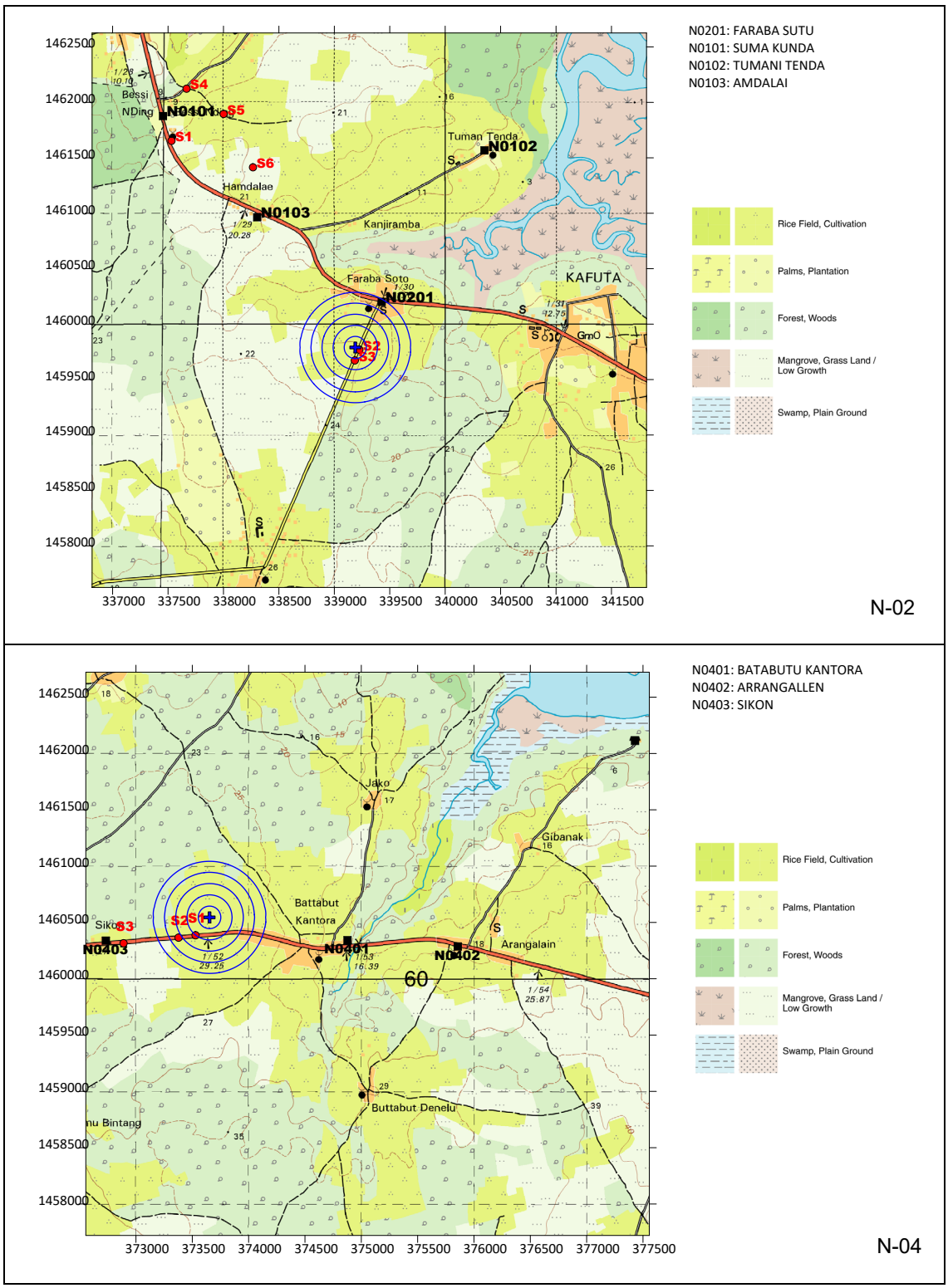
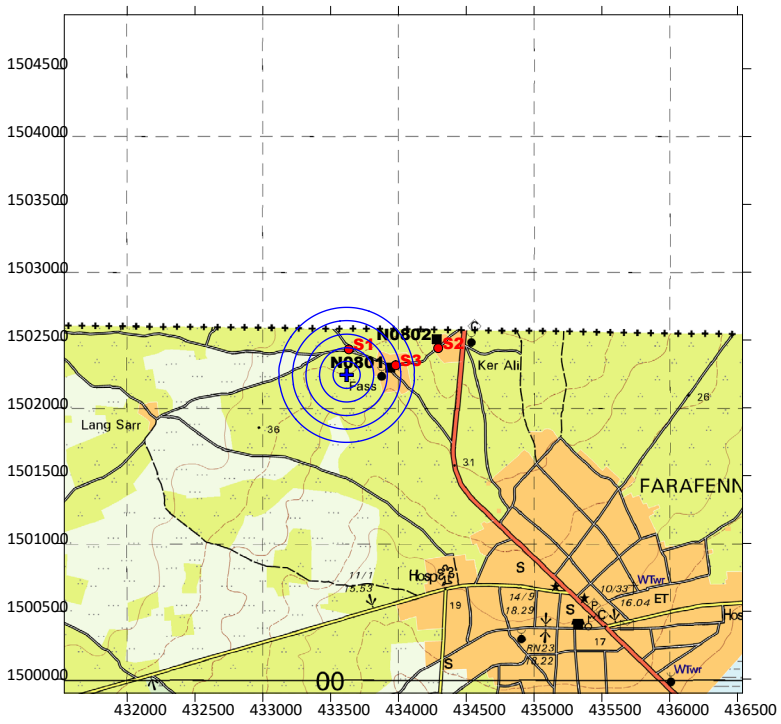
資料 7-8　試掘井掘さく位置図

試掘井掘削位置図（同心円は掘削地点からの距離を示し、最内側が 100m で再外側が 500m であり、コンター間隔は 100m）

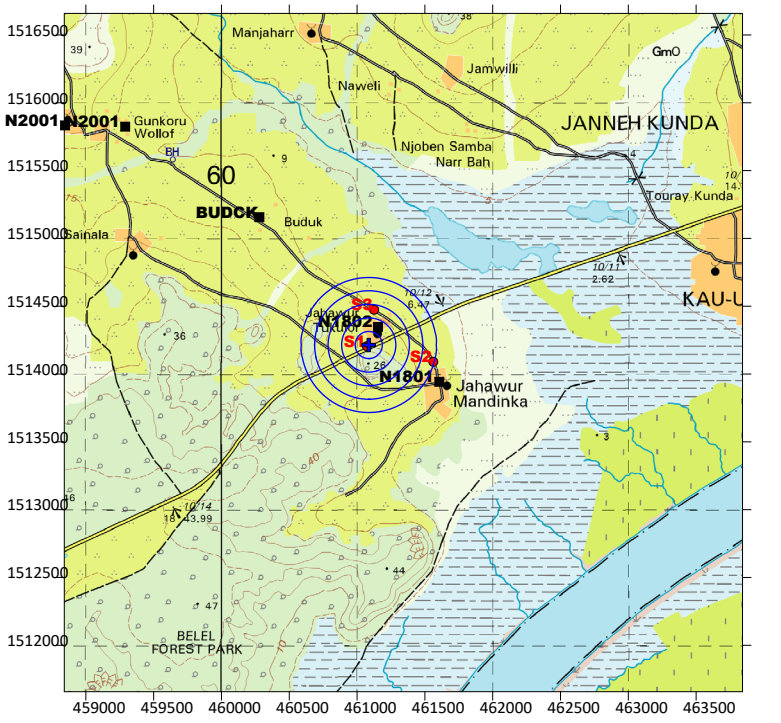




N0801: KER SULAY
N0802: KER ALI

Rice Field, Cultivation
Palms, Plantation
Forest, Woods
Mangrove, Grass Land / Low Growth
Swamp, Plain Ground

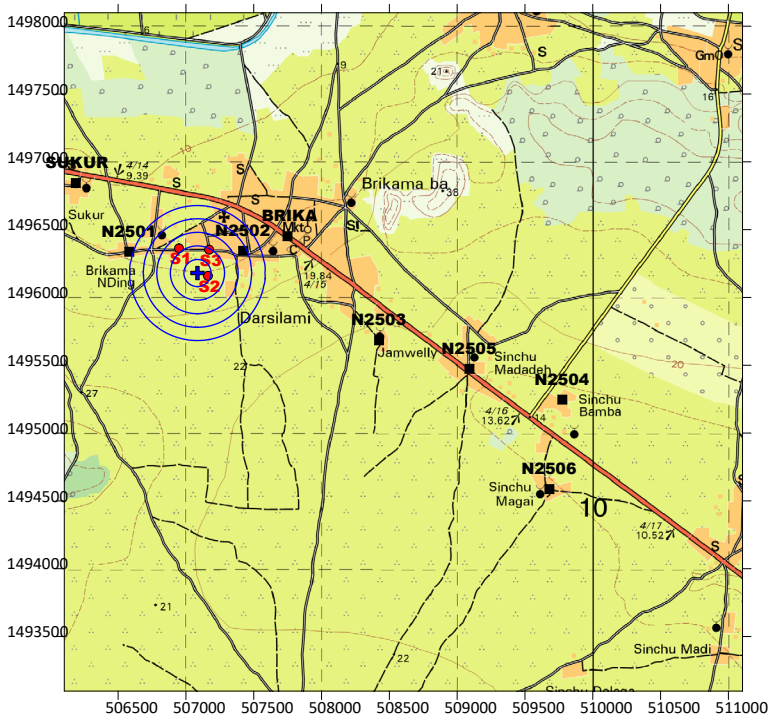
N-08



N1801: JAHAWUR MANDINKA
N1802: JAHAWUR FULA

Rice Field, Cultivation
Palms, Plantation
Forest, Woods
Mangrove, Grass Land / Low Growth
Swamp, Plain Ground

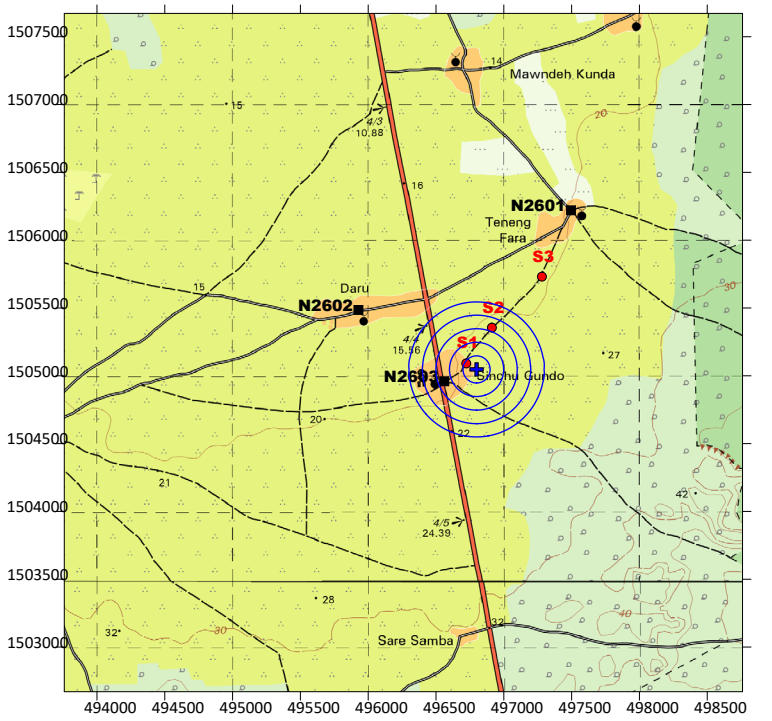
N-18



N2501: BRIKAMANDING
N2502: DARSILAMI
N2503: JAMWELLY
N2504: SINCHU BAMBA
N2505: SINCHU MADADO
N2506: SINCHU MAGAI

Rice Field, Cultivation
Palms, Plantation
Forest, Woods
Mangrove, Grass Land / Low Growth
Swamp, Plain Ground

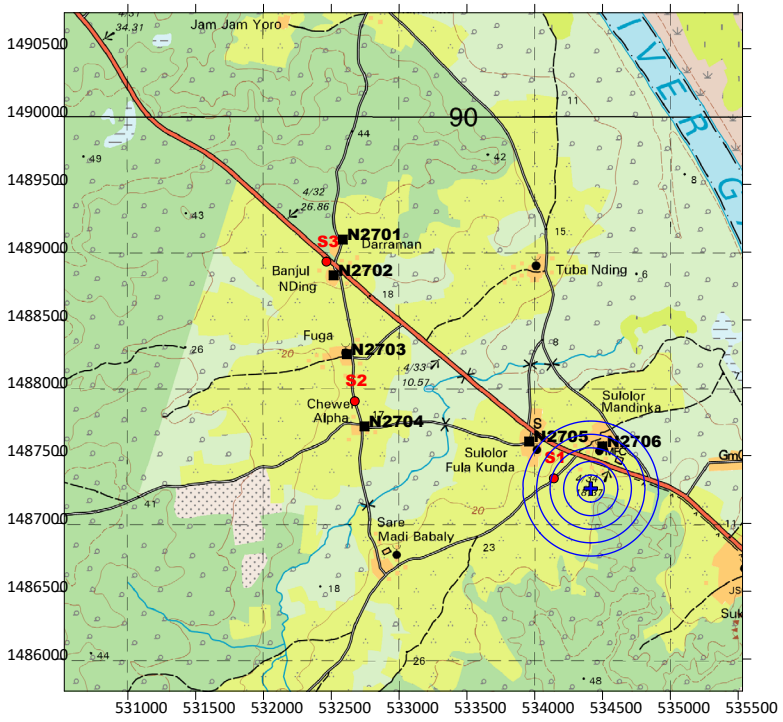
N-25



N2601: TENENG FARA
N2602: SINCHU ALAGIE
N2603: SINCHU GUNDO

Rice Field, Cultivation
Palms, Plantation
Forest, Woods
Mangrove, Grass Land / Low Growth
Swamp, Plain Ground

