE-27		23 — 24						
1283	ALKALERI	GUMBALWA	150NE-27		30.5 — 40.5						
1284	ALKALERI	GWAJALEWA	150NE-28	10 2 88	40 — 43	64	31.99	55	32.61	>400	40
1285	ALKALERI	GWAJALEWA	150NE-28		46 — 50						
1286	ALKALERI	GWAJALEWA	150NE-28		59 — 62						
1287	ALKALERI	BESHI	150NW-1	9 6 82	20 — 28	28	3.68	11	11.56	17	25
1288	ALKALERI	SANGAR	150SE-1	8 1 85	17.5 — 25.5	30	14.79	56	15.35	190	19
1289	ALKALERI	PANTI	150SE-2	9 1 85	14.5 — 22.5	25	7.84	16	11.18	22	19
1290	ALKALERI	KUKA	150SE-3	9 1 85	25 — 33	36	16.4	72	17.19	>400	22
1291	ALKALERI	GAR	150SE-4	11 1 85	12 — 24	27	10.04	8	20.56	8	23
1292	ALKALERI	BARKIN KOGI	150SE-5	12 1 85	22 — 30	32	19.43	66	24.74	22	28
1293	ALKALERI	FARIN RUWA	150SE-6	17 1 85	19 — 31	31	13.88	32	17.56	32	22
1294	ALKALERI	KPALIKELA	150SW-1	11 6 82	22 — 30	33	6.84	12	10.42	35	16
1295	ALKALERI	UNG SARKIN YELWA	150SW-2	15 6 82	19 — 27	29	7.57	15	16.85	14	19
1296	ALKALERI	SHAFAN KANAWAIJYIA	150SW-3	16 6 82	16 — 24	24	6.83	16	11.63	20	13
1297	ALKALERI	PAU	150SW-4	17 6 82	22 — 28	28.5	8.4				

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)	
1310	ALKALERI	SHARIFURI	151NW-2	17 12 83	56 — 60	60	43.98	54	44.24	>400	55	
1311	ALKALERI	BAGE	151NW-3	22 1 85	51.5 — 55.5	56	37.63	120	38.4	>400	43	
1312	ALKALERI	GIDDI SABUWA	151NW-4	23 1 85	42.5 — 50.5	52	26.42	70	27.61	>400	31	
1313	ALKALERI	TUBULE	151NW-5	9 2 85	46.5 — 52.5	54	44.25	35	44.68	130	49	
1314	ALKALERI	WARRA	151NW-6	14 2 85	71 — 77	78	48.15	140	49.39	>400	58	
1315	ALKALERI	JIMBABAM	151NW-7	9 11 87	55 — 58	66	39.99	76	40.27	>400	49	
1316	ALKALERI	JIMBABAM	151NW-7		61 — 63							
1317	ALKALERI	KOCHIYEL	151NW-8	11 11 87	58 — 61	63	43.92	80	44.83	>400	52	
1318	ALKALERI	KADOLLI	151NW-9	9 12 87	44 — 50	51	34.87	58	35.57	>400	43	
1319	ALKALERI	GABACHARI KUDU	151SE-2	30 1 85	82 — 90	101	34.66	48	37.79	>400	40	
1320	ALKALERI	GABACHARI KUDU	151SE-2		93 — 97							
1321	ALKALERI	MATIMADU	151SE-3	4 2 85	100.5 —	108	108	74	15	74.06	>400	82
1322	ALKALERI	SHUGU	151SE-4	9 2 85	89.5 — 94	96	70.44	100	71.57	>400	76	
1323	ALKALERI	KWAIMANA	151SW-1	29 1 85	70 — 86	90	71.3	17	74.34	34	82	
1324	ALKALERI	KWALA	151SW-4	5 2 85	45 — 53	54	29.27	53	30.5	>400	37	
1325	ALKALERI	KASHARA	151SW-5	7 2 85	83.5 — 88	89	66.23	20	67.32	220	76	
1326	ALKALERI	BUBU	151SW-6	16 12 87	55 — 61	66	26.76	63	28.34	>400	34	
1327	ALKALERI	KUNDAK	170NE-10	8 3 84	19 — 25	31	7.08	8	19.44	10	28	
1328	ALKALERI	KUNDAK	170NE-10		29 — 31							
1329	ALKALERI	GWARTAM BALE	170NE-15	12 1 85	17 — 25	25	12.3	20	14.32	32	19	
1330	ALKALERI	YALWAN GOKAR	170NE-16	15 1 85	31 — 39	39	28.45	20	30.46	18	37	
1331	ALKALERI	GACHI TAYAMA	170NE-25	18 2 88	22.5 — 46.5	48	19.75	20	25.44	19	33	
1332	ALKALERI	BIRIM	171NW-1	9 1 85	22.5 — 36.5	37	14.35	12	22.26	10	28	
1333	ALKALERI	BAJAMA	171NW-2	10 1 85	19.5 — 27.5	28	11.9	32	15.76	44	19	
1334	ALKALERI	DAN	171NW-3	12 1 85	26 — 30	46	7.05	12	20.07	12	31	
1335	ALKALERI	DAN	171NW-3		42 — 46							
1336	ALKALERI	BAKIN DUTSE	171NW-4	14 1 85	11 — 19	19	9.61	32	11.26	18	16	
1337	ALKALERI	DAGUDI	171NW-5	14 1 85	26 — 34	34	15.7	32	20.43	48	25	
1338	ALKALERI	BALA	171NW-6	14 1 85	18 — 26	30	10.9	20	15.62	20	19	
1339	ALKALERI	BALA	171NW-6		26 — 30							
1340	ALKALERI	GURUMTUN	171NW-7	15 1 85	11 — 27	27	5.55	8	16.68	8	25	
1341	ALKALERI	NATSIRA	171NW-8	21 2 85	16 — 28	31	14.27	12	18.24	22	25	
1342	ALKALERI	GUM	171NW-9	22 2 85	31 — 39	55	20.13	12	33.9	16	46	
1343	ALKALERI	GUM	171NW-9		47 — 55							
1344	ALKALERI	TUDAN WADA	171NW-10	19 2 85	78 — 82	87	23.83	12	59.51	15	70	
1345	ALKALERI	KAFI	171SE-1	16 1 85	52 — 60	60	43.75	38	46.83	70	49	
1346	ALKALERI	YELWA DOGO	171SE-2	17 1 85	40 — 48	48	30.36	57	30.6	>400	34	
1347	ALKALERI	DUGURI FARM SERVICE CENTER	171SE-3	19 1 85	50 — 56	60	6.68	220	24.98	360		
1348	ALKALERI	BUN YULI	171SW-1	21 2 85	48 — 60.5	61	19.56	27	23.52	135	46	
1349	ALKALERI	WUNDO	172NE-7	22 6 84	24 — 28	30	20.43	12	21.67	24	25	
1350	ALKALERI	JAURO BUNNE	172NE-8	25 6 84	50 — 54	54	38.46	32	40.89	110	43	
1351	ALKALERI	YALO	172SE-1	21 6 84	26 — 30	30	18.62	40	19.88	165	25	
1352	ALKALERI	GARIN SAMBO	172SE-2	25 6 84	29 — 33	36	12.88	12	16.61	35	25	
1353	ALKALERI	ALKALI SULE	172SE-3	27 6 84	16 — 24	24	11.58	20	12.9	45	16	
1354	ALKALERI	BALLADE	172SE-4	3 7 84	20 — 26	27	12.86	40	13.26	>400	19	
1355	DUKKU	DUKKUYEL	108SE-4	11 12 84	30 — 36	37	17.29	72	17.73	>400	28	
1356	DUKKU	ZAUNE	108SE-5	11 12 82	34 — 42	42	19.71	72	20.02	>400	28	
1357	DUKKU	DUGGIRI	108SE-6	14 12 82	23.5 — 29.5	30	15.6	72	15.86	>400	25	
1358	DUKKU	WALOJI	108SE-7	15 12 82	39 — 47	48	33.98	72	35.19	210	40	
1359	DUKKU	LAFIYA	108SE-8	8 1 83	37 — 43	43	30.03	72	30.56	>400	34	
1360	DUKKU	KALOMA	108SE-9	13 1 83	34.5 — 42.5	42	28.61	72	28.94	>400	34	
1361	DUKKU	JAMARAI	108SE-10	14 1 83	40 — 48	50	28.16	60	28.9	>400	34	
1362	DUKKU	WURO BULAMA	108SE-11	15 1 83	50 — 54	54	42.93	48	43.27	>400	47	
1363	DUKKU	JAURO BAKKO	108SE-12	29 3 84	31 — 39	39	24.64	65	25.21	>400	31	
1364	DUKKU	WUROATIKO	108SE-15	12 4 85	38 — 42	42	22.18	65	22.66	>400	28	
1365	DUKKU	BURARI	108SW-8	17 12 82	70.5 — 75	78	44.06	48	44.4	>400	52	
1366	DUKKU	BIRISHE	108SW-15	16 4 85	71.5 — 75	75	56.81	80	57.67	>400	67	
1367	DUKKU	DAMBA	109SE-1	14 12 84	31.5 — 43.5	45	5.6	12	29.82	10	37	
1368	DUKKU	GURYA	109SW-1	6 12 84	40 — 44	54	27.64	20	41.45	15	52	
1369	DUKKU	GURYA	109SW-1		47 — 48							
1370	DUKKU	KIYAYO	109SW-1		51 — 54							
1371	DUKKU	KIYAYO	109SW-2	7 12 84	87 — 91.5	102	81.53	32	89.79	15	91	
1372	DUKKU	KIYAYO	109SW-2		97.5 — 99							
1373	DUKKU	GARIN GALDADIMA	109SW-3	8 12 84	60 — 64	66	64.57	8	61.87	8	64	
1374	DUKKU	SABON GADUKU	109SW-4	12 12 84	34 — 42	42	33.69	32	33.95	26	37	
1375	DUKKU	KAMBA KASUWA	109SW-6	13 11 87	65 — 71	72	14.72	26	31.62	55	31	
1376	DUKKU	DOKORO	130NE-1	5 1 83	30 — 38	38	18.33	40	18.52	>400	25	
1377	DUKKU	KOLE	130NE-2	7 1 83	52 — 60	60	47.87	40	47.87	>400	52	
1378	DUKKU	ALAGARNO	130NE-3	10 1 83	37 — 45	45	26.59	72	26.92	>400	34	
1379	DUKKU	WUROTALE	130NE-4	11 1 83	37 — 45	45	21.65	72	22.14	>400	31	
1380	DUKKU	LUMPASO	130NE-5	11 1 83	34 — 42	42	24.23	68	24.55	>400	31	
1381	DUKKU	HASHIDUYEL	130NE-6	12 1 83	41 — 45	45	30.31	48	30.85	>400	37	
1382	DUKKU	KALAM	130NE-7	15 1 83	82.5 — 84	110	56.88	60	58.28	>400	64	
1383	DUKKU	KALAM	130NE-7		95 — 96.5							
1384	DUKKU	KALAM	130NE-7		107.5 — 109							
1385	DUKKU	GUDEMONO	130NE-8	18 4 85	45 — 53	54	31.28	80	31.88	>400	40	
1386	DUKKU	HASHIDU	130NW-4	24 12 82	26 — 32	32	12.76	40	12.92	>400	22	
1387	DUKKU	GOMBE ABBA	130NW-6	3 1 83	16 — 24	24	10.55	40	10.82	>400	16	
1388	DUKKU	GIRTIBA	130NW-7	5 1 83	21.5 — 29.5	30	11.64	40	11.74	>400	19	
1389	DUKKU	BULBUL	130NW-8	18 1 83	49 — 52	52	28.03	72	28.76	>400	37	
1390	DUKKU	GALE	130NW-9	13 1 83	54 — 57	57.5	49.68	40	50.04	>400	58	
1391	DUKKU	GAJIGALE	130NW-10	14 1 83	40 — 44	44	23.17	40	23.78	>400	28	
1392	DUKKU	YOLE	130NW-11	15 1 83	18 — 22	22	14.23	40	14.33	>400	19	
1393	DUKKU	MAYO MADAKI	130NW-13	17 1 83	28 — 32	32	20.61	40	20.87	>400	25	
1394	DUKKU	MAYO LAMIDO	130NW-15	19 1 83	32 — 36	36	16.51	40	17.3	>400	28	
1395	DUKKU	KWAGO	130NW-19	27 3 84	32 — 40	40.5	18.74	72	19.27	>400	25	
1396	DUKKU	GANAWAJI	130NW-20	28 3 84	63 — 72	72	45.29	98	46.12	>400	52	
1397	DUKKU	LAIFIYA	130NW-21	27 3 85	26 — 34	35	24.21	68	24.44	360	31	
1398	DUKKU	TALE	130NW-22	28 3 85	33 — 41	42	22.61	68	22.95	>400	28	
1399	DUKKU	WURO BAYE	130NW-23	30 3 85	51 — 59	60	33.09	55	33.16	>400	37	
1400	DUKKU	WURO BUNDO	130NW-24	30 3 85	70.5 — 75	79	48.71	94	49.41	>400	55	
1401	DUKKU	KABADE	130NW-26	20 4 85	26 — 34	35	14.95	102	15.17	>400	22	
1402	DUKKU	TIMBU	130NW-27	23 4 85	66 — 71.5	—	54.72	70	60.56	90	67	
1403	DUKKU	GAMBE LAMBE	130NW-28	12 7 87	39.5 — 45.5	48	23.51	65	23.75	>400	31	
1404	DUKKU	LULE DABE	130NW-29	11 7 87	35 — 40.5	42	30.54	60	30.76	>400	37	
1405	DUKKU	PAKAR AJIYA	130NW-30	16 7 87	67 — 70	72	42.56	48	44	>400	49	
1406	DUKKU	WURO TARA	130NW-31	17 7 87	108 — 114	120	59.96	32	61.52	>400	67	
1407	DUKKU	ARDO MANU DABEW										

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1420	DUKKU	TASHAN KARGO	131NE-8	17 12 84	33 — 37	38	25.77	58	26.29	>400	31
1421	DUKKU	BADABDI	131NE-9	18 12 84	24 — 28	35	17.9	12	22.88	10	31
1422	DUKKU	BADABDI	131NE-9		30 — 34						
1423	DUKKU	MAIDUKURI	131NE-10	20 12 84	27 — 33	36	21.77	12	23.54	24	28
1424	DUKKU	MUNDA	131NE-11	20 12 84	43 — 47	47.5	33.78	32	34.22	>400	43
1425	DUKKU	GARIN ABBA	131NE-12	22 12 84	51 — 59	66	47.85	32	48.75	78	52
1426	DUKKU	GALGALDU	131NE-13	30 10 87	76.5 — 81	84	59.79	34	60.23	>400	67
1427	DUKKU	MANNARI	131NE-14	30 10 87	37.5 — 40.5	54	22.23	11	31.36	12	40
1428	DUKKU	SHUWARI JAURO GARGA	131NE-15	30 10 87	40.5 — 43.5	45	22.77	20	24.93	115	31
1429	DUKKU	WURO JAURO HARDO	131NE-16	5 11 87	46 — 49	54	39.72	18	40.37	120	49
1430	DUKKU	WURO JAURO HARDO	131NE-16		51 — 54						
1431	DUKKU	GONGILA BAYE	131NE-17	5 11 87	22 — 28	29	12.22	31	18.63	35	22
1432	DUKKU	BIRIN FULANI	131NE-18	19 11 87	42 — 48	—	37.77	75	40.25	90	
1433	DUKKU	BIRIN FULANI	131NE-18		108.5 — 111.5						
1434	DUKKU	JIMBAM	131NE-19	23 11 87	104 — 105.5	114	38.19	32	67.74	50	58
1435	DUKKU	JIMBAM	131NE-19		111 — 114						
1436	DUKKU	JAGARBARI	131NE-20	27 11 87	93 — 96	114		24	25.98	60	22
1437	DUKKU	JAGARBARI	131NE-20		107 — 110						
1438	DUKKU	BULAGAIDAM	131NE-21	8 1 88	103 — 106	106	14.08	40	35.21	120	28
1439	DUKKU	GWIWA	131SE-7	11 12 84	24 — 30	60	23.43	8	23.71	12	28
1440	DUKKU	RIBADU	131SE-8	17 12 84	27 — 33	33	12.43	32	21.01	38	25
1441	DUKKU	TILDE	131SE-9	17 12 84	22 — 30	30	8.21	32	15.14	44	19
1442	GOMBE	KARGARI	131SE-2	30 9 83	28 — 32	33	21.45	20	22.68	110	28
1443	GOMBE	ZONGO KARGU	131SE-3	4 10 83	49 — 53	54	9.42	32	18.27	100	28
1444	GOMBE	MAGUMERI	131SE-4	4 11 83	19.5 — 27.5	30	9.77	32	7.57	90	13
1445	GOMBE	MALLAM BAKAM	131SE-5	5 12 84	26 — 30	31	6.38	20	10.14	70	16
1446	GOMBE	YAME	131SE-6	6 12 84	24 — 30	60	6.84	12	19.31	15	25
1447	GOMBE	MAJUKUNA	131SE-10	25 10 87	65 — 68	72	10.32	46	31.92	80	25
1448	GOMBE	KWADON FARM	152NE-1	19 7 83	16.5 — 18	19	3.36	12	4.41	90	
1449	GOMBE	MALLAM SIDI	152NE-2	26 9 83	32 — 36	40	11.98	40	13.84	310	16
1450	GOMBE	ZOMGOMA KYARI	152NE-3	29 9 83	56 — 60	66	11.7	40	17.73	200	25
1451	GOMBE	PILAM	152NE-4	6 10 83	45 — 59	54	16.49	20	19.73	125	25
1452	GOMBE	ZONGOMA NGOBDO	152NE-5	10 10 83	34 — 38	60	16.75	20	18.99	110	25
1453	GOMBE	MALKO	152NE-6	15 10 83	49.5 — 52.5	60	16.84	20	27.29	45	34
1454	GOMBE	MADIKELLUMI	152NE-9	19 10 83	18.5 — 22.5	78	6.82	20	8.97	75	16
1455	GOMBE	GARIN ALKALI	152NE-10	21 10 83	22 — 26	27	9.64	20	13.17	45	19
1456	GOMBE	WURO TARA	152NE-16	25 10 83	34.5 — 38.5	60	7.76	40	9.38	>400	16
1457	GOMBE	JAMBALU	152NE-17	26 10 83	66 — 67.5	78	68.7	8	70	8	71
1458	GOMBE	JAMBALU	152NE-17		70.5 — 72						
1459	GOMBE	LAGARNO	152NE-21	28 10 83	45 — 57	60	36.54	32	38.42	95	43
1460	GOMBE	GARIN HAMMA	152NE-23	28 10 83	20.5 — 24.5	36	8.7	32	13.12	60	16
1461	GOMBE	GERKWAMI	152NE-24	29 10 83	34 — 38	41	11.87	72	12.6	>400	16
1462	GOMBE	GARIN WAKILI	152NE-28	31 10 83	9.5 — 13.5	25	6.79	20	9.24	15	16
1463	GOMBE	MALLAM ANNA	152NE-41	4 12 84	26.5 — 30.5	34	6.74	30	10.77	100	13
1464	GOMBE	GARKO WADUGO	152NE-42	6 12 84	21 — 25	30	9.52	20	15.03	25	19
1465	GOMBE	JAURO GABON	152NE-43	8 12 84	26 — 32	33	9.92	32	20.63	34	25
1466	GOMBE	ZONGAMA ABA	152NE-44	11 12 84	14 — 20	36	9.77	8	11.53	14	19
1467	GOMBE	TANNA	152NE-45	12 12 84	14 — 18	42	12.37	8	13.89	8	19
1468	GOMBE	DAWAKIRI	152NE-47	23 10 87	57 — 61	66	25.53	62	28.65	>400	34
1469	GOMBE	YASHI MADIGU	152NE-48	21 10 87	52 — 58	60	18.64	60	22.35	380	28
1470	GOMBE	MADAKI JAMJI	152NE-49	21 10 87	50 — 53	54	12.09	60	26.84	110	22
1471	GOMBE	MAIDUGURI YANKARI	152NE-50	23 10 87	78 — 81	81	62.61	34	65.66	120	70
1472	GOMBE	JAURA JATTO	152NE-51	26 10 87	44 — 47	60	14.95	69	19.09	340	22
1473	GOMBE	JAURA JATTO	152NE-51		54 — 57						
1474	GOMBE	JAURO ALHAJI AMADU	152NE-52	26 10 87	102 — 105	113.5	86.09	32	86.39	>400	91
1475	GOMBE	JAURO ALHAJI AMADU	152NE-52		110.5 — 113.5						
1476	GOMBE	KWAGGA JAURO LUDO	152NE-53	29 10 87	62 — 68	90	26.79	30	35.58	60	40
1477	GOMBE	JAURO BAFETO	152NE-55	18 11 87	55 — 56.5	82	20.49	84	48.68	70	34
1478	GOMBE	JAURO BAFETO	152NE-55		62 — 63.5						
1479	GOMBE	JAURO BAFETO	152NE-55		69 — 72						
1480	GOMBE	LANTAIWA	152NE-56	20 11 87	73.5 — 76.5	78	24.39	31	27.64	330	34
1481	GOMBE	METEKO HAMMA	152NE-57	25 11 87	57 — 60	68	9.12	84	25.56	170	19
1482	GOMBE	METEKO HAMMA	152NE-57		65.5 — 68.5						
1483	GOMBE	GARIN JAURO	152NE-58	26 11 87	72 — 78	83	24.82	21	31.78	100	37
1484	GOMBE	SABON GARI MUSA	152NE-60	30 11 87	59 — 62	62	43.07	90	44.54	>400	52
1485	GOMBE	EASTERN ZONE HEADQUARTERS	152NW-1	16 10 83	46 — 51.5	54	36.48	72	40.05	100	
1486	GOMBE	KUFAYI	152NW-2	22 9 83	35 — 39	68	26.66	12	27.65	65	31
1487	GOMBE	KULLM	152NW-3	13 10 83	43 — 47	48	17.38	20	19.9	145	25
1488	GOMBE	SHANGAYARI	152NW-4	17 10 83	62.5 — 65.5	78	8.22	8	50.93	10	61
1489	GOMBE	TITI	152NW-5	20 10 83	21 — 25	78	7.95	20	9.82	100	16
1490	GOMBE	BENTERE BOKKI	152NW-6	21 10 83	51.5 — 55.5	58	40.67	12	42.16	55	45
1491	GOMBE	WURO DOLE	152NW-7	22 10 83	13 — 17	58	6.14	32	6.86	200	13
1492	GOMBE	KORAN GIWA	152NW-8	7 11 83	24.5 — 28.5	33	7	72	8.43	>400	13
1493	GOMBE	KOLARI	152NW-9	10 11 83	50 — 54	60				10	52
1494	GOMBE	MOI GEDO	152NW-10	15 11 83	82.5 — 84	96	83.36	8	84.88	20	88
1495	GOMBE	MOI GEDO	152NW-10		89.5 — 91						
1496	GOMBE	JAORO BELLO	152NW-11	17 11 83	34 — 38	40	25.77	20	27.99	50	31
1497	GOMBE	PANTAMA (MARAFASIDI)	152NW-12	24 11 83	42 — 50	60	11.65	20	24.45	30	37
1498	GOMBE	GARIN MARDAIKI	152NW-15	14 9 84	35 — 41	42	14.2	32	22.61	55	34
1499	GOMBE	WURO BUNDO	152NW-16	24 9 84	71.5 — 76	77	54.35	32	65.42	35	67
1500	GOMBE	KAGARAWAL	152NW-17	14 12 84	28 — 32	36	10.47	32	19.46	44	22
1501	GOMBE	GALDIMARI	152NW-18	25 11 87	98.5 — 103	108	45.22	32	50.43	230	55
1502	GOMBE	TSAMIYA	152NW-19	28 11 87	84 — 88.5	91	39.83	65	49.49	210	49
1503	TANGALE WAJA	REFELE	153SW-10	15 10 84	25 — 37	37	6.28	8	15.91	10	34
1504	TANGALE WAJA	TUDAN WADA	153SW-11	22 10 84	14 — 30	30	12.6	12	17.67	10	25
1505	TANGALE WAJA	NASARAWA	153SW-12	27 10 84	29 — 37	38	13.49	12	20.36	20	25
1506	TANGALE WAJA	KULISHIN	173NE-1	20 7 84	23 — 31	32	9.8	20	14.8	36	22
1507	TANGALE WAJA	TARMANA JEJI	173NE-2	11 9 84	34 — 42	42	30.08	32	31.22	75	37
1508	TANGALE WAJA	GUJUBA	173NE-3	12 9 84	30 — 34	35	26.53	20	25.58	65	31
1509	TANGALE WAJA	BELTUBO	173NE-4	12 9 84	37 — 45	45	27.45	32	30.66	67	37
1510	TANGALE WAJA	POKWANGALI	173NE-5	13 9 84	46 — 54	54	40.03	32	40.53	350	46
1511	TANGALE WAJA	WILI	173NE-6	13 9 84	35.5 — 42	42	32.12	32	32.72	125	37
1512	TANGALE WAJA	SHENGE-SHENGE	173NE-7	17 9 84	43 — 51	52	11.37	60	21.48	130	34
1513	TANGALE WAJA	POPANDI	173NE-8	17 9 84	32 — 40	44	10.74	12	24.61	12	31
1514	TANGALE WAJA	LAPAN	173NE-9	17 9 84	16 — 20	20	2.44	32	5.65	95	10
1515	TANGALE WAJA	MOSSO	173NE-10	18 9 84	35 — 42	42	15.05	60	18.15	270	34
1516	TANGALE WAJA	WTC KALTUNGO	173NE-11	19 9 84	18 — 26	26	4.95	60	6.97	>400	16
1517	TANGALE WAJA	BALAM	173NE-12	24 9 84	34 — 42</						