N-26



N2701: DRAMANI
N2702: BANJULUNDING
N2703: FUGA
N2704: CHEWEL
N2705: SOLOLO FULA
N2706: SOLOLO MANDINKA

Rice Field, Cultivation

Palms, Plantation

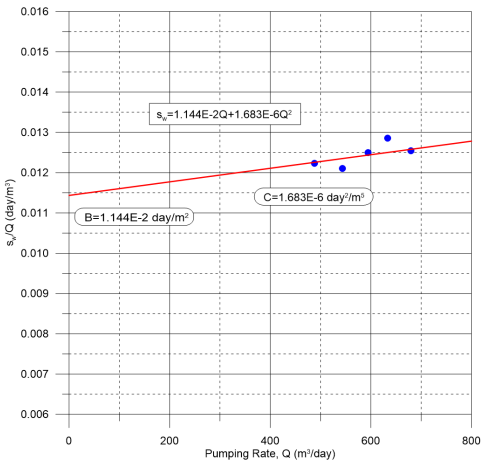
Forest, Woods

Mangrove, Grass Land / Low Growth

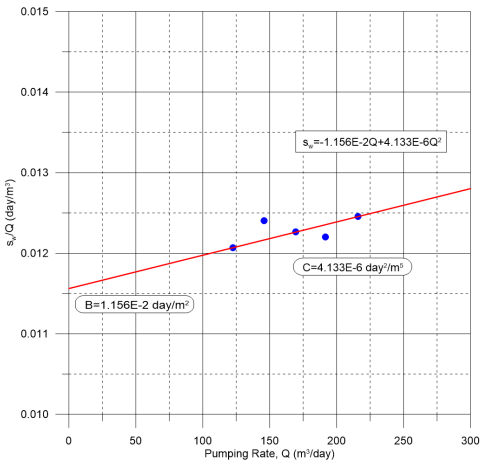
Swamp, Plain Ground

N-27

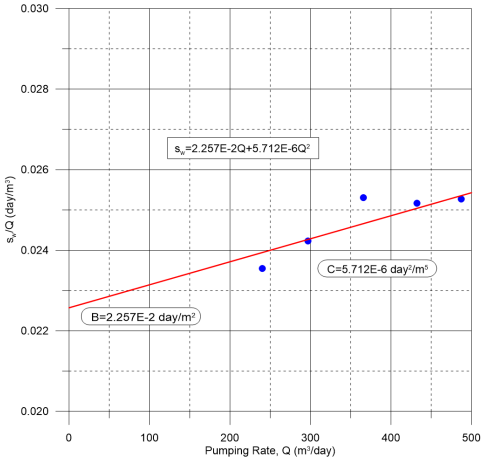
資料 7-9　段階揚水試験解析



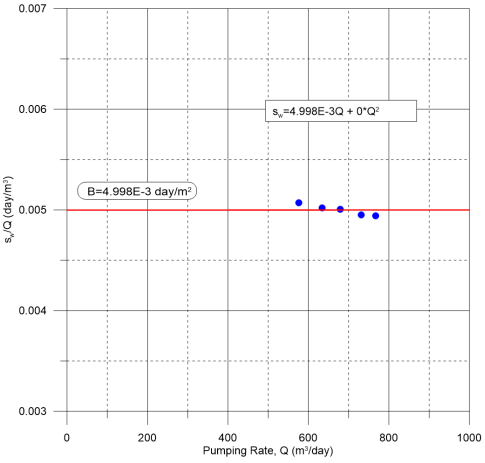
N-02



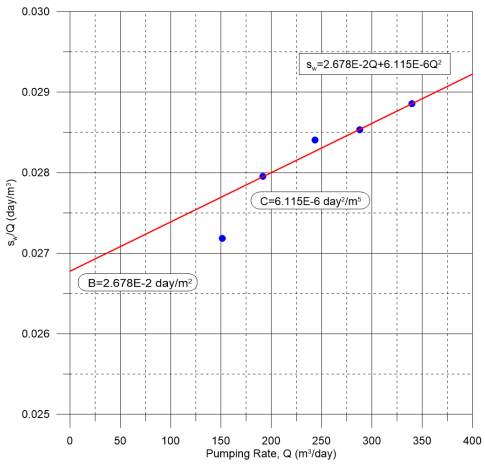
N-04



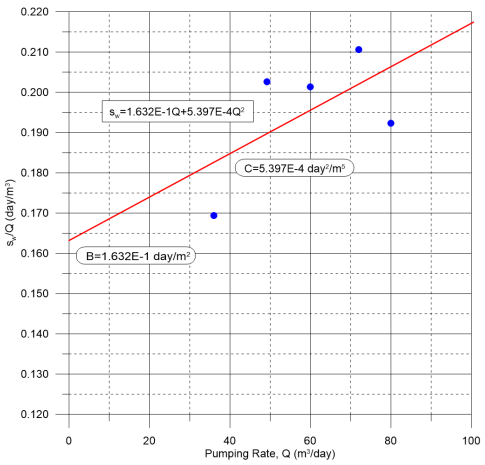
N-08



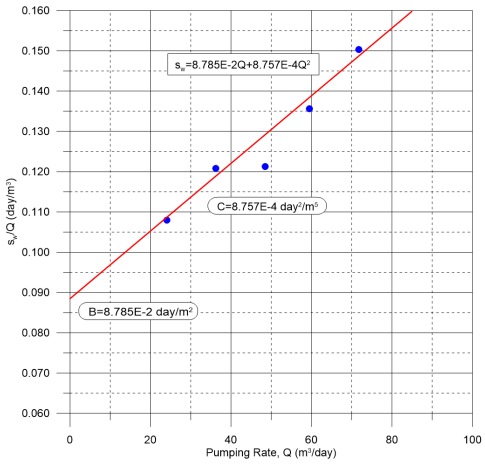
N-18


s_w=2.678E-2Q+6.115E-6Q²
C=6.115E-6 day²/m⁵
B=2.678E-2 day/m²
s_w/Q (day/m²)
Pumping Rate, Q (m³/day)

N-25

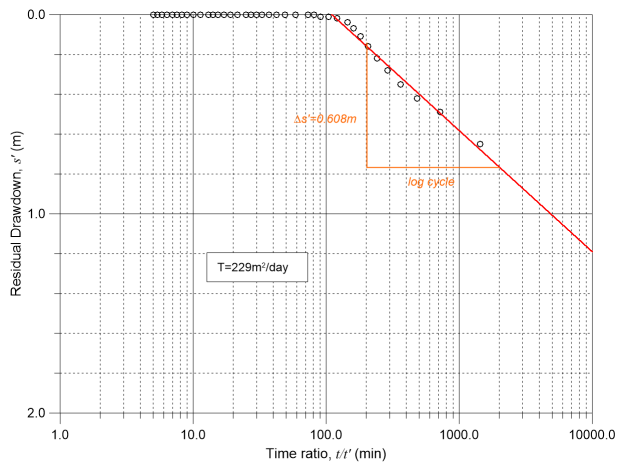

s_w=1.632E-1Q+5.397E-4Q²
C=5.397E-4 day²/m⁵
B=1.632E-1 day/m²
s_w/Q (day/m²)
Pumping Rate, Q (m³/day)

N-26

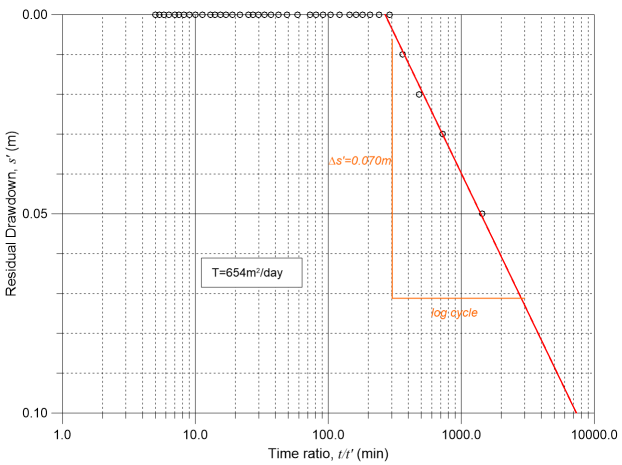

s_w=8.785E-2Q+8.757E-4Q²
C=8.757E-4 day²/m⁵
B=8.785E-2 day/m²
s_w/Q (day/m²)
Pumping Rate, Q (m³/day)

N-27

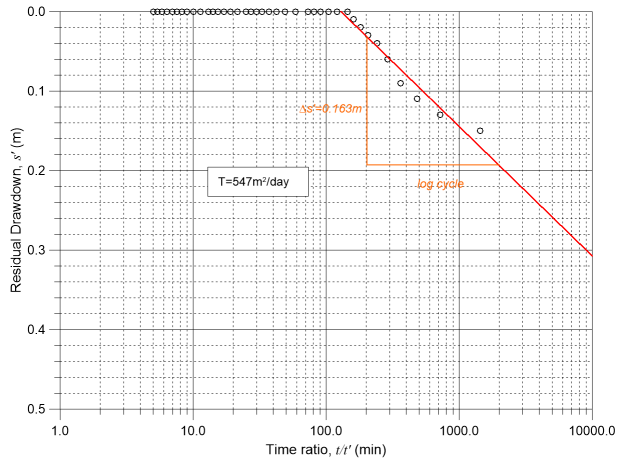
資料 7-10　回復試験解析



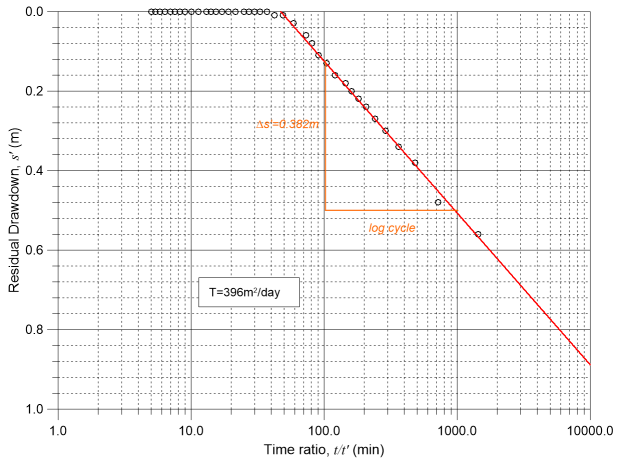
N-02



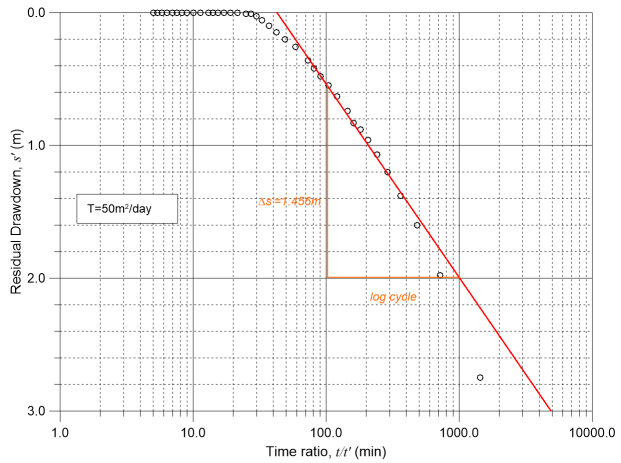
N-04



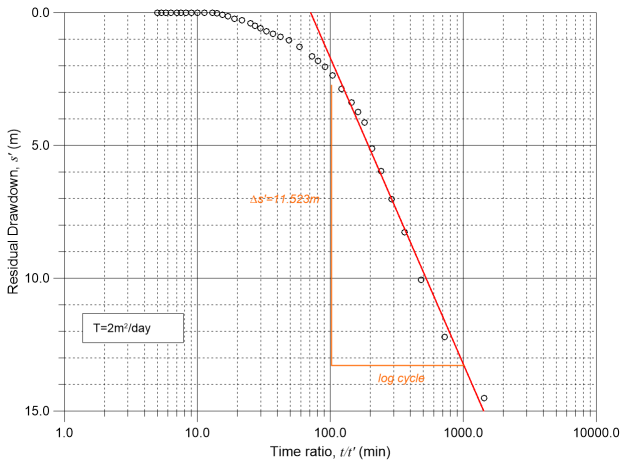
N-08



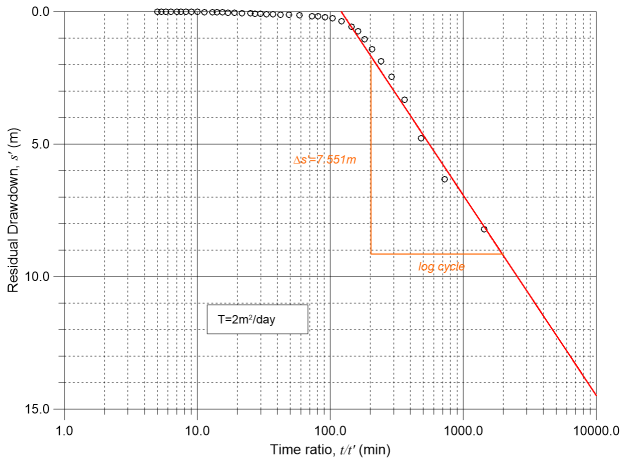
N-18


0.0
1.0
2.0
3.0
Residual Drawdown, s' (m)
T=50m²/day
Δs'=1.456m
log cycle
1.0
10.0
100.0
1000.0
10000.0
Time ratio, t/t' (min)

N-25


0.0
5.0
10.0
15.0
Residual Drawdown, s' (m)
T=2m²/day
Δs'=11.523m
log cycle
1.0
10.0
100.0
1000.0
10000.0
Time ratio, t/t' (min)

N-26


0.0
5.0
10.0
15.0
Residual Drawdown, s' (m)
Δs'=7.551m
log cycle
T=2m²/day
1.0
10.0
100.0
1000.0
10000.0
Time ratio, t/t' (min)

N-27

資料-7-11 水質試験結果

N-25 Brikamanding

WATER QUALITY MONITORING AND CONTROL LABORATORY:
DWR, ABUKO, KMC Tel:- 220 4398104/6201106/7794502

WATER QUALITY RESULTS

Location details

Town: Brikamading
Address: FMK Drilling Company Ltd
Location: Village Outskirst
District: Lower Fuladu West
Division: Central River Region

Type of sample: Borehole water
Sample taken from: The borehole

Date of Analysis: 2nd to 3rd January 2019 — ***Weather Conditions:*** *Sunny*

Parameters	Borehole # 25	WHO Guideline Values
Temperature (°C)	26.4	Acceptable
Turbidity (NTU)	< 5	<5
pH	5.60	6.5 - 8.5
pH after aeration (A.pH)	5.89	6.5 - 8.5
Electrical Conductivity (µS/cm)	28.10	1300
Total Dissolved Solids (mg/l)	18.00	1000
Salinity (promile)	0.0	NS
Colour	Absent	Absent
Odour	Normal	Normal
Taste	Normal	Normal
Suspended Solids (mg S.S./l)	1.00	Normal
Phosphate (mg PO_4^{3-}/l)	0.05	NS
Nitrate (mg NO_3^--N/l)	0.5	10
Nitrite (mg NO_2^--N/l)	0.001	0.03
Total Iron (mg $Fe^{+2/3}$/l)	0.09	0.3
Chloride (mg Cl^-/l)	1.9	250
Alkalinity (mg $CaCO_3$/l)	24.3	> 20
Free Carbondioxide (mg CO_2/l)	123	NS
Hardness (mg $CaCO_3$/l)	15.0	200
Calcium (mg Ca^{+2}/l)	6.0	200
Magnesium (mg Mg^{+2}/l)	1	150
Arsenic (mg AS+/l)	0.002	0.01
Cyainde(mgCN-/1	0.000	0.050
Mecury (Hg mg/l)	0.000	0.006
Lead (pb FC mg/1	0.000	0.01
Manganese (Mn+2/l)	0.0	0.5
Fluoride (mg F^-/l)	0.09	1.5
Copper (mg Cu^{+2}/l)	0.0	1.0
Sulphate (mg SO_4^{-2}/l)	1	250
Ammonia (mg NH_4^+/l)	0.11	0.5
Total Coliform (No./100ml)	0	Nil
Faecal Coliform (No./100ml)	0	Nil
Sanitary Survery	*Fairly clean*	*Clean, dry with good dratnage*

Remarks: NS = not set , Please note that the stipulated guideline values are meant for drinking water quality recommended by World Health Organisation (WHO).