S.No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL.	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1530	TANGALE WAJA	LANTAREN	173NE-25	20	12	87	70	—	77	78	9.9
1531	TANGALE WAJA	BWARA	173NE-26	22	12	87	37	—	40	67	3.3
1532	TANGALE WAJA	BWARA	173NE-26				62	—	66.5		
1533	TANGALE WAJA	BUNDE BUNDE	173NE-27	23	12	87	76.5	—	79.5	24	68
1534	TANGALE WAJA	YABDE	173NE-28	24	12	87	132.5	—	135.5	144	19.14
1535	TANGALE WAJA	YABDE	173NE-28				141	—	144		
1536	TANGALE WAJA	NAHUTA	173NE-29	9	1	88	32	—	35	46	22.61
1537	TANGALE WAJA	NAHUTA	173NE-29				40	—	43		
1538	TANGALE WAJA	TODI	173NW-1	17	9	83	14	—	18	18	8.89
1539	TANGALE WAJA	KALMAI	173NW-2	22	9	83	40	—	44	44	22.98
1540	TANGALE WAJA	LAWILTU	173NW-3	15	12	83	49	—	53	32	35.23
1541	TANGALE WAJA	LAWISHADAI	173NW-4	16	12	83	38.5	—	46.5	48	32.34
1542	TANGALE WAJA	KWIBAH	173NW-5	19	12	83	20	—	28	30	14.7
1543	TANGALE WAJA	POKWANGLI	173NW-6	21	12	83	36	—	40	40	18.19
1544	TANGALE WAJA	LADONGOR	173NW-7	26	5	84	47.5	—	51.5	52	35.15
1545	TANGALE WAJA	AMTAWALAM	173NW-18	23	6	84	34	—	38	39	14.15
1546	TANGALE WAJA	LAMUGU	173NW-19	25	6	84	10	—	18	18	8.4
1547	TANGALE WAJA	LAKALEMBU	173NW-21	26	6	84	14	—	18	24	11.1
1548	TANGALE WAJA	KANADI	173NW-23	3	7	84	19	—	31	34	9.79
1549	TANGALE WAJA	PANDIN KUDE	173NW-24	3	7	84	20	—	28	29	11.69
1550	TANGALE WAJA	POBISHI	173NW-25	5	7	84	47	—	51	66	43.73
1551	TANGALE WAJA	POBISHI	173NW-25				57	—	65		
1552	TANGALE WAJA	TANGALANG	173NW-26	6	7	84	16	—	22	22	10.62
1553	TANGALE WAJA	TUDUN WADA	173NW-27	21	7	84	36	—	40	40	2.77
1554	TANGALE WAJA	POSHIYA	173NW-28	20	7	84	21	—	29	30	6.43
1555	TANGALE WAJA	KENTENKERENG	173NW-29	21	7	84	35.5	—	39.5	40	23.67
1556	TANGALE WAJA	SANSANI	173NW-30	6	10	84	20	—	28	28	12.58
1557	TANGALE WAJA	GADA IKU	173NW-31	23	12	87	23	—	29	33	7.81
1558	TANGALE WAJA	LABERPITO	173NW-32	6	1	88	72.5	—	77	77	20.19
1559	TANGALE WAJA	DEGRI	173NW-33	8	1	88	34.5	—	39	40.5	17.38
1560	TANGALE WAJA	KAKURIYA LAWYA	173SE-1	31	10	84	35	—	41	46	16.12
1561	TANGALE WAJA	BEKUNTIN	173SE-2	5	11	84	23	—	31	31	11.68
1562	TANGALE WAJA	FANTAMI	173SE-3	7	11	84	58	—	64	57	53.07
1563	TANGALE WAJA	DORAWA	173SE-4	12	11	84	27.5	—	35.5	36	16.69
1564	TANGALE WAJA	SABON LAYI	173SE-4	20	10	84	16	—	24		2.28
1565	TANGALE WAJA	BANDARA	173SE-5	13	11	84	52	—	60	24	40.45
1566	TANGALE WAJA	KAFIN BAWA	173SE-6	13	11	84	52	—	60	60	17.62
1567	TANGALE WAJA	LAKWEME	173SE-7	13	11	84	32	—	40	40	19.16
1568	TANGALE WAJA	SABARA	173SE-8	13	11	84	33	—	37	39	21.76
1569	TANGALE WAJA	LOBWORE	173SE-9	15	11	84	34	—	42	43	5.02
1570	TANGALE WAJA	LUKULAKWIL	173SE-10	15	11	84	85.5	—	90	97	2.89
1571	TANGALE WAJA	LASSASSAD	173SE-11	16	11	84	47	—	55	55	23.41
1572	TANGALE WAJA	LOFIYO	173SE-12	17	11	84	22	—	30	31	14.31
1573	TANGALE WAJA	LAYIRO	173SE-13	17	11	83	32	—	40	41	9.48
1574	TANGALE WAJA	NABANG	173SE-14	19	11	84	67.5	—	75		
1575	TANGALE WAJA	BURAKK SABON LAYI	173SE-15	21	11	84	25	—	32	32	5.1
1576	TANGALE WAJA	FURMAI	173SE-16	24	11	84	38	—	50	52	4.86
1577	TANGALE WAJA	DADIYA DUTSE	173SE-17	15	12	87	52	—	61	67	1.46
1578	TANGALE WAJA	TUDU KWAYA	173SW-1	26	6	84	25.5	—	29.5	30	17.24
1579	TANGALE WAJA	LALAIPIDO	173SW-2	3	7	84	28	—	36	36	20.65
1580	TANGALE WAJA	AMPOBOKYE	173SW-3	7	7	84	29	—	33	49	1.52
1581	TANGALE WAJA	AMPOBOKYE	173SW-3				41	—	49		
1582	TANGALE WAJA	DOGUMA HAUSAWA	173SW-4	10	7	74	90.5	—	95	96	80.19
1583	TANGALE WAJA	GUNDALI	173SW-5	10	7	84	37	—	45	45	9.04
1584	TANGALE WAJA	GUJUBA	173SW-6	12	7	84	28.5	—	34.5	35	8.38
1585	TANGALE WAJA	ANTAGWANA	173SW-7	12	7	84	27	—	35	36	10.02
1586	TANGALE WAJA	PAMADU	173SW-8	16	7	84	23	—	27	27	9.03
1587	TANGALE WAJA	POPANDI KATAGUM	173SW-9	17	7	84	25	—	33	33	
1588	TANGALE WAJA	FARIN KASA	173SW-10	19	7	84	50	—	66	66	
1589	TANGALE WAJA	LOYI	173SW-11	23	11	84	69.5	—	74	74	40.98
1590	TANGALE WAJA	KWARI	173SW-12	24	11	84	22	—	29	30	2.35
1591	TANGALE WAJA	YARANA	173SW-13	25	11	84	53	—	61	66	41.63
1592	TANGALE WAJA	GARUM	173SW-14	26	11	84	55	—	63	63	35.87
1593	TANGALE WAJA	LAFIYA SARKI	174NE-1	29	10	84	23	—	31	31	4.29
1594	TANGALE WAJA	BAKASI	174NW-1	25	9	84	18	—	28	28	12.32
1595	TANGALE WAJA	BALANGA	174NW-2	29	9	84	27	—	35	35	25.72
1596	TANGALE WAJA	TAKASA	174NW-3	31	10	84	57.5	—	62	63	2.34
1597	TANGALE WAJA	DONGOLE	174NW-4	10	10	84	51	—	60	61	45.82
1598	TANGALE WAJA	SWA	174NW-5	10	10	84	36	—	40	40	17.25
1599	TANGALE WAJA	REME	174NW-6	12	10	84	60	—	68	70	9.14
1600	TANGALE WAJA	WALA WAJA	174NW-7	12	10	84	49	—	53	53	19.65
1601	TANGALE WAJA	GURKEMI	174NW-8	15	10	84	61	—	69	70	34.49
1602	TANGALE WAJA	BWUNGAL	174NW-9	16	10	84	15	—	23	29	12.7
1603	TANGALE WAJA	JUNGE	174NW-10	17	10	84	56	—	64	66	
1604	TANGALE WAJA	GURMA	174NW-11	17	10	84	46	—	56	57	41.49
1605	TANGALE WAJA	SAYI	174NW-12	20	10	84	31	—	38	39	14.85
1606	TANGALE WAJA	KULANI	174NW-13	22	10	84	82	—	88	90	36.27
1607	TANGALE WAJA	DEMI A'	174NW-14	23	10	84	93	—	96	96	2.01
1608	TANGALE WAJA	GALA WAJA	174NW-15	25	10	84	11	—	19	19	6.53
1609	TANGALE WAJA	BUTA	174NW-16	26	10	84	82	—	88	90	60.17
1610	TANGALE WAJA	BANGU	174NW-17	27	10	84	54	—	66	66	60
1611	TANGALE WAJA	KONDI	174NW-18	30	10	84	54	—	66	66	14.42
1612	TANGALE WAJA	POTUKI	174NW-19	30	10	84	28	—	36	36	9.71
1613	TANGALE WAJA	KWEN	174NW-20	3	11	84	19	—	27	27	12.28
1614	TANGALE WAJA	DADIYO	174NW-21	3	11	84	50	—	57	57	44.48
1615	TANGALE WAJA	SURKWAM	174NW-22	4	11	84	22.5	—	32.5	33	16.13
1616	TANGALE WAJA	KONDI	174NW-23	4	11	84	42.5	—	46.5	47	37.11
1617	TANGALE WAJA	YORIYO	174NW-24	5	11	84	22	—	30	34	15.71
1618	TANGALE WAJA	KWANG	174NW-25	8	11	84	45	—	53	44	31.75
1619	TANGALE WAJA	LAFIA	174NW-26	10	11	84	14	—	18	24	5.26
1620	TANGALE WAJA	JALINGO NO.1	174NW-27	12	11	84	34	—	42	42	10.86
1621	TANGALE WAJA	BALA MUSA	174NW-28	15	11	84	57	—	65	56	15.98
1622	TANGALE WAJA	JALINGO NO.2	174NW-29	20	12	87	33	—	36	42.5	11.75
1623	TANGALE WAJA	JALINGO NO.2	174NW-29				38	—	41		
1624	TANGALE WAJA	SABON GARI	174NW-30	21	12	87	41.5	—	47.5	49	21.85
1625	TANGALE WAJA	GUMSA	174NW-31	23	12	87	60	—	63		45.58
1626	TANGALE WAJA	DONG	174NW-32	6	1	88	30.5	—	35		15.62
1627	TANGALE WAJA	DEGRI	174NW-33	8	1	88	34.5	—	39	40.5	37.38
1628	TANGALE WAJA	CHING	174NW-34	8	1	88	46.5	—	52.5	54	
1629	TANGALE WAJA	YADI	174SE-1	15	10	84	57	—	61	68	26.54
1630	TANGALE WAJA	YADI	174SE-1				63	—	67		
1631	TANGALE WAJA	YOLDE	174SE-2	17	10	84	34	—	42	43	1.26
1632	TANGALE WAJA	KORAWA	174SE-3	18	10	84	16	—	24	24	6.55
1633	TANGALE WAJA	SABON LAYI	174SE-4	20	10	84	16	—	24	24	2.28
1634	TANGALE WAJA	DO-ARA	174SE-5	25	10	84	18	—	26	30	6.55
1635	TANGALE WAJA	GADAMAYO	174SW-1	22	9	84	66	—	74	75	18.97
1636	TANGALE WAJA	KWARGE	174SW-2	9	10	84	36	—	42	46	
1637	TANGALE WAJA	LAKUN	174SW-3	10	10	84	36	—	42	42	4.28
1638	TANGALE WAJA	TIKSIR	174SW-4	29	10	84	99	—	105	105	
1639	TANGALE WAJA	DON GAJE	174SW-5	30	10						

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..				SCREEN INTERVAL(m)		DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1640	TANGALE WAJA	MONA LOJAH	174SW-6	31	10	84	22	—	30	30	1.09	20	15.34	20	19
1641	TANGALE WAJA	SABON LAYI KWARGE	174SW-7	6	1	88	51	—	54	61	13.13	40	31.26	60	25
1642	GAMAWA	61NE SABON GARI	BSWB-2	15	4	80	54	—	72	100	25	29	176		
1643	GAMAWA	61NE SABON GARI	BSWB-2					82	—	88					
1644	GAMAWA	61SE GUMAI	BSWB-1	15	2	83	48	—	52	52	25		26	400	
1645	GAMAWA	61SE KATAGUM	BSWB-1					—			0.6		2.4	467	
1646	GAMAWA	61SE KATAGUM	BSWB-2					—			0.5		1.8	600	
1647	GAMAWA	61SE KATAGUM	BSWB-3					—							
1648	GAMAWA	61SE SAKWA	BSWB					—							
1649	GAMAWA	61SE SAKWA	BSWB-1					—			0.7		2.7	200	
1650	GAMAWA	61SE SAKWA	BSWB-2					—			1.1		3.4	200	
1651	GAMAWA	61SE SAKWA	BSWB-3					—							
1652	GAMAWA	62NW BURSALI	BSWB-1					—							
1653	GAMAWA	62NW BURSALI	BSWB-2					—							
1654	GAMAWA	62NW BURSALI	BSWB-3					—							
1655	GAMAWA	62NW GOLOLO	BSWB-1	15	4	78	132	—	136	296	19		24	111	
1656	GAMAWA	62NW GOLOLO	BSWB-1					142	—	148					
1657	GAMAWA	62NW GOLOLO	BSWB-1					160	—	168					
1658	GAMAWA	62NW GOLOLO	BSWB-1					217	—	223					
1659	GAMAWA	62NW GOLOLO	BSWB-1					243	—	253					
1660	GAMAWA	62NW GOLOLO	BSWB-1					260	—	266					
1661	GAMAWA	62NW GOLOLO	BSWB-2	15	4	78	89	—	97	278	20		35	129	
1662	GAMAWA	62NW GOLOLO	BSWB-2					114	—	118					
1663	GAMAWA	62NW GOLOLO	BSWB-2					142	—	148					
1664	GAMAWA	62NW GOLOLO	BSWB-2					192	—	199					
1665	GAMAWA	62NW GOLOLO	BSWB-2					221	—	223					
1666	GAMAWA	62NW GOLOLO	BSWB-2					229	—	235					
1667	GAMAWA	62NW GOLOLO	BSWB-2					240	—	244					
1668	GAMAWA	62NW GOLOLO	BSWB-3					—			20		32	167	
1669	GAMAWA	62NW LODIYO	BSWB-1					—							
1670	GAMAWA	63NW LODIYO	GJRSA-1					—			16.5		24.5	25	
1671	GAMAWA	62NW TUMBI	BSWB-1	27	2	83	60	—	63	65	42		52	52	
1672	GAMAWA	62SW ALAGARNO	BSWB					—							
1673	GAMAWA	62SW ALAGARNO	BSWB-1					—			24.15		35.69	176	
1674	GAMAWA	62SW KAIFI RCMI					—								
1675	GAMAWA	62SW LAMIDO BONGI	BSWB-1	6	5	80	63	—	71	110	25		10	180	
1676	GAMAWA	62SW LAMIDO BONGI	BSWB-1					89	—	98					
1677	GAMAWA	62SW LAMIDO BONGI	BSWB-2	7	2	82	99	—	104	108	26		32		
1678	GAMAWA	62SW MARANA	BSWB-1					—			23.5		60	198	
1679	GAMAWA	84NE GADIA	BSWB-1	30	5	80	54	—	69	72	26		37	180	
1680	GAMAWA	85NW RAGU	GJRSA-1					—			32.4		35.5	308	
1681	GAMAWA	85NW UDUBO	BSWB-1					—			26.3		27.8	233	
1682	GAMAWA	85NW UDUBO	BSWB-2					—			24.5		25	267	
1683	GAMAWA	85NW UDUBO	BSWB-3	6	4	78	84	—	88	25			27	264	
1684	GAMAWA	85NW UDUBO	BSWB-3					103	—	109					
1685	GAMAWA	85NW UDUBO	BSWB-3					116	—	126					
1686	GAMAWA	85NW UDUBO	BSWB-3					145	—	151					
1687	GAMAWA	85NW WABU	BSWB-1	13	5	80	24.2	—	33.1	92	19		23	180	
1688	GAMAWA	85NW WABU	BSWB-1					55.1	—	58.1					
1689	GAMAWA	85NW WABU	BSWB-1					70	—	88					
1690	GAMAWA	85NW WABU	BSWB-2					—							
1691	JAMA'ARE	83SE DOGON JEJI	BSWB-2					—			5.6		23.6	220	
1692	JAMA'ARE	83SE DOGON JEJI	BSWB-3					—			5.2		28.9	213	
1693	JAMA'ARE	83SE HANA FARI	BSWB-1					—							
1694	JAMA'ARE	83SE HANA FARI	BSWB-2					—							
1695	JAMA'ARE	83SE SABON KAFI	GJRSA-1					—			39		65	18	
1696	KATAGUM	83NE ITAS	BSWB-1					—			51		68.9	323	
1697	KATAGUM	83NE ITAS	BSWB-2					—			8.2		13	153	
1698	KATAGUM	83NE ITAS	BSWB-3					—			8.3		28	213	
1699	KATAGUM	83NE MAGARYA	BSWB-1					—							
1700	KATAGUM	83NE MASHEMA	BSWB-1					—							
1701	KATAGUM	84NE MADARA	BSWB-1	7	11	78	38	—	42	85	15		30	136	
1702	KATAGUM	84NE MADARA	BSWB-1					65	—	75					
1703	KATAGUM	84NE MADARA	BSWB-2					82	—	88					
1704	KATAGUM	84NE MADARA	BSWB-2	24	11	78	30	—	34	91	17		30	76	
1705	KATAGUM	84NE MADARA	BSWB-2					49	—	59					
1706	KATAGUM	84NE MADARA	BSWB-2					67	—	77					
1707	KATAGUM	84NE MADARA	GJRSA-1					—			14.5		40.5	153	
1708	KATAGUM	84NW GADAU	BSWB-1					—			10.8				
1709	KATAGUM	84NW GADAU	BSWB-2					—							
1710	KATAGUM	84SE CHINADE	BSWB-1	28	7	77	35	—	41	56	6.1		6.36	219	
1711	KATAGUM	84SE CHINADE	BSWB-2					53	—	56					
1712	KATAGUM	84SE CHINADE	BSWB-2	15	7	77	51	—	63	65	5.93		37.12	267	
1713	KATAGUM	84SE CHINADE	BSWB-3	24	9	80	38	—	44		13.35		13.33	227	
1714	KATAGUM	84SE CHINADE					47	—	51						
1715	KATAGUM	84SE DUHUWAR KURA	BSWB-1					—							
1716	KATAGUM	84SW DAWARZAL					—								
1717	KATAGUM	84SW FATAR	BSWB-1					—							
1718	KATAGUM	84SW KUJURU	BSWB-1					—							35
1719	KATAGUM	84SW MADACHI	BSWB-1					—							
1720	KATAGUM	84SW MADANGALA	GJRSA-1					—			18		32	21	
1721	KATAGUM	85SW BULKACHUWA	BSWB-1					—							187
1722	KATAGUM	86SW BULKACHUWA	BSWB-3					—							200
1723	KATAGUM	87SW BULKACHUWA	ROADS NIG					—							
1724	MISAU	107NE DUNKURMI	BSWB-1	20	1	79	15	—	27	32	8		23	20	
1725	MISAU	107NE DUNKURMI	BSWB-2	29	2	80	8	—	10	52	9		36	27	
1726	MISAU	107NE DUNKURMI	BSWB-2					16	—	20					
1727	MISAU	107NE DUNKURMI	BSWB-2					26	—	30					
1728	MISAU	107NE DUNKURMI	BSWB-2					37	—	43					
1729	MISAU	107NE HARDAWA	BSWB-1	29	6	78	36	—	40	70	9		38	65	
1730	MISAU	107NE HARDAWA	BSWB-1					54	—	66					
1731	MISAU	107NE HARDAWA	BSWB-2	28	4	77	24	—	52	54	7		36	50	
1732	MISAU	107NE HARDAWA	BSWB-5	26	11	80	18	—	36	80	18				27
1733	MISAU	107NE HARDAWA	BSWB-5					48	—	60					
1734	MISAU	107NE ZADAWA	BSWB-2					—			2		15	20	
1735	MISAU	108NW AKUYAM	BSWB-2	22	10	78	89	—	95	146	24		27	161	
1736	MISAU	108NW AKUYAM	BSWB-2					102	—	108					
1737	MISAU	108NW AKUYAM	BSWB-2					130	—	142					
1738	MISAU	108NW AKUYAM	BSWB-3					—			47		51	100	
1739	MISAU	108NW ZINDI					—								
1740	MISAU	108NW AKUYAM	BSWB-1	30	9	78	106	—	114	165					131
1741	MISAU	108NW AKUYAM	BSWB-1					128	—	133					
1742	MISAU	108NW AKUYAM	BSWB-1					141	—	149					
1743	MISAU	108NW AKUYAM	BSWB-1					156	—	162					
1744	MISAU														

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1750	MISAU	85SE DAGAUDA	BSWB-2		175 — 187						
1751	MISAU	85SE DAGAUDA	BSWB-2		240 — 252						
1752	MISAU	85SE DAGAUDA	BSWB-2		274 — 280						
1753	MISAU	85SE DAGAUDA	BSWB-3				41		49	167	
1754	MISAU	85SE DAGAUDA	BSWB-4								
1755	MISAU	85SE JALAM	BSWB-1		—					160	
1756	MISAU	85SE JALAM	BSWB-2		—		56		58	133	
1757	MISAU	85SE JALAM	GJRSA-1		—		54		55.3	330	
1758	MISAU	85SW DAMBAM	BSWB		—						
1759	MISAU	85SW DAMBAM	BSWB-1		—					267	
1760	MISAU	85SW DAMBAM	BSWB-4		—					300	
1761	MISAU	85SW DAMBAM	BSWB-5		—						
1762	SHIRA	106NE DISINA	BSWB-1		—		0.9		1.8	267	
1763	SHIRA	106NE DISINA	BSWB-2		—		0.6		1.5	233	
1764	SHIRA	106NE DISINA	BSWB-3		—		1.1		2.67	333	
1765	SHIRA	106NE DISINA	BSWB-4		—		1		2.02	267	
1766	SHIRA	106NE DISINA	BSWB-5		—		1.7		2.4	333	
1767	SHIRA	106NE FAGGO	BSWB-1		—		0.3		1.2	400	
1768	SHIRA	106NE FAGGO	BSWB-2		—		0.32		1.2	400	
1769	SHIRA	106NE FAGGO	BSWB-3		—		0.5		1	400	
1770	SHIRA	106NE FAGGO	GJRSA-1		—		5.8		7.5	348	
1771	SHIRA	106NE SAWE	BSWB-1		—						
1772	SHIRA	106NE ZIGAU	BSWB-1		—		0.15		0.35	412	
1773	SHIRA	106NE ZIGAU	BSWB-2		—		0.2		0.5	400	
1774	SHIRA	106NE ZIGAU	BSWB-3		—		0.65		1	400	
1775	SHIRA	107NE ZABI ROADS NIG.			—		4			100	
1776	SHIRA	107NW GIADE	BSWB-1		17 — 31	33	7		21.05	261	
1777	SHIRA	107NW GIADE			31 — 33						
1778	SHIRA	107NW GIADE	BSWB-2	14 2 78	22 — 36	38	10		10.55	128	
1779	SHIRA	107NW GIADE	BSWB-3	3 2 77	14 — 26	42	5		17	136	
1780	SHIRA	107NW GIADE			33 — 39						
1781	SHIRA	107NW GIADE	BSWB-4	8 2 78	22 — 40	41.5	6		19	85	
1782	SHIRA	107NW GIADE	GJRSA-1		—		6		30.6	98	
1783	SHIRA	107NW SHIRA		4 11 77	19 — 29	35	9		18	33	
1784	SHIRA	107NW SHIRA		27 11 0	20 — 34	60	3		18	30	
1785	SHIRA	107NW SHIRA		30 10 77	23 — 29	55	4		45	81	
1786	SHIRA	107NW SHIRA			44 — 52						
1787	SHIRA	107NW SHIRA		19 10 77	26 — 44	50	4		28	38	
1788	SHIRA	84SW KILBORI			—						
1789	SHIRA	84SW KILBORI			—						
1790	DARAZO	107SE GABARIN	GJRSA-1		—		8.4		14.3	142	
1791	DARAZO	107SE KWANKIYAL	BSWB-2	30 6 78	30 — 36	79	17		38	66	
1792	DARAZO	107SE KWANKIYAL	BSWB-2		43 — 49						
1793	DARAZO	107SE KWANKIYAL	BSWB-2		56 — 62						
1794	DARAZO	107SE KWANKIYAL	BSWB-2		69 — 75						
1795	DARAZO	107SE KWANKIYAL	BSWB-4	1 8 78	43 — 57	59	9		39	74	
1796	DARAZO	109NE LANZAI	BSWB-1	26 2 78	116 — 122.5	250.5	59.4		86.4	277	
1797	DARAZO	108NE LANZAI	BSWB-1		145 — 149						
1798	DARAZO	108NE LANZAI	BSWB-1		180 — 182						
1799	DARAZO	108NE LANZAI	BSWB-1		196 — 201						
1800	DARAZO	108NE LANZAI	BSWB-1		207 — 207						
1801	DARAZO	108NE LANZAI	BSWB-1		216 — 216						
1802	DARAZO	108NE LANZAI	BSWB-2		244 — 248		63		63.5	133	
1803	DARAZO	108NE LANZAI	BSWB-3	16 4 78	108.5 — 112.8	244.4				133	
1804	DARAZO	108NE LANZAI	BSWB-3		127 — 132.9						
1805	DARAZO	108NE LANZAI	BSWB-3		154 — 157.9						
1806	DARAZO	108NE LANZAI	BSWB-3		193 — 201						
1807	DARAZO	108NE LANZAI	BSWB-3		215 — 223						
1808	DARAZO	108NE LANZAI	BSWB-3		237 — 239						
1809	DARAZO	108NE LANZAI	BSWB-6	7 5 78	96 — 102	262			65	250	
1810	DARAZO	108NE LANZAI	BSWB-6		123 — 129						
1811	DARAZO	108NE LANZAI	BSWB-6		164 — 168						
1812	DARAZO	108NE LANZAI	BSWB-6		196 — 202						
1813	DARAZO	108NE LANZAI	BSWB-6		209 — 215						
1814	DARAZO	108NE LANZAI	BSWB-6		222 — 224						
1815	DARAZO	108NE LANZAI	BSWB-6		238 — 242						
1816	DARAZO	108NE LANZAI	BSWB-6		249 — 254						
1817	DARAZO	108NE LANZAI	BSWB-7		—						
1818	DARAZO	108NE PAPA	BSWB-9	3 4 85	107 — 113		68		68	400	
1819	DARAZO	108NW DALA GOBE	BSWB-1		—					100	
1820	DARAZO	108NW SADE	BSWB-1	18 5 78	86 — 90	218			39	141	
1821	DARAZO	108NW SADE	BSWB-1		119 — 125						
1822	DARAZO	108NW SADE	BSWB-1		139 — 141						
1823	DARAZO	108NW SADE	BSWB-1		156 — 162						
1824	DARAZO	108NW SADE	BSWB-1		169 — 175						
1825	DARAZO	108NW SADE	BSWB-1		197 — 203						
1826	DARAZO	108NW SADE	BSWB-1		210 — 212						
1827	DARAZO	108NW SADE	BSWB-3	6 6 78	88 — 98	41			42	153	
1828	DARAZO	108NW SADE	BSWB-3		120 — 126						
1829	DARAZO	108NW SADE	BSWB-3		141 — 145						
1830	DARAZO	108NW SADE	BSWB-3		160 — 164						
1831	DARAZO	108NW SADE	BSWB-3		171 — 181						
1832	DARAZO	108SW GABCHIYARI	BSWB-2		—						
1833	DARAZO	108SW GABCHIYARI	GJRSA-1		—		64		67.8	208	
1834	DARAZO	108SW KARI	BSWB-1		—		0.75		1.2	400	
1835	DARAZO	108SW KARI	BSWB-2		—		0.8		1.2	400	
1836	DARAZO	108SW KARI	BSWB-3		—		0.65		1.8	200	
1837	DARAZO	128NE MIYA	BSWB-1	20 11 78	11 — 15	7			17	46	
1838	DARAZO	128NE MIYA	BSWB-1		22 — 28						
1839	DARAZO	128NE MIYA	BSWB-2	20 11 78	15 — 21	30	4		20	36	
1840	DARAZO	128NE MIYA	BSWB-2		24 — 28						
1841	DARAZO	128NE ZARA	GJRSA-1		—		3.9			34	
1842	DARAZO	128SE KAFIN MADAKI	BSWB-1	9 9 78	14 — 18	54	5		8	100	
1843	DARAZO	128SE KAFIN MADAKI	BSWB-1		26 — 30						
1844	DARAZO	128SE KAFIN MADAKI	BSWB-1		38 — 42						
1845	DARAZO	128SE KAFIN MADAKI	BSWB-1		47 — 49						
1846	DARAZO	128SE KAFIN MADAKI	BSWB-2	28 9 78	24 — 32		6		27		
1847	DARAZO	128SE KAFIN MADAKI	BSWB-2		40 — 42						
1848	DARAZO	128SE KAFIN MADAKI	BSWB-2		50 — 54						
1849	DARAZO	128SE KAFIN MADAKI	BSWB-3		—		3		11	80	
1850	DARAZO	128SE KAFIN MADAKI	BSWB-4		—		4		15	33	
1851	DARAZO	128SE KAFIN MADAKI	BSWB-6		—						
1852	DARAZO	128SE KAFIN MADAKI	BSWB-7		—						
1853	DARAZO	128SE KAFIN MADAKI	BSWB-8		—						
1854	DARAZO	128SE KAFIN MADAKI	BSWB-9		—						
1855	DARAZO	128SE NASARAWA	GJRSA-1		—		1				
1856	DARAZO	129NE BINGI	BSWB-1	7 1 78	18 — 34	116				30	
1857	DARAZO	129NE BINGI	BSWB-4	26 5 78	17 — 21	47	3		14	96	
1858	DARAZO	129NE BINGI	BSWB-4		26 — 37						
1859	DARAZO	129NE BINGI	BSWB-7	8 11 78	24 — 30	48	8		34	32	