Conclustions: *All the physico-chemical, chemical parameters tested are within the recommended guideline values set by World Health Organisation Therefore, The water is of good quality and consequently fit for consumption as well as other domestic purposes based on WHO's guideline values.*

Officer In Charge: Yaya Trawally
For Principal Scientific Officer

N-08 Ker Sulay

WATER QUALITY MONITORING AND CONTROL LABORATORY:
DWR, ABUKO KMC, Tel:- 220 4398104/6201106

WATER QUALITY RESULTS

Location details

Town: Kerr Sulay
Address: FMK Drilling Company Ltd
Location: Village Outskirst
District: Upper Badibu
Region; North Bank Region

Type of Sample: Borehole
Date of Sampling. 23rd December 2018

Date of Analysis: 28th to 29th January 2019 — ***Weather Conditions:-*** *Sunny*

Parameters	Borehole water	WHO Guideline Values
Temperature (°C)	32.4	Acceptable
Turbidity (NTU)	< 5	<5
pH	4.80	6.5 - 8.5
pH after aeration (A.pH)	5.00	6.5 - 8.5
Electrical Conductivity (µS/cm)	29.00	1300
Total Dissolved Solids (mg/l)	19.00	1000
Salinity (promile)	0.0	NS
Colour	Absent	Absent
Odour	Normal	Normal
Taste	Normal	Normal
Suspended Solids (mg S.S./l)	2.00	Normal
Phosphate (mg PO_4^{3} /l)	0.07	NS
Nitrate (mg NO_3 -N/l)	0.7	10
Nitrite (mg NO_2 -N/l)	0.003	0.03
Total Iron (mg $Fe^{+2/3}$/l)	0.15	0.3
Chloride (mg Cl /l)	2.1	250
Alkalinity (mg $CaCO_3$/l)	17.3	> 20
Free Carbondioxide (mg CO_2/l)	567	NS
Hardness (mg $CaCO_3$/l)	17.0	200
Calcium (mg Ca^{+2}/l)	6.5	200
Magnesium (mg Mg^{+2}/l)	1.1	150
Arsenic(mg AS+/l)	0.001	0.01
Cyanide(mgCN-/l)	0.0001	0.050
Mecury (Hg mg/l)	0.0002	0.006
Lead pb (FC mg/l)	0.001	0.01
Manganese (Mn+2/l)	0.0	0.5
Fluoride (mg F /l)	0.012	1.5
Sulphate (mg SO_4^{2}/l)	1	250
Ammonia (mg NH_4^{+}/l)	0.14	0.5
Total Coliform (No./100ml)	0	Nill
Faecal Coliform (No./100ml)	0	Nill
Sanitary Survery	*Fairly clean*	***Clean, dry with good drainage***

Remarks: NS = not set , Please note that the stipulated guideline values are meant for drinking water quality recommended by World Health Organisation (WHO).

Conclusions: *All the physico-chemical,chemical and microbiological parameters tested are within the recommended guideline values set by World Health Organisation apart from the low pH values which is a natural phenomenon in The Gambian groundwater quality. Therefore, the borehole-water is of good quality and consequently fit for consumption as well as other domestic purposes based on WHO's guideline Values.*

Officer In Charge: Yaya Trawally
For Principal Scientific Officer

N-27 Sololo

WATER QUALITY MONITORING AND CONTROL LABORATORY:
DWR,ABUKO, KMC Tel:- 220 4398104/7794502

WATER QUALITY RESULTS

Location details

Town: Sololo
Address: FMK Drilling Company Ltd
Location: Village Outskirst
District: Upper Fuladu West
Division: Central River Rigion

Type of Sample: Borehole
Date of Sampling. 1st Jan 2019

Date of Analysis: 6th to 7th January 2019 — *Weather Conditions:- Sunny*

Parameters	Borehole # 27	WHO Guideline Values
Temperature (°C)	23.4	Acceptable
Turbidity (NTU)	< 5	<5
pH	5.20	6.5 - 8.5
pH after aeration (A.pH)	5.45	6.5 - 8.5
Electrical Conductivity (µS/cm)	27.00	1300
Total Dissolved Solids (mg/l)	18.00	1000
Salinity (promile)	0.0	NS
Colour	Absent	Absent
Odour	Normal	Normal
Taste	Normal	Normal
Suspended Solids (mg S.S./l)	1.00	NS
Phosphate (mg PO_4^{3-}/l)	0.08	NS
Nitrate (mg NO_3^--N/l)	0.6	10
Nitrite (mg NO_2-N/l)	0.001	0.03
Total Iron (mg $Fe^{+2/3}$/l)	0.08	0.3
Chloride (mg Cl^-/l)	2.7	250
Alkalinity (mg $CaCO_3$/l)	21.7	> 20
Free Carbondioxide (mg CO_2/l)	273	NS
Hardness (mg $CaCO_3$/l)	16.0	200
Calcium (mg Ca^{+2}/l)	6.5	200
Magnesium (mg Mg^{+2}/l)	1	150
Arsenic(mg AS+/l)	0.001	0.01
Cyainde(mgCN- /l	0.000	0.050
copper(mg Cu^{+2}/l)	0.00	1.0
Mecury Hg (mg/l)	0.000	0.006
Lead pb FC (mg/l)	0.00	0.01
Manganese (Mn+2/l)	0.0	0.5
Fluoride (mg F /l)	0.12	1.5
Sulphate (mg SO_4^{-2}/l)	1	250
Ammonia (mg NH_4^+/l)	0.13	0.5
Total Coliform (No./100ml)	0	Nil
Faecal Coliform (No./100ml)	0	Nil
Sanitary Survery	Fairly clean	Clean, dry with good drainage

Remarks: NS = not set , Please note that the stipulated guideline values are meant for drinking water quality recommended by World Health Organisation (WHO).

Conclusions: *All the physico-chemical, chemical parameters tested are within the recommended guideline values set by World Health Organisation Therefore, The water is of good quality and consequently fit for consumption as well as other domestic purposes based on WHO's guideline values.*

Officer In Charge: Yaya Trawally
For Principal Scientific Officer

N-02 Faraba Sutu

WATER QUALITY MONITORING AND CONTROL LABORATORY:
DWR, ABUKO, KMC Tel:- 220 4398104/6201106/7794502

WATER QUALITY RESULTS

Location details

Town: Faraba Sutu
Address: FMK Drilling Company Ltd.
Location: Village Outskirts
District: Kombo East
Region: West Coast Region

Type of sample: Borehole water
Sample taken from: The borehole

Date of Analysis: 24th to 26th December 2018 — ***Weather Conditions:-*** *Sunny*

Parameters	Borehole # 2	WHO Guideline Values
Temperature (°C)	23.9	Acceptable
Turbidity (NTU)	< 5	<5
pH	6.00	6.5 - 8.5
pH after aeration (A.pH)	6.20	6.5 - 8.5
Electrical Conductivity (µS/cm)	21.00	1300
Total Dissolved Solids (mg/l)	14.00	1000
Salinity (promile)	0.0	NS
Colour	Absent	Absent
Odour	Normal	Normal
Taste	Normal	Normal
Suspended Solids (mg S.S./l)	1.00	NS
Phosphate (mg PO_4^{3-}/l)	0.03	NS
Nitrate (mg NO_3^--N/l)	0.4	10
Nitrite (mg NO_2^--N/l)	0.001	0.03
Total Iron (mg $Fe^{+2/3}$/l)	0.11	0.3
Chloride (mg Cl^-/l)	1.6	250
Alkalinity (mg $CaCO_3$/l)	25.9	> 20
Free Carbondioxide (mg CO_2/l)	40	NS
Hardness (mg $CaCO_3$/l)	10.0	200
Calcium (mg Ca^{+2}/l)	4.5	200
Magnesium (mg Mg^{+2}/l)	0.9	150
Arsenic (mg AS+/l)	0.001	0.01
Cyainde(mgCN-/l	0.000	0.050
Mecury (Hg mg/l)	0.000	0.006
Lead (pb FC mg/l)	0.001	0.01
Manganese (Mn+2/l)	0.0	0.5
Fluoride (mg F^-/l)	0.04	1.5
Copper (mg Cu^{+2}/l)	0.0	1.0
Sulphate (mg SO_4^{-2}/l)	1	250
Ammonia (mg NH_4^+/l)	0.07	0.5
Total Coliform (No./100ml)	0	*Nill*
Faecal Coliform (No./100ml)	0	*Nill*
Sanitary Survery	*Fairly clean*	*Clean, dry with good drainage*

Remarks: NS = not set , Please note that the stipulated guideline values are meant for drinking water quality recommended by World Health Organisation (WHO).

Conclusions: *All the physico-chemical, chemical and microbiological parameters tested are within the recommended guideline values set by World Health Organisation apart from the low pH values which is a natural phenomenon in The Gambian groundwater quality. Therefore, The water is of good quality and consequently fit for consumption as well as other domestic purposes based on WHO's recommended guideline values for drinking water quality.*

Officer In Charge: Yaya Trawally
For Principal Scientific Officer

N-18 Jahawur Mandinka

WATER QUALITY MONITORING AND CONTROL LABORATORY:
DWR,ABUKO, KMC Tel:- 220 4398104/7794502

WATER QUALITY RESULTS

Location details

Town: Jahawur
Address: FMK Drilling Company Ltd
Location: Village Outskirst
District: Lower Saloum
Division: Central River Region

Type of Sample: Borehole
Date of Sampling. 5th Jan 2019

Date of Analysis: 6th to 7th January 2019 — ***Weather Conditions:-*** *Sunny*

Parameters	Borehole # 18	WHO Guideline Values
Temperature (°C)	23.6	Acceptable
Turbidity (NTU)	< 5	<5
pH	5.35	6.5 - 8.5
pH after aeration (A.pH)	5.55	6.5 - 8.5
Electrical Conductivity (µS/cm)	56.00	1300
Total Dissolved Solids (mg/l)	36.00	1000
Salinity (promile)	0.0	NS
Colour	Absent	Absent
Odour	Normal	Normal
Taste	Normal	Normal
Suspended Solids (mg S.S./l)	2.00	Normal
Phosphate (mg PO_4^{3-}/l)	0.16	NS
Nitrate (mg NO_3-N/l)	1.2	10
Nitrite (mg NO_2-N/l)	0.004	0.03
Total Iron (mg $Fe^{+2/3}$/l)	0.16	0.3
Chloride (mg Cl^-/l)	5.3	250
Alkalinity (mg $CaCO_3$/l)	23	> 20
Free Carbondioxide (mg CO_2/l)	205	NS
Hardness (mg $CaCO_3$/l)	20.0	200
Calcium (mg Ca^{+2}/l)	9.8	200
Magnesium (mg Mg^{+2}/l)	1.1	150
Arsenic(mg AS+/l)	0.002	0.01
Cyainde(mgCN-/l	0.000	0.050
copper(mg Cu^{+2}/l)	0.00	1.0
Mecury Hg (mg/l)	0.000	0.006
Lead pb FC (mg/l)	0.00	0.01
Manganese (Mn+2/l)	0.0	0.5
Fluoride (mg F /l)	0.13	1.5
Sulphate (mg SO_4^{-2}/l)	2	250
Ammonia (mg NH_4^+/l)	0.13	0.5
Total Coliform (No./100ml)	0	Nil
Faecal Coliform (No./100ml)	0	Nil
Sanitary Survery	*Fairly clean*	*Clean, dry with good drainage*

***Remarks: NS** = not set , Please note that the stipulated guideline values are meant for drinking water quality recommended by World Health Organisation (WHO).*

Conclusions: *All the physico-chemical, chemical parameters tested are within the recommended guideline values set by World Health Organisation Therefore, The water is of good quality and consequently fit for consumption as well as other domestic purposes based on WHO's guideline values.*

Officer In Charge: Yaya Trawally

For Principal Scientific Officer

N-26 Teneng Fara Complex

WATER QUALITY MONITORING AND CONTROL LABORATORY:
DWR, ABUKO, KMC Tel:- 220 4398104/6201106/7794502

WATER QUALITY RESULTS

Location details

Town: Teneng Fara
Address: FMK Drilling Company Ltd
Location: Village Outskirst
District: Kombo East
Division: West Coast Region

Type of sample: Borehole water
Sample taken from: The borehole

Date of Analysis: 2nd to 3rd January 2019 — ***Weather Conditions:-*** *Sunny*

Parameters	Borehole # 26	WHO Guideline Values
Temperature (°C)	26.1	Acceptable
Turbidity (NTU)	< 5	<5
pH	5.41	6.5 - 8.5
pH after aeration (A.pH)	5.60	6.5 - 8.5
Electrical Conductivity (µS/cm)	39.00	1300
Total Dissolved Solids (mg/l)	22.10	1000
Salinity (promile)	0.0	NS
Colour	Absent	Absent
Odour	Normal	Normal
Taste	Normal	Normal
Suspended Solids (mg S.S./l)	1.00	NS
Phosphate (mg PO_4^{3-}/l)	0.12	NS
Nitrate (mg NO_3^--N/l)	0.9	10
Nitrite (mg NO_2^--N/l)	0.002	0.03
Total Iron (mg $Fe^{+2/3}$/l)	0.05	0.3
Chloride (mg Cl^-/l)	3.1	250
Alkalinity (mg $CaCO_3$/l)	23.4	> 20
Free Carbondioxide (mg CO_2/l)	178	NS
Hardness (mg $CaCO_3$/l)	19.0	200
Calcium (mg Ca^{+2}/l)	7.3	200
Magnesium (mg Mg^{+2}/l)	1.1	150
Arsenic(mg AS+/l)	0.005	0.01
Cyainde(mgCN-/l	0.000	0.050
Mecury Hg mg/l	0.000	0.006
Lead pb FC mg/l	0.000	0.01
Manganese (Mn+2/l)	0.0	0.5
Fluoride (mg F^-/l)	0.12	1.5
Copper (mg Cu^{+2}/l)	0.0	1.0
Sulphate (mg SO_4^{-2}/l)	1	250
Ammonia (mg NH_4^+/l)	0.13	0.5
Total Coliform (No./100ml)	0	Nill
Faecal Coliform (No./100ml)	0	Nill
Sanitary Survery	*Fairly clean*	***Clean, dry with good drainage***

Remarks: NS = not set , Please note that the stipulated guideline values are meant for drinking water quality recommended by World Health Organisation (WHO).

Conclusions: *All the physico-chemical, chemical parameters tested are within the recommended guideline values set by World Health Organisation apart from the low pH values which is a natural phenomenon in The Gambian groundwater quality. Therefore, The water is of good quality and consequently fit for consumption as well as other domestic purposes based on WHO's guideline values.*

Officer In Charge: Yaya Trawally
For Principal Scientific Officer

N-04 Bntabut Kantora

WATER QUALITY MONITORING AND CONTROL LABORATORY:
DWR, ABUKO, KMC Tel:- 220 4398104/6201106/7794502

WATER QUALITY RESULTS

Location details

Town: Batabut kantora
Address: FMK Drilling Company Ltd.
Location: Village Outskirts
District: Foni Berefet
Region: West Coast Region

Type of sample: Borehole water
Sample taken from: The borehole

Date of Analysis: 24th to 26th December 2018 — ***Weather Conditions:-*** *Sunny*

Parameters	Borehole # 4	WHO Guideline Values
Temperature (°C)	23.9	Acceptable
Turbidity (NTU)	< 5	<5
pH	6.85	6.5 - 8.5
pH after aeration (A.pH)	7.00	6.5 - 8.5
Electrical Conductivity (µS/cm)	68.00	1300
Total Dissolved Solids (mg/l)	44.00	1000
Salinity (promile)	0.0	NS
Colour	Absent	Absent
Odour	Normal	Normal
Taste	Normal	Normal
Suspended Solids (mg S.S./l)	2	Normal
Phosphate (mg PO_4^{3-}/l)	0.13	NS
Nitrate (mg NO_3^--N/l)	2.00	10
Nitrite (mg NO_2^--N/l)	0.009	0.03
Total Iron (mg $Fe^{+2/3}$/l)	0.06	0.3
Chloride (mg Cl^-/l)	5.6	250
Alkalinity (mg $CaCO_3$/l)	26.8	> 20
Free Carbondioxide (mg CO_2/l)	7	NS
Hardness (mg $CaCO_3$/l)	20	200
Calcium (mg Ca^{+2}/l)	9.0	200
Magnesium (mg Mg^{+2}/l)	1.0	150
Arsenic (mg AS+/l)	0.003	0.01
Cyainde (mgCN-/l	0.001	0.050
Mecury (Hg mg/l)	0.000	0.006
Lead (pb FC mg/l)	0.000	0.01
Manganese (Mn+2/l)	0.0	0.5
Fluoride (mg F^-/l)	0.14	1.5
Copper (mg Cu^{+2}/l)	0.0	1.0
Sulphate (mg SO_4^{-2}/l)	1	250
Ammonia (mg NH_4^+/l)	0.13	0.5
Total Coliform (No./100ml)	0	Nill
Faecal Coliform (No./100ml)	0	Nill
Sanitary Survery	clean surrounding	Clean, dry with good drainage

Remarks: NS = not set , Please note that the stipulated guideline values are meant for drinking water quality recommended by World Health Organisation (WHO).

Conclusions: *All the physico-chemical, chemical and microbiological parameters tested are within the recommended guideline values set by World Health Organisation apart from the low pH values which is a natural phenomenon in The Gambian groundwater quality. Therefore, The water is of good quality and consequently fit for consumption as well as other domestic purposes based on WHO's recommended guideline values for drinking water quality.*

Officer In Charge: Yaya Trawally
For Principal Scientific Officer

資料 7-12 標準貫入試験結果

サイト番号：N-02

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: FARABA SUTU

B.H.No N-02 | **TYPE OF BORING:** PERCUSSION | **Dia.of Boring:** 150mm to 15.0m | **Date Started:** 28.12.18 | **Date Completed:** 28.12.18

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
28.12.18		0.20					1	B1		
	Light brown, loose, clayey SAND with some fibrous materials (roots).	0.50					2	B2		
	Brown, firm, sandy CLAY with some fibrous material (roots)	1.00				0.78	3	J1	17	S1(78)
	Brown, very stiff, sandy CLAY.	1.50					4	B3		
		2.00				1.28	5	J2	12	S2(67)
		2.50					6	B4		
	Brown, stiff, sandy CLAY with few stones (5 - 10 mm) between 3.50 and 4.00 m.	3.04				1.28	7	J3	13	S3(67)
		3.50					8	B5		
		4.00				2.78	9	J4	24	S4(100)
		4.50					10	B6		
	Mottled brown / light brown, very stiff, sandy CLAY with some pebbles (5 - 10 mm).	5.06				4.28	11	J5	23	S5(100)
		5.50					12	B7		
		6.00				4.28	13	J6	26	S6(100)
		6.50					14	B8		
	Mottled dark brown / light grey / yellowish brown, very stiff, sandy CLAY with many pebbles (5 - 25 mm).	7.04				5.78	15	J7	50	S7(89)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.200677, -16.484003

FIG. 1 SHEET 1 OF B.H. N-02

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: FARABA SUTU

B.H.No N-02

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 15.0m

Date Started: 28.12.18

Date Completed: 28.12.18

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
28.12.18	Mottled dark brown / light grey / yellowish brown, very stiff, sandy CLAY with many pebbles (5 - 25 mm).	7.50					16	B9		
		8.00				7.28	17	J8	21	S8(93)
		8.50					18	B10		
	Mottled yellowish brown / light grey / dark brown, medium dense, clayey fine to medium SAND.	9.05				7.28	19	J9	21	S9(84)
		9.50					20	B11		
		10.10				9.78	21	J10	19	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 1 SHEET 2 OF B.H. N-02

サイト番号：N-04

PROJECT: RURAL WATER SUPPLY PHASE IV			LOCATION: BATABUT KANTORA								
B.H.No N-04	TYPE OF BORING: PERCUSSION		Dia.of Boring: 150mm to 10.0m				Date Started: 30.12.18 Date Completed: 30.12.18				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
30.12.18	Greyish brown, loose, clayey SAND with some fibrous material (roots).	0.20					1	B1		
		0.50					2	B2		
	Brown, medium dense, very clayey, fine to medium SAND.	1.00				0.78	3	J1	16	S1(89)
		1.50					4	B3		
		2.00				1.28	5	J2	8	S2(82)
	Brown, loose, very clayey, fine to medium SAND.	2.50					6	B4		
		3.08				1.28	7	J3	7	S3(87)
		3.50					8	B5		
		4.12				2.78	9	J4	8	S4(76)
		4.50					10	B6		
	Brown, firm, sandy CLAY.	5.09				4.28	11	J5	7	S5(100)
		5.50					12	B7		
	Brown, loose, very clayey, fine to medium SAND.	6.12				4.28	13	J6	8	S6(78)
		6.50					14	B8		
	Brown, firm, sandy CLAY.									

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.209048, -16.166121

FIG. 2 SHEET 1 OF B.H. N-04

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: BATABUT KANTORA

B.H.No N-04

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 30.12.18

Date Completed: 30.12.18

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
30.12.18		7.13				5.78	15	J7	7	S7(73)
	Brown, firm, sandy CLAY.	7.50					16	B9		
		8.10				7.28	17	J8	8	S8(89)
	Mottled brown / light grey, firm, sandy CLAY	8.50					18	B10		
		9.13				8.78	19	J9	18	S9(67)
		9.50					20	B11		
	Mottled brown / light grey / yellowish brown, very stiff, sandy CLAY.	10.07				9.00	21	J10	49	S10(67)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 2 SHEET 2 OF B.H. N-04

サイト番号：N-05

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		DOBANG								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m				Date Started: 31.12.18				
N-05	PERCUSSION					Date Completed: 31.12.18				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
31.12.18		0.10					1	B1		
	Greyish brown, loose, clayey SAND with some fibrous material (roots).	0.30								
		0.50					2	B2		
	Brown, firm, sandy CLAY with roots.	1.00				0.78	3	J1	12	S1(67)
		1.50					4	B3		
	Brown, stiff, sandy CLAY.	2.00				1.28	5	J2	5	S2(53)
		2.50					6	B4		
		3.07				1.28	7	J3	5	S3(67)
	Brown, firm, sandy CLAY with some pebbles (5 mm).	3.50					8	B5		
		4.06				2.78	9	J4	6	S4(53)
		4.50					10	B6		
		5.00				4.28	11	J5	27	S5(100)
		5.50					12	B7		
	Brown, very stiff, sandy CLAY with some pebbles (5 - 15 mm) between 5.00 and 6.50 m.	6.00				4.28	13	J6	21	S6(84)
		6.50					14	B8		
		7.00				5.78	15	J7	14	S7(69)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.2310986, -16.0735278

FIG. 3 SHEET 1 OF B.H. N-05

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: DOBANG

B.H.No N-05

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 31.12.18

Date Completed: 31.12.18

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
31.12.18	Mottled brown / light grey / yellowish brown, stiff, sandy CLAY.	7.50					16	B9		
		8.07				7.28	17	J8	11	S8(89)
	Mottled brown / light grey / yellowish brown, medium dense, clayey fine SAND.	8.50					18	B10		
		9.06				7.28	19	J9	10	S9(100)
		9.50					20	B11		
		10.24				9.00	21	J10	15	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 3 SHEET 2 OF B.H. N-05

サイト番号：N-26

PROJECT: RURAL WATER SUPPLY PHASE IV				LOCATION: SINCHU GUNDO							
B.H.No N-26	TYPE OF BORING: PERCUSSION			Dia.of Boring: 150mm to 10.0m				Date Started: 03.01.19 Date Completed: 03.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
03.01.19	Greyish brown, dense, clayey SAND with some fibrous material (roots).	0.10 0.20					1	B1		
		0.50					2	B2		
	Brown, firm, sandy CLAY with some fibrous material (roots).	1.00				0.78	3	J1	14	S1(78)
	Brown, stiff, sandy CLAY.	1.50					4	B3		
		2.05				1.28	5	J2	4	S2(51)
		2.50					6	B4		
	Mottled light brown / brown, firm, sandy CLAY.	3.25				1.28	7	J3	10	S3(67)
		3.50					8	B5		
	Mottled orangish brown / light grey, stiff, sandy CLAY with few pebbles (5 mm).	4.10				2.78	9	J4	16	S4(100)
		4.50					10	B6		
		5.00				4.28	11	J5	28	S5(100)
	Mottled orangish brown / light grey, very stiff, sandy CLAY with few pebbles (5 - 10 mm).	5.50					12	B7		
		6.00				4.28	13	J6	26	S6
		6.50					14	B8		
		7.00				5.78	15	J7	19	S7(82)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.614115, -15.029474

FIG. 4 SHEET 1 OF B.H. N-26

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: SINCHU GUNDO

B.H.No N-26

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 03.01.19

Date Completed: 03.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
03.01.19		7.50					16	B9		
	Mottled orangish brown / light grey, very stiff, sandy CLAY with few pebbles (5 - 10 mm).	8.09				7.28	17	J8	32	S8(100)
		8.50					18	B10		
	Mottled yellowish brown / light grey, very stiff, sandy CLAY.	9.00				7.28	19	J9	34	S9(100)
		9.50					20	B11		
		10.00				9.00	21	J10	27	10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 4 SHEET 2 OF B.H. N-26

サイト番号：N-25

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		BRIKAMA NDING								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m				Date Started: 04.01.19				
N-25	PERCUSSION					Date Completed: 04.01.19				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
04.01.19		0.10					1	B1		
		0.20								
	Brown, soft, sandy CLAY with some fibrous material (roots).	0.50					2	B2		
		1.00				0.78	3	J1	3	S1(53)
	Mottled light brown / light grey, soft sandy CLAY.	1.50					4	B3		
		1.80								
	Mottled light brown / light grey, medium dense, clayey sandy GRAVEL (5 - 20 mm).	2.00				1.50	5	J2	17	S2(80)
	Mottled light brown, yellowish brown / light grey, very stiff, sandy CLAY with some pebbles (5 - 10 mm).	2.50					6	B4		
		3.00				2.28	7	J3	15	S3(76)
	Mottled light brown / yellowish brown, stiff, sandy CLAY with some pebbles (5 - 20 mm).	3.50					8	B5		
		4.08				2.78	9	J4	12	S4(100)
		4.50					10	B6		
		5.00				2.78	11	J5	12	S5(80)
		5.50					12	B7		
		6.00				4.28	13	J6	19	S6(93)
	Mottled yellowish brown / light grey, very stiff, sandy CLAY with few pebbles (5 - 15 mm).	6.50					14	B8		
		7.00					15	J7	49	S7(100)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.533849, -14.934352

FIG. 5 SHEET 1 OF B.H. N-25

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: BRIKAMA NDING

B.H.No N-25

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 04.01.19

Date Completed: 04.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
		7.50					16	B9		
		8.00				5.28	17	J8	50	S8(100)
		8.50					18	B10		
	Mottled light grey / yellowish brown, very stiff, sandy CLAY.	9.16				8.28	19	J9	50	S9(100)
		9.50					20	B11		
		10.12				9.00	21	J10	50	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 5 SHEET 2 OF B.H. N-25

サイト番号：N-27

PROJECT: RURAL WATER SUPPLY PHASE IV				LOCATION: SOLOLO							
B.H.No N-27	TYPE OF BORING: PERCUSSION			Dia.of Boring: 150mm to 10.0m				Date Started: 05.01.19 Date Completed: 05.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
05.01.19	Greyish brown, loose, sandy CLAY with some fibrous material (roots).	0.10 0.20					1	B1		
	Brown, soft, sandy CLAY with some fibrous material (roots).	0.50					2	B2		
		1.00				0.78	3	J1	7	S1(58)
	Brown, firm, sandy CLAY.	1.50					4	B3		
		1.80					5	J2		
	Dark brown, very dense, clayey SAND with many pebbles (3 - 5 mm).	2.00				1.28	6	J3	50	S2(44)
		2.30					7	B4		
		2.50					8	B5		
		3.00				1.50	9	J4	11	S3(78)
	Mottled yellowish brown / brown / light grey, stiff, sandy CLAY.	3.50					10	B6		
		4.00				2.78	11	J5	18	S4(82)
	Mottled brown / yellowish brown / light grey, very stiff, sandy CLAY.	4.50					12	B7		
		5.00				2.78	13	J6	36	S5(67)
		5.50					14	B8		
		6.00				4.28	15	J7	20	S6(93)
		6.50					16	B9		
	Mottled brown / yellowish brown / light grey, very stiff, slightly sandy CLAY.									