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL.	SCREEN INTERVAL(m)	DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1860	DARAZO	129NE BINGI	BSWB-7		37 — 45						
1861	DARAZO	129SW SORO	BASIRDA-3	18 2 87	—						
1862	DARAZO	129SW SORO	BSWB-1	29 10 78	13 — 19	67	4		18	49	
1863	DARAZO	129SW SORO	BSWB-1		26 — 34						
1864	DARAZO	129SW SORO	BSWB-1		49 — 56						
1865	DARAZO	129SW SORO	BSWB-2	27 1 80	14 — 20	50	5		23	45	
1866	DARAZO	129SW SORO	BSWB-2		26 — 30						
1867	DARAZO	129SW SORO	BSWB-2		37 — 41						
1868	DARAZO	130NW ZALANGA			—						
1869	NINGI	104SE UNGUMUR DANDUTSE					16		80.5	24	
1870	NINGI	105NW AGWARMAJE	BSWB-1				4.9		57	294	
1871	NINGI	105SE BAKIN DUTSE	GJRSA-1				22.6		34.8	172	
1872	NINGI	106SE MUDA	GJRSA-1				5.8			116	
1873	NINGI	106SE MUDA TSAMIYA	BSWB-1				0.9		1.8	270	
1874	NINGI	106SW KATANGA WARJI	FDWR-2				0.9		1.8	240	
1875	NINGI	106SW KATANGAN	FDWR-1				11.9		25.9	221	
1876	NINGI	106SW KATANGAR	FDWR-2				0.6		1.5	480	
1877	NINGI	106SW NASARU	BSWB-1	14 9 76	28 — 40	42	3		16	131	
1878	NINGI	106SW NASARU	GJRSA-1				24			34	
1879	NINGI	106SW NASARU	GJRSA-2	27 9 78	15 — 27	26	4		12	51	
1880	NINGI	106SW TUDUN WADA	BASIRDA-1								
1881	NINGI	128NW GADAN MAIWA	BASIRDA-1								
1882	NINGI	128NW GUDA	BASIRDA-1								
1883	NINGI	128NW JANGU			—						
1884	NINGI	128NW ZAKARA	BASIRDA-1								
1885	BAUCHI	149NE GALAMBI	BSWB-2				12		19.6	51	
1886	BAUCHI	149NE INKIL			—						
1887	BAUCHI	149NE KANGERERE	BSWB-1	16 1 78	16 — 30	33			18	199	
1888	BAUCHI	149NE KANGERERE	BSWB-2	23 2 78	17 — 27	30	6		16	45	
1889	BAUCHI	149NE KANGERERE	GJRSA-1				2.4			34	
1890	BAUCHI	149SE LIMAN KATAGUM	BSWB-1	13 11 78	30 — 42	54	4		30	144	
1891	BAUCHI	149SE LIMAN KATAGUM	BSWB-2	24 10 78	38 — 54	65	4		24	97	
1892	BAUCHI	149SE LIMAN KATAGUM	BSWB-3	31 10 78	40 — 54	58	4		21	86	
1893	BAUCHI	170NE ZUNGUR			—						
1894	DASS	169NE BAGAS	BASIRDA-1								
1895	BAUCHI	170NW GIMSA			—						
1896	BAUCHI	170NW GWALTUKURWA	SGEN-1								
1897	T/BALEWA	169SE LERE	BSWB-1	14 3 79	19 — 31	50	9		20	192	
1898	T/BALEWA				38 — 42						
1899	T/BALEWA	169SE LERE	BSWB-2	1 3 79	20 — 26	70	4		22	642	
1900	T/BALEWA				32 — 36						
1901	T/BALEWA				54 — 62						
1902	T/BALEWA	169SE LERE	BSWB-3				3.6		23.46	100	
1903	T/BALEWA	170NW BUNUNU	FMWR-1								
1904	T/BALEWA	170NW BUNUNU	FMWR-2								
1905	T/BALEWA	170NW SAKARE	BSWB-1				20.6		25	90	
1906	T/BALEWA	170SW BOGORO	BASIRDA-1								
1907	T/BALEWA	170SW BOGORO	BASIRDA-2								
1908	T/BALEWA	170SW BOI	BASIRDA-1								
1909	TORO	127SW TULLU	BASIRDA-2								
1910	TORO	147NE RAHAMMA	GJRSA								
1911	TORO	147NE RISHI	BSWB-1	12 3 79	23 — 33	50	3.5		12	113	
1912	TORO	147NE RISHI	BSWB-2				5		13.2	33	
1913	TORO	147SE TULDEN FULANI	BSWB-1				6		40	90	
1914	TORO	147SE TULDEN FULANI	BSWB-2				5		16	162	
1915	TORO	148NW GUMAU	BSWB-1	14 12 78	17 — 23	68	3		22	2	
1916	TORO				37 — 43						
1917	TORO				56 — 60						
1918	TORO	148NW GUMAU	BSWB-2	23 12 78	13.5 — 17.5		3		30	1	
1919	TORO	148NW GUMAU	BSWB-2		23.5 — 29.5						
1920	TORO	148NW GUMAU	BSWB-2		36.5 — 40.5						
1921	TORO	148NW GUMAU	BSWB-2		52.5 — 58.5						
1922	TORO	148NW LAME	BASIRDA-1								
1923	TORO	148NW ZALAU	GJRSA-1				5.4			3	
1924	TORO	148SE NABORDO	BSWB-1	15 12 78	12 — 16	82	4		28	2	
1925	TORO	148SE NABORDO	BSWB-1		28 — 32						
1926	TORO	148SE NABORDO	BSWB-1		50 — 56						
1927	TORO	148SE NABORDO	BSWB-1		68 — 74						
1928	TORO	148SE NABORDO	BSWB-2	22 12 78	12 — 14	60	5		6	1	
1929	TORO	148SE NABORDO	BSWB-2		25 — 33						
1930	TORO	148SE NABORDO	BSWB-2		40 — 46						
1931	TORO	148SE NABORDO	BSWB-3								
1932	TORO	148SE RIMI ZAYAN	BASIRDA-1								
1933	TORO	148SW MAGAMA GUMAU	BSWB-1								
1934	TORO	148SW MAGAMA GUMAU	BSWB-2								
1935	TORO	148SW RAUTA BASIRDA			—						
1936	TORO	148SW RIGIN GAINI	BSWB-1				2.8		10.4	138	
1937	TORO	149SW ZARANDA	BSWB-1							40	
1938	TORO	169NE PALAMA	BSWB-1								
1939	TORO	169NE PALAMA	GJRSA-1				14.4			1	
1940	AKKO	152NE DADIN KOWA					0.25		0.4	400	
1941	AKKO	152NE DADIN KOWA					0.3		0.4	400	
1942	AKKO	152NE DIFA GJRSA					15.8		36.6	321	
1943	AKKO	152NE KWADON	DOMA GGSS								
1944	AKKO	152NE ZAMBUK					9			203	
1945	AKKO	152SE DEBA HABE			179 — 185	266	9		13	600	
1946	AKKO	152SE DEBA HABE			209 — 215						
1947	AKKO	152SE DEBA HABE			228 — 237						
1948	AKKO	152SE DEBA HABE			255 — 261						
1949	AKKO	152SE DEBA HABE		11 5 79	234 — 252	252	18		44	780	
1950	AKKO	152SE KURI	BSWB-1				16.4		35.87	330	
1951	AKKO	152SE KURI	BSWG-2				16.6		37.67	220	
1952	AKKO	152SE KURJALE					15		16.2	333	
1953	AKKO	152SE LAMBAM	GJRSA-1				18.2		42	311	
1954	AKKO	152SW GARKO	BSWB-1								
1955	AKKO	152 GARKO	GJRSA-1				2.4			197	
1956	AKKO	152SW KALSHINGI									
1957	AKKO	153NE HINA	BSWB-1								
1958	AKKO	153NE HINA	BSWB-2								
1959	AKKO	153NE HINA	BSWB-3				0.56		0.59	400	
1960	AKKO	153NE HINA	BSWB-4				0.51		0.6	400	
1961	AKKO	153NE HINA	BSWB-5								
1962	AKKO	153SW JAGALI					22		36.2	90	
1963	AKKO	172NE PINDIGA	BSWB-2	17 11 78	356 — 393	320	76		143	150	
1964	ALKALERI	129SE RIBAN GARMU	BSWB-1				2.9		5	204	
1965	ALKALERI	129SE RIBAN GARMU	GJRSA-1						11.7	19.7	739
1966	ALKALERI	150NE KIRFIN KASA									113
1967	ALKALERI	150NE KIRFIN KASA									
1968	ALKALERI	150NE KIRFIN SAMA	BSWB-1						10		576
1969	ALKALERI	150NE WANKA									90

S/No.	(LGA)	LOCATION	BOREHOLE No.	DATA COMPL..	SCREEN INTERVAL(m)		DRILLING DEPTH(m)	STATIC WATER	PUMPING TEST	PUMPING WATER	EST. YIELD(Lpm)	HAND PUMP SETTING(m)
1970	ALKALERI	150SE MAINA MAJI	BSWB-1		50	—	54	165	54	56	5460	
1971	ALKALERI	150SE MAINA MAJI	BSWB-1		65	—	71					
1972	ALKALERI	150SE MAINA MAJI	BSWB-1		78	—	88					
1973	ALKALERI	150SE MAINA MAJI	BSWB-1		104	—	108					
1974	ALKALERI	150SE MAINA MAJI	BSWB-1		114	—	116					
1975	ALKALERI	150SE MAINA MAJI	BSWB-1		150	—	152					
1976	ALKALERI	150SE MAINA MAJI	BSWB-1		160	—	162					
1977	ALKALERI	150SE MAINA MAJI	BSWB-2	18 2 78	71	—	75	151	30	48	256	
1978	ALKALERI				103	—	123					
1979	ALKALERI				145	—	149					
1980	ALKALERI	150SE MAINA MAJI	BSWB-3	13 9 81	22	—	30	53	6	9	5460	
1981	ALKALERI				32	—	38					
1982	ALKALERI				46	—	53					
1983	ALKALERI	150SE MAINA MAJI	BSWB-4			—						
1984	ALKALERI	151NW BARA	BSWB-1	23 3 78	163	—	167	300	5.28	10.7	1280	
1985	ALKALERI				252	—	258					
1986	ALKALERI	151NW BARA	BSWB-2			—			6.8	14.2	333	
1987	ALKALERI	171SE DUGURI	BSWB-1			—			9	18	528	
1988	ALKALERI	171SE DUGURI	BSWB-2			—					606	
1989	DUKKU	108SW MALALA	GJRSA-1			—			150	16.2	333	
1990	DUKKU	109SE NAFADA	BSWB-1			—			0.3	3.1	267	
1991	DUKKU	109SE NAFADA	BSWB-2			—			0.5	0.9	267	
1992	DUKKU	109SE NAFADA	GJRSA-1			—			36.9	74.6	156	
1993	DUKKU	130NE DUKKU				—			2.67	17.67	568	
1994	DUKKU	130NE DUKKU				—			2.95	26.95	234	
1995	DUKKU	130NE DUKKU				—			2.7	12.7	803	
1996	DUKKU	130NE DUKKU				—			1.25	2.56	593	
1997	DUKKU	130NE DUKKU				—			1.17	3.15	415	
1998	DUKKU	130NE DUKKU	BSWB-1			—			130	160	57	
1999	DUKKU	130NE DUKKU	BSWB-2			—			147	147.5	80	
2000	DUKKU	130NE DUKKU	BSWB-3			—			141.1	142.1	67	
2001	DUKKU	130NE DUKKU	BSWB-5			—			43.5	53.8	80	
2002	DUKKU	130NE DUKKU	BSWB-7			—			137	139.7	67	
2003	DUKKU	130NE DUKKU	GJRSA-1			—			17.51	190	150	
2004	DUKKU	130NW GOMBE ABBA	BSWB-1			—			0.9	1.8	333	
2005	DUKKU	130NW GOMBE ABBA	BSWB-2			—			0.6	1.5	333	
2006	DUKKU	130NW HASHIDU	GJRSA-1			—			14	33	213	
2007	DUKKU	131NE BAJOGA	BSWB-1	10 10 78	299	—	305	383	18	70	153	
2008	DUKKU	131NE BAJOGA	BSWB-1		324	—	330					
2009	DUKKU	131NE BAJOGA	BSWB-1		342	—	360					
2010	DUKKU	131NE BAJOGA	BSWB-1		372	—	378					
2011	DUKKU	131NE BAJOGA	BSWB-2	9 11 78	346	—	377	384	18	112	165	
2012	DUKKU	131NE BAJOGA	BSWB-3	21 10 78	341	—	371	378	27	56	384	
2013	GOMBE	152NE DABA FULANI	BSWB-2			—						
2014	GOMBE	152NE MALLAM SIDI	BSWB-1	31 8 78	20	—	26.1	153	17.7	32.75	3120	
2015	GOMBE				40.1	—	52.3					
2016	GOMBE	152NE MALLAM SIDI	GJRSA-1			—			42	61.7	308	
2017	GOMBE	152NW GADAM	GJRSA-1			—			174	186	48	
2018	T/WAJA	173NE KALTUNGO	BSWB-7	20 2 79	95	—	107	131	38	107	72	
2019	T/WAJA				116	—	126					
2020	T/WAJA	173NE KALTUNGO	BSWB-8	31 3 79	275	—	288	380	19	199	132	
2021	T/WAJA				315	—	325					
2022	T/WAJA				361	—	372					
2023	T/WAJA	173NE KALTUNGO	BSWB-10	24 6 79	35	—	44	50	3	31	176	
2024	T/WAJA	173NE TAL	GJRSA-1			—			15.2	39.4	323	
2025	T/WAJA	173NE TULA BAULE	BSWB-1			—			27	36.6	64	
2026	T/WAJA	173NE TULA WANGE	BSWB-1			—						
2027	T/WAJA	173NE TULA WANGE	BSWB-2			—						
2028	T/WAJA	173NE TULA WANGE	BSWB-2	22 1 82	61	—	70	112	56			
2029	T/WAJA	173NE TULA BAULE	BSWB-2		105	—	109					
2030	T/WAJA	173NW BANGANJE	BSWB-1			—						
2031	T/WAJA	173NW BANGANJE	BSWB-2			—						
2032	T/WAJA	173NW KUFAI	BSWB-1			—						
2033	T/WAJA	173SE BAMBAB	BSWB-1			—						
2034	T/WAJA	173SE BAMBAB	BSWB-2			—						
2035	T/WAJA	174NE NYUWAR			20	—	29		26	41	90	
2036	T/WAJA	174NE NYUWAR			49	—	55					
2037	T/WAJA	174NW GELENGU	BSWB-1			—			27	48.6	200	
2038	T/WAJA	174NW GELENGU	BSWB-2			—			26	34	187	
2039	T/WAJA	174NW GELENGU	BSWB-3			—			22	25	237	
2040	T/WAJA	174NW TALASE				—			16	25.2	196	
2041	T/WAJA	174NW TALASE	BSWB-1			—			1	23	327	
2042	T/WAJA	174NW TALASE	BSWB-2			—			92	21.6	384	
2043	T/WAJA	174NW WALA WAJA	BSWB-1			—			20	22	367	
2044	T/WAJA	174SW CHAM	BSWB-1			—						
2045	T/WAJA	174SW CHAM	FDWR-1			—						
Total					82470		94254	74682.3	32393.34	53876	43225.41	254189
Average								48.31	19.43	36.26	25.96	150.59
												30.64

A little less than 60% of the static water levels are in the range 20 to 30 m. However, at the Shira, Warji, Ningi, Toro, Bauchi, Tafawa Balewa and Bogoro LGAs in the western part of the state, levels are less than 10 m. Yields are variable. The shallow areas of static water yield 75 liters per minute or less while deeper water levels can yield more than 100 liters per minute. Drilling depths varied widely, ranging from 28 m in the western part of the state to 67 m in the eastern part of the state. The average depth was 47 m. Hand pumps were set between 16 and 41 m.

The results by geological distribution show that the static water levels and drilling depths for basement were shallower than those for sedimentary. The yields were around 100 liters/minute, and very little water was pumped. For the sedimentary, more than 300liters/minute were pumped, and the potential for developing underground water is high.

1.4 Analysis of The Existing Boreholes in Katsina State

(1) Existing borehole data

Records of existing boreholes in Katsina state are shown in the Table17. The upper part of the table shows LGAs excavated 2 years after procurement of machinery, while the lower part shows LGAs excavated 5 years after procurement of machinery. These data were obtained from “ Records of capital project (RUWASSA, 2004-2007) ” and “ UNICEF assisted school project (2005-2009) ”, and then the hydro geological conditions in the target areas were analyzed.

Table 14 LGAs Excavated 2 Years after Procurement of Machinery (Katsina State)

No.	LGA	S. W. L(m)	Yield(l/s)	Drilling Depth(m)	Geology
2	Dutsin-Ma	13.06	0.56	43.89	Basement complex
4	Safana	9.45	0.52	49.83	Basement complex
5	Mashi	24.48	0.59	47.75	Gundumi & Basement
8	Faskari	6.33	0.71	54.33	Basement complex
10	Kankara	12.70	0.57	48.73	Basement complex
	Average	13.17	0.59	48.46	

Table15 LGAs Excavated 5 Years after Procurement of Machinery (Katsina State)

No.	LGA	S. W. L(m)	Yield(l/s)	Drilling Depth(m)	Geology
1	Batsari	9.46	0.49	45.93	Basement complex
3	Rimi	16.16	0.61	37.00	Basement complex
6	Sandamu	14.36	1.30	37.43	Gundumi formation
7	Zango	19.60	0.53	48.38	Gundumi & Basement
9	Kafur	7.82	0.69	56.36	Basement complex
11	Malumfashi	11.36	0.54	46.79	Basement complex
	Average	13.07	0.58	47.03	

Table16 Results for Existing Boreholes by Each Type of Geology(Katsina State)

Geology	S. W. L(m)	Yield(l/s)	Drilling Depth(m)
Gundumi formation	14.36	1.30	37.43
Gundumi formation	21.94	0.56	48.08
Gundumi & Basement	11.09	0.58	47.31
Average	13.09	0.61	46.97

Table17 Existing Borehole Data (Katsina State, 2004~2007)