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.452893, -14.681818

FIG. 6 SHEET 1 OF B.H. N-27

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: SOLOLO

B.H.No N-27

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 05.01.19

Date Completed: 05.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
05.01.19		7.07				5.78	17	J8	19	S7(96)
		7.50					18	B10		
	Mottled brown / yellowish brown / light grey, very stiff, slightly sandy CLAY.	8.00				7.28	19	J9	20	S8(100)
		8.50					20	B11		
		9.12				7.28	21	J10	17	S9(89)
		9.50					22	B12		
	Mottled brown / yellowish brown / light grey, very stiff, sandy CLAY.	10.16				7.00	23	J11	29	S10(89)
		(End of Borehole)								

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 6 SHEET 1 OF B.H. N-27

サイト番号：N-32

PROJECT: RURAL WATER SUPPLY PHASE IV			LOCATION: MADINA BALLA							
B.H.No N-32	TYPE OF BORING: PERCUSSION		Dia.of Boring: 150mm to 10.0m				Date Started: 06.01.19 Date Completed: 07.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
06.01.19	Greyish brown, firm, sandy CLAY with some fibrous material (roots).	0.10 0.20					1	B1		
		0.50					2	B2		
	Brown, firm, sandy CLAY.	1.00				0.78	3	J1	4	S1(67)
		1.50					4	B3		
	Mottled brown / light brown, firm, sandy CLAY with some pebbles (5 mm).	1.70					5	B4		
		2.00				1.50	6	J2	12	S2(67)
		2.50					7	B5		
07.01.19	Mottled brown / yellowish brown / light grey, stiff, sandy CLAY with some pebbles (5 - 10 mm).	3.10				1.50	8	J3	13	S3(100)
		3.50					9	B6		
		4.14				2.78	10	J4	17	S4(89)
		4.50					11	B7		
		5.17				2.78	12	J5	15	S5(76)
	Mottled light grey / yellowish brown / orangish brown, very stiff, slightly sandy CLAY with few pebbles (5 mm).	5.50					13	B8		
		6.22				4.28	14	J6	25	S6(100)
		6.50					15	B9		
		7.00				5.78	16	J7	50	S7(100)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.418319, -16.838212

FIG. 7 SHEET 1 OF B.H. N-32

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: MADINA BALLA

B.H.No N-32

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 06.01.19

Date Completed: 07.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
07.01.19	Mottled dark brown / yellowish brown / light grey, very stiff, slightly sandy CLAY with many pebbles (5 - 20 mm).	7.50					17	B10		
		8.00				5.78	18	J8	37	S8(100)
		8.50					19	B11		
	Mottled dark brown / light grey / yellowish brown, very stiff, slightly sandy CLAY.	9.07				7.28	20	J9	50	S9(100)
		9.50					21	B12		
		10.00				9.00	22	J10	44	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 7 SHEET 2 OF B.H. N-32

サイト番号：N-35

PROJECT: RURAL WATER SUPPLY PHASE IV				LOCATION: PERAI							
B.H.No N-35	TYPE OF BORING: PERCUSSION			Dia.of Boring: 150mm to 10.0m				Date Started: 08.01.19 Date Completed: 08.01.19			
DATE	STRATA DESCRIPTION	Depth (m)		Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
08.01.19		0.10						1	B1		
		0.20									
	Brown, firm, sandy CLAY with some fibrous material (roots).	0.50						2	B2		
		1.00					0.78	3	J1	12	S1(100)
	Brown, stiff, sandy CLAY.	1.50						4	B3		
		2.00					1.28	5	J2	18	S2(89)
		2.50						6	B4		
	Mottled dark brown / light grey / yellowish brown, very stiff, sandy CLAY with many pebbles (5 - 20 mm).	3.07					1.50	7	J3	43	S3(100)
		3.50						8	B5		
		4.00					2.78	9	J4	45	S4(93)
		4.50						10	B6		
		5.00					4.28	11	J5	30	S5(100)
	Mottled yellowish brown / light gery / dark brown, very stiff, sandy CLAY with few pebbles (5 - 10 mm).	5.50						12	B7		
		6.07					4.28	13	J6	42	S6(100)
		6.50						14	B8		
		7.00					5.78	15	J7	50	S7(84)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.376503, -14.031223

FIG. 8 SHEET 1 OF B.H. N-35

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: PERAI

B.H.No N-35

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 08.01.19

Date Completed: 08.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
08.01.19		7.50					16	B9		
	Mottled yellowish brown / light gery / dark brown, very stiff, sandy CLAY with few pebbles (5 - 10 mm).	8.10				5.78	17	J8	36	S8(100)
		8.50					18	B10		
		9.00				7.28	19	J9	50	S9(100)
	Mottled yellowish brown / light grey, very stiff, sandy CLAY.	9.50					20	B11		
		10.25				9.00	21	J10	50	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 8 SHEET 2 OF B.H. N-35

サイト番号：N-29

PROJECT: RURAL WATER SUPPLY PHASE IV				LOCATION: LIMBAMBULU YAMADOU							
B.H.No N-29	TYPE OF BORING: PERCUSSION			Dia.of Boring: 150mm to 10.0m				Date Started: 12.01.19 Date Completed: 13.01.19			
DATE	STRATA DESCRIPTION	Depth (m)		Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
12.01.19	Greyish brown, loose, clayey SAND with some fibrous material (roots).	0.10 0.20						1	B1		
		0.50						2	B2		
	Brown, soft, sandy CLAY with some fibrous material (roots).	1.00					0.78	3	J1	26	S1(100)
		1.22									
		1.50						4	B3		
	Brown, medium dense, sandy, clayey GRAVEL (5 - 20 mm).	2.00					1.28	5	J2	8	S2(76)
		2.50						6	B4		
	Mottled brown / light grey, firm, sandy CLAY with many pebbles (5 - 20 mm).	3.00					1.28	7	J3	25	S3(76)
		3.50						8	B5		
13.01.19	Mottled brown / yellowish brown / light grey, very stiff, sandy CLAY with many pebbles (5 - 20 mm).	4.00					2.78	9	J4	49	S4(71)
		4.50						10	B6		
		5.00					4.28	11	J5	44	S5(84)
		5.50						12	B7		
	Mottled dark brown / yellowish brown / light grey, very stiff, slightly sandy CLAY with few pebbles (5 - 10 mm).	6.00					4.28	13	J6	50	S6(71)
		6.50						14	B8		

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.413786, -14.121962

FIG. 9 SHEET 1 OF B.H. N-29

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: LIMBAMBULU YAMADOU

B.H.No N-29

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 12.01.19

Date Completed: 13.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
13.10.19		7.08				5.78	15	J7	50	S7(78)
	Mottled dark brown / yellowish brown / light grey, very stiff, slightly sandy CLAY with few pebbles (5 - 10 mm).	7.50					16	B9		
		8.00				7.28	17	J8	43	S8(100)
		8.50					18	B10		
	Mottled yellowish brown / light grey / dark brown, very stiff, sandy CLAY.	9.00				7.28	19	J9	30	S9(89)
		9.50					20	B11		
		10.00				8.78	21	J10	42	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 9 SHEET 2 OF B.H. N-29

サイト番号：N-30

PROJECT: RURAL WATER SUPPLY PHASE IV				LOCATION: KOLI BANTANG							
B.H.No N-30	TYPE OF BORING: PERCUSSION			Dia.of Boring: 150mm to 10.0m				Date Started: 14.01.19			
								Date Completed: 15.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE	
14.01.19	Greyish brown, loose, sandy CLAY with some fibrous material (roots).	0.10 0.20					1	B1			
		0.50					2	B2			
		1.00				0.78	3	J1	5	S1(40)	
	Brown, firm, sandy CLAY.	1.50					4	B3			
		2.07				1.28	5	J2	4	S2(62)	
		2.50					6	B4			
		3.00				1.28	7	J3	50	S3(49)	
15.01.19		3.50					8	B5			
	Mottled dark brown / light grey / yellowish brown, very dense, sandy, clayey GRAVEL (5 - 20 mm).	4.00				3.43	9	J4	50	S4(78)	
		4.50					10	B6			
		5.00				4.28	11	J5	50	S5(73)	
	Mottled dark brown / light grey / yellowish brown, very stiff, sandy CLAY with many pebbles (5 - 20 mm).	5.50					12	B7			
		6.00				5.28	13	J6	50	S6(89)	
	Mottled yellowish brown / light grey / dark brown, very sifff, sandy CLAY with few pebbles (5 - 10 mm).	6.50					14	B8			
		7.00				6.28	15	J7	50	S7(89)	

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.434043, -14.195218

FIG. 10 SHEET 1 OF B.H. N-30

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		KOLI BANTANG								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m				Date Started: 14.01.19				
N-30	PERCUSSION					Date Completed: 15.01.19				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
		7.50					16	B9		
		8.00				6.78	17	J8	43	S8(100)
	Mottled yellowish brown / light grey, very stiff, sandy CLAY.	8.50					18	B10		
		9.00				7.28	19	J9	34	S9(89)
		9.50					20	B11		
		10.00				8.78	21	J10	34	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 10 SHEET 2 OF B.H. N-30

サイト番号：N-23

PROJECT:			LOCATION:							
RURAL WATER SUPPLY PHASE IV			JALLOW KUNDA							
B.H.No	TYPE OF BORING:		Dia.of Boring: 150mm to 10.0m				Date Started: 16.01.19			
N-23	PERCUSSION						Date Completed: 16.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
16.01.19		0.10					1	B1		
	Soft, greyish brown, sandy CLAY, with some fibrous material (roots).	0.30								
		0.50					2	B2		
	Brown, firm, sandy CLAY with some fibrous material (roots).	1.00				0.78	3	J1	11	S1(56)
	Brown, stiff, sandy CLAY.	1.50					4	B3		
		2.00				1.28	5	J2	5	S2(71)
		2.50					6	B4		
		3.09				1.28	7	J3	4	S3(67)
		3.50					8	B8		
		4.00				2.78	9	J4	4	S4(56)
	Brown, firm, sandy CLAY.	4.50					10	B6		
		5.00				2.78	11	J5	7	S5(69)
		5.50					12	B7		
		6.00				4.28	13	J6	8	S6(67)
		6.50					14	B8		
		7.00				5.78	15	J7	18	S7(82)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.757768, -14.971841

FIG. 11 SHEET 1 OF B.H. N-23

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: JALLOW KUNDA

B.H.No N-23

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 16.01.19

Date Completed: 16.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
16.01.19	Mottled brown / light grey / orangish brown, very stiff, sandy CLAY with some pebbles (5 mm).	7.50					16	B9		
		8.00				5.78	17	J8	13	S8(80)
	Mottled brown / light brown, stiff, sandy CLAY.	8.50					18	B10		
		9.00				7.28	19	J9	16	S9(84)
	Mottled brown / light grey, very stiff, sandy CLAY with few pebbles (5 mm).	9.50					20	B11		
		10.00				8.78	21	J10	31	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 11 SHEET 2 OF B.H. N-23

サイト番号：N-24

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		NYANGA BANTANG								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m					Date Started: 17.01.19			
N-24	PERCUSSION						Date Completed: 17.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
17.01.19		0.10					1	B1		
		0.20								
	Brown, soft, sandy CLAY with some fibrous material (roots).	0.50					2	B2		
		1.00				0.78	3	J1	4	S1(51)
	Greyish brown, soft, sandy CLAY.	1.50					4	B3		
		2.00				0.78	5	J2	28	S2(100)
		2.30								
		2.50					6	B4		
		3.00				1.28	7	J3	50	S6(1000
	Mottled yellowish brown / light grey / dark brown, very stiff, sandy CLAY with many pebbles (5 - 30 mm).	3.50					8	B5		
		4.00				2.78	9	J4	32	S4(100)
		4.50					10	B6		
		5.00				3.78	11	J5	26	S5(100)
		5.50					12	B7		
	Mottled yellowish brown / light grey / dark brown, very stiff, sandy CLAY with few pebbles (5 - 30 mm).	6.00				4.28	13	J6	30	S6(93)
		6.50					14	B8		
		7.00				5.78	15	J7	26	S7(100)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.781077, -14.997690

FIG. 12 SHEET 1 OF B.H. N-24

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: NYANGA BANTANG

B.H.No N-24

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 17.01.19

Date Completed: 17.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
17.01.19		7.50					16	B9		
		8.00				7.28	17	J8	28	S8(100)
	Mottled light grey / yellowish brown, very stiff, sandy CLAY.	8.50					18	B10		
		9.00				7.28	19	J9	50	S9(89)
		9.50					20	B11		
		10.00				8.78	21	J10	50	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 12 SHEET 2 OF B.H. N-24

サイト番号：N-22

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		KERR GINDEH								
B.H.No	TYPE OF BORING:	Dia.of Boring:	150mm to 10.0m			Date Started:	18.01.19			
N-22	PERCUSSION					Date Completed:	18.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
18.01.19		0.10					1	B1		
		0.20								
		0.50					2	B2		
	Brown, loose, clayey SAND with some fibrous material (roots).	1.00				0.78	3	J1	16	S1(89)
	Brown, medium dense, clayey, fine to medium SAND.	1.50					4	B3		
		2.00				0.78	5	J2	6	S2(73)
		2.50					6	B4		
		3.00				1.28	7	J3	8	S3(100)
		3.50					8	B5		
	Brown, loose, very clayey, fine to medium SAND.	4.00				2.78	9	J4	9	S4(78)
		4.50					10	B6		
		5.00				2.78	11	J5	6	S5(80)
		5.50					12	B7		
		6.00				4.28	13	J6	12	S6(78)
		6.50					14	B8		
	Brown, medium dense, clayey, fine to medium SAND.	7.00				5.78	15	J7	24	S7(71)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.711887, -15.270356

FIG. 13 SHEET 1 OF B.H. N-22

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		KERR GINDEH								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m				Date Started: 18.01.19				
N-22	PERCUSSION					Date Completed: 18.01.19				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
18.10.19	Brown, very stiff, sandy CLAY with few pebbles (5 - 10 mm).	7.50					16	B9		
		8.00				7.28	17	J8	11	S8(76)
	Brown, medium dense, very clayey, fine SAND.	8.50					18	B10		
		9.00				7.28	19	J9	8	S8(93)
	Brown, loose, very clayey, fine SAND.	9.50					20	B11		
		10.00				8.78	21	J10	10	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 13 SHEET 2 OF B.H. N-22

サイト番号：N-21

PROJECT: RURAL WATER SUPPLY PHASE IV			LOCATION: NGAIGE							
B.H.No N-21	TYPE OF BORING: PERCUSSION		Dia.of Boring: 150mm to 10.0m				Date Started: 18.01.19 Date Completed: 21.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
18.01.19		0.10					1	B1		
	Brown, firm, sandy CLAY with some some fibrous material (roots).	0.50					2	B2		
		1.00				0.78	3	J1	21	S1(67)
	Mottled brown / dark brown, very stiff, sandy CLAY.	1.50					4	B3		
		2.00				1.28	5	J2	45	S2(73)
	Mottled brown / light grey, very stiff, sandy CLAY with many pebbles (5 - 10 mm).	2.50					6	B4		
19.01.19		3.00				1.28	-	-	50	S3(0)
		3.10					7	B3		
		3.50					8	B6		
		4.00				3.78	9	J3	50	S4(71)
		4.50					10	B7		
	Mottled brown / yellowish brown, very dense, clayey sandy GRAVEL (5 - 30 mm).	5.00				4.28	11	J4	50	S5(71)
		5.50					12	B8		
20.10.19		6.00					13	B9		
		6.50				5.78	14 15	J5 B10	50	S6(36)
		7.00				6.78	16	J6	50	S7(58)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.739385, -15.282449

FIG. 14 SHEET 1 OF B.H. N-21

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		NGAIGE								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m				Date Started: 18.01.19				
N-21	PERCUSSION					Date Completed: 21.01.19				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
	Mottled yellowish brown, dark brown / light grey, very stiff, sandy CLAY with many pebbles (5 - 30 mm).	7.50					17	B11		
		8.00				7.28	18	J7	50	S8(67)
		8.50					19	B12		
21.01.19	Mottled light grey / yellowish brown / dark brown, very stiff, sandy CLAY.	9.00				7.28	20	J8	50	S9(69)
		9.50					21	B13		
		10.00				8.78	22	J9	50	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 14 SHEET 2 OF B.H. N-21

サイト番号：N-18

PROJECT: RURAL WATER SUPPLY PHASE IV			LOCATION: JAHAUR							
B.H.No N-18	TYPE OF BORING: PERCUSSION		Dia.of Boring: 150mm to 10.0m				Date Started: 21.10.19 Date Completed: 21.10.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
21.01.19		0.10					1	B1		
		0.20								
	Brown, soft, sandy CLAY with some fibrous material (roots).	0.50					2	B2		
		1.00				0.78	3	J1	9	S1(47)
	Brown, stiff, sandy CLAY.	1.50					4	B3		
		2.00				1.28	5	J2	2	S2(44)
	Brown, soft, sandy CLAY.	2.50					6	B4		
		3.06				1.28	7	J3	10	S3(71)
	Brown, stiff, sandy CLAY with some pebbles (5 mm).	3.50					8	B5		
		4.00				2.78	9	J4	5	S4(60)
	Mottled brown / yellowish brown, firm, sandy CLAY.	4.50					10	B6		
		5.00				4.28	11	J5	10	S5(78)
		5.50					12	B7		
	Mottled brown / yellowish brown / light grey, stiff, sandy CLAY with few pebbles (5 - 10 mm).	6.00				4.28	13	J6	14	S6(71)
		6.50					14	B8		
		7.00				5.78	15	J7	17	S7(87)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.696997, -15.359929

FIG. 15 SHEET 1 OF B.H. N-18

PROJECT:		LOCATION:									
RURAL WATER SUPPLY PHASE IV		JAHAUR									
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m					Date Started: 21.10.19				
N-18	PERCUSSION						Date Completed: 21.10.19				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE	
21.10.19		7.50					16	B9			
		8.00				7.28	17	J8	11	S8(93)	
		8.50					18	B10			
	Mottled light grey / yellowish brown, medium dense, clayey fine SAND.	9.00				7.28	19	J9	10	S9(84)	
		9.50					20	B11			
		10.10				9.00	21	J10	11	S10(80)	
			(End of Borehole)								

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 15 SHEET 2 OF B.H. N-18

サイト番号：N-07

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		SINCHU NJABO								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m				Date Started: 22.01.19				
N-07	PERCUSSION					Date Completed: 23.01.19				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
22.01.19	Greyish brown, loose, clayey SAND with some fibrous material (roots).	0.10 0.20					1	B1		
	Brown, soft, sandy CLAY with some roots.	0.50					2	B2		
		1.00				0.78	3	J1	10	S1(60)
	Brown, stiff, sandy CLAY.	1.50					4	B3		
		2.00				1.28	5	J2	4	S2(48)
	Mottled brown / light grey, soft sandy CLAY.	2.50					6	B4		
		3.00				1.28	7	J3	30	S3(93)
		3.50					8	B5		
		4.00				2.78	9	J4	50	S4(100)
	Mottled brown / light grey / yellowish brown, very stiff, sandy CLAY with some pebbles (5 - 10 mm).	4.50					10	B6		
		5.00				4.28	11	J5	50	S5(76)
		5.50					12	B7		
23.01.19		6.00				5.28	13	J6	50	S6(58)
	Mottled dark brown / yellowish brown, very stiff, sandy CLAY with many pebbles (5 - 30 mm).	6.50					14	B8		
		7.00				6.78	15	J7	50	S7(60)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.546381, -15.413101

FIG. 16 SHEET 1 OF B.H. N-07

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: SINCHU NJABO

B.H.No N-07

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 22.01.19

Date Completed: 23.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
23.01.19	Mottled dark brown / yellowish brown, very stiff, sandy CLAY with many pebbles (5 - 30 mm).	7.50					16	B9		
		8.00				7.20	17	J8	50	S8(58)
	Mottled yellowish brown / dark brown / light grey, very stiff, sandy CLAY with few pebbles (5 - 10 mm).	8.50					18	B10		
		9.00				8.78	19	J9	50	S9(58)
	Mottle light grey / yellowish brown / brown, very stiff, sandy CLAY.	9.50					20	B11		
		10.00				8.78	21	J10	50	S10(78)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 16 SHEET 2 OF B.H. N-07

サイト番号：N-08

PROJECT: RURAL WATER SUPPLY PHASE IV			LOCATION: KERR ALI							
B.H.No N-08	TYPE OF BORING: PERCUSSION		Dia.of Boring: 150mm to 10.0m				Date Started: 24.01,19 Date Completed: 24.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
24.01.19	Greyish brown, loose, clayey SAND with some fibrous material (roots).	0.10 0.20					1	B1		
		0.50					2	B2		
	Brown, loose, clayey SAND.	1.00				0.78	3	J1	5	S1(80)
		1.50					4	B3		
	Brown, firm, sandy CLAY.	2.00				1.28	5	J2	7	S2(76)
		2.50					6	B4		
		3.00				1.28	7	J3	10	S3(89)
		3.50					8	B5		
		4.00				2.78	9	J4	9	S4(69)
		4.50					10	B6		
	Brown, stiff, sandy CLAY.	5.00				4.28	11	J5	9	S5(69)
		5.50					12	B7		
		6.00				4.28	13	J6	13	S6(64)
		6.50					14	B8		
		7.00				5.78	15	J7	13	S7(71)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.591208, -15.606528

FIG. 17 SHEET 1 OF B.H. N-08

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		KERR ALI								
B.H.No	TYPE OF BORING:	Dia.of Boring: 150mm to 10.0m				Date Started: 24.01,19				
N-08	PERCUSSION					Date Completed: 24.01.19				
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
24.01.19		7.50					16	B9		
		8.00				7.28	17	J8	13	S8(67)
	Brown, stiff, sandy CLAY.	8.50					18	B10		
		9.00				7.28	19	J9	13	S9(69)
	Mottled brown / light grey, stiff, sandy CLAY.	9.50					20	B11		
		10.00				8.78	21	J10	39	S10(71)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 17 SHEET 2 OF B.H. N-08

サイト番号：N-10

PROJECT:		LOCATION:								
RURAL WATER SUPPLY PHASE IV		PASSI								
B.H.No	TYPE OF BORING:	Dia.of Boring:	150mm to 10.0m			Date Started:	25.01.19			
N-10	PERCUSSION					Date Completed:	25.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
25.01.19	Greyish brown, loose, sandy CLAY with some fibrous material (roots).	0.10 0.20					1	B1		
		0.50					2	B2		
	Brown, loose, clayey SAND.	1.09				0.78	3	J1	4	S1(78)
		1.50					4	B3		
		2.00				1.28	5	J2	4	S2(64)
	Brown, soft, sandy CLAY.	2.50					6	B4		
		3.00				1.28	7	J3	5	S3(64)
		3.50					8	B5		
	Brown, firm, sandy CLAY.	4.00				2.78	9	J4	6	S4(51)
		4.50					10	B6		
	Brown, firm, sandy CLAY with some pebbles (5 - 10 mm).	5.00				4.28	11	J5	12	S5(82)
		5.50					12	B7		
	Mottled brown / light grey / yellowish brown, stiff, sandy CLAY with some pebbles (5 - 10 mm).	6.00				5.78	13	J6	20	S6(87)
		6.50					14	B8		
	Mottled brown / light grey / yellowish brown, very stiff, sandy CLAY with some pebbles (5 - 10 mm).	7.00				5.78	15	J7	25	S7(96)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.499403, -16.293195

FIG. 18 SHEET 1 OF B.H. N-10

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: PASSI

B.H.No N-10

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 25.01.19

Date Completed: 25.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
25.01.19		7.50					16	B9		
		8.00				7.28	17	J8	33	S8(96)
	Mottled brown / light grey / yellowish brown, very stiff, sandy CLAY with some pebbles (5 - 10 mm).	8.50					18	B10		
		9.00				7.28	19	J9	49	S9(93)
		9.50					20	B11		
		10.00				8.78	21	J10	35	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 18 SHEET 1 OF B.H. N-10

サイト番号：N-11

PROJECT: RURAL WATER SUPPLY PHASE IV			LOCATION: KERR JATTA							
B.H.No N-11	TYPE OF BORING: PERCUSSION		Dia.of Boring: 150mm to 10.0m				Date Started: 25.01.19			
							Date Completed: 25.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
25.01.19		0.10					1	B1		
	Greyish brown, loose, clayey SAND with some fibrous material (roots).	0.30								
		0.50					2	B2		
		1.00				0.78	3	J1	3	S1(64)
	Brown, loose, clayey fine SAND.	1.50					4	B3		
		2.00				1.28	5	J2	4	S2(67)
		2.50					6	B4		
	Brown, soft, sandy CLAY.	3.00				1.28	7	J3	4	S3(93)
		3.50					8	B5		
		4.00				2.78	9	J4	6	S4(91)
		4.50					10	B6		
		5.00				4.28	11	J5	7	S5(78)
	Brown, loose, clayey fine to medium SAND.	5.50					12	B7		
		6.00				4.28	13	J6	7	S6(78)
		6.50					14	B8		
		7.00				5.78	15	J7	8	S7(73)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.549882, -16.446037

FIG. 19 SHEET 1 OF B.H. N-11

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: KERR JATTA

B.H.No N-11

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 25.01.19

Date Completed: 25.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
25.01.19	Mottled brown / yellowish brown, firm, sandy CLAY.	7.50					16	B9		
		8.00				5.78	17	J8	9	S8(76)
		8.50					18	B10		
	Mottled brown / light grey / yellowish brown, stiff, sandy CLAY.	9.00				7.28	19	J9	10	S9(78)
		9.50					20	B11		
		10.00				8.78	21	J10	11	S10(80)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 19 SHEET 2 OF B.H. N-11

サイト番号：N-01

PROJECT: RURAL WATER SUPPLY PHASE IV			LOCATION: SUMA KUNDA							
B.H.No N-01	TYPE OF BORING: PERCUSSION		Dia.of Boring: 150mm to 10.0m				Date Started: 30.01.19			
							Date Completed: 31.01.19			
DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
30.01.19		0.10					1	B1		
		0.20								
	Brown, firm, sandy CLAY.	0.50					2	B2		
		1.00				0.78	3	J1	11	S1(62)
	Brown, stiff, sandy CLAY.	1.50					4	B3		
		2.00				0.78	5	J2	4	S2(42)
	Brown, soft, sandy CLAY.	2.50					6	B4		
		3.00				1.28	7	J3	11	S3(78)
	Brown, stiff, sandy CLAY with many pebbles (5 - 10 mm).	3.50					8	B5		
		4.00				2.78	9	J4	29	S4(100)
		4.50					10	B6		
	Mottled brown / light brown, very stiff, sandy CLAY with some pebbles (5 - 10 mm).	5.00				4.28	11	J5	29	S5(96)
		5.50					12	B7		
		6.00				4.28	13	J6	45	S6(100)
	Mottled brown / yellowish brown / light grey, very stiff, sandy CLAY with many pebbles (5 - 20 mm).	6.50					14	B8		
31.01.19		7.00				6.78	15	J7	50	S7(84)

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

GPS Coordinates of Borehole
13.214494, -16.496240

FIG. 20 SHEET 1 OF B.H. N-01

PROJECT: RURAL WATER SUPPLY PHASE IV

LOCATION: SUMA KUNDA

B.H.No N-01

TYPE OF BORING: PERCUSSION

Dia.of Boring: 150mm to 10.0m

Date Started: 30.01.19

Date Completed: 31.01.19

DATE	STRATA DESCRIPTION	Depth (m)	Legend	Reduced Level (m)	Water Level	Casing Depth	SAMPLE No.	SAMPLE TYPE	-N- VALUE	TEST TYPE
31.01.19		7.50					16	B9		
	Mottled brown / yellowish brown / light grey, very stiff, sandy CLAY with many pebbles (5 - 20 mm).	8.00				7.28	17	J8	50	S8(76)
		8.50					18	B10		
		9.00				8.78	19	J9	50	S9(82)
	Mottled light grey / yellowish brown / dark brown, very stiff sandy CLAY with some pebbles (5 -20 mm).	9.50					20	B11		
		10.00				8.78	21	J10	50	S10(100)
			(End of Borehole)							

SYMBOLS - KEY

U(100)	indicates 100mm (4in) undisturbed sample
U(38)	indicates 38mm (1 1/2in) undisturbed sample
B-	indicates disturbed bag sample
J-	indicates jar sample
S-	indicates Standard Penetration Test
N-	indicates no. of blows / 12in(300mm). penetration
V-	indicates vane test

REMARKS

FIG. 20 SHEET 2 OF B.H. N-01

※-1 試掘の優先順位はサイト単位とする。　※-2 水質の単位：EC (μS/cm)、CL (ppm)、Fe (mg/L)、大腸菌（個数）　尚、乾季においては、全ての村落で掘削リグや資機材搬入のアクセスが容易