S/No.	(LGA)	LOCATION	STATIC WATER LEVEL(m)	DRAW DOWN(m)	YIELD(L/S)	DRILLING DEPTH(m)	DATA COMPL..
1	INGAWA	YAKURYTU	8.16	43.59	0.3	59	1ST PHASE 2004
2	"	SANTAR NA KYALLU	26	24.5	0.21	52	1ST PHASE 2004
3	"	KURGAWA	14.1	18.65	0.33	57	1ST PHASE 2004
4	"	RUGAGE	22.02	7.44	0.33	61	1ST PHASE 2004
5	"	YANDOMA YAMMA	1.61	12.82	0.67	37	1ST PHASE 2004
6	"	SHAMIYA	22	5.07	1	51	1ST PHASE 2004
7	"	MAJE MARAKE	18.16	10.2	0.2	33	1ST PHASE 2004
8	"	KANTAREWA	21.02	7.45	0.23	50	1ST PHASE 2004
9	"	LADAN FULANI	44.05	4.45	0.23	56	1ST PHASE 2004
10	"	AMALAWA	30.2	10.9	0.23	62	1ST PHASE 2004
11	"	KAFI WOJA'E	20.07	12.84	0.26	39	1ST PHASE 2004
12	"	TSUAUWA	30	9.95	0.8	50	1ST PHASE 2004
13	DUTSI	DUTSI MARKET	17.63	11.17	1.73	46	1ST PHASE 2004
14	"	YAMEL NEW LAYOUT	18.29	10.35	0.24	40	1ST PHASE 2004
15	"	KAYAWA KUDU	24.26	13.7	0.35	61	1ST PHASE 2004
16	"	DIGGOL	22.55	5.56	0.23	42	1ST PHASE 2004
17	"	SOBASHI	25	7.18	0.34	39	1ST PHASE 2004
18	"	JIGAWA TUKKI	22.08	4.96	0.83	38	1ST PHASE 2004
19	"	RABA AREWA	22.01	1.49	0.21	39	1ST PHASE 2004
20	SINDAWA	ALKANDI	26.78	24.14	0.2	55	1ST PHASE 2004
21	"	TAMA	11.42	33.36	0.2	46	1ST PHASE 2004
22	"	ADARKAWA KANYA	23.95	14.61	0.2	40	1ST PHASE 2004
23	"	WALAWA	8.65	23.16	0.29	38	1ST PHASE 2004
24	"	YAN BABIA	7.68	17.63	1.02	35	1ST PHASE 2004
25	"	BUJAWA/GANGARE	17.78	10.33	0.23	32	1ST PHASE 2004
26	"	NASARAWA	12.11	20.48	0.23	33	1ST PHASE 2004
27	"	KURMI	24.32	12.92	0.24	43	1ST PHASE 2004
28	"	KARKAHU	24.1	14.33	0.2	42	1ST PHASE 2004
29	"	DAY YANGORA	26.49	17.82	0.21	48	1ST PHASE 2004
30	"	BANKEMI	18.4	11.97	0.3	34	1ST PHASE 2004
31	"	DAKWALE	19.15	13.59	0.6	36	1ST PHASE 2004
32	KUSADA	BAURANYA	16.75	18.36	0.34	40	1ST PHASE 2004
33	"	DUNGURMI	16.95	9.87	0.89	51	1ST PHASE 2004
34	"	GIDAN MADA	16.18	7.89	0.3	45	1ST PHASE 2004
35	"	FANDARO	10.4	8.08	0.33	39	1ST PHASE 2004
36	"	SABON RAFI	5.41	30.6	0.21	57	1ST PHASE 2004
37	"	SABARAWA	14.65	13.33	0.26	50	1ST PHASE 2004
38	MASHI	KASANKI	22.27	14.16	0.45	40	1ST PHASE 2004
39	"	MUGUN DUTSI	23.98	14.93	0.22	62	1ST PHASE 2004
40	"	DOKAWA	13.47	2.98	0.89	35	1ST PHASE 2004
41	"	GADARE	26.37	11.87	0.61	45	1ST PHASE 2004
42	"	BADOLE	16.01	3.01	0.45	34	1ST PHASE 2004
43	"	GUMA HAYI FADAMA	27.32	4.17	0.23	42	1ST PHASE 2004
44	"	BUNU BUNU	11.49	2.08	1	49	1ST PHASE 2004
45	"	GDSS BIRNIN KUKA	34.35	6.82	0.38	57	1ST PHASE 2004
46	"	CHEDERIN JAMA'A GABAS	34.02	2.88	0.34	45	1ST PHASE 2004
47	"	BADAURI	34.35	6.27	0.38	60	1ST PHASE 2004
48	"	DUNDIYAL	20.02	10	0.67	57	1ST PHASE 2004
49	RIMI	MAKWALLA	21.62	17.98	0.96	58	1ST PHASE 2004
50	"	TAKE TSIMI	23.62	6.98	0.31	40	1ST PHASE 2004
51	"	MAJEN GOBIN	9.97	10.28	1.2	32	1ST PHASE 2004
52	"	YAT NABAYYE	23.44	1.89	1.3	30	1ST PHASE 2004
53	"	KARARE	5.42	20.03	1.28	39	1ST PHASE 2004
54	"	SABON GARIN GOLE	9.04	5.32	0.6	35	1ST PHASE 2004
55	"	GUNGU	21.72	10.27	0.14	40	1ST PHASE 2004
56	"	KADAJI	6.42	19.72	0.46	30	1ST PHASE 2004
57	"	JANNAI	9.12	14.58	0.42	27	1ST PHASE 2004
58	"	BAI	20.97	4.94	0.24	30	1ST PHASE 2004
59	"	FARUMA	31.7	6.18	0.58	42	1ST PHASE 2004
60	"	KAZOMAWA	2.87	25.17	0.24	40	1ST PHASE 2004
61	CHARANCHI	YAN ALBASA	14	19.38	0.25	40	1ST PHASE 2004
62	"	TSAKI	11.52	31.77	0.21	48	1ST PHASE 2004
63	"	DAMBUNA	15.03	4.65	1	32	1ST PHASE 2004
64	"	GIDAN BAYYE	6.68	34.88	0.26	43	1ST PHASE 2004
65	"	BAGGA	15.58	13.31	0.28	35	1ST PHASE 2004
66	"	KAGADAMA	6.84	13.12	0.31	25	1ST PHASE 2004
67	"	DAWAN GAMLI	2.68	12.62	0.8	22	1ST PHASE 2004
68	"	PILOT PRI SCHOOL	5.7	17.83	0.4	30	1ST PHASE 2004
69	"	UNGUWAR TINYA	16.18	13.61	0.46	38	1ST PHASE 2004
70	"	BARANGIZO	24.78	7.3	0.42	42	1ST PHASE 2004
71	"	MARKE	13.53	13.38	0.62	33	1ST PHASE 2004
72	"	LAMBA	6.3	23.29	0.19	31.5	1ST PHASE 2004
73	BATSARI	GARINZAKI	3.87	8.41	0.34	25	1ST PHASE 2004
74	"	BEHIND SECRETARIAT	21.57	15.15	0.48	56	1ST PHASE 2004
75	"	BAKON ZABO	17.08	9.42	0.95	51	1ST PHASE 2004
76	"	GIGINYU	19.98	18.57	0.2	51	1ST PHASE 2004
77	"	GAZARI	6.41	11.24	0.35	45	1ST PHASE 2004
78	"	YASORE	6.93	12.43	0.33	47	1ST PHASE 2004
79	"	MAIKARE	3.12	14.28	0.6	34	1ST PHASE 2004
80	"	DANKAR	15.06	10.01	0.2	57	1ST PHASE 2004
81	"	MAKADA DUMA	2.58	21.42	0.35	57	1ST PHASE 2004
82	"	ZANKO	8.5	17.41	0.51	51	1ST PHASE 2004
83	"	GARIN KARBAU	2.03	25.94	1.2	51	1ST PHASE 2004
84	"	GARIN AJIYA	4.92	19.08	0.85	45	1ST PHASE 2004
85	"	MALKAREH SHANU	4.3	25.77	0.25	39	1ST PHASE 2004
86	SAFANA	BABBAN DUHU	15.38	14.32	0.72	45	1ST PHASE 2004
87	"	KUNAMAWAR AINSALE	9.27	25.9	0.2	41	1ST PHASE 2004
88	"	DALLAJE	18.5	10.85	0.57	57	1ST PHASE 2004
89	"	KAN BIRI	19.52	9.08	0.23	57	1ST PHASE 2004
90	"	UNGUWAR AISHA	5.12	15.5	0.2	57	1ST PHASE 2004
91	"	GPSS SAFANA	3.54	11.02	1.5	57	1ST PHASE 2004
92	"	KINFDAO	6	10.71	0.26	40	1ST PHASE 2004
93	"	ILLEA	11	11.68	0.23	51	1ST PHASE 2004
94	"	GDSS BABBAN	12.04	14.59	0.89	57	1ST PHASE 2004
95	"	SALIHAWAKAIPO	5.75	11.59	0.89	47	1ST PHASE 2004
96	"	GDSS ZAKKA	5.02	14.04	0.31	57	1ST PHASE 2004
97	DUTSINMA	GACCI	12.78	13.68	0.98	43	1ST PHASE 2004
98	"	BADOLE	23.28	16.87	0.23	55	1ST PHASE 2004
99	"	BAGAGGA GARI	5.6	11.5	1.1	45	1ST PHASE 2004
100	"	KUKIT'B DORO	22	20	0.21	51	1ST PHASE 2004
101	"	KAROFIB JANGAURA	6.3	34.01	0.3	51	1ST PHASE 2004
102	"	GIDAN TAKIKUKI	21.61	13.91	0.42	42	1ST PHASE 2004
103	"	TSAWA TSAWA	9.83	18.2	0.8	39	1ST PHASE 2004
104	"	KAROFIA JAKA	4.6	21.5	0.23	51	1ST PHASE 2004
105	"	DAGE LAWAL	9.03	16.04	1.14	51	1ST PHASE 2004
106	KAITA	BEHIND SECRETARIAT	23.49	20.7	0.31	52	1ST PHASE 2004
107	"	GDSS DANKAMA	12.42	7.01	1.25	40	1ST PHASE 2004
108	"	GAMJIN MAKAOHO	17.67	9.4	1.05	42	1ST PHASE 2004
109	"	FADAMA BABARE	24.18	6.14	1.14	43	1ST PHASE 2004

S/No.	(LGA)	LOCATION	STATIC WATER LEVEL(m)	DRAW DOWN(m)	YIELD(L/S)	DRILING DEPTH(m)	DATA COMPL..
110	"	KAYAWA KUDU	43.2	15.11	1.14	75	1ST PHASE 2004
111	"	HAYIN MAISAI	28.1	2.97	0.37	37	1ST PHASE 2004
112	"	ALLEMI	22.96	7.49	0.26	50	1ST PHASE 2004
113	"	SABIN ALLEMI	8.5	24.09	0.22	50	1ST PHASE 2004
114	"	ABDULLAWA NASARAWA	16.6	4.68	0.93	33	1ST PHASE 2004
115	"	LOKI	26.4	4.7	0.25	40	1ST PHASE 2004
116	"	GANDE FULANI	6.42	8.67	1	51	1ST PHASE 2004
117	MANI	GGSS MANI	25.15	9.46	0.56	42	1ST PHASE 2004
118	"	SHATSKAWA	14.52	18.78	0.2	36	1ST PHASE 2004
119	"	DAMAWA	21.13	5.87	0.24	42	1ST PHASE 2004
120	"	SHEME	16	15.45	0.23	49	1ST PHASE 2004
121	"	MUSAWAR HABA	7.83	17.08	0.21	45	1ST PHASE 2004
122	"	AGAISA	25.46	8.91	0.23	46	1ST PHASE 2004
123	"	SANTAR GAWO	21.9	7.43	0.21	57	1ST PHASE 2004
124	"	SANTAR LAKA	27.1	11.09	0.33	62	1ST PHASE 2004
125	"	URIMI DUWAN	20.5	1.54	0.34	55	1ST PHASE 2004
126	"	MALKAUACHI	26.6	6.46	0.82	52	1ST PHASE 2004
127	"	DOKOTA	23.9	7.98	1	50	1ST PHASE 2004
128	BATAGARAWA	KADAFAWA	20.18	17.75	0.22	40	1ST PHASE 2004
129	"	ALLANKA	4.22	7.16	0.38	15	1ST PHASE 2004
130	"	BAMBAMI	13.21	16.21	0.21	32	1ST PHASE 2004
131	"	MATAWALLE	9.66	4.43	1.02	21	1ST PHASE 2004
132	"	SHIBDAWA	13.7	19.3	0.22	36	1ST PHASE 2004
133	"	SHEKAR GABI	4.36	20.12	0.19	29	1ST PHASE 2004
134	BAURE	DOROWA GOMA	24.9	2.39	0.26	34	1ST PHASE 2004
135	"	BABBAN MUTUM GDSS	25.7	2.2	1.6	40	1ST PHASE 2004
136	"	AVA	20.51	0.19	2.4	41.2	1ST PHASE 2004
137	"	KIRKA	28.73	1.44	1.71	46.6	1ST PHASE 2004
138	"	YANTUBA	24.68	3.52	1.5	38	1ST PHASE 2004
139	"	TSAYA	29.3	3.4	1.5	45	1ST PHASE 2004
140	"	DANCHALE	31.48	2.22	1.25	48	1ST PHASE 2004
141	"	BORO	30.2	6.42	0.21	45	1ST PHASE 2004
142	"	DOKI FULANI	30.9	2.73	0.83	51	1ST PHASE 2004
143	"	SINNINTI FULANI	26.8	2.18	1.55	37	1ST PHASE 2004
144	"	YANGAGI	25.8	6.34	1.9	45.5	1ST PHASE 2004
145	"	KATSALLE	28.49	1.53	1.5	43.5	1ST PHASE 2004
146	DAURA	BADERAWA	9.29	13.5	0.81	27	1ST PHASE 2004
147	"	MAKASAURO	18.34	11.78	0.34	41	1ST PHASE 2004
148	"	SHARAWA	26.55	7.55	0.3	38	1ST PHASE 2004
149	"	SHARIFAWA	12.72	4.49	1.34	41	1ST PHASE 2004
150	"	DAGARAWA	17.1	2.3	0.26	26	1ST PHASE 2004
151	"	BONI	24.3	8.55	0.27	33	1ST PHASE 2004
152	SANDAMU	DANEJI	11.4	9.8	0.3	27	1ST PHASE 2004
153	"	BURTA HANBUNARE	2.52	2.19	1.67	33	1ST PHASE 2004
154	"	RADE GARI	15.19	13.95	1.45	41	1ST PHASE 2004
155	"	FAGON KANAWA	17.8	16.61	2	46	1ST PHASE 2004
156	"	RUIJYAR TSAMIYA	18.71	1	38	1ST PHASE 2004	
157	"	MAJUYAWA	18.01	8.25	1.5	41	1ST PHASE 2004
158	JIBIYA	TSAYAU	19	11.08	0.69	40	1ST PHASE 2004
159	"	M/TAKWAS	29.35	17.53	0.36	51	1ST PHASE 2004
160	"	MORAWA	34.03	2.84	0.81	57	1ST PHASE 2004
161	"	TSAMBEN TSAUNI	11.25	12.04	0.31	5	1ST PHASE 2004
162	"	KARAUKI	6.15	15.16	0.19	62	1ST PHASE 2004
163	"	MURTUKU	6.18	6.04	0.29	42	1ST PHASE 2004
164	"	TSARAKI	10.58	17.1	0.2	57	1ST PHASE 2004
165	"	JARKUKA	14.7	12.66	0.23	61	1ST PHASE 2004
166	"	RUGAGEN FUJANI	22.5	13.14	0.21	43	1ST PHASE 2004
167	"	MAIKAHOK	17.19	9.76	0.5	49	1ST PHASE 2004
168	"	YAULE	26.09	16.23	0.25	58	1ST PHASE 2004
169	"	SHAISKAWA	13.15	1.54	0.88	45	1ST PHASE 2004
170	KURFI	GANDU	11.48	11.7	0.5	28	1ST PHASE 2004
171	"	AWAKI BANZA	5.67	1.08	1.02	23	1ST PHASE 2004
172	"	KADAGE	4.65	20.01	0.46	29	1ST PHASE 2004
173	"	TSAUTI GARI	10	10.32	0.2	24	1ST PHASE 2004
174	"	KUKOKI	3.54	22.63	0.24	30	1ST PHASE 2004
175	"	LAMBO	11.15	15.6	0.34	31	1ST PHASE 2004
176	MUSAWA	GARU	6.81	29.71	0.23	38	2ND PHASE 2005
177	"	YALLEMA	23.6	27.34	0.22	52	2ND PHASE 2005
178	"	DAMINAWA	4.33	40.6	0.24	46	2ND PHASE 2005
179	"	UNGWIWAR GIDE	19.8	23.8	1.02	46	2ND PHASE 2005
180	"	PILOT PS MUSAWA	12.66	20.28	1	42	2ND PHASE 2005
181	"	BAMBAMA	24.48	4.35	1.2	43	2ND PHASE 2005
182	MATAZU	DIKKWA	3	26.9	1.1	31	2ND PHASE 2005
183	"	HAYIN NOMUA	15.45	26.3	0.24	43	2ND PHASE 2005
184	"	UNGWIWAR KARO	10.54	25.18	0.21	37	2ND PHASE 2005
185	"	GDSS MATAZU	15.14	27.82	0.35	46	2ND PHASE 2005
186	"	BADOLE	4.84	41.33	0.2	61	2ND PHASE 2005
187	"	SABON LAYI	13.95	15.18	0.2	30	2ND PHASE 2005
188	KANKIA	GOLGORO	14.29	9.45	1.1	30	2ND PHASE 2005
189	"	EANEFARAUTA	24.77	26.91	0.26	55	2ND PHASE 2005
190	"	DUZAR KANAWA	2.14	40.94	0.2	46	2ND PHASE 2005
191	"	SAGAWA	13.24	6.79	1.2	34	2ND PHASE 2005
192	"	TASHAR LADO	7.13	13.76	0.75	23	2ND PHASE 2005
193	"	YAMADI	5.91	29.21	0.44	37	2ND PHASE 2005
194	"	MALLAMAWA	3.03	22.71	0.33	27	2ND PHASE 2005
195	"	DARAWA	20.85	25.08	0.42	46	2ND PHASE 2005
196	"	GANDE FULANI	8.76	17.53	1.1	40	2ND PHASE 2005
197	"	TASHAR KARE	7.92	26.97	0.22	36	2ND PHASE 2005
198	"	COMM ARABIC SCHOOL KANK	2.76	42.22	0.21	49	2ND PHASE 2005
199	"	JATAKA	23.76	25.91	0.2	52	2ND PHASE 2005
200	MAJADUA	UNGWIWAR TOKA	26.8	2.7	1	51	2ND PHASE 2005
201	"	WALAWA	31	1.8	1	51	2ND PHASE 2005
202	"	GIDAN TAKI	30.4	8.23	0.6	51	2ND PHASE 2005
203	"	KURCHI	18.2	6.98	0.25	51	2ND PHASE 2005
204	"	BUMBUM	40.02	2.78	0.3	51	2ND PHASE 2005
205	"	SAITAWA	22.3	6.8	1	51	2ND PHASE 2005
206	ZANGO	YAKUBAWA	27.1	2.95	0.6	51	2ND PHASE 2005
207	"	ROGOGO	35.2	7.8	0.3	51	2ND PHASE 2005
208	"	KOMO	13.5	10.61	1.2	51	2ND PHASE 2005
209	"	MAKYAWA	8.1	6.05	0.25	51	2ND PHASE 2005
210	"	MADAKA	7.5	10.81	0.25	51	2ND PHASE 2005
211	"	JAMAAR M SANI	28.2	5.4	0.3	51	2ND PHASE 2005
212	DANMUSA	AMARAWA	18.2	2.8	1.2	51	2ND PHASE 2005
213	"	GDSS YANTUMAKI	10	15.1	1	51	2ND PHASE 2005
214	"	GDSS DANMUSA	15.5	13	0.4	45	2ND PHASE 2005
215	"	BARZA	8.75	6.16	0.3	51	2ND PHASE 2005
216	"	BICCI	6.7	9.48	1	51	2ND PHASE 2005
217	"	DANTAKURI	19	10.9	0.3	45	2ND PHASE 2005
218	MALUMFASHI	DANSARAI	3.45	24.06	0.21	57	2ND PHASE 2005
219	"	G-ROKO	8.25	27.55	0.3	57	2ND PHASE 2005

S/No.	(LGA)	LOCATION	STATIC WATER LEVEL(m)	DRAW DOWN(m)	YIELD(L/S)	DRILLING DEPTH(m)	DATA COMPL..
220	"	MARARRABAR KANKARA	7.05	18.65	1.05	53	2ND PHASE 2005
221	"	YABA	15.82	19.32	0.42	53	2ND PHASE 2005
222	"	YABA	15.25	19.09	0.36	53	2ND PHASE 2005
223	"	ZUZZURFA	1.45	21.92	0.21	52	2ND PHASE 2005
224	"	GDSS DAYI	7.47	7.83	1.21	54	2ND PHASE 2005
225	"	UNGUWAR DIGO	24.1	10.64	0.44	52	2ND PHASE 2005
226	"	ML SECRETARIAT	1.41	26.94	0.72	60	2ND PHASE 2005
227	"	HAYIN BISO	9.95	18.89	0.2	43	2ND PHASE 2005
228	"	YALMAKIYAYI	8.16	20.64	0.2	57	2ND PHASE 2005
229	"	RUGAR WAJE	10.68	19.6	0.81	55	2ND PHASE 2005
230	KANKARA	DANLAWAL LABI	8.24	27.06	0.8	50	2ND PHASE 2005
231	"	GIDAN NAMUNE	11.24	1.56	1.3	51	2ND PHASE 2005
232	"	TASHAR MAJDUNA	17.05	15.35	0.6	45	2ND PHASE 2005
233	"	GSSS KANKARA	5.65	23.5	0.2	50	2ND PHASE 2005
234	"	GURBI	6.09	23.61	1	56	2ND PHASE 2005
235	"	NASARAWA DABYAJI	12.89	2.19	1.2	55	2ND PHASE 2005
236	"	KUKA HUDU	5.77	28.17	0.25	55	2ND PHASE 2005
237	"	BAKAWA	9.73	23.05	0.5	56	2ND PHASE 2005
238	"	DANMARUSA	11.25	14.59	0.3	33	2ND PHASE 2005
239	"	BADA'	21.04	16.76	0.2	62	2ND PHASE 2005
240	"	GIRBOBO	17.4	19.3	0.55	57	2ND PHASE 2005
241	"	GUNDAWA	12.98	14.14	0.75	56	2ND PHASE 2005
242	FUNTUA	SABON FEJI 1	5.1	10.7	2.5	57	2ND PHASE 2005
243	"	SABON FEJI 2	5.15	7.25	2.1	60	2ND PHASE 2005
244	"	SABON FEJI 3	3.55	15.15	1.1	61	2ND PHASE 2005
245	"	SABON FEJI 4	3.8	3.7	1.4	58	2ND PHASE 2005
246	"	SABON FEJI 5	3.8	11.8	1.3	48	2ND PHASE 2005
247	KATSINA	PILGRIMS W. BOARD 1	12.56	9.26	0.46	29	2ND PHASE 2005
248	"	PILGRIMS W. BOARD 2	10.6	6.9	0.4	27	2ND PHASE 2005
249	"	KATSINA CENTRAL MARKET	8.06	16.89	1.21	32.5	2ND PHASE 2005
250	"	BAKURU	13.25	2.51	0.36	26	2ND PHASE 2005
251	"	KAMBARAWA	12.69	3.92	0.3	29	2ND PHASE 2005
252	"	DNMARN PRI SCHOOL	9.41	9.82	0.7	39	2ND PHASE 2005
253	"	GIDAN DAWA	16.3	4.7	1	36	2ND PHASE 2005
254	"	G/DAWA MASALIACHI	11.1	3.61	1.06	32.5	2ND PHASE 2005
255	"	BRIMIN BADAWA/FS	6.85	3.85	1	28	2ND PHASE 2005
256	"	ABBATTORIR CEMETERY	15.63	9.32	1.06	35	2ND PHASE 2005
257	"	KWADO	10.47	1.52	1.21	30	2ND PHASE 2005
258	"	SHINKAFI	23.99	4.82	0.2	40	2ND PHASE 2005
259	MUSAWA	DANJANKU	6.75	21.14	1.3	29	3RD PHASE 2006
260	"	JIKAMSHI	4.83	45.89	0.26	53	3RD PHASE 2006
261	"	MARRARABAR MUSAWA	22.71	22.23	0.5	47	3RD PHASE 2006
262	"	BACHIRAWA	6.45	49.47	0.31	57	3RD PHASE 2006
263	"	TUGE	18.86	25.73	0.24	52	3RD PHASE 2006
264	"	KIRA	3.7	39.42	0.25	45	3RD PHASE 2006
265	MATAZU	JINFIN NAWALA	9.54	26.74	0.32	39	3RD PHASE 2006
266	"	GANGULE	21.27	11.06	0.46	36	3RD PHASE 2006
267	"	MARUJI	12.75	25.54	0.73	42	3RD PHASE 2006
268	"	SHAISKAWA	20.13	10.12	1.2	36	3RD PHASE 2006
269	"	DAURAWA	3.21	38.51	0.33	45	3RD PHASE 2006
270	"	SABON GARI	11.34	12.6	0.21	25	3RD PHASE 2006
271	KANKARA	UNGUWAR RABO	14.47	24.45	0.52	40	3RD PHASE 2006
272	"	UNGUWAR S/NOMA	16.55	18.62	0.28	37	3RD PHASE 2006
273	"	KAIKABAYAS	20.16	6.67	0.16	28	3RD PHASE 2006
274	KUSADA	DANGAMAU	20.04	23.88	0.25	45	3RD PHASE 2006
275	"	DUDUNNI	16.32	34.62	0.22	52	3RD PHASE 2006
276	"	JOFALAWA	18.43	13.85	1.4	41	3RD PHASE 2006
277	"	JERI	17.21	29.62	0.18	49	3RD PHASE 2006
278	"	MAIRANE	18.43	28.16	0.88	52	3RD PHASE 2006
279	"	KUSADA	18.06	26.19	1.02	46	3RD PHASE 2006
280	DUTSINMA	TUDUN DOLE	20.76	5.42	0.25	45	3RD PHASE 2006
281	"	GIZAWA	13.95	26.34	0.22	46	3RD PHASE 2006
282	"	YAN AIBASA	15.49	23.44	1.4	42	3RD PHASE 2006
283	"	SANAWA	8.29	14.46	0.18	36	3RD PHASE 2006
284	"	SALIHAWA	8.01	29.91	0.88	39	3RD PHASE 2006
285	"	FARARU	13.83	29.34	1.02	45	3RD PHASE 2006
286	KURFI	S/GARIN BURABURA	13.81	17.11	0.44	33	3RD PHASE 2006
287	"	TUDAWA	23.48	16.21	0.31	41	3RD PHASE 2006
288	"	BIRCHI	4.95	16.88	0.55	33	3RD PHASE 2006
289	"	SUDA	8.04	31.1	0.21	42	3RD PHASE 2006
290	"	KUFRI	5.01	18.88	0.22	25	3RD PHASE 2006
291	DAMUSA	GIDAN CHIRAI	31.65	7.49	0.73	45	3RD PHASE 2006
292	KATSINA	NASARAWA K/DURBI	8.14	1.94	1.3	27	3RD PHASE 2006
293	"	UNGUWAR MADAWAKI	10.36	4.58	1.3	31	3RD PHASE 2006
294	"	SCH. OF NURSING	10.11	9.86	1.3	23	3RD PHASE 2006
295	"	YAR'ADUA B	6.55	1.94	1.3	23	3RD PHASE 2006
296	"	DA'AWA ISL. SCH	4.14	1.29	1.3	23	3RD PHASE 2006
297	"	INWALA	9.48	16.44	1.2	28	3RD PHASE 2006
298	"	GDSS KAMBARAWA	10.98	14.96	0.23	28	3RD PHASE 2006
299	"	TUDUN WADA	10.77	10.19	0.7	24	3RD PHASE 2006
300	"	DUTSIN AMARE	6.99	13.49	0.52	23	3RD PHASE 2006
301	BAKORI	KANDARAWA	15.06	2.79	1.3	50	3RD PHASE 2006
302	"	GANGAREN NAKURDI	13.94	1.56	1.3	32.5	3RD PHASE 2006
303	"	DUTSEN REME	4.73	26.72	1.77	65.5	3RD PHASE 2006
304	"	LAYIN MAHAUTA	6.23	25.63	0.76	51	3RD PHASE 2006
305	"	MAKURDI	14.95	27.49	0.61	50	3RD PHASE 2006
306	"	KURAMI	5.78	30.5	0.45	52	3RD PHASE 2006
307	"	GGASS KABOMO	8.3	28.89	0.53	52	3RD PHASE 2006
308	"	NARABAR DANJA	4.66	27.42	0.44	56	3RD PHASE 2006
309	"	KURAMI MAKERA	14.03	26.45	0.65	57	3RD PHASE 2006
310	"	UNGUWAR LAMIDO	14	34.35	0.65	60	3RD PHASE 2006
311	"	MAKERA	9.7	27.3	0.53	56	3RD PHASE 2006
312	"	FGGS BAKORI	7.02	27.2	0.43	48	3RD PHASE 2006
313	DANJA	DANMAIGWAUTA	7.04	26.45	1	57	3RD PHASE 2006
314	"	LAYIN MAHAUTA	7.66	19.14	1.1	50	3RD PHASE 2006
315	"	KAROFI	9.34	19.26	0.4	58	3RD PHASE 2006
316	"	UNGUWAR SODANGI	8.31	21.43	0.43	55	3RD PHASE 2006
317	"	HAYIN BAZANGA	10.4	22.05	0.44	57	3RD PHASE 2006
318	"	BAGARUWA	6.81	21.89	0.4	55	3RD PHASE 2006
319	"	MANGORO BABBAN PAFI	3.82	21.93	0.41	60	3RD PHASE 2006
320	"	KOKI GIDAN YASUF D	7.35	23.89	0.44	58	3RD PHASE 2006
321	"	DABAI COMUN SEC. SCH.	8.35	26.35	0.42	52	3RD PHASE 2006
322	"	YARKASUWA	6.2	11.05	0.4	53	3RD PHASE 2006
323	"	TATARIN FULANI	9.3	15.81	1.33	55	3RD PHASE 2006
324	"	SABON GARI DANJA	7.71	21.54	0.4	55	3RD PHASE 2006
325	KAFUR	TIBIS	9.09	20.15	1.2	57	3RD PHASE 2006
326	"	UNGUWAR DANCIBI	6.72	6.88	2	52	3RD PHASE 2006
327	"	YANGWAURO	6.73	25.8	0.41	52	3RD PHASE 2006
328	"	UNGUWAR GARI	6.89	20.96	0.45	58	3RD PHASE 2006
329	"	MASU KWARI	4.24	21.72	0.61	57	3RD PHASE 2006