地点番号	調査村落名	州	既存井戸の利用実態					主要道路からの搬入道路
			井戸形状	飲料用の地下水の水質	SWL(m)	水位標高	利用井戸の状況	
N1(1)	Amdalai	WCR	Dug well & Handpump	EC（30μS/cm）,CL(3),大腸菌(≧25),Fe(0)	ab.15	9.00	道路傍の井戸、水量やや不足、水質は問題ない	ab. 2.3km 砂利道
N1(2)	Suma Kunda	WCR	Open well & Bucket	EC（50μS/cm）,CL(3)，大腸菌(20), Fe(0)	11.80	9.20	Open wellのみで、地下水は若干砂混じりの灰白色	
N1(3)	Tumani Tenda	WCR	Open well & Bucket	EC（530μS/cm）,CL(15),大腸菌(7) Fe(0)	7.38	5.12	学校専用のdag well Solarが敷設、住民はOpen well(6ヶ所）の地下水利用	
N2	Faraba Sutu	WCR	Dug well & Handpump	EC（90μS/cm）,CL(8),大腸菌(10), Fe(0)	9.92	10.08	村内に3ヵ所のDag Well、その内学校専用は電動ポンプ、Boreholeは故障	ab.3.7km砂利道
N3	Jalo Koto	WCR	Dug well & Handpump	EC（170μS/cm）,CL(8),大腸菌(20), Fe(0)	－	－	道路傍の井戸、水量、水質はECが若干高く、大腸菌がやや多いが飲水利用	ab.0.5km～.0.7km砂利道
			Borehole Hand ppoum	EC（50μS/cm）,CL(10)，大腸菌(20), Fe(0)	－	－	水質はCLがやや高いが、飲料水としてはほぼ可能な範囲	
N4(1)	Arrangallen	WCR	Borehole & Solar pump	EC（30μS/cm）,CL(6),大腸菌(10), Fe(0)	－	－	道路傍の井戸、水量、水質は大腸菌が若干多いが飲水利用	主道路沿い
N4(2)	Batabutu Kantora	WCR	Dug well & Handpump	EC（50μS/cm）,CL(6),大腸菌(1), Fe(0)	14.00	6.00	水質、水量ともに問題ない	
N4(3)	Sikon	WCR	Dug well & Handpump	EC（50μS/cm）,CL(5),大腸菌(1)，Fe(0)	－	－	水質、水量ともに問題ない	
N5	Dobong	WCR	Dug well & Handpump	EC（160μS/cm）,CL(15),大腸菌(1)，Fe(0)	9.93	3.07	ELとCLが若干高いが、飲料水利用	0.6km 砂利道
N6	Drammeh Joka	NBR	Borehole & Solar pump	EC（60μS/cm）,CL(5) ,大腸菌(11), Fe(0)	14.20	30.80	1日2時間の給水、Dag wellとOpen wellがあるが乾季に時々枯渇	ab.1km弱粘土道
N7(1)	Shinchu Njabo	NBR	Dug well & Handpump	EC（50μS/cm）,CL(5),大腸菌(20)，Fe(0)	－	－	大腸菌が若干多いが、飲料水利用	ab. 3km 砂利と粘土道が交互、一部湿地帯あり
N7(2)	Kani kunda Suba	NBR	Dug well & Handpump	EC（280μS/cm）,CL(20),大腸菌(≧100)，Fe(0)	8.10	8.90	ハンドポンプの使い方が激しいので、何れメンテが必要になると予想	
N7(3)	Kani kunda Tenda	NBR	Dug well & Handpump	EC（160μS/cm）,CL(20)**, Fe(0.4)**, 大腸菌(20)	2.67	2.33	川が近く浅井戸は塩水浸入が起きている	
N7(4)	Ker Bamba Lowe	NBR	Dug well & Handpump	EC（200μS/cm）,CL(20),大腸菌(≧100)，Fe(0)	10.04	2.96	飲料水は隣村(Sinchu Njaboh)から運んでいる、約1.7 km	
N8(1)	Ker Sulay	NBR	Borehole & Solar pump	EC（30μS/cm）,CL(5),**Fe（0.4）**,大腸菌(20)	－	－	ポンプの揚水時間は15分（水位低下）、一部買水	ab.0.1km砂利道
N8(2)	Ker Ali	NBR	Borehole & Solar pump	EC（30μS/cm）,CL(5),大腸菌(0), Fe(0)	－	－	水量不足（一部セネガルからかい買水）	
N9(1)	Kataba Wollof	NBR	Dug well & Handpump	EC（350μS/cm）,CL(20),大腸菌(20)，Fe(0)	10.88	10.12	1基のハンドポンプ井戸で飲水利用、やや水量不足	ab. 0.3km～1km砂利道
N9(2)	Kataba Tata	NBR	Dug well & Handpump	EC（90μS/cm）,CL(10),大腸菌(8)，Fe(0)	－	－	小さな村落で水量的には現状で十分と思われる	
N9(3)	Bantasu	NBR	Dug well & Handpump	EC（440μS/cm）,CL(50),大腸菌(6)，Fe(0)	18.10	10.90	ECが高いが、1基のHandpomp井戸しかなく飲水に利用	
N9(4)	Tyba	NBR	Dug well & Handpump	EC（100μS/cm）,CL(50),大腸菌(2)，Fe(0)	－	－	1基のHandpomp井戸しかなく飲水に利用、故障した時は他の村から貰う	
N10	Passy Chally	NBR	Open well & Bucket	EC（270μS/cm）,CL(50),大腸菌(≧100)	13.80	19.20	ECが高いが他に手当てなく飲料水利用	ab.4.8km砂利道
N11(1)	Ker Jatta	NBR	Open well & Bucket	EC（90μS/cm）,CL(10),大腸菌(≧50)，Fe(0)	9.92	20.08	他にハンドポンプ井戸が2基あるが水質悪い	ab.0.2km～0.5km砂利道
N11(2)	Sotokoi	NBR	Dug well & Handpump	EC（60μS/cm）,CL(5),大腸菌(≧100)，Fe(0)	9.15	20.85	大腸菌が多く、味はよくないが飲料水利用	
N11(3)	Lewna +（Wellingara）	NBR	Dug well & Handpump	EC（480μS/cm）,CL(50),大腸菌(≧20)，Fe(0)	ab.15.2	13.85	小さい部落が点在、他のOpen wellは乾季に枯渇	
N11(4)	Wellingara	NBR	Dug well & Handpump	**N11(3) 村と共同利用**				
N12(1)	Ker Jane	NBR	Borehole & Solar pump	EC（30μS/cm）,CL(2),大腸菌(≧50)，Fe(0)	－	－	N12(1)とN12(2)の村で共同のBorholeを飲水。Tap;N12(1)5ヶ所、N12(2)10ヶ所	ab. 3.5km砂利道
N12(2)	Ker Njugare	NBR	Open well & Bucket	EC（30μS/cm）,CL(2),大腸菌(≧50)，Fe(0)	12.78	24.22	N12(1)村から給水（3 Taps）しているが、独自にOpen wellも利用	
N13(1)	Kolior Sula	LRR	Borehole & Hand pump	EC（60μS/cm）,CL(2),大腸菌(3)，Fe(0)	－	－	水質、水量ともに問題ない	ab. 1km～1.5km 砂利道
N13(2)	Kolior Nyamala	LRR	Dug well & Handpump	EC（250μS/cm）,CL(5),大腸菌(2)，Fe(0)	－	－	ECが若干高い1基のハンドポンプ井戸で飲料水利用	
N14	Jiffin	LRR	Borehole & Solar pump	EC（30μS/cm）,CL(3ppm),大腸菌(0)，Fe(0)	－	－	水質、水量ともに問題ない	ab.0.5km砂利道

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地点番号	調査村落名	州	既存井戸の利用実態					主要道路からの搬入道路
			井戸形状	飲料用の地下水の水質	SWL(m)	水位標高	利用井戸の状況	
N15(1)	Buiba Mandinka	LRR	Borehole & Solar pump	EC（40μS/cm）,CL(2),大腸菌(15), Fe(0)	－	－	プライベートのBorehole井戸から4つのタップで村に給水	ab.0.01km～0.7km 主道沿い
N15(2)	Buiba Jallow Kunda	LRR	Dug well & Handpump	EC（300μS/cm）,CL(20),大腸菌(7), Fe(0)	－	－	村には3基のハンドポンプ井戸があり、全て飲料水利用	
N16	Jarra Sukuta	LRR	Open well & Bucket	EC（330μS/cm）,CL(20),大腸菌(15), Fe(0)	5.20	26.80	村には2基のBoreholeがあるが、ECがとても高く飲めない	ab.1.2km粘土道
			Borehole & Solar pump	EC（1700μS/cm）, Fe(測定していない?)			EC値が高く飲料不適で雑用水利用	
N17(1)	Jiroff	LRR	Borehole & Hand pump	EC（60μS/cm）,CL(7),大腸菌(0)、Fe(0)	－	－	村には他にオープンとハンドポンプ井戸が計3基あるがEc高く雑用水	ab. 0.5km～1km砂利道
N17(2)	Mandina	LRR	Dug well & Handpump	EC（200μS/cm）,CL(25),大腸菌(20), Fe(0)	14.28	8.72	1基のハンドポンプ井戸のみを飲料水使用	
		LRR	Borehole & Hand pump	EC(100μS/cm)			時々飲料に利用	
N17(3)	Nema Kuta	LRR	Dug well & Handpump	EC（120μS/cm）,CL(15),大腸菌(≧50), Fe(0)	－	－	1基のOpen wellは水質やや悪い、Hand pump井戸（4基）はやや塩分高い	
N18(1)	Jahawur Mandinka	CRR	Dug well & Handpump	EC（270μS/cm）、CL(≧50), **Fe (1.5),** 大腸菌(5)	5.15	6.85	雑用水用で飲料水は隣村（Buduck村)から買水：20 L/2.5 GMD	ab. 0.5km 砂利道
N18(2)	Jahawur Fula	CRR	Open well & Bucket	EC（350μS/cm）,CL(≧50),大腸菌(≧100), Fe(0)	9.20	5.80	雑用水用で飲料水は隣村（Buduck村)から買水：20 L/2.5 GMD	
N19(1)	Baneri	CRR	Open well & Bucket	EC（240μS/cm）,CL(≧50,大腸菌(≧100), Fe(0)	8.00	10.00	井戸はライニングしてなく、地表水浸透で少し濁っている	ab.0.5km～4km砂利道
N19(2)	Bantanto Ker Uldi	CRR	Open well & Bucket	EC（260μS/cm）,CL(30), **Fe(0.2)**, 大腸菌(≧100)	11.13	14.87	2本のオープン井戸だけで飲料・雑用に使用、水不足で困っている	
N19(3)	Bantanto Ker Sulay	CRR	Borehole & Solar pump	EC（420μS/cm）,CL(20),大腸菌(≧10), Fe(0)	Dry	－	飲水用のBoreholeは塩分高いが、水質良い浅井戸は乾季にドライになる為に飲水しない	
N19(4)	Bantanto Jawara Jallow	CRR	Open well & Bucket	EC（200μS/cm）,CL(≧50),大腸菌(8), Fe(0)	13.73	11.27	1基のオープン井戸を飲水、地下水は乾季は水不足で雨季は濁りる	
N20(1)	Gongur Wollof	CRR	Borehole & Solar pump	EC（200μS/cm）,CL(15),大腸菌(5), Fe(0)	－	－	小さな村で、1ヶ所の井戸で飲水利用、やや水量が足りない	ab.2.5km～3.5km 砂利道
N20(2)	Gongur Tukulor	CRR	Dug well & Handpump	EC（30μS/cm）,CL(8),大腸菌(0), Fe(0)	15.82	4.18	1基のhand ponp wellで飲料水利用、水量不足	
N20(3)	Ganje Wollof	CRR	Dug well & Handpump	EC（990μS/cm）,CL(20),大腸菌(≧30), Fe(0)	12.46	10.54	ハンドポンプ井戸はECが極めて高く、他に手当てがなく飲水利用	
N21(1)	Madina Jose	CRR	Open well & Bucket	EC（50）,CL(5)**,Fe（1.5）**,大腸菌(≧30)	41.15	3.85	小さな村で1基の井戸で飲水、Fe高いが他に手当無しで、水量不足	ab.1km～2km 砂利・粘土道が交互
N21(2)	Ngaige	CRR	Borehole & Solar pump	EC（30μS/cm）,CL(7), 大腸菌(20), Fe(0)	42.06	2.94	水質、水量ともに問題ない	
N21(3)	Makka Ali Sar	CRR	Borehole & Solar pump	EC（20μS/cm）,CL(15),大腸菌(5), Fe(0)	33.16	11.84	CLが若干高いが飲料的には支障はないと思われる	
N22(1)	Jarreng Ker Gibbi	CRR	Dug well & Handpump	EC（280μS/cm）,CL(20),大腸菌(≧20), Fe(0)	15.27	17.73	村の規模の割りには飲料水の井戸が少ない	ab.1.5m～2.5m 砂利・粘土道が交互
N22(2)	Jarreng Ablie Leigh	CRR	Dug well & Handpump	EC(190μS/cm),CL(20),大腸菌(5), Fe(0)	－	－	村の規模小さく、1基のハンドポンプで飲・雑用水利用、やや水不足	
N22(3)	Jarreng Passy + Jarreng, Ker Mamudu, + Jarreng Mbojeng	CRR	Open well & Bucket	EC(100μS/cm),CL(8),大腸菌(≧50), Fe(0)	15.56	14.44	1基のオープン井戸で3村共同で飲料利用、水量不足が否めない	
		CRR	**3村で共同利用**					
N22(4)	Jarreng Ker Maduar	CRR	Open well & Bucket	EC(550μS/cm),CL(20ppm),大腸菌(≧50), Fe(0)	21.25	6.75	オープン井戸の1基は飲料水、1基は雑用水利用	
N22(5)	Jarreng Sait Sowe	CRR	Open well & Bucket	EC(120μS/cm),CL(15),大腸菌(≧100), Fe(0)	23.49	6.51	1基のオープン井戸で飲・雑用水に利用	
N23(1)	Njoben Toro/Wollof + Njoben Fula	CRR	Borehole & Solar pump	EC(60μS/cm),CL(7),大腸菌(15), Fe(0)	25.20	4.80	村の規模の割にはやや水量が足りない	ab. 0.5m～1.5km 砂利
N23(2)	Njoben Toro/ Wollof	CRR	Dug well & Handpump	EC(300μS/cm),CL(20),大腸菌(≧50), Fe(0)	14.08	13.92	4 taps利用、水質が悪いが飲料水利用	
N23(3)	Jallow Kunda Mat	CRR	Borehole & Solar pump	EC(240μS/cm),CL(20),大腸菌(0), Fe(0)	23.90	4.10	ソーラーの規模が小さく揚水不足	
N23(4)	Jallow Kunda Sering	CRR	Open well & Bucket	EC(50μS/cm),CL(4),大腸菌(≧50), Fe(0)	31.32	0.68	N23(5) Jallow Kunda Dembaからタップ(3ヶ所）で配給して貰っている	