S/No.	(LGA)	LOCATION	STATIC WATER LEVEL(m)	DRAW DOWN(m)	YIELD(L/S)	DRILLING DEPTH(m)	DATA COMPL..
330	"	YARSHARU	7.34	20.3	0.42	60	3RD PHASE 2006
331	"	GIDAN TOKA	5.7	20.45	0.44	58	3RD PHASE 2006
332	"	S/L GIDAN KURA	6.64	23.9	0.43	59	3RD PHASE 2006
333	"	UNGUWAR SAURO	12.5	18.69	0.47	55	3RD PHASE 2006
334	"	BUGAWA	6.62	21.63	0.5	52	3RD PHASE 2006
335	"	MAHUTA JUMAAT MOSQUE	13.6	20.9	0.64	60	3RD PHASE 2006
336	SABUWA	INONON MALAMAI	11.1	15.32	1.07	65	3RD PHASE 2006
337	"	MADACI	6.1	11.59	2	58	3RD PHASE 2006
338	"	KABALAWA	6.47	18.93	1	58	3RD PHASE 2006
339	"	AWALA	8.33	17.87	1.6	55	3RD PHASE 2006
340	"	NASARAWAR GAMJI	6.42	22.9	1.45	57	3RD PHASE 2006
341	"	ALBASU S/GIDA	5.76	30.2	0.38	65	3RD PHASE 2006
342	"	HAYIN TABO	4.69	31.27	0.41	60	3RD PHASE 2006
343	"	U/CARBA DAMARI	6.54	30.67	0.43	62	3RD PHASE 2006
344	"	BARKISHI	5.35	27.7	0.66	60	3RD PHASE 2006
345	"	KABALAWA M/CHAKI	8.54	24.39	0.44	58	3RD PHASE 2006
346	"	BANDAGA	10.55	37.4	0.44	65	3RD PHASE 2006
347	"	MAZARE	7.76	31.36	0.45	58	3RD PHASE 2006
348	FASKARI	KADISAU	7.8	—	0.41	55	4TH PHASE 2007
349	"	KUKOKI	8.6	—	0.55	69	4TH PHASE 2007
350	"	KANON HAKI	2.5	—	1.23	49	4TH PHASE 2007
351	"	BANGORI	11.58	—	0.51	50	4TH PHASE 2007
352	"	UNGUWAR KAFIA	3.9	—	0.89	52	4TH PHASE 2007
353	"	KWAI	12.26	—	0.96	52	4TH PHASE 2007
354	"	MUNJUNU	4.86	—	0.45	52	4TH PHASE 2007
355	"	UNGUWAR TSAMIYA	4.91	—	0.43	57	4TH PHASE 2007
356	"	UNGUWAR ZUBAIRU	6.56	—	0.39	57	4TH PHASE 2007
357	"	UNGUWAR GWANKI	5.74	—	0.78	50	4TH PHASE 2007
358	"	GDSS FASKARI	2	—	1.5	53	4TH PHASE 2007
359	"	UNGUWAR BAKI	5.2	—	0.4	56	4TH PHASE 2007
360	FUNTUA	UNGUWAR FADI	2.37	—	0.75	54	4TH PHASE 2007
361	"	UNGUWAR BIRI	3.82	—	0.56	54	4TH PHASE 2007
362	"	GOVERNMENT TECH COLLEGE	1.06	—	1.8	57	4TH PHASE 2007
363	"	YARTAFKI	6.18	—	0.45	55	4TH PHASE 2007
364	"	LEDO	3.51	—	0.53	46	4TH PHASE 2007
365	"	UNGUWAR DANDADA	1.6	—	0.85	58	4TH PHASE 2007
366	DANDUME	SABUWAR UNGUWA JIRUWA	5.59	—	0.78	56	4TH PHASE 2007
367	"	UNGUWAR GYAZAMA	2.63	—	1.21	56	4TH PHASE 2007
368	"	TUDUM FILANI	18.13	—	0.41	56	4TH PHASE 2007
369	"	NASARAWAR BAWA	5.45	—	0.36	55	4TH PHASE 2007
370	"	DANMAYAKIN KAROFI	4.46	—	0.41	57	4TH PHASE 2007
371	"	KWANAR DUKE	3.21	—	0.88	50	4TH PHASE 2007
372	"	UNGUWAR KATAGE	3.68	—	1.13	52	4TH PHASE 2007
373	"	KURMIN CHAKARA	11.82	—	1.09	55	4TH PHASE 2007
374	"	ARAWA	2.19	—	0.37	52	4TH PHASE 2007
375	"	ZAGAMAWA	16.82	—	1.09	55	4TH PHASE 2007
376	"	UNGUWAR SHUAIJU	7.95	—	0.34	56	4TH PHASE 2007
377	"	UNGUWAR ALLAH NANAN	5.8	—	1.16	50.8	4TH PHASE 2007
378	KATSINA	POLO GROUND	16.53	—	1.8	38	2007(DIRECT EXECUTION)
379	"	POLO GROUND 2	16.59	—	1.8	37	2007(DIRECT EXECUTION)
380	"	DUTSIN SAFE LC MOSQUE	15.57	—	1.6	30	2007(DIRECT EXECUTION)
381	"	DUTSIN SAFE NEW LC	14.12	—	1.8	35	2007(DIRECT EXECUTION)
382	"	PRIISON YARD	9.6	—	1.5	27.5	2007(DIRECT EXECUTION)
383	"	IYATANCHI	9.3	—	1.8	23	2007(DIRECT EXECUTION)
384	"	RUWASSA HQ	12.28	—	1.5	29	2007(DIRECT EXECUTION)
385	"	DANNABASO	18.18	—	1.2	45	2007(DIRECT EXECUTION)
386	JIBIYA	BUGALE	13.86	—	0.18	43	2007(DIRECT EXECUTION)
387	"	DADDARA	17.82	—	0.18	34	2007(DIRECT EXECUTION)
388	MALUMFASHI	UNG. GALADIMA	19.74	—	0.75	39	2007(DIRECT EXECUTION)
389	"	BADAWA	14.65	—	0.24	30	2007(DIRECT EXECUTION)
390	"	UNG. FULANI DANSARAI	16.11	—	0.33	39	2007(DIRECT EXECUTION)
391	"	DOKOKI	21.01	—	0.6	40	2007(DIRECT EXECUTION)
392	"	UNG. DA'U ALHAZAWA	10.41	—	0.3	43	2007(DIRECT EXECUTION)
393	"	GDSS KARFI	13.49	—	0.18	31	2007(DIRECT EXECUTION)
394	"	GGSSS MALUMIASHI	7.47	—	1.8	21	2007(DIRECT EXECUTION)
395	BAKORI	DUTSEN REME	5.64	—	1.2	36	2007(DIRECT EXECUTION)
396	MUSAWA	GDSS DANGANI	15.16	—	0.18	27.2	2007(DIRECT EXECUTION)
397	KANKIA	GDSS KANKIA	12.96	—	0.2	28	2007(DIRECT EXECUTION)
398	BATAGARAWA	BATAGARAWA LOW COST	20.91	—	0.75	37	2007(DIRECT EXECUTION)
399	BINDAWA	LLAKI	14.52	—	0.4	28	2007(DIRECT EXECUTION)
400	"	FARU	25.32	—	0.2	36	2007(DIRECT EXECUTION)
401	MANI	GUNKI	4.95	—	0.64	35	2007(DIRECT EXECUTION)
402	"	MUSAWAR FULANI	24.16	—	1.1	37	2007(DIRECT EXECUTION)
403	"	KWATTAR KOLKODAU	17.91	—	0.2	30	2007(DIRECT EXECUTION)
404	CHARANCHI	KWARAWA	14.31	—	0.2	36	2007(DIRECT EXECUTION)
405	DUTSINMA	MARRARAB SAFANA	24.69	—	0.2	38	2007(DIRECT EXECUTION)
406	BATAGARAWA	DOGON MARKE	7.4	—	0.3	47	2007(CONTRACT)
407	"	DANDAGORO	14.4	—	0.84	38	2007(CONTRACT)
408	"	TARNO	14.1	—	0.58	47	2007(CONTRACT)
409	"	YARMANI	9.7	—	0.75	28	2007(CONTRACT)
410	"	SABON GARI	9.48	—	1.2	38	2007(CONTRACT)
411	"	TABKIN ALUMU BADAWA	20.19	—	0.2	53	2007(CONTRACT)
412	"	KAUYEN YAMMA	6.42	—	0.4	40	2007(CONTRACT)
413	DAURA	HEALTH TECHNOLOGY	22.1	—	0.7	45	2007(CONTRACT)
414	"	JUDJUN WADA	14.15	—	0.75	45	2007(CONTRACT)
415	"	SABON GARI	15.35	—	0.7	45	2007(CONTRACT)
416	"	RAHAMAWA	8.45	—	1	45	2007(CONTRACT)
417	"	TAMBUI TUDU	18.1	—	0.35	39	2007(CONTRACT)
418	"	MAZOJI GARI	17.9	—	0.62	45	2007(CONTRACT)
419	ZANGO	KAWARIN MALAMAI	13.5	—	0.75	55	2007(DIRECT EXECUTION)
420	"	YARDAJE	26.8	—	0.3	51	2007(DIRECT EXECUTION)
421	"	DARGAGE	20.95	—	—	36	2007(DIRECT EXECUTION)
422	"	GWAMBA	9.05	—	1.3	32	2007(DIRECT EXECUTION)
423	"	BARAGE	12.1	—	0.5	50	2007(DIRECT EXECUTION)
424	"	JAWOLILI	17.9	—	0.3	45	2007(DIRECT EXECUTION)
425	MAIADUA	MAITURMI SABUWA	32.4	—	0.5	47	2007(CONTRACT)
426	"	UNGUWAR LABE	17.2	—	0.4	47	2007(CONTRACT)
427	"	BANNASARA	43.2	—	0.5	55	2007(CONTRACT)
428	"	MAIKONI	19.4	—	.95	42	2007(CONTRACT)
429	"	YANHAKUM	20	—	0.84	33	2007(CONTRACT)
430	"	DANMUSA	—	—	0.3	—	2007(CONTRACT)
431	DUTSI	SOBASHI	23.35	—	0.3	42	2007(CONTRACT)
432	"	KOGON BURTU	26.8	—	0.3	47	2007(CONTRACT)
433	"	YAMEL	21.05	—	0.3	42	2007(CONTRACT)
434	"	MINAWA	9	—	0.3	44	2007(CONTRACT)
435	"	MACHINAWA	4.8	—	0.33	37	2007(CONTRACT)
436	KATSINA	FILIN SMJI	6.9	—	1	27	2007(DIRECT EXECUTION)
437	"	SABON LAYI	9.3	—	1.2	33	2007(DIRECT EXECUTION)
438	"	SHAISKAWA	7.86	—	1.2	26	2007(DIRECT EXECUTION)
439	"	KCK	7.04	—	2	26	2007(DIRECT EXECUTION)

S/No.	(LGA)	LOCATION	STATIC WATER LEVEL(m)	DRAW DOWN(m)	YIELD(L/S)	DRILLING DEPTH(m)	DATA COMPL..
440	"	ATC	14.25	—	0.29	27	2007(DIRECT EXECUTION)
441	BATAGARAWA	KABAKAWA EEC	19.47	—	0.84	33	2007(DIRECT EXECUTION)
442	"	KAURAN BAKO	—	—	—	—	2007(DIRECT EXECUTION)
443	BATSARI	SAKI JIKI	16.02	—	0.2	34	2007(DIRECT EXECUTION)
444	CHARANCHI	DOKA	19.2	—	0.2	43	2007(DIRECT EXECUTION)
445	DANMUSA	DAN-ALI	21.18	—	1.1	41	2007(DIRECT EXECUTION)
446	DUTSINMA	SHEMA	8.28	—	0.2	31	2007(DIRECT EXECUTION)
447	"	KUTAWA	6.76	—	0.29	40	2007(DIRECT EXECUTION)
448	JIBIA	YOLE	22.28	—	0.28	40	2007(DIRECT EXECUTION)
449	"	YANGERO	16.42	—	0.5	34	2007(DIRECT EXECUTION)
450	KAITA	NAHUTA	—	—	—	—	2007(DIRECT EXECUTION)
451	KURFI	DADAWA	—	—	—	—	2007(DIRECT EXECUTION)
452	RIMI	ABUKUR	14.4	—	0.25	36	2007(DIRECT EXECUTION)
453	"	YARGWAMNA	25.95	—	0.52	39	2007(DIRECT EXECUTION)
454	SAFANA	TSASKIA	2.23	—	0.2	32	2007(DIRECT EXECUTION)
455	DAURA	SUDUJE GDSS	16.41	—	0.3	29	2007(DIRECT EXECUTION)
456	BAURE	GARKI	25.29	—	1.1	34	2007(DIRECT EXECUTION)
457	BINDAWA	SCIENCE SEC SCH. BINDAWA	18.01	—	0.48	39	2007(DIRECT EXECUTION)
458	DUTSI	DAN AUNAI	—	—	—	—	2007(DIRECT EXECUTION)
459	INGAWA	BAKATANTAN	17.61	—	0.38	30	2007(DIRECT EXECUTION)
460	KANKIA	GIDAN KUNU	7.5	—	0.2	60	2007(DIRECT EXECUTION)
461	KUSADA	BARAWA	—	—	—	—	2007(DIRECT EXECUTION)
462	MAJADUA	GWAOJO-GWAJO	37.48	—	1.2	53	2007(DIRECT EXECUTION)
463	MANI	BAKANKARA	31.02	—	0.2	48	2007(DIRECT EXECUTION)
464	"	KWATTA	—	—	—	—	2007(DIRECT EXECUTION)
465	MASHI	BIRNIN-KUKA	30.22	—	1.5	47	2007(DIRECT EXECUTION)
466	SANDAMU	FAGO	16.92	—	1.2	36	2007(DIRECT EXECUTION)
467	ZANGO	YARDAJE GARI	34.92	—	0.28	54	2007(DIRECT EXECUTION)
468	FUNTUA	GANGAREN AMMANI	—	—	—	—	2007(DIRECT EXECUTION)
469	BAKORI	KADANYAR BAUSHE	—	—	—	—	2007(DIRECT EXECUTION)
470	DANDUME	TAKALIMAWE	—	—	—	—	2007(DIRECT EXECUTION)
471	DANJA	KAHUTU	—	—	—	—	2007(DIRECT EXECUTION)
472	FASKARI	KASIDAU	—	—	—	—	2007(DIRECT EXECUTION)
473	KAFUR	YARI-BORI	—	—	—	—	2007(DIRECT EXECUTION)
474	KANKARA	KETARE	—	—	—	—	2007(DIRECT EXECUTION)
475	MALUMFASHI	MAKAURACHI	—	—	—	—	2007(DIRECT EXECUTION)
476	MATAZU	GWARJO	19.32	—	0.28	40	2007(DIRECT EXECUTION)
477	MUSAWA	TABBANI	—	—	—	—	2007(DIRECT EXECUTION)
478	SABUWA	UNGUWAR BAKO	—	—	—	—	2007(DIRECT EXECUTION)
479	KUSADA	SABON RUWA PRY. SCH	5.9	—	0.35	42	UNICEF ASSISTED SCH.PJ
480	"	BARAWA PRY. SCH	11.7	—	0.38	47	UNICEF ASSISTED SCH.PJ
481	"	ZANGON YASANYA PRY. SCH	14.93	—	1.25	47	UNICEF ASSISTED SCH.PJ
482	"	SABARAWA PRY. SCH	16.1	—	0.3	62	UNICEF ASSISTED SCH.PJ
483	"	KAWARIN YASHE PRY. SCH	30.7	—	0.44	52	UNICEF ASSISTED SCH.PJ
484	"	BAURANYA PRY. SCH	17.15	—	0.5	50	UNICEF ASSISTED SCH.PJ
485	"	KUSADA PRY. SCH	8.72	—	0.36	34.75	UNICEF ASSISTED SCH.PJ
486	"	DUDUNNI PRY. SCH	7.28	—	0.7	53	UNICEF ASSISTED SCH.PJ
487	"	JOFALAWA PRY. SCH	17.58	—	0.43	52	UNICEF ASSISTED SCH.PJ
488	"	KAJKAI PRY. SCH	9.54	—	0.6	37.96	UNICEF ASSISTED SCH.PJ
489	"	YASHE PRY. SCH	13.83	—	0.35	50.8	UNICEF ASSISTED SCH.PJ
490	INGAWA	KANDAWA PRY. SCH	12.74	—	0.93	52	UNICEF ASSISTED SCH.PJ
491	"	DARA PRY. SCH	30.5	—	0.31	55	UNICEF ASSISTED SCH.PJ
492	"	YERE PRY. SCH	9.65	—	0.35	53	UNICEF ASSISTED SCH.PJ
493	"	YALLAWAL PRY. SCH	26.81	—	0.3	50	UNICEF ASSISTED SCH.PJ
494	"	ADAMAWA PRY. SCH	18.15	—	0.4	54	UNICEF ASSISTED SCH.PJ
495	"	BIDORE PRY. SCH	37.5	—	0.35	62	UNICEF ASSISTED SCH.PJ
496	"	AMALAWA PRY. SCH	36.81	—	0.32	57	UNICEF ASSISTED SCH.PJ
497	"	BARERUWA PRY. SCH	22.1	—	0.33	52	UNICEF ASSISTED SCH.PJ
498	"	KARKARKU PRY. SCH	12.04	—	1.43	55	UNICEF ASSISTED SCH.PJ
499	"	DUGUL PRY. SCH	24.02	—	0.36	55	UNICEF ASSISTED SCH.PJ
500	"	YANKAURWA PRY. SCH	16.38	—	0.43	40.88	UNICEF ASSISTED SCH.PJ
501	"	ZUCCI PRY. SCH	7.35	—	1.43	60	UNICEF ASSISTED SCH.PJ
502	"	MANOMAWA PRY. SCH	17.2	—	0.3	55.48	UNICEF ASSISTED SCH.PJ
503	KURFI	BIRCHI PRY. SCH	4.88	—	0.93	54	UNICEF ASSISTED SCH.PJ
504	"	GATARAWA PRY. SCH	2.5	—	1	47	UNICEF ASSISTED SCH.PJ
505	"	FARAR KASA PRY. SCH	6.6	—	0.3	42	UNICEF ASSISTED SCH.PJ
506	"	FADUMAWA PRY. SCH	5.6	—	0.33	54	UNICEF ASSISTED SCH.PJ
507	"	YAMARKE PRY. SCH	7.55	—	0.88	42	UNICEF ASSISTED SCH.PJ
508	"	DOKARA NOMADIC PRY. SCH	10.86	—	0.35	57	UNICEF ASSISTED SCH.PJ
509	"	MARADI AMADU PRY. SCH	5.81	—	0.6	32	UNICEF ASSISTED SCH.PJ
510	"	MUJI PRY. SCH	11.8	—	1	47.8	UNICEF ASSISTED SCH.PJ
511	"	BAMBADAWA PRY. SCH	20.56	—	0.5	40	UNICEF ASSISTED SCH.PJ
512	"	S/LAYI NOMADIC PRY. SCH	7.57	—	0.73	36	UNICEF ASSISTED SCH.PJ
513	"	WURMA MODEL PRY. SCH	10.2	—	0.25	46.72	UNICEF ASSISTED SCH.PJ
514	"	SABON GARI PRY. SCH	7.96	—	0.46	31	UNICEF ASSISTED SCH.PJ
515	DANMUSA	YANTUMAKI MODEL PRY. SCH	13.98	—	0.33	37	UNICEF ASSISTED SCH.PJ
516	"	S/G TABARAU PRY. SCH	14.42	—	0.45	34	UNICEF ASSISTED SCH.PJ
517	"	UGA MAKERA PRY. SCH	5.43	—	0.3	28	UNICEF ASSISTED SCH.PJ
518	"	KAIGAR MALAMAI PRY. SCH	4.36	—	0.88	25	UNICEF ASSISTED SCH.PJ
519	"	DANMUSA MODEL PRY. SCH	14.75	—	0.3	33	UNICEF ASSISTED SCH.PJ
520	"	YARIMAN SAFANA PRY. SCH	7.07	—	0.31	25	UNICEF ASSISTED SCH.PJ
521	"	AIDUM MANGORO PRY. SCH	17.04	—	0.32	33.5	UNICEF ASSISTED SCH.PJ
522	"	MADAWA PRY. SCH	19.4	—	1	42	UNICEF ASSISTED SCH.PJ
523	"	WURMWA PRY. SCH	7.55	—	0.53	51	UNICEF ASSISTED SCH.PJ
524	"	BARE BRIN NASANA PRY. SCH	8.95	—	0.35	46	UNICEF ASSISTED SCH.PJ
525	"	DANGEZA PRY. SCH	1.75	—	0.31	48	UNICEF ASSISTED SCH.PJ
526	"	DOMAWA PRY. SCH	19.4	—	1	42	UNICEF ASSISTED SCH.PJ
527	"	DANTUDU PRY. SCH	11.3	—	0.44	43	UNICEF ASSISTED SCH.PJ
528	"	FALALE PRY. SCH	7.2	—	1	56	UNICEF ASSISTED SCH.PJ
529	"	FARWA PRY. SCH	8.65	—	0.32	52	UNICEF ASSISTED SCH.PJ
530	BAKORI	UNG MAKERA PRY. SCH	7.52	—	0.32	28	UNICEF ASSISTED SCH.PJ
531	"	UNG LAMIDO PRY. SCH	14.73	—	0.33	32	UNICEF ASSISTED SCH.PJ
532	"	MAKURDA PRY. SCH	11.34	—	0.9	32	UNICEF ASSISTED SCH.PJ
533	"	TSIGA PRY. SCH	6.42	—	0.88	32	UNICEF ASSISTED SCH.PJ
534	"	KABOMO PRY. SCH	6.99	—	0.73	28	UNICEF ASSISTED SCH.PJ
535	"	U/ABDULBASHID PRY. SCH	10.35	—	0.64	28	UNICEF ASSISTED SCH.PJ
536	"	ADAKO PRY. SCH	6.87	—	0.56	29	UNICEF ASSISTED SCH.PJ
537	"	KURAMI PRY. SCH	6.87	—	0.44	24	UNICEF ASSISTED SCH.PJ
538	"	BADABO MODEL PRY. SCH	10.75	—	0.44	24	UNICEF ASSISTED SCH.PJ
539	"	UNG SHANTALI PRY. SCH	7.2	—	0.69	49	UNICEF ASSISTED SCH.PJ
540	"	YANSHUNI PRY. SCH	12.14	—	0.84	48	UNICEF ASSISTED SCH.PJ
541	"	RAFIN KANYA PRY. SCH	5.9	—	0.53	52	UNICEF ASSISTED SCH.PJ
542	"	UNG DOGO PRY. SCH	5.41	—	0.4	52	UNICEF ASSISTED SCH.PJ
543	"	DANMAYAKI PRY. SCH	3.52	—	0.94	50	UNICEF ASSISTED SCH.PJ
544	"	KATOGE PRY. SCH	7.55	—	0.53	50	UNICEF ASSISTED SCH.PJ
545	"	GARANGOZAI PRY. SCH	17.44	—	0.66	48	UNICEF ASSISTED SCH.PJ
546	"	MAIBAKA PRY. SCH	2.45	—	0.64	50	UNICEF ASSISTED SCH.PJ
547	"	DOOTSA PRY. SCH	5.51	—	0.6	48	UNICEF ASSISTED SCH.PJ
548	"	BABBAB PRY. SCH	6.45	—	0.33	50	UNICEF ASSISTED SCH.PJ
549	SABUWA	INONO PRY. SCH	7.21	—	0.55	35	UNICEF ASSISTED SCH.PJ

S/No.	(LGA)	LOCATION	STATIC WATER LEVEL(m)	DRAW DOWN(m)	YIELD(L/S)	DRILLING DEPTH(m)	DATA COMPL..
550	"	YARLAGWADA PRY. SCH	9.3	—	32	25	UNICEF ASSISTED SCH.PJ
551	"	KINDO PRY. SCH	5.31	—	0.94	34	UNICEF ASSISTED SCH.PJ
552	"	DUNGUN PRY. SCH	8.77	—	0.66	33	UNICEF ASSISTED SCH.PJ
553	"	GANJI PRY. SCH	9.27	—	0.38	30	UNICEF ASSISTED SCH.PJ
554	"	BAGEGA PRY. SCH	6.93	—	0.62	23	UNICEF ASSISTED SCH.PJ
555	"	DAMARI PRY. SCH	7.26	—	0.41	25	UNICEF ASSISTED SCH.PJ
556	"	GAZARI NOMADIC PRY. SCH	8.1	—	0.3	27	UNICEF ASSISTED SCH.PJ
557	"	KYAWARE PRY. SCH	—	—	—	—	UNICEF ASSISTED SCH.PJ
558	"	LABI PRY. SCH	5.87	—	0.5	50	UNICEF ASSISTED SCH.PJ
559	"	YARKAKA PRY. SCH	2.56	—	0.45	50	UNICEF ASSISTED SCH.PJ
560	"	ALH SHAREHU PRY. SCH	5.55	—	0.35	50	UNICEF ASSISTED SCH.PJ
561	"	UNG MAIWADA PRY. SCH	8.62	—	0.41	47	UNICEF ASSISTED SCH.PJ
562	"	SAYAU PRY. SCH	12.38	—	0.37	52	UNICEF ASSISTED SCH.PJ
563	"	KAWON BAWA PRY. SCH	10.9	—	0.34	47	UNICEF ASSISTED SCH.PJ
564	"	MAIGANGUNNA PRY. SCH	9.18	—	0.69	47	UNICEF ASSISTED SCH.PJ
565	"	S/U YANKINDA PRY. SCH	20.5	—	0.59	50	UNICEF ASSISTED SCH.PJ
566	"	KABALAWA PRY. SCH	3.55	—	0.57	47	UNICEF ASSISTED SCH.PJ
Total			7514.71	5331.08	375.40	24273.69	
Average			13.71	15.41	0.69	44.30	

Analysis of existing boreholes showed that static water levels averaged 13 m and ranged from 6 to 24 m. Most yields were from 30 to 40 liters per minute and the average yield was 35 liters per minute. Only Sandamu LGA was rated at about 80 liters per minute. Drilling depths ranges from 37 to 56 m, with an average depth of 47 m.

Geology in Katsina state is characterized by the Gundumi formations. These formations are high yield at shallow drilling depth. The same as in Bauchi state, the static water levels for basement rock are shallow and yield is low at 35 liters per minute. The potential for groundwater is low.

7. RESULT OF SOCIAL CONDITIONS SURVEY

Appendix 7

1 Results of Social Condition Survey

The two kinds of social condition surveys, the village survey and household survey, were conducted as in the next table to see the needs of a new borehole and possibility of establishing a water committee for operation and maintenance (O&M) at community level.

Table 1 Social Condition Survey

		Interviewee	Bauchi State	Katsina State
1	Village Survey	Village head or representative	20 villages	20 villages
2	Household Survey	Head or representative of household	40 households	40 households

The study team with RUWASSA/WATSAN Project and officers from Local Government Area (LGA) selected 1 or 2 villages from each target LGA. Villages with and without a borehole, and villages with and without a water committee were selected to compare. In each village, interview with a village head was conducted for the village survey to know the basic information about the village, and then two households were picked up randomly for the household survey to know detailed household-based information. RUWASSA/WATSAN Project staffs interviewed them by using the attached two types of questionnaires. The next tables show the summary of questionnaires and the village names where the survey was conducted. As it turned out by a trial interview that women did not know the income or expenditure of their households and roles or activities a water committee at their villages, men were mainly interviewed.

Table 2 Questions in Social Condition Survey (Village and Household Survey)

Current Condition of the target villages/households	<ul style="list-style-type: none"> Basic socio economic information of the villages (population, major economic activities, household income and expenditure etc) Water supply and water use (water sources, water quality, amount of water used, distance to the water source, costs or charges to get water etc) Health and sanitary conditions (health/sanitary facilities, water borne diseases, education on water and sanitation etc) The roles of men and women
Current Condition of the Operation and Maintenance System	<ul style="list-style-type: none"> Current operation and maintenance system for borehole (existence of water and sanitation committee, members of the committee, water charges, responsibilities of the committee) Reasons if a water and sanitation committee is not functioning
Attitudes toward Operation and Maintenance for a new borehole	<ul style="list-style-type: none"> The amount villagers are willing to pay for operation and maintenance of a new borehole Villagers' willingness to participate in operation and maintenance activities Contribution other than paying water charges

Table 3 List of Villages Surveyed

	Bauchi state		Katsina state	
	Name of LGA	Name of Village	Name of LGA	Name of Village
1	Alkaleri	Dan	Batsari	Bakon Zabo
2		Yashi		Randa
3	Bauchi	Glikiram (Anguwan Dalo)	Dutsin-Ma	Shema
4		Bishi		Kutawa
5	Gamawa	Busukuwa	Rimi	Remawa
6	Ganjuwa	Manga		Kadaji
7	Itas-Gadau	Gamsha	Safana	Salihawar Humo
8	Jama'are	Dogon Jeji		Ung. Korau
9	Katagum	Ragwam	Mashi	Jigawa
10	Bogoro	Boi		Tamillo
11		Kurun Saruata	Sandamu	Kwasdarawa

12	Shira	Yelwa		Katsayal
13	Misau	Zadawa	Zango	Yakubawa
14	TafawaBalewa	Shall		Koki
15	Toro	Zaranda	Faskari	Maigora
16		Panshanu	Kafur	Ungwar Shukau
17	Ningi	Tifi	Kankara	Mabai
18		Ari		Danmarke
19	Warji	Tiyin	Maumfashi	Hayin Gada
20		Baima		Dogon Marke

Regarding the population and number of households of villages, the data obtained from the interview was much bigger than the census date, sometimes triple or four times bigger. And the village heads did not know even the exact number of households in their villages. It is assumed that the data from the interviewed is not accurate. Thus, the census data is used in this study.

As for household income and expenditure, villagers do not manage their income and expenditure in a monthly basis. For income, they know their income roughly in a yearly basis, since their cash income comes seasonally from sales of agricultural products or occasionally from sales of livestock. For expenditure, they grasp the flow of money only in a daily basis. Therefore, the data gained in the interview was re-calculated in a monthly basis. The actual monthly income and expenditure varies every month.

Since the characteristics of the two states are different, the results of the social survey will be summarized below by state.

1.1 Results of Survey in Bauchi State

(1) Village Basic Information

There are many ethnic groups such as Hausa, Fulani, Kanuri, Girawa, Foltawa, Kare Kare, Sayawa, Boyawa, Fa'awa, Warjawa, Butawa. They believe in Islam or Christianity, and they live together in about half of the villages. They engage in agriculture, animal raring and petty trading. The size of household varies from 6 to 90 members, and the average number of family members in a household is 19. Most of men are married to one or two wives and there are averagely 10-12 children in a household and the others are adults.

Men engage in work outside home such as agriculture, gathering firewood, shopping and attending community meeting. Women mainly do housework such as caring children, washing clothes, cooking and cleaning. How to spend money is decided by men. Livestock raring is done by both, as livestock is raised in house compounds. Women spend 3 to 5 hours to do housework every day. Generally, men help housework. The role of men and women are different between Islam and Christian. For Christian, women play more active roles outside homes, and they also engage in agriculture.

The average household income per month is 31,000 Naira, which mainly comes from sales of agricultural products (eg. ground nuts, maize, beans etc), livestock (eg. cow, goat, sheep etc) or petty trading (eg processed food). The basic expenditure for food, clothes, water, sanitation and hygiene and health is 20,000. The breakdown of the total expenditure is shown in the next figure. The rest is used for other purposes or saved

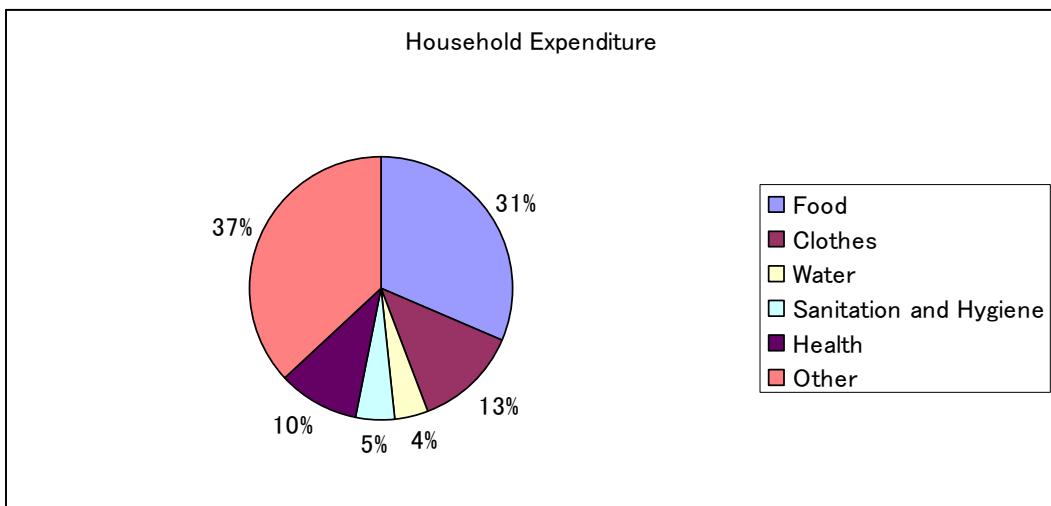


Figure 1 Household Expenditure in Bauchi

The problems they face are summarized in the next table. The big problems are water& sanitation and health.

Table 4 Problems Villages and Households Face in Bauchi

	Water & Sanitation	Money	Education	Health
Village survey	100%	45%	50%	90%
Household Survey	93%	55%	60%	78%

And the next table explains what kinds of water & sanitation problems they face. The top three problems are “little water in the dry season” “too many people use the same water source” and “water source is too far”.

Table 5 Water& Sanitation Problems in Bauchi

	Village Survey	Household Survey
Water source it too far	50%	58%
Little water in the dry season	85%	83%
Little water even in the rainy season	0%	3%
Water quality is bad	20%	35%
Too many people use the same water source	85%	58%
Poor water drainage	10%	10%
Broken/stolen parts of boreholes	10%	8%
Many children are usually sick	20%	30%
Many adults are usually sick	0%	0%
There is no latrine or too few	15%	10%
No clean clothes	0%	3%
No clean house/compounds	0%	5%

Note: each interviewee selected three options from the all.

(2) Water Sources and Water Use

The current water sources in the villages and water sources the villagers actually use are as follows. There is no big difference in the water sources between the rainy season and dry season. But it is clear that the number of water sources in the dry season is smaller than the rainy season. 35 % of villages and 40% of households buy water in particular in the dry season when enough water is not available or no one can fetch water. Normally, one jerry can costs 10 Naira. If they buy water regularly they pay 3,000 Naira per month or up to 6,000 Naira. Regarding the volume of water, 80% of the households answered that it is not enough during the dry season, 10% answered that it is not enough even in the rainy season.

Table 6 Water Sources in Villages in Bauchi

	Rainy season	Dry season
Borehole with generator	10%	10%
Solar system borehole	10%	10%
Hand pump borehole	75%	60%
Dug well	95%	75%
Pond	10%	5%
Stream/river	35%	20%
Rainwater	60%	0%
Buy water	35%	

Table 7 Water Sources Households Use in Bauchi

	Rainy season	Dry season
Borehole with generator	10%	5%
Solar system borehole	5%	5%
Hand pump borehole	60%	53%
Dug well	88%	83%
Pond	10%	3%
Stream/river	35%	18%
Rainwater	38%	0%
Buy water	40%	

Regarding the distance to the water sources, most of people use the water sources within 500m from their houses. However, 25% of the households use the water sources over 500 m away from the houses in the rainy season and over 30% in the dry season. And some even use the water sources 2,000m away from their houses.

The water quality of boreholes is ok, but the 50% of households answered that the water quality of dug wells is bad and 90% answered that the water quality of pond and stream/river is bad in terms of color, smell and taste.

Children or male adults fetch water two or three times per day. 20% take over 1 hour to fetch water. They use jerry cans or plastic buckets to fetch water and store the water in a clay pots or plastic containers with a lid. One household use 360 litters per day on the average. 18% treat water by boiling or filtering before drinking.

Table 8 Who Fetches Water in Bauchi

Who fetches water	Percentage of households
Male adult	58%
Female adult	23%
Boy	93%
Girl	78%

(3) Health and Sanitation

5% of the villages do not have any health facilities and they go to nearby health facilities which are located outside their village. Basically villagers have traditional pit latrine at house, but in 3 villages (15%), most of households do not have latrine and they defecate in the bush.

The three most common diseases are malaria, typhoid and measles. When they were asked whether they had any patients who suffered from water borne diseases in their village or household in the past one year, the answers were as follows. (Malaria or skin diseases were included to see the sanitation conditions.)

Table 9 Water Borne Diseases in Bauchi

	Village Survey	Household Survey
Cholera	25%	25%
Malaria	100%	100%
Diarrhea	60%	63%
Typhoid	100%	78%
Dysentery	70%	45%
Skin disease	30%	15%

When the villagers suffer from these diseases, they visit health center or dispensaries, some visit traditional doctors. They know that unsafe water and unclean environment is the cause of the diseases. Health posts or primary schools give workshops or lessons on hygiene and health, but 40% of the interviewees think their household members do not have enough knowledge on them. They wash their hands before eating or after using latrine. 15% answered that they do not wash hands before cooking.

(4) Water Committee and Operation and Maintenance of Boreholes

15 out of 20 villages, which have boreholes, operate and maintain their borehole as follows. In the target 14 LGAs, WATSAN Project and most of LGAs do not support communities to establish a water committee, so the villagers have established a committee on their own or use village development committee. Almost all villages have not taken technical trainings for hand pump maintenance, so they need to hire technical personnel. Maintenance fee is collected when necessary, and the average amount is N 100 at a time.

Table 10 Water Committee and Operation and Maintenance in Bauchi

	Committee in charge of O&M of boreholes	Established by	Water Facility	Water Charge (When it is not specified, water charge per household is mentioned)	Response to Minor Repair
1	Water committee	LGA	Hand pump borehole	Only when the borehole is broken down, money is collected (100~200 Naira)	Buy spare parts from LGA and hire technical personnel to fix it.
2	Water committee	LGA	Motorized borehole (generator) and hand pump	Only when the borehole is broken down, money is collected (100 Naira)	Buy spare parts and hire technical personnel to fix it.
3	Water committee	Petroleum Trust Fund	Hand pump borehole	Only when the borehole is broken down, money is collected (If the cost is high, 200 Naira for men and 100 for women is collected. If the cost is moderate, 100 Nair for each household)	Buy spare parts and ask LGA to send a staff to fix it.
4	Water committee	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected (100 Naira)	Ask LGA to sell spare parts and fix it by them selves.
5	Water committee	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected (100 Naira)	Buy spare parts and hire technical personnel to fix it.
6	Water committee	Villagers	Motorized borehole (solar) and hand pump borehole	Only when the borehole is broken down, money is collected (200 Naira)	Buy spare parts and technical personnel in the village to fix it.
7	Village development committee	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected from those who can afford (100 Naira)	Buy spare parts and ask LGA to send a staff to fix it.
8	Village development committee	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected	Buy spare parts and hire technical personnel to fix it.
9	Village development committee	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected (50 Naira)	Buy spare parts and technical personnel in the village to fix it.
10	Village development committee	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected (100~200 Naira)	Buy spare parts and hire technical personnel to fix it.
11	Village development committee	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected from those who can afford (200 Naira)	Buy spare parts and hire technical personnel to fix it.
12	Social Club	villagers	Hand pump borehole	20 Naira per week	Buy spare parts and hire technical personnel to fix it.

13	None		Hand pump borehole	Only when the borehole is broken down, money is collected (amount depends on their income)	Buy spare parts and hire technical personnel to fix it.
14	None		Hand pump borehole	Only when the borehole is broken down, money is collected	Buy spare parts and hire technical personnel to fix it.
15	None		Motorized borehole (generator and solar) & hand pump borehole	Only when the borehole is broken down, money is collected (100 Naira)	Buy spare parts and hire technical personnel to fix it.

A village head, head master, religious leader, elder and youth are nominated to those committees and they play a role of chairman, secretary and treasurer. The committees fine those who fail to attend meetings, ban children's playing or defecation around the boreholes, besides collection of water charges. The money for repair is collected by a village head or committee leader and managed by a treasurer.

40% of the villages answered that their major problem is low technical skills, 10% for current water charges are not enough to cover the repair costs, and 30% for some cannot afford to pay. One village used to have a water committee, but it did not work. The reason is the villagers were not willing to cooperate.

(5) Willingness to Participate in O/M for New Boreholes

The villages where they do not have a water committee as they have only dug wells answered that they wanted to establish a committee when they have a borehole. All the 20 villages heads and 40 household representatives answered that they were willing to pay for O&M cost of a new hand pump borehole and in addition to give other kind of contributions such as labor work. The amount they are willing to pay per month as a household is mostly 100-200 Naira and 150 Naira on the average.

1.2 Results of Survey in Katsina State

(1) Village Basic Information

Main ethnic groups of Katsina state are Hausa and Fulani. They believe in Islam, as Katsina is located in the North of Nigeria. Only one village has Christian population in this survey. Villagers engage in agriculture, animal rearing and petty trading. The size of household varies from 3 to 25 members, but the average number of family members in a household is 11. Most of men are married to one or two wives and there are about eight children in a household.

The roles of men and women play are almost the same in Bauchi state. Katshina being an Islamic state, women spend more time at home. They spend 3 to 5 hours to do housework every day. 30% answered they spend over 5 hours for housework.

The average household income per month is 16,000 Naira, which mainly comes from sales of agricultural products (eg. ground nuts, guinea corn, and millet), livestock (eg. cow, goat, and sheep) or petty trading (eg processed food). The basic expenditure for food, clothes, water, sanitation and hygiene and health is 12,800 Naira. The breakdown of the total expenditure is shown in the next figure. The rest is used for other purposes or saved

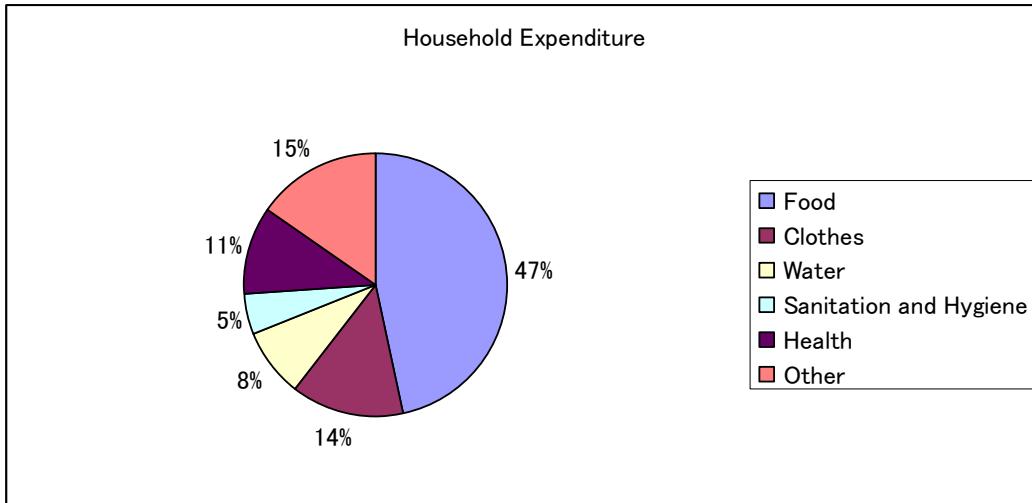


Figure 2 Household Expenditure in Katsina

The problems they face are summarized in the next table. The big problem is water& sanitation.

Table 11 Problems Villages and Households Face in Katshina

	Water & Sanitation	Money	Education	Health
Village survey	85%	35%	45%	40%
Household Survey	83%	83%	40%	33%

And the next table explains what kinds of water & sanitation problems they face. The top three problems are “little water in the dry season” “too many people use the same water source” and “water source is too far”.

Table 12 Water& Sanitation Problems in Katshina

	Village Survey	Household Survey
Water source it too far	50%	65%
Little water in the dry season	65%	73%
Little water even in the rainy season	5%	3%
Water quality is bad	30%	13%
Too many people use the same water source	60%	90%
Poor water drainage	25%	13%
Broken/stolen parts of boreholes	15%	0%
Many children are usually sick	10%	33%
Many adults are usually sick	0%	0%
There is no latrine or too few	20%	3%
No clean clothes	10%	3%
No clean house/compounds	5%	0%

Note: each interviewee selected three options from the all.

(2) Water Sources and Water Use

The current water sources are as follows. There is no big difference in the water sources between the rainy season and dry season. 15 % of villages and 23% of households buy water in particular in the dry season when enough water is not available or no one can fetch water. Normally, one jerry can costs 10 Naira. If they buy water regularly they pay from 600 Naira up to N 9,000 Naira. As for the volume of water from the water sources, 30% answered that it is not enough in the dry season and 45% answered it is not enough even in the rainy season.

Table 13 Water Sources in Villages in Katsina

	Rainy season	Dry season
Borehole with generator	15%	15%
Solar system borehole	30%	25%
Hand pump borehole	45%	45%
Dug well	65%	70%
Pond	10%	5%
Stream/river	30%	20%
Rainwater	45%	0%
Buy water	15%	

Table 14 Water Sources Villagers Use in Katsina

	Rainy season	Dry season
Borehole with generator	13%	13%
Solar system borehole	13%	13%
Hand pump borehole	35%	35%
Dug well	53%	55%
Pond	5%	5%
Stream/river	15%	13%
Rainwater	78%	0%
Buy water		23%

Regarding the distance to the water sources, most of people use the water sources within 500m from their houses. However, 20% of the households use the water sources over 500 m away from the houses.

The water quality of boreholes is ok, but the households answered that the water quality of 50% of dug wells and 90% of pond and stream/river is bad in terms of color, smell and taste.

Since Katsina is an Islamic state, boys or male adults fetch water two or three times per day. 18% take over one hour to fetch water. They use jerry cans or plastic buckets to fetch water and store the water in a clay pots, drums or plastic containers with a lid. One household use 300 litters per day on the average. 10% treat water by boiling before drinking.

Table 15 Who Fetches Water in Katsina

Who fetches water	Percentage of households
Male adult	63%
Female adult	10%
Boy	53%
Girl	20%

(3) Health and Sanitation

25% of the villages do not have any health facilities and they go to nearby health facilities which are located outside their village. Most households have a traditional pit latrine in their house.

The three most common diseases are malaria, typhoid and meningitis. The cases of water borne diseases in the past one year are as follows.

Table 16 Water Borne Diseases in Katsina

	Village Survey	Household Survey
Cholera	45%	10%
Malaria	100%	90%
Diarrhea	60%	33%
Typhoid	100%	55%
Dysentery	65%	20%
Skin disease	65%	48%

When the villagers suffer from these diseases, they visit health center or dispensaries or buy drugs, and some visit traditional doctors. They know that unsafe water and unclean environment is the cause of the diseases. Half of them have taken lessons on hygiene and health at health posts or primary schools, and 28% of the interviewees think their household members do not have enough knowledge on them. They wash their hands before eating and cooking or after using latrine.

(4) Water Committee and Operation and Maintenance of Boreholes

15 out of 20 villages, which have boreholes, operate and maintain their borehole as follows. As RUWASSA and LGAs have supported communities to establish a water committee called WASHCOM (Water, Sanitation and Hygiene Committee) and given necessary trainings, they can fix

small problems by themselves and money is collected regularly or when necessary.

Table 17 Operation and Maintenance in Katsina

	Committee in charge of O&M of boreholes	Established by	Water Facility	Water Charge (When it is not specified, water charge per household is mentioned)	Response to Minor Repair
1	WASHCOM	RUWASSA	motorized borehole (generator)& hand pump borehole	5 Naira/ jerry can	Buy spare parts fix it by themselves
2	WASHCOM	RUWASSA	Hand pump borehole	Only when the borehole is broken down, money is collected	Buy spare parts fix it by themselves
3	WASHCOM	RUWASSA	Motorized borehole (solar)	30 Naira/ week	Ask LGA to give spare parts and fix it by themselves
4	WASHCOM	RUWASSA	Hand pump borehole	20 Naira / day	Buy spare parts or ask LGA to give spare parts and fix it by themselves
5	WASHCOM	RUWASSA	Hand pump borehole	20 Naira/ week. In addition, when the borehole is broken down, money is collected	Buy spare parts or ask LGA to give spare parts and fix it by themselves
6	WASHCOM	RUWASSA	Hand pump borehole	Only when the borehole is broken down, money is collected (100 Naira)	Buy spare parts and fix it by themselves
7	WASHCOM	RUWASSA	Motorized borehole (solar) & hand pump borehole	5 Naira /day	Buy spare parts fix it by themselves
8	Water user's association	LGA	Motorized borehole (solar & generator)	3 Naira/ jerry can	
9	Water user's association	LGA	Motorized borehole (generator)	Only when the borehole is broken down, money is collected	Ask LGA to give spare parts and fix it by themselves
10	Water user's association	LGA	Motorized borehole (generator) in the next village	100 Naira/ day	
11	Water user's association	Villagers	Motorized borehole (solar) & hand pump borehole	Only when the borehole is broken down, money is collected	Buy spare parts fix it by themselves
12	Water user's association	Villagers	Hand pump borehole	Only when the borehole is broken down, money is collected (300 Naira)	Buy spare parts fix it by a plumber in the village
13	Water committee	Village head	Motorized borehole (solar) & hand pump borehole	Only when the borehole is broken down, money is collected (200-300Naira)	Buy spare parts fix it by themselves
14	None (Youth club takes some responsibilities)		Motorized borehole (solar)	Only when the borehole is broken down, money is collected (100 Naira)	Ask LGA to give spare parts and fix it by themselves
15	None		Hand pump borehole	Only when the borehole is broken down, money is collected (100 Naira)	Buy spare parts fix it by a plumber

The number of committee members is from 5 to 50. A traditional ruler, religious leader and representative from the elder, youth and women are nominated to the committees. The committees charge and collect water charge, repair boreholes. In addition, they buy diesel and fuel it in the generators for motorized boreholes, also they patrol around to prevent theft or use of the boreholes outside the working hours. (It was found during the survey that a solar system was not working because someone stole a solar panel). Water charge for operation and maintenance is collected by committee leaders and treasurers and managed by treasurers. 40% of the villages answered that their major problem is low technical skills, 10% for current water charges are not enough to cover the repair costs.

(5) Willingness to Participate in O/M for New Boreholes

The villages where they do not have a water committee as they have only dug wells answered that they wanted to establish a committee when they have a borehole. All the 20 villages and 40 household representatives answered that they were willing to pay for operation and maintenance. The amount they are willing to pay per month as a household is mostly 100-200 Naira and 140 Naira on the average.

1.3 Summary of the Social Condition Survey

(1) Needs of New Hand Pump Boreholes

Both the villages and households have the perception that water and sanitation is the biggest problem they face. In particular, the serious problems are as following; they do not have enough water in the dry season, too many people use the same water sources, which make them take time to fetch water, and it is far to water sources. It was found that many households buy water from water venders because water sources, such as boreholes, dug wells and rivers, dry up or the water volume from the water sources becomes low in the dry season, which also makes the water quality bad. If they regularly buy water, their expenditure for water is considerably big, for instance one household pays 3,000-9,000 Naira /month. With new boreholes, their water expenditure will become less, and they are expected to regularly pay the new water charges for the new boreholes (The households which buy water answered the bigger amount for the willingness to pay according to the social condition survey). The survey was conducted in the dry season and the existing water sources were observed. Some boreholes, river and ponds were cloudy so that it was not appropriate for drinking. So many people use the same water sources that people have to queue to fetch water, and sometimes they cannot have enough water.

Although they answered that the distance to water sources are far, most of people use the water sources within 500m from their homes. The reason is that they tend to use dug wells which are inside the houses or near the houses rather than to use boreholes which provide safe water but are located far away from the houses. As a consequence, even though there are boreholes in the villages, the households do not use them very much (Table 6, 7, 13, 14). Villagers sometimes do not know the existence of water committees in their villages, if they do not use boreholes. Boreholes and dug wells are located in the center of villages in many cases and even if there are several water sources, they are located close by each other. This is inconvenience for villagers who live far from the center of a village. Some households use boreholes which is located nearer to their houses in the next villages rather than boreholes in their village. When the number of water sources increases by constructing new boreholes, it is possible to give easy access to safe water to those who currently use unsafe water. However, the location of new boreholes should be considered carefully.

Although Guinea worm was not observed due to an eradication program, the prevalence rate of water borne diseases is high. There are high needs of safe water. But there are also needs of hygiene education. According to the village survey, the following were observed.

- There are sometimes no latrines, and people defecate in the bush.
- Villagers use space with just walls and without a pit to defecate at home.
- Livestock is raised near dug wells or water storage places, and livestock manure is observed.
- Drainage of water supply facilities is not good. The area around water supply facilities is muddy, and livestock come around to drink from a pool of drained off water.

- The distance between a latrine, dug well and kitchen is close.
- Children eat food with dirty hands

From the above facts, it is clear that there is room for improvement of the sanitary conditions in villages. The provision of safe water with hygiene education will lower the prevalence rate of the diseases.

The social condition survey confirmed the high needs of new boreholes. It is required, with the increase of number of water sources, to increase water volume, to decrease the number of people use one water source, and to give easy access to safe water to people who live far away from the safe water sources.

(2) Possibility to Establish a Functioning O&M System at Community Level

There is a difference in the performances of the several types of water committees between Bauchi and Katsina states. As explained in the next section, RUWASSA and LGAs in Katsina give generous assistance to communities, such as trainings and maintenance kits, so community members can check and repair breakdowns. Also some of the villages regularly collect money in order to buy spare parts promptly after they have breakdowns. People in Bauchi showed their willingness to check and repair by themselves, but they need to hire technical personnel or ask LGA to repair as they have never taken any training. Also the necessary amount of money for repair is collected every time when they have a breakdown. As this difference explains, it is feasible to establish a functioning O&M water system at community level if villagers take necessary trainings.

All the interviewees are willing to pay necessary costs for safe water according to the survey, and in addition, they are also willing to contribute their labor. Therefore, it is possible to collect the O&M costs. The results of the social condition survey show that people prefer to pay water charge as a household, and the percentage that people answered they are willing to pay 100-200 Naira/month is the highest (the average amount is about 150 Naira/month). The annual O&M cost of a hand pump borehole is 35,000 Naira (the number of beneficiaries of this Project is about 300 people per borehole) and the annual cost per head is 120 Naira (10 Naira/month). When the average number of people per household is ten, water charge per household is 100 Nair/month. But, when the average number of people per household is 20, water charge per household is raised to 200 Naira/ month. The average monthly household incomes in both states are different. It is about 16,000 Naira and average number of people per household in 11 in Katsina Stats, and it is about 31,000 Naira and 19 people in Bauchi State. Therefore, the water charge of 100-200 Naira/month is less than 3-5% of their average monthly household income, which is used as an indicator showing the water charge a household can afford,. However, there is a range in the average number of people per household from 2 to 90 according to the social condition survey. So, it is necessary for communities to discuss how to set water charge, for instance, whether it should be a fixed rate for all households or adjusted by the number of people in a household.

As for the better O&M system, it is needed to raise awareness of LGA and communities to have them understand that the main responsibilities of water supply facilities in the villages lie with communities, since some LGA do not expect participation of communities and some communities rely on LGAs for O&M. The custom of the rich pay O&M cost still prevails in the areas. But it is important for all to understand that safe water is not free, and it is required communities to discuss how to involve those who cannot afford O&M cost in some form.

Women expressed their opinions during the interview that women had higher needs for safe water as they stay at home and take care of their families. They also said that they wanted to have right information on water and sanitation and pay necessary costs for O&M. To encourage women to be a member of a water committee will improve the sanitary condition. Although men currently decided how to spend at home, the involvement of women will give them a chance to decide together and assure the collection of O&M cost.

2 O/M Capacity Survey

Supplementary, O&M capacity survey was conducted by interviewing RUWASSA/WATSAN project and LGAs to see how they train community members. The level how to operate and maintain boreholes at community level is different between Bauchi and Katsina as found in the social condition survey. The results of the O&M capacity survey will explain this difference.

Currently, responsibilities of state, LGA and community for O/M of water supply facilities in Bauchi and Katsina are as follows in principle.

Table 18 Responsibilities of Each Level

Level	Responsibility
Community	Daily maintenance, minor repair
LGA	Provision of spare parts and repair services when type of repair are over the capacity of community
State (RUWASSA/ WATSAN Project)	Provision of spare parts and repair services when types of repair are over the capacity of LGA

Although, LGA is basically in charge of O&M of all the boreholes or dug wells in their administration area, after the water supply facilities were constructed by the federal government or state government, they pay necessary costs for these repairs at each level. There is no clear guideline to tell in which cases they can ask for assistance from a higher level. So there are communities which ask LGA for even minor repairs.

2.1 Results of Survey in Bauchi State

(1) WATSAN Project

WATSAN project staffs have taken necessary trainings from UNICEF to be a trainer. The community mobilization & hygiene promotion department with 5 staffs is in charge of establishment of Water, Sanitation and Hygiene Committee (WASHCOM), which is a model developed by UNICEF, at community level. WATSAN project has established over 30 WASHCOMs in the UNICEF's 6 focal LGAs for the past five years and is planning to expand this model to the rest of 14 LGAs in Bauchi.

WASHCOM members are nominated from the following groups and the composition of WASHCOM is as follows.

Table 19 WASHCOM Members in Bauchi

Selected from	Composition of WASHCOM
1. Traditional Ruler	1. Chairman
1. Religious Leader	2. Secretary
2. Youth	3. Treasurer
3. Women	4. Hand pump artisan
4. Elder	5. Latrine construction artisan
5. Village head	

WATSAN Project provides the following trainings to LGA officers only in the UNICEF's focal 6 LGAs annually, and the LGA officers provide trainings to WASHCOM members.

Table 20 Training Organized by WATSAN Project

1	Technical training for maintenance of hand pump	1 day
2	Hygiene promotion (construction of latrine, hand washing, personal hygiene, prevention of water borne diseases)	1 day
3	Management and Accounting	1 day
4	How to establish WASHCOM (its member, role)	1 day

WATSAN Project uses two textbook developed by UNICEF and National Water Resource Institute for the training.¹ Maintenance kits are distributed to only LGA, not to communities.

¹ “Trainees Community Management MANUAL” and “Trainers Participatory Hygiene and Sanitation Promotion Manual”

Lack of the budget hinders WATSAN Project from monitoring WASHCOM activities regularly. But some budgets have been allocated for FY 2009 to establish WASH committee at state level for monitoring and evaluation of WASHCOM activities.

(2) Local Government

The rural water supply unit, which has about 10-30 staffs, under the works department is in charge of operation and maintenance of water supply facilities at LGA. As the 14 target LGAs of the Project are not UNICEF focal LGAs, LGA officers have not received trainings from WATSAN Project, but they have been trained somehow by the National Water Resource Institute, the federal government, the state government, and donors. Most of LGAs do not have experiences as for how to establish a water committee. Therefore, they hardly provide training courses of technical skills for operation and maintenance to communities or maintenance kits, nor explain how to establish a water committee. And some LGAs help communities even for minor repairs. This leads heavy dependency of communities on LGAs for maintenance of their water facilities. Half of LGAs answered the budget is insufficient to meet the all requests for repairs from communities. LGAs need to develop their capacity to establish a water committee which encourages communities to have a sense of ownership and to establish sufficient training courses for communities to be able to have capability of money collection and to do minor repairs by themselves in order to reduce necessary costs for repairs which is currently bourn by LGAs.

3) Community

Since establishing a formal water committee by LGA is not common in Bauchi, communities establish a water committee on their own or use another committee such as village development committee to take necessary actions to operate and maintain their boreholes. But they tend to depend on LGAs. As communities are not trained to maintain hand pump boreholes, when their boreholes are broken down, they collect money from villagers to buy spare parts and also to hire a technical personnel such as plumber to repair minor breakdowns. Money for O&M is not collected regularly but only when it is necessary. So the required amount for repair is not sometimes collected promptly.

Table 21 Summary of LGA Interview in Bauchi

	Name of LGA	Water committee	Practices of the local water committee	LGA assistance to communities	Demarcation between community and LGA	Training received	Remarks
1	Alkaleri	None	LGA trains community members only when LGA officers go to a community to repair. No provision of maintenance kit.	Community is responsible for minor repairs, and LGA is responsible for major repairs.	Hand pump maintenance and how to establish a water committee organized by UNICEF	Hand pump maintenance and how to establish a water committee organized by UNICEF	is sometimes not enough response to all repairs.
2	Bauchi	None	LGA gives technical training for O/M to selected communities which have a sense of ownership.	LGA provides spare parts and maintenance services for the all types of repairs. Community is responsible for only reporting.	Maintenance of water facilities organized by the state government	Budget sometimes insufficient to response to all repairs.	Budget is sometimes not enough response to all repairs.
3	Gamawa	None		LGA provides spare parts and maintenance services for most of repairs.	Hand pump maintenance and water control quality organized by the federal and state government	Hand pump maintenance and how to establish a water committee organized by UNICEF	Budget is sometimes not enough response to all repairs.
4	Ganjuwa	9 WASHCOM (NGO model)	Members in WASHCOM are selected from youth, elder and women group. The composition of WASHCOM is chairman, secretary, treasurer, woman leader, PR officer and auditor.	In case of WASHCOM, LGA give training on OM skills, financial record keeping and sanitation. And a maintenance kit is provided.	Community is responsible for minor repairs, and LGA is responsible for major repairs.	O/M technical skill, hygiene & sanitation and water quality from NGO.	WASH unit was established in LGA in 2004.
5	Itas-Gadau	None			LGA provides spare parts and maintenance services for most of repairs.	Hand pump maintenance and sanitation facilities organized by National Water Research Institute	
6	Jama'are	Water association	Members are consisted of village head, youth leader, religious leader and the elder. The committee is responsible for money collection and minor repairs.	LGA gives technical training for O/M.	Community is responsible for minor repairs, and LGA is responsible for major repairs.		
7	Katagum	None			LGA provides spare parts and maintenance services for most of repairs.		
8	Bogoro	10 WASHCOM	Members in WASHCOM are selected from youth, elder and women groups.	LGA gives training of hand pump maintenance	Communities are sometimes responsible for buying spare parts, and LGA is responsible for provision of spare parts and major maintenance services.	Hand pump maintenance and water quality from UNICEF	Budget sometimes not enough response to all repairs.
9	Shira	Only one water user's association	LGA trains community members only when LGA	Community is responsible for minor repairs, and LGA is	Hand pump organized	Hand pump organized	Budget is sometimes

			officers go to a community to fix a problem.	responsible for major repairs.	by the state government	insufficient response to all repairs.
10	Misau	None	LGA gives technical training for O/M.	Community is responsible for minor repairs, and LGA is responsible for major repairs.	Hand pump maintenance for trainers organized by the federal government and UNICEF	
11	Tafawa Balewa	18 WASHCOM (NGO model)	7 members in WASHCOM (4 men and 3 women selected from youth, elder and women group). They educate community members. Money for maintenance is collected when necessary.	LGA provides technical training for hand pump (3-4 days), and monitor WASHCOM activities.	Hand maintenance and financial management by NGO.	There is WASH unit in LGA. They do not have enough skilled staffs and budget for maintenance.
12	Toro	None		LGA provides spare parts and maintenance services for most of repairs.	Maintenance of water facilities organized by the state government	Budget is sometimes insufficient to respond to all repairs.
13	Ningi	A few WASHCOM (UNICEF model)		LGA gives training of hand pump maintenance and maintenance kit to only WASHCOM	Where there is WASHCOM, they buy spare parts and fix a problem by themselves. But in most villages, LGA are responsible for buying spare parts and repairs.	LGA has enough staff but their skill is low. Budget for maintenance is not enough.
14	Wariji	Water maintenance committee	Religious leader, youth and village head are the members. The composition of the committee are chairman, secretary, treasurer and PR officer	LGA trains community members only when LGA officers go to a community to fix a problem. No provision of maintenance kit.	Community is responsible for minor repairs, and LGA buys spare parts and do major repairs.	They cannot train community members nor repair all problems because of lack of budget.

2.2 Results of Survey in Katsina State

(1) RUWASSA

RUWASSA has their own model for a water committee called WASHCOM (Water, Sanitation and Hygiene Committee) for operation and maintenance of a borehole at community level, which was developed in 2003. They have established at least 20 WASHCOMs in each LGA where RUWASSA constructed boreholes. The mobilization department, which has 8 staffs (community mobilization unit-4 staff, PR unit -2 staff, hygiene unit-2 staff), is in charge of mobilization of people to establish WASHCOM. The members of WASHCOM and the composition of WASHCOM are as follows.

Table 22 WASHCOM Members in Katsina

Members of WASH COM	Composition of WASH COM
1. Traditional Ruler (5) 2. Religious Leader (5) 3. Opinion Leader (10) 4. Youth Group (20) 5. Women (10)	1. Patron (village head) 2. Chairman 3. Vice Chairman (male) 4. Vice Chairman (female) 5. Secretary 6. Treasurer 7. PR officer 8. Scheme Supervisor (2-3 people) 9. Woman Representative 10. Auditor

RUWASSA provides four kinds of training courses to WASHCOM members as follows. They also invite officers from LGA when they organize the training courses to communities.

Table 23 Trainings Organized by RUWASSA

		To Whom	Period
1	Technical training for maintenance of hand pump	Scheme supervisor	3 days
2	Financial record keeping	Chairman, secretary, treasurer	3 days
3	Hygiene education	All members	1 week
4	Demonstration (How to use borehole and latrine)	Youth and women	1-2 days

For the trainings, RUWASSA gives them two textbooks in Hausa developed by RUWASSA, one for technical skill for maintenance of hand pump and one for financial record keeping. RUWASSA also gives an essential maintenance kit and account books to every WASHCOM. RUWASSA lets WASHCOM decide among community members when and how to collect money for operation and maintenance.

RUWASSA monitors WASHCOM activities regularly with LGA officers. They usually check whether WASHCOM functions, the condition of boreholes, and accounting. If RUWASSA finds any problems, necessary actions are taken.

The PR unit under the mobilization department conducts several PR activities using radio, TV and newspaper to disseminate necessary knowledge to people, such as how to operate and maintain boreholes. A successful case of WASHCOM is publicized to other areas to encourage them to establish WASHCOM.

(2) Local Government

The rural water supply unit, which has about 10-20 staffs, under the works department is in charge of operation and maintenance of water supply facilities at LGA. There are WASHCOMs established by RUWASSA in the all 11 target LGAs. Since RUWASSA invites LGA officers to join when they organize the training courses to communities, they have already basic knowledge. LGAs have WASHCOMs in their areas, but they have not expanded this model to the other villages other than the communities where RUWASSA has intervened. Rather, 6 LGAs have their local model of a water committee, which is usual called “water user’s association”, and they have encouraged communities to establish this kind of water committee after LGAs had constructed a borehole. Their local models of water committee and WASHCOM are similar in terms of member and responsibilities such as minor

repairs and collection of money for maintenance. To make WASHCOM the standardized model in Katsina to avoid confusion, RUWASSA is planning to replace the local models with WASHCOM.

Most of LGAs provide training courses of hand pump maintenance and maintenance kits. The basic principle is that communities take responsibility of minor repairs, and LGA support them when repairs are in a bigger scale and beyond the capacity of communities. However, some LGAs pay necessary maintenance fees if it costs merely over 1,000 or 5,000 Naira. And there are LGAs which hire caretakers for boreholes by LGA budges. These cases discourage communities' willingness to participate in O&M. The table in the next page summarizes the results of the interviews with 11 LGAs.

RUWASSA is now working to establish a new department called WASH department in LGA by the end of this year. The WASH department consists of staff from the works department in charge of water supply, health department in charge of disease control, education & social service department in charge of mobilization of people, headed by the vice chairman of Local Government. The establishment of WASH department will encourage all departments concerned to work together in an integrated manner, and RUWASSA is expecting this movement will make concerned LGA officers to understand the concept of WASHCOM, a community centered operation and maintenance system, and develop capacity of communities.

Table 24 Summary of LGA Interview

	Name of LGA	Local model for water committee	Practices of the local water committee	LGA assistance to communities	Demarcation between community and LGA	Remarks
1	Batsari	Water Use's Association	Member: traditional ruler, leader of community, but no women members. Repair: Minor repair is done by community and major repair by LGA. Water charge: per container	1. technical training 2. maintenance kit and spare parts 3 establishment of youth hygiene club at every community	Minor repair is done by community and major repair by LGA.	Old spare parts are kept for inspection.
2	Dutsin-Ma	Water Use's Association	No local model. They want to expand WASHCOM model but they do not have budget to do it.		LGA does not have a local model of water committee, so they do not ask communities pay money for operation and maintenance. If repair is needed, Rural water supply unit goes and fixes the problems.	
3	Rimi					
4	Safana	Water Use's Association (over 80)	Member: traditional ruler, youth leader, community leader, religious leader, women Water Charge: when needs arise or monthly charge	technical training and maintenance kit by using RUWSSA manual	Minor repair is done by community and major repair by LGA.	
5	Mashu	Water Use's Association	Member: Head of village, councilor, secretary, community leader (women, youth), religious leader Water charge: 1 Naira/ jerry can	1. technical training for maintenance (LGA developed a manual) and maintenance kit 2. treatment of water 3. education of sanitation and hygiene	Community is responsible for minor repair and LGA is responsible for the repairs which costs over 1,000 Naira	As staffs of rural water supply unit are posted in rural areas, it is easy to monitor the condition of boreholes.
6	Sandamu	Water Use's Association at Ward level.	Water Charge: only when repairs is needed they contribute money according to their capacity	1. technical training 2. financial record keeping	When it is over communities' capacity, LGA assists them.	LGA hires many caretakers for motorized boreholes and pay 5,000-10,000 Naira /month as a salary/
7	Zango	No. There is another model		1. technical training 2 provision of spare parts		

			3. hiring guards for boreholes 4 assisting for buying fuel
	They do daily maintenance and minor repair. Water charge is 1-5 Naira /day to buy diesel. Major repair is done by LGA. They want to expand WASHCOM model to other villages.	No, but LGA is now establishing WASHCOM in other communities.	LGA intervenes when it is over community's capacity
8 Faskari	Water Use's Association for every borehole	Member: 30 people Chairmen (man & woman), traditional ruler, youth leader, elder, women Water charge: mostly only when needs arise. Sometimes monthly charge.	1. technical training 2. provision and sales of spare parts
9 Kafur	Water Use's Association	Member: youth, traditional leader Water Charge: only who are able to pay or per jerry can	Minor repair is done by community and a major repair which costs over 5,000 Naira is done by LGA.
10 Kankara	Water Use's Association	Member: youth, traditional leader Water Charge: only who are able to pay or per jerry can	Minor repair is done by community and major repair which costs over 5,000 Naira is done by LGA.
11 Muinfashi	No, but LGA wants to use WASHCOM model in other villages.	1. technical training 2. education on personal hygiene and sanitation through village health development committee	Minor repair is done by community and major repair by LGA.

(3) Community

They have some kinds of water committee for operation and maintenance purposes, such as WASHCOM and water uses association, in villages where they have boreholes. The water committees are established by RUWASSA, LGA or villagers. The committees collect regular water charges or collect money when necessary for operation and maintenance. There is no water committee if a community does not have a borehole yet. Regarding minor repairs, if community members are trained by RUWASSA or LGA, they can fix problems by themselves, and if not, they hire technical personnel such as a plumber to fix problems.

2.3 Summary of the O&M Survey

RUWASSA and LGAs in Katsina State have more experiences and they are more active in training LGA officers and community members on O&M of boreholes than WATSAN project and LGAs in Bauchi State. This difference is reflected in ownership and performances of O&M practices at community level as it was seen in the results of the social condition survey. This means that once communities are trained properly, they can be responsible for their parts. Willingness of community members to participate in O&M is important, but an effective and efficient O&M system will be established with necessary trainings on technical skills to repair hand pump boreholes or financial record keeping etc. In this sense, the role of RUWASSA/WATSAN Project and LGAs is very important to train those who do not have enough knowledge and skills. Especially, LGAs, which are closer to communities, should play a bigger role, since RUWASSA/WATSAN Project cannot provide trainings to all communities directly, nor follow up and monitor them after giving the trainings. Thus, it is required to train LGA officials as a trainer from now on.

Currently, the types of LGA assistance to communities and demarcation between LGA and communities vary from LGA to LGA. Some LGAs give excessive assistance to communities and they do not expect participation of communities. It is necessary to change this stance and encourage participation of communities in O&M because LGAs will be expected to bear the O&M costs more with the increase of the number of boreholes as planned in the both states.

Communities are responsible for daily maintenance and minor repairs. However, the types of repairs which communities ask LGA to do are different as capacity of each community varies. Likewise, the types of repairs which LGA ask State to do are different as capacity of each LGA varies. There is no clear definition which explains what kinds of repairs are beyond capacity of community or LGA. Therefore, some LGA do even easy and minor repairs.

It is necessary to clarify the roles and the scope of responsibilities regarding O&M at the all three levels, which enable the three levels to understand what they are expected to do and what are necessary skills and costs at each level. To do so, it is required for all stakeholders to discuss and decided their roles and responsibilities.

Village/Community Survey

Date _____

Name of Interviewer _____

Village No.	
Village name	
LGA	
Name of Respondent and Age	(Age)
(Respondent's) Position	
Sex of Respondent	a. Male b Female

A : Basic Information

A1. Village Population: Total _____ / male (_____), female (_____)

A2. Total number of households: _____

A3. Ethnic Group: _____

A4. Religion: _____

A5. Access to the village by car: a. paved road b. unpaved road c. no road

A6. School (and its number): a. Primary school () b. Secondary school ()

A7. Name(s) of Community-based organizations: _____

A8. What do the villagers do for their livelihood?

- a. farming b. livestock raising c. fishing d. hunting e. trading
- f. manufacturing g. handcraft h. other ()

A9. Village economy: a. subsistence economy b. cash economy c. both

A10. From what do people gain cash income?

	Please answer the main products	Average income per month from this source (if it is annual income, please indicate it)
a. selling agriculture products		
b. selling livestock		
c. selling fish		
d. selling other items		
e. work as farm labor		
f. other labor work		
g. remittances		
h. other		

A11. How much is the average cash income people gain?

N _____ /month

A12. Do the villagers have any fluctuation in their cash income in a year?

- a. yes If yes, please specify _____
- b. no

A13. How much do people spend per month? (This amount should be the total amount of the next question)

Average: N _____ /month

A14. How much do people spend for;

- a. Food: N _____ /month
- b. Clothes: N _____ /month

c. Water-related expenses (water charges, repair of well, Buy Water, Jelly can, etc) N _____ /month

d. Sanitation and hygiene-related expenses (soap, latrine construction, etc) N _____ /month

e. Health-related expenses (medicine, hospital, etc) N _____ /month

f. other () N _____ /month

A15. Where do people buy necessities?

- a. Rural Market b. City Market c. Peddler d. Other ()
- A16. What are the problems the villagers face?
 a. Water & Sanitation b. financial problem c. Education d. Health
 e. Other ()
- A17. What kind of Water & Sanitation problems does the village have?
 (Please choose the worst 3 problems)
- a. Water source is too far
 - b. Little water in the dry season
 - c. Little water even in the rainy season
 - d. Water quality is bad → d-1. Smell d-2. Color d-3. Taste d-4. Other ()
 - e. Too many people use the same water resource
 - f. Poor water drainage
 - g. Broken /stolen parts of boreholes
 - h. Many children are usually sick → (Ex. : _____)
 - i. Many adults are usually sick → (Ex. : _____)
 - j. Latrine: None/Too few
 - k. No clean clothes
 - l. No clean water-drawing containers
 - m. No clean house/compounds
 - n. Other ()

A18. What is the role of men and women?

	Men	Women
a. agriculture		
b. livestock raising		
c.gathering firewood		
d.shopping		
e.drawing water		
f.caring chirdren		
g.washing clothes		
h.cooking		
i.cleaning		
j.attending community meeting		
k.deciding how to spend money		
l.other ()		

A19. Are women the members of any kinds of organization or committee in the village?

- a. Yes b. No

B. Questions about Health Condition

- B1. What kinds of Medical facilities are in the village? (Please write the numbers.)
 a. Hospitals _____ b. Clinics _____ c. Dispensaries _____ d. Health Center/Health Post _____
 e. Drug Shops _____ f. Traditional Doctors _____
- B2. Which diseases are common in the village? Please write the top 3 diseases
 1.() 2.() 3.()
- B3. Were the villagers affected by the following diseases in the last one year?
 a. Cholera b. Guinea worm c. Malaria d. Diarrhea e. Typhoid
 f. Dysentery g. skin disease h. Other ()
- B4. What are the causes of the diseases?
 a. dirty water b. irregular weather c. bad people d. unclean food
 e. malnutrition f. other ()
- B5. How did the people cure the diseases?
 a. Self treatment b. Traditional doctor c. Mosque/Church
 d. Hospital/Clinic/Health Center e. Buy drugs f. No treatment
 g. Other ()
- B6. How do you think the villagers can prevent diseases?
 a. Clean water b. Good sanitary condition c. Good medicine
 d. nourishing foods e. Other ()
- B7. Do hospital/clinic/health center & post organize any educational activities to the villagers to give

information on water and sanitation? If yes, please answer what kinds of activities were and are available.

C. Questions about Water Supply

C1. What kinds of water source are there in the village? Please answer the numbers too.

- a. Borehole with motor pump (generator, solar, other) (Number .)
- b. Borehole with hand pump (No.) c. Dug Well (No.)
- d. Pond e. Stream/River f. Rain Water g. Other ()

C2. Does the village have enough volume of water?

- a. Yes through out the year b. Yes, only in the rainy season c. No

C3. What is the main drinking water source in the rainy season?

- a. Borehole with motor pump b. Borehole with hand pump c. Dug Well
- d. Pond e. Stream/River f. Rain Water g. Other ()

C4. How far is the main water source from the center of the village in the rainy season?

- a. less than 200m b. 200-500m c. 600-1000m d. 1100-1500m e. 1600-2000m
- f. Over 2000m

C5. How is the water quality of the main water source in the rainy season? If “Bad”, please choose the reason.

- a. Good b. OK c. Bad → 1. Water volume 2. Color 3. Smell 4. Taste

C6. What is the main drinking water source in the dry season?

- a. Borehole with motor pump b. Borehole with hand pump c. Dug Well
- d. Pond e. Stream/River f. Rain Water g. Other ()

C7. How far is the main water source from the center of the Village in the dry season?

- a. less than 200m b. 200- 500m c. 600- 1000m d. 1100-1500m
- e. 1600-2000m f. Over 2000m

C8. How is the water quality of the main source in the dry season?

- a. Good b. OK c. Bad → 1. Water volume 2. Color 3. Smell 4. Taste

C9. What kinds of container do people use to carry water from the water sources?

- a. Jerry can b. Plastic Bucket/Bowl c. Clay pot d. Calabash
- e. Iron Pail f. Other ()

C10-1. What kinds of container do people use to store water?

- a. Drum b. Plastic Container c. Clay Pot d. Clay pots fitted with taps
- e. Buckets fitted with taps f. Calabash g. Other ()

C10-2 Does the container have a lid? a. Yes b. No

C11. How do people treat water before drinking?

- a. Boil b. Filter c. No treatments d. Other ()

C12 Who fetches water?

- a. male adult b. female adult c boy d girl e.other

D. Questions about Water & Sanitation/Hygiene

D1. Is there household or public latrine in the Village?

- a. Yes b. No (Please specify the place to excrete)

D2. What type of household latrine or public latrine is in the village?

- a. Traditional Pit Latrine b. Improved Traditional Pit Latrine
- c. Ventilated Improved Pit Latrine d. Other ()

D3. How do people dispose of the excreta from the facilities?

- a. Bush b. Stream/River c. Pit latrine d. Gutter
- e. Court yard/House surrounding f. Other ()

D4. Do people wash their hands

After using the latrine?	a. Yes with soap	b. Yes without soap	c. No
Before eating?	a. Yes with soap	b. Yes without soap	c. No
Before cooking?	a. Yes with soap	b. Yes without soap	c. No
Before playing?	a. Yes with soap	b. Yes without soap	c. No

D5. Do schools give health/hygiene education to children?

- a. Yes b. No

If yes, please give details ()

D6. Do people have enough knowledge about water, sanitation and hygiene?

- a. Yes b. No
If no, please give details ()

E. Questions about Public Participation to O/M

E1. Did/Does the village have any kind of Water Committee? What is the name of the committee?

- The name of the committee _____
a. Yes, It was established in (When _____ Year) and still exists.
b. Yes, It was established in (When _____ Year) but it is not functioning now.
c. No, but we have a plan to establish it. It will be established in (When _____ Month/Year).
d. No, we do not have a plan to establish the committee.

E2. (If "a" or "b" or "c") Who encouraged you to establish the VWESC?

- a. RUWASSA/WATSAN project b.LG c.Donar/NGO (please specify)
d. ourselves e.other()

E3. (If "a" or "b"in E1) Who are/were the members of the committee and how many of them?

(Number of the committee member:)

(Member (their position:)

E4. (If "a" in E1) What is the reason the committee is still functioning

- a. People understand the importance of their contribution and pay money
b. The committee has enough capacity and skills
c. We receive assistance from outside the village
d. Other ()

E5. (If "a" in E1) Please tell us the role of the committee and rule of the committee (such as daily works, check &repair, accounting etc)

E6. (If "a" or "b" in E1) How much money did a household or individual pay as an initial contribution?

Who paid? a.. household b .individual

Amount paid

- a. less than N100 b. N100 c. N200 d. N300 e. N400
f. N500 g. over N500 h. None i.. don't know
j. other kinds of contribution (labor, material, etc Please specify)

E7. Do people regularly pay some amount of money for the water charges (for operation & maintenance (O&M)?

- a. Yes a individual b. household

1. monthly charge (N_____ per month)
2. weekly charge (N_____ per week)
3. daily charge (N_____ per day)
4. _____ Naira per jerry can
5. other _____

b. Only when repair is required, money is collected

c. No, people do not pay any money

E8. (If "Yes") How much money does each household pays regularly for Water charge (operation and maintenance) per month?

Answer Naira

- a. less than N20 b. N20-N40 c. N40-N60 d.N60-N80 e.N80-100 f. N100-140
g. 150-190 h.200-240 i.250-290 j. over 300 k. None. l. don't know
m. other kinds of contribution (labor, material, etc Please specify)

E9. (If "b" in E1) Why is the committee not functioning now?

- a. Villagers were not willing to cooperate b. Villagers didn't want to pay money
c. Villagers could not pay money
d. The committee members did not have knowledge and skills for O/M
e. Depended on support from LGA, RUWASSA, WATSAN Project
d. Other ()

E10. (If "c" in E1) How much money will household pay as an initial contribution?

- a. about N100
- b. about N200
- c. about N300
- d. about N400
- e. about N500
- f. over N500
- g. None
- h. don't know
- i. other kinds of contribution (labor, material, etc. Please specify)

E11. (If "c" in E1) How often will each household pay for the water charges (O/M)?

- a. Monthly
- b. weekly
- c. daily
- d. per jelly can
- e. When a water supply facility brakes

E12. (If "c" in E1) How much money will each household pay regularly for the water charges (O/M) per month?

- a. less than N20
- b. N20-N40
- c. N40-N60
- d. N60-N80
- e. N80-100
- f. N100-140
- g. 150-190
- h. 200-240
- i. 250-290
- j. over 300
- k. None.
- l. don't know
- m. other kinds of contribution (labor, material, etc. Please specify)

E13. (If "d" in E1) What is the reason you do not have a plan of establishing a committee?

- a. Villagers cannot afford to pay the water charges
- b. No necessity
- c. This is government responsibility
- d. Other ()

E14. (If money will be/is collected regularly) Who does/will collect the money?

- a. Village Head
- b. Committee leader
- c. Accountant/treasurer of the committee
- d. Other ()

E15. (If money will be/is collected regularly) Who does/will keep the money?

- a. Village Head
- b. committee leader
- c. Accountant /treasurer of the committee
- d. Other ()

E16. Does/Did the village receive financial or technical services of O/M, training for the operation and maintenance or sanitation/hygiene Education?

- a. Yes (Please specify)
- b. No

E17. (If "Yes") Who did/does support to Village?

- a. LGA
- b. State Government
- c. Donor/ NGO (Please specify)
- d. Other ()

E18. When the bore holes are broken, what do you do?

	Minor repair	Major Repair
a. buy spare parts and fix it by ourselves		
b. ask LGA to give spare parts but fix it by ourselves		
c. ask LGA to sell us spare parts but fix it by ourselves		
d. ask LGA to give us spare parts and fix it		

E19. If you have/had any water committee in your village, what is/was the major problem of the committee?

- a. low technical skills
- b. current water charges are not enough to cover the cost of repairs
- c. some people cannot afford to pay
- d. other()

If a new borehole is constructed and you can have safe water and stable water supply

E20. Are the villagers willing to participate in operation and maintenance activities and help the committee?

- a. Yes
- b. No

E21. If no, what is the reason?

- a. this is not our responsibility but the government
- b. I cannot afford to pay money
- c. I do not have time to do it.
- D. other ()

E22. If yes, what do you think the villagers can do?

- a. Pay money
- b. Other kind of contributions (cleaning the well etc. Please specify)
- c. other ()

E21. How much do you think the villagers are willing to pay for safe water and stable water supply per month?

- | Answer | Naira | a. individual | b. household | | |
|--|------------|---------------|--------------|------------|---------------|
| a. less than N20 | b. N20-N40 | c. N40-N60 | d. N60-N80 | e. N80-100 | f. N100-140 |
| g. 150-190 | h. 200-240 | i. 250-290 | j. over 300 | k. None. | l. don't know |
| m. other kinds of contribution (labor, material, etc. Please specify) | | | | | |

E22. Do you have any idea of the members of committee?

- a. village head b.elder c.youth d. men e.women f.other()

F. Questions about Others

F1. Does the village have any projects by other donor or NGO?

- a. Yes b. No

F2. (If "Yes") What kind of project?

- a. Water supply & Sanitation b. Education c. Health
d. Infrastructure (Ex. Road construction) e. Other ()

F3. (If "Yes") Who is operation the project?

- a. UNICEF b. NGO () c. Other ()

F4. Does the village have any community based organizations?

- a. School committee b. Health Committee c.other(). d. No

F5. If the organizations are working well, what are the reasons?

- a. Villagers are willing to cooperate b. Villagers contribute money
c. The members are motivated and have good knowledge and skills
d.assistance from outside the village (from who) e.other()

Household Survey

Date _____

Name of Interviewer _____

Village No.	
Village name	
LGA	
Name of Respondent	
Age of Respondent	
Sex of Respondent	a. Male b Female
Marital Status of Household Head	a. married (monogamous) b. married (polygamous) (the number of wives _____) c. single d. widow/widower e.divorced

A : Basic Information

A1. Household Composition (number):

Total _____ / Male adult (_____), Female adult (_____) / Boys (_____),
 Girls (_____)

A2. What is the main job of your household?

- a. farming b. livestock raising c. fishing d. hunting e. trading
 f. farm labor g. other labor work h handcraft i. other (_____)

A3. How do you mainly gain cash income?

	Please answer the main products	Average income per month from this source (if it is annual income or seasonal income, please indicate it)
a. selling agriculture products		
b. selling livestock		
c. selling fish		
d. selling other items		
e. work as farm labor		
f. other labor work		
g. remittances		
h. other		

A4. How much is the average cash income your household gain?

N _____ /month

A5. Do you have any fluctuation in your cash income in a year?

- a. yes If yes, please specify _____
 b.no

A6. How much does your household spend per month? (this amount should be the total amount of the next question)

Average: N _____ /month

A7. How much does your household spend for ;

- a. Food: N _____ /month
 b. Clothes: N _____ /month
 c. Water-related expenses (Water charges, repair, Buy Water, Jelly can, etc) N _____ /month
 d. Sanitation and hygiene-related expenses (soap, latrine construction, etc) N _____ /month
 e. Health-related expenses (medicine, hospital, etc) N _____ /month
 f. Other N _____ /month

A8. Where does your household buy necessities?

- a. Rural Market b. City Market c. Peddler d. Other (_____)

A9. What are the problems your household faces?

- a. Water & Sanitation
- b. Low Income
- c. Education
- d. Health
- e. Other ()

A10. What kind of Water & Sanitation problems does your household have?

(Please choose the worst 3 problems)

- a. Water source is too far
- b. Little water in the dry season
- c. Little water even in the rainy season
- d. Water quality is bad → d-1. Smell d-2. Color d-3. Taste d-4. Other ()
- e. Too many people use the same water resource
- f. Poor water drainage
- g. Broken/stolen parts of boreholes
- h. Many children are usually sick → (Ex. : _____)
- i. Many adults are usually sick → (Ex. : _____)
- j. Latrines: None/Too few
- k. Not clean clothes
- l. Not clean water-drawing containers
- m. Not clean house/compounds
- n. Other ()

B. Questions about Health Condition

B1. What kind of diseases your household members were affected in the last one year?

- a. Cholera
- b. Guinea worm
- c. Malaria
- d. Diarrhea
- e. Typhoid
- f. Dysentery
- g. skin disease
- h. Other ()

B2. What are the causes of the disease?

- a. dirty water
- b. irregular weather
- c. bad people
- d. unclean food
- e. malnutrition
- f. other ()

B3. How do you cure the diseases?

- a. Self treatment
- b. Traditional doctor
- c. Mosque/Church
- d. Hospital/Clinic/Health Center
- e. Buy drugs
- f. No treatment
- g. Other ()

B4. How do you think you can prevent the diseases?

- a. Clean water
- b. Good sanitary condition
- c. Good medicine
- d. nourishing foods
- e. Other ()

B5. Do hospital/clinic/health center & post organize any educational activities to the villagers to give information on water and sanitation? If yes, please answer what kinds of activities were/are available.

- a. Yes (Specify)
- b. No

C. Questions about Water Supply

C1. What kinds of water source does **your household** use? Please answer the numbers too.

- a. Borehole with motor pump (generator, solar, other) (Number.)
- b. Borehole with hand pump (No.) c. Dug Well (No.)
- d. Pond e. Stream/River f. Rain Water g. Other ()

C2. Does your household have enough volume of water?

- a. Yes through out the year
- b. Yes only in the rainy season
- c. No

C3. What is the main drinking water source in the rainy season?

- a. Borehole with motor pump
- b. Borehole with hand pump
- c. Dug Well
- d. Pond
- e. Stream/River
- f. Rain Water
- g. Other ()

C4. How far is the main water source from your house in the rainy season?

- a. less than 200m
- b. 200- 500m
- c. 600- 1000m
- d. 1100- 1500m
- e. 1600-2000m
- f. Over 2000m

C5. How is the water quality of the main source in the rainy season?

- a. Good
- b. OK
- c. Bad → 1. Water volume
- 2. Color
- 3. Smell
- 4. Taste

C6. What is the main drinking water source in dry season?

- a. Borehole with motor pump
- b. Borehole with hand pump
- c. Dug Well
- d. Pond
- e. Stream/River
- f. Rain Water
- g. Other ()

C7. How far is the main water source from your house in the dry season?

- a. less than 200m b. 200- 500m c. 600-1000m d. 1100-1500m
- e. 1600- 2000m f. Over 2000m

C8. How is the water quality of the main source in the dry season?

- a. Good b. OK c. Bad → 1. Water amount 2. Color 3. Smell 4. Taste

C9. Who usually fetch water in your family?

- a. Male adult b. Female adult c. Boy d. Girl e. Take turns
- f. Other ()

C10. How often do your household members fetch water?

- a. once a day b twice a day c more than three times a day d once every 2 days
- e. once every 3-4 days f. other ()

C11. How long does it take to fetch water?

- a. less than 20 minutes b. 30 minutes c. 45 minutes d. over 1 hour

C12. What kind of container do you use to carry the water from the water source and how many litter does the container can accommodate ?

- a. Jerry cans (℥) b. Plastic Bucket/Bowl (℥) c. Clay pot (℥)
- d. Calabash (℥) e. Iron Pail (℥) f. Other (, ℥)

C13. How much volume of water do you fetch at one time?

- a. 10ℓ b. 20ℓ c. 30ℓ d. 40ℓ e. 50-90ℓ f. 100-140 ℥ g. 150-190 ℥
- h. 200-290ℓ i. over 300 ℥

Please ask how many jerry cans do you use? _____ jelly cans

C14. How many liters of water does your household use per day?

- a. less than 40ℓ b. below 80ℓ c. below 120ℓ d. below 160ℓ
- e. below 200ℓ f. below 300ℓ. g. over 300ℓ

C15 -1. What kind of container do you use to store water?

- a. Drum b. Plastic Container c. Clay Pot d. Clay pots fitted with taps
- e. Buckets fitted with taps f. Calabash g. Other ()

C15-2 Does the container have a lid?

- a. Yes b. No

C16. How do you treat water before drinking?

- a. Boil b. filtering c. No treatment d. Other ()

C17. How many times do you clean the water containers?

- a. Every day b. Few times per week c. Few times per month
- d. Never e. Other ()

C18. Does your household pay any money to gain water?

- a. Yes b. No

C19. (If yes) For what do you pay money?

- a. Water charge for the public wells (regular payment to the water committee)
- b. Buy water (how much per month? N _____)
- c. Only when the wells are broken we pay money for repair
- d. other ()

C20. Are you satisfied with the amount of money you pay?

- a. Yes, it is reasonable b. No, it is too expensive c. other()

C21. For what do you use the fetched water ?

- a. cooking b. drinking c taking bath/shower d. washing cloth e. other

D. Questions about Water & Sanitation/Hygiene

D1. Do you have latrine in your house?

- a. Yes b. No (Specify the place to excrete)

D2. What type of latrine is it?

- a. Traditional Pit Latrine
- b. Improved Traditional Pit Latrine
- c. Ventilated Improved Pit Latrine
- d. Other ()

D3. How does your family dispose of the excreta from the facilities?

- a. Bush b. Stream/River c. Pit latrine d. Gutter
- e. Court yard/House surrounding f. Other ()

D4. Do you wash your hands

After using the latrine?	a. Yes with soap	b. Yes without soap	c. No
Before eating?	a. Yes with soap	b. Yes without soap	c. No
Before cooking?	a. Yes with soap	b. Yes without soap	c. No
Before playing?	a. Yes with soap	b. Yes without soap	c. No

D5. What do you use to clean your hands ?

- a. Water only
- b. Water & leaves
- c. Paper & leaves
- d. Water with soap
- e. Other ()

D6. How many times do you usually clean your latrine?

- a. Every day
- b. Few times per week
- c. Few times per month
- d. Never
- e. Other ()

D7. Have your household members ever taken any lessons or seminars on water/sanitation/hygiene?

- a. Yes
- b. No

D8. If yes, who was the organizer and what was the content?

(Organizer:)

(Content:)

D9. Do you think your household members have enough knowledge on water/sanitation/hygiene?

- a. Yes
- b. No

E. Questions about Participation to O/M

E1. Did/Does your village have any kind of Water Committee? And what is the name of the committee?

The name of the committee _____

- a. Yes, It was established in (When _____ year) and still exists.
- b. Yes, It was established in (When _____ year) but it is not functioning now.
- c. No, but we have a plan to established it in (When _____ month/year).
- d. No, we do not have a plan to establish the committee.

E2. (If "a"or "b") How much money did you pay as an initial contribution?

- a. Individual
- b. household
- a. less than N100
- b. N100
- c. N200
- d. N300
- e. N400
- f. N500
- g. over N500
- h. None
- i.. don't know
- j. other kinds of contribution (labor, material, etc Please specify)

E3. Do you regularly pay some amount of money for water charges (operation and maintenance)?

- a. Yes
 - a. Individual
 - b. household
 1. monthly charge N _____ per mongh
 2. weekly charge N _____ per week
 3. daily charge N _____ per day
 4. N _____ per jelly can
 5. other _____

b. When repair is required, we pay money

- c. No, we do not pay any money

E4. (If "Yes") How much money does you household pay regularly for water charges (Operation and maintenance) per month?

- | | | | |
|---------------|--------------|----------------------|--------------------|
| <u>Answer</u> | <u>Naira</u> | <u>a. individual</u> | <u>b.household</u> |
|---------------|--------------|----------------------|--------------------|
- a. less than N20
 - b. N20-N40
 - c. N40-N60
 - d. N60-N80
 - e. N80-100
 - f. N100-140
 - g. 150-190
 - h. 200-240
 - i. 250-290
 - j. over 300
 - k. None.
 - l. don't know
 - m. other kinds of contribution (labor, material, etc Please specify)

E5. Are you satisfied with the amount you pay for water ?

- a. Yes, it is ok.
- b. Yes, but we can pay more for safe water and stable water supply (how much?)
- c. No, it is expensive

E6. (If "b") Why do you think the committee is not functioning now?

- a. Villagers were not willing to cooperate
- b. Villagers didn't want to pay money
- c. Villagers could not pay money (how much was the water charges?)
- d. The committee members did not have knowledge and skills for O/M
- e. depended on support from LGA, RUWASSA, WATSAN Project
- d. Other ()

E7. (If "c") How much money will you pay as an initial contribution?

a. less than N100 b. N100 c. N200 d. N300 e. N400

f. N500 g. over N500 h. None i. don't know

j. other kinds of contribution (labor, material, etc Please specify)

E8. (If "c") How much money will you pay regularly for water charges (Operation and maintenance) per month?

a. less than N20 b. N20-N40 c. N40-N60 d. N60-N80 e. N80-100

f. N100-140 g. 150-190 h. 200-240 i. 250-290 j. over 300 k. None.

l. don't know m. other kinds of contribution (labor, material, etc Please specify)

E9. (If "c") How often will you pay the water charge (O/M)?

a. Monthly b. weekly c. daily

d. per jerry can e. When boreholes break

E10. (If "d") What is the reason you do not have a plan of establishing a committee?

a. Villagers cannot afford to pay the water charges b. No necessity

c. This is government responsibility d. Other ()

E11. (If money will be/is collected regularly) Who does/will collect the money?

a. Village Chairman b. committee leader c. Accountant/treasurer of committee

d. Other ()

E12. (If money will be/is collected regularly) Who does/will keep the money?

a. Village Chairman b. committee leader

c. Accountant and treasurer of the committee d. Other ()

E13. Does/Did the village receive financial or technical services for the operation and maintenance (O&M), training for O/M or Sanitation/hygiene Education?

a. Yes (Please specify) b. No c. don't know

E14. (If "Yes") Who did/does support to Village?

a. LGA b. State Government c. Donor/ NGO (Please specify)

d. Other ()

If a new borehole is constructed and you can have safe water and stable water supply

E15. Are you willing to participate in operation and maintenance activities and help the committee?

a. Yes b. No

E16. If no, what is the reason?

a. this is not our responsibility but the government b. I cannot afford to pay money

c. I do not have time to do it. D. other ()

E17. If yes, what do you think you can do?

a. Pay money

b. Other kind of contributions (cleaning the well etc. Please specify)

c. other ()

E18. How much are you willing to pay for safe water and stable water supply per month?

Answer Naira/ a. Individual b. household

a. less than N20 b. N20-N40 c. N40-N60 d. N60-N80 e. N80-100

f. N100-140 g. 150-190 h. 200-240 i. 250-290 j. over 300 k. None.

l. don't know m. other kinds of contribution (labor, material, etc Please specify)

E19. Do you have any idea of the members of committee?

a. village head b. elder c. youth d. men e. women f. other()

F. Questions about Other

F.1 Please tell us the roles of men and women

	Men	Women
a. agriculture		
b. livestock raising		
c. gathering firewood		
d. shopping		
e. drawing water		
f. caring children		
g. washing clothes		

h.cooking		
i.cleaning		
j.attending community meeting		
k.deciding how to spend money		
l.other ()		

(For women or For men about his wife)

F2. Do you play any role outside home?

- a. Yes b. No

F3. If yes, please specify.()

F4. How long do you spend doing housework per day?

- a. Less than 2 hrs. b. Less than 3 hrs. c. Less than 4 hrs. d. Less than 5 hrs.
e. Over 5 hrs.

F5. How often do you wash your family clothes in a week?

- a. Every day b. 5 times c. 4 times d. 3 times e. 2 times f. once a week

F6. How long do you spend doing washing clothes?

- a. Less than 1 hrs. b. Less than 2 hrs. c. Less than 3 hrs. d. Less than 4 hrs.
e. Over 4 hrs.

F7. Where do you wash clothes?

- a. at home b. at pond c.stream/river d.near well e.other ()

(For men or For women about her husband)

F8. Do you help in housework?

- a. Yes b. No

F9. (If "Yes") What kind of housework?

Please specify ()