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N23(5)	Jallow Kunda Demba	CRR	Open well & Bucket	EC(160μS/cm),CL(10),大腸菌(≧100), Fe(0)	33.22	-1.22	Tapは5ヵ所、水質が若干悪いが飲料水利用	道、一部粘土道あり
N23(6)	Jallow Kunda Kerewan	CRR	Dug well & Handpump	EC(30μS/cm),CL(4),大腸菌(≧100), Fe(0)	27.80	4.20	村の規模が小さいので水量的には現況で十分と思われる	
N23(7)	Ramatoulie Jallow Kunda	CRR	Open well & Bucket	EC(180μS/cm),CL(20), **Fe (0.1)**, 大腸菌(≧30)	19.30	2.70	小さな村、乾季は水量不足になる	
N23(8)	Nyanen	CRR	Dug well & Handpump	EC(330μS/cm),CL(20),大腸菌(0), Fe(0)	11.60	3.40	村の規模の割には飲料用の井戸（1基）が少ない	
N24(1)	Nyaga Bakary	CRR	Open well & Bucket	EC(210μS/cm),CL(20),大腸菌(≧100)	12.41	3.59	27家族で1本の井戸を飲料に使用、村の規模の割りには井戸が少ない	ab. 0.1km～0.3km砂利道
N24(2)	Nyaga Bantang	CRR	Dug well & Handpump	EC(160μS/cm),CL(20),大腸菌(≧50)	5.97	4.03	Hand poup well（住民用に1基、学校専用に1基）、やや水量不足	
N25(2)	Brikamanding	CRR	N25(3)と共有	EC(30μS/cm),CL(2ppm), **Fe(5mg/L)**, 大腸菌(≧50)	－	－	公共水栓5ヵ所、供給井戸は(3)のDashilami村（5ヶ所の水栓）と共有	ab. 0.1km～2km 砂利道
N25(3)	Darsilami	CRR	Borehole & Solar pump		10.15	12.85	(2)のBrikamal Ndingと共同で利用、村内にはTapが5ヶ所	
N25(4)	Jamwelly	CRR	Open well & Bucket	EC(60μS/cm),CL(20),大腸菌(≧30), Fe(0)	12.75	11.25	水質は良いが、水量不足	
N25(5)	Sinchu Madado	CRR	Dug well & Handpump	EC(80μS/cm),CL(20),大腸菌(0), Fe(0)	－	－	水質は良いが、水量不足	
N25(6)	Sinchu Magai	CRR	Open well & Bucket	EC(90μS/cm),CL(8),大腸菌(≧50), Fe(0)	5.95	11.05	水質は良いが、水量不足	
N25(7)	Sinchu Bamba	CRR	Open well & Bucket	EC(210μS/cm),CL(30),大腸菌(≧15), Fe(0)	8.98	13.02	水質は良いが、水量不足	
N26(1)	Teneng Fara	CRR	Borehole & Solar pump	EC(30μS/cm),CL(3),大腸菌(≧100), Fe(0)	15.17	10.83	Boreholeの資質は中位であるが、Dag wellは水質悪い	ab. 1km～1.5km砂利道
N26(2)	Sinchu gundo	CRR	Dug well & Handpump	EC(30μS/cm),CL(2),大腸菌(0), Fe(0)	14.22	11.78	水量がやや不足	
N26(3)	Sinchu Alagie	CRR	Open well & Bucket	EC(110μS/cm),CL(15),大腸菌(≧30), Fe(0)	11.12	3.88	9本のオープン井戸全て飲料利用、地下水は細砂が混じり黄色の微色	
N27(1)	Dramani + Banjulunding(2村)	CRR	Dug well & Handpump	EC(70μS/cm),CL(5),大腸菌(≧15), Fe(0)	－	－	水質は良いが、水量的にはやや不足	ab.4km 砂利道と粘土道が交互
N27(2)	Fuga + Chewel (2村)	CRR	Open well & Bucket	EC(40μS/cm),CL(10),大腸菌(≧100), Fe(0)	11.15	12.85	EC, CL, Feのは基準内であるが、大腸菌が多い	
N27(3)	Sololo Mandinka	CRR	Dug well & Handpump	EC(100μS/cm),CL(10),Fe(＜0.05),大腸菌(≧15)	－	－	3つのhand pump井戸はすべて飲料、Boreholeはダメージで未使用	
N27(4)	Sololo Fula	CRR	N27(3)と共有		－	－		
N28(1)	Njoren	CRR	Dug well & Handpump	EC(60μS/cm),CL(2),大腸菌(≧30), Fe(0)	24.20	30.80	水質は良いが、水量不足	ab.3.5km 砂利・粘土道交互
N28(2)	Sankabari	CRR	Dug well & Handpump	EC(40μS/cm),CL(2),大腸菌(5), Fe(0)	－	－	水量不足、地下水位が深いため汲み上げるのに4人係りの動力	
N29(1)	Limbambul Bambo	URR	Dug well & Handpump	EC(130μS/cm),CL(10),大腸菌(≧30), Fe(0)	14.19	3.81	3基のHandpumpの2基がダメージで1基のみ稼動、水量不足	ab.0.5km粘土道
N29(2)	Limbambul Yamadou	URR	Dug well & Handpump	EC(70μS/cm),CL(3),大腸菌(≧30), Fe(0)	14.53	3.47	2基のHandpumpの1基故障、地下水位が深くポンプアップは4人の動力必要	
N30(1)	Yorro Bawol	URR	Borehole & Handpump	EC(30μS/cm),CL(2),大腸菌(≧30), Fe(0)	25.98	10.02	水質は良いが、水量不足（水位はOpen well）	ab.0.5kmkm 粘土道交互
N30(2)	Kolly Bantang	URR	Borehole & Solar pump	EC(60μS/cm),CL(5),大腸菌(≧10), Fe(0)	28.40	13.60	1日1時間の給水、3ヶ所のタップの内、1ヶ所はダメージ、水量不足(水位はOpen well)	
N30(3)	Samba Gabbudeh	URR	Dug well & Handpump	EC(90μS/cm),CL(7),大腸菌(≧100), Fe(0)	29.26	13.74	水質は良いが、水量不足（水位はOpen well）	
N31	Touba Wulli	URR	Dug well & Handpump	EC(140μS/cm),CL(20),大腸菌(≧50), Fe(0)	14.19	15.81	塩分高い地下水を飲料水利用で、水質の良い水を希望	ab.0.3km粘土道
N32(1)	Jawo Kunda	URR	Dug well & Handpump	EC(30μS/cm),CL(3)大腸菌(≧100), Fe(0)	12.38	7.62	ハンドポンプ井戸が1基で、水量不足（水位はOpen well）	ab.0.5km～4km砂利・粘
N32(2)	Sotuma Kantora	URR	Dug well & Handpump	EC(80μS/cm),CL(7),大腸菌(≧100), Fe(0)	－	－	ハンドポンプ井戸が1基で、水量不足	
N32(4)	Madina Balla	URR	Dug well & Handpump	EC(50μS/cm),CL(15),大腸菌(≧30), Fe(0)	－	－	CL値がやや高いが、他に手当てなく飲料水利用	

※-1 試掘の優先順位はサイト単位とする。　　※-2 水質の単位：EC (μS/cm)、CL (ppm)、Fe (mg/L)、大腸菌（個数）　　尚、乾季においては、全ての村落で掘削リグや資機材搬入のアクセスが容易

地点番号	調査村落名	州	既存井戸の利用実態					主要道路からの搬入道路
			井戸形状	飲料用の地下水の水質	SWL(m)	水位標高	利用井戸の状況	
N32(5)	Hereman Kono (Chemanbugu)	URR	Open well & Bucket	EC(50μS/cm),CL(8),大腸菌(≧30), Fe(0)	11.62	17.38	小さな村、2基のHandpumpの1基故障	土道が交互
N32(6)	Sare Beru	URR	Dug well & Handpump	EC(60μS/cm),CL(10),大腸菌(≧50), Fe(0)	13.54	15.46	1基のハンドポンプが飲料水、他のオープン井戸は家畜用	
N33(1)	Kantel Kunda	URR	Dug well & Handpump	EC(60μS/cm),CL(10),大腸菌(≧50), Fe(0)	10.85	14.15	1基のhand ponp wellだけで飲料水利用、水量不足	ab.6km～7km粘土道
N33(2)	Bani	URR	Open well & Bucket	EC(40μS/cm),CL(5),大腸菌(2), Fe(0)	17.61	17.39	1基のhand ponp で飲水足りない、地下水が出るまで相当動力がいる	
N34	Simoto Touba	URR	Dug well & Handpump	EC(60μS/cm),CL(15),大腸菌(15), Fe(0)	11.65	16.35	1基のhand ponp wellだけで飲料水利用、水量不足	ab.0.5km粘土道
N35	Perai Tenda	URR	Dug well & Handpump	EC(30μS/cm),CL(10), **Fe (0.3)**, 大腸菌(≧100)	11.49	12.51	大腸菌が多いが飲水、学校用に別の井戸（Dag Well & Solar)	ab.0.7km粘土道
N36(1)	Badari	URR	Dug well & Handpump	EC(30μS/cm),CL(7),大腸菌(≧5), Fe(0)	11.80	25.20	1基のhand ponp で2村利用、水量が足りない	ab. 0.2km～6km粘土質道路
N36(2)	Ceesay Kunda	URR	Dug well & Handpump	EC(100μS/cm),CL(15),大腸菌(≧7), Fe(0)	8.85	18.15	CL値がやや高いが、他に手当てなく飲料水利用	
N36(3)	Samba Kunda	URR	Dug well & Handpump	EC(60μS/cm),CL(5),大腸菌(1), Fe(0)	14.58	20.42	水質は良い、2基のHandpumpで飲料利用、オープン井戸は雑用水	

資料 7-14　直流水中モーターポンプ導入に係る検討

一般的に直流水中モーターポンプは直流を交流に変換するインバータが不要であり、交流モーターポンプに比べて故障の可能性が小さいと考えられているため、以下の様に本プロジェクトでの直流水中モーターポンプの導入可能性について検討を行った。

(1) 直流水中モーターポンプ導入の前提条件

本プロジェクトで直流ポンプを採用する前提条件としては、まず以下の 2 点が挙げられる。

- 動水位：40 m 以上（第三次地方飲料水供給計画の平均値）
- 揚水量：5 m^3/時以上（試掘井の成功井の条件）

(2) 直流水中モーターポンプの特徴

「ガ」国で実積のある直流水中モーターポンプは、デンマークを基盤とするポンプ製造企業のグルンドフォス（Grundfos）社、ドイツで設立されたソーラーポンプを主に製造しているローレンツ（Lorentz）社もしくはインドの国営企業であるシャクティ（Shakti）社の 3 社が確認されている。各社の特徴について以下に示す。

- グルンドフォス社
  グルンドフォス社の SQE シリーズは直流ブラシレスモーターを採用したポンプであるが、全揚程－流量曲線により、上記前提条件の動水位 40 m 以上、揚水量 5 m^3/時（83.3 L/分）以上を満たす適用範囲はほとんどない。

- ローレンツ社
  多様な型式の直流モーターポンプを製造しているが、動水位 40 m 以上、揚水量 5 m^3/時以上の条件に適合する型式は PS2-4000C が適用可能と考えられる。ただし、ソーラー式揚水設備の維持管理会社からは、本製品のモーターとコントローラは比較的故障が多いという情報を受けている。

- シャクティ社
  シャクティ社製の直流水中モーターポンプは、「ガ」国で実積のあるグルンドフォス社やローレンツ社などの製品とは異なり、本プロジェクトで直流ポンプを採用する前提条件である動水位 40 m 以上、揚水量 5 m3/時以上の条件に適合する型式を数多く有していることが確認された。

動水位 40 m 以上、揚水量 5 m^3/時以上の条件に適合する型式は数多く有しているが、「ガ」国でのこれまで設置されたポンプは 1 ヵ月程度しか経過しておらず、運用・稼働状況を評価することが難しい。一方、すべてのポンプには、コントローラ上に SIM カードを挿入する監視デバイスが備わっており、インターネットを介して日々の生産状況などポンプの稼働状況を遠隔で監視することができる。

(3) シャクティ社製の直流モーターポンプの信頼性の確認

シャクティ社製の直流モーターポンプの信頼性の確認を行うべく下記のように検討を行った。

a) SWE-GAM 社からインド製ポンプの信頼性に関する聞き取り
シャクティ社製を含むインド製の水中モーターポンプは、グルンドフォスなどのヨーロッパ製と比べて安価なことが特徴の一つである。一方、「ガ」国でインド製を採用したソーラーポンプを取扱う SWE-GAM 社からは、インペラーがカタログではステンレス製と記載があるにもかかわらず、以下の写真のようにポンプ内部に錆が発生して故障した例がいくつか確認されている。

水中モーターポンプ外観

ポンプインペラー

b) GAM-SOLAR 社からシャクティ社製ポンプの信頼性に関する聞き取り
「ガ」国で唯一シャクティ社製の直流水中モーターポンプを運用している GAM-SOLAR 社では、設置期間は本調査時点で 1 年未満と短く一度もポンプを井戸から引き上げたことがなかったため、ポンプの状態を確認することはできなかった。

c) セネガルでのシャクティ社製のポンプの信頼性に関する調査
セネガル国でシャクティ社製の直流モーターポンプを設置した業者から信頼性・耐久性についての確認を試みた。しかし、シャクティ社のインド本社によれば、セネガル国にはシャクティポンプの代理店はなくパイロット的に 1 基インドからの技術者によって直接設置されたものであると説明を受けており、確認することができなかった。

d) シャクティ社の本社に対するポンプの信頼性に関する調査
シャクティ社はインドやモロッコでは多くの実積があることが確認できているため、長期間に設置したポンプのレポートなど品質に関する情報をシャクティ社の本社に求めたところ、製品の宣伝的な資料は提供されたが、信頼性・耐久性に関する資料の提供を拒否されており確認することができなかった。

(4) 結論

上述したように、シャクティ社の直流水中モーターポンプは本プロジェクトで採用するには、現状では信頼性・耐久性に懸念がある。

Project Monitoring Report
on
THE PROJECT FOR RUTAL WATER SUPPLY PHASE IV IN THE REPUBLIC OF THE GAMBIA
Grant Agreement No. XXXXXXX
2020, March

Organizational Information

Signer of the G/A (Recipient)	Person in Charge (Designation) Contacts Address: Phone/FAX: Email:
Executing Agency	**Department of Water Resources (DWR)** Person in Charge Mr. Lamin Mai Touray, Director Contacts Address: 7 Marina Parade, Banjul, The Gambia Phone/FAX:+220-422-7631 Email: laminmaitouray@gmail.com
Line Ministry	**Ministry of Fisheries, Water Resources & National Assembly Matters** Person in Charge Dr. Bamba A.M Banja, Permanent Secretary Contacts Address: 7 Marina Parade, Banjul, The Gambia Phone/FAX:+220-422-7773 Email: bamba.banja@yahoo.co.uk

General Information:

Project Title	The Project for Rural Water Supply Phase IV
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY____. Government of (the Republic of The Gambia: JPY____.

1: Project Description

1-1 Project Objective

In order to contribute to achieving universal and equitable access to safe and affordable drinking water, the Project will provide solar water supply facilities which promote the use of renewable energy. Specifically, construction of 20 solar water supply facilities using boreholes as a water source, and technical support of the operation and maintenance will be provided for sustainable supply of safe drinking water in rural areas.

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

Higher-level objectives:
It is expected that the risk of water-related diseases such as diarrhea can be reduced by improving access to improved drinking water sources and improving water quality. In particular, ensuring safe water access to children under the age of five, who are prone to waterborne diseases, can prevent the occurrence of diarrhea that reduces the ability to absorb nutrients and contribute to long-term improvement in nutritional status. In addition, by reducing the time, physical and energy burden of fetching water from many women and children who are responsible for collecting water every day, the opportunity for children to attend school and women to participate in economic activities can be expected to increase.

Situation of the target groups:
According to the results of the social condition survey, there are no villages that use untreated surface water for potable purposes, but 16 out of 100 surveyed villages depend only on unprotected open shallow wells. The rest of the villages use some improved water sources, but have 1) not enough water facilities for the population and longer time spent in fetching water, 2) daily water supply time is restricted during the day and stable water supply services cannot be accessible due to the effects of seasonal fluctuations in water quantity, and 3) Bacterial contamination in water is measured.

1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr 2018)	Target (Yr 2025)
Water Supply Population (person)	22,000	27,800
Water Supply Amount (m^3/day)	528	1,673

Qualitative indicators to measure the attainment of project objectives

- Reduction of diarrheal disease (corresponding to SDGs 3.9.2)
- Reduction of stunting in children (corresponding to SDGs 2.2.1)
- Improve the environmental health of schools and health facilities (health centers)
- Reduction of time required for fetching water (including waiting time)

2: Details of the Project

2-1 Location

Components	Original *(proposed in the outline design)*	Actual
1. Construction of solar powered water supply system and soft component activities	20 sites in five regions.	

2-2 Scope of the work

Components	Original* *(proposed in the outline design)*	Actual*
1. Construction of solar pumping systems	N = 30	
2. Construction of Elevated steel water tanks	N = 20	
3. Construction of Transmission Pipeline	About 12.5 km	
4. Construction of Distribution Pipeline	About 100.6 km	
5. Construction of Public Tap Stands	N = 473	

Reasons for modification of scope (if any).

(PMR)

2-3 Implementation Schedule

Items	Original		Actual
	(proposed in the outline design)	*(at the time of signing the Grant Agreement)*	
Government Bond			
Cabinet Approval	3/2020		
E/N	4/2020		
G/A	4/2020		
Consultant Contract	5/2020		
Detailed Design	5/2020- 9/2020		
Tender Notice	9/2020		
Tender	12/2020		
Contractor Agreement	1/2021		
Construction of solar powered water supply systems	1/2021- 10/2022		
Check-out of Completion of Construction work	10/2022		
Assistance in the start-up or operation and maintenance	8/2020 – 12/2022		
Defect Liability Period	10/2023		
Project Completion	10/2023		

Reasons for any changes of the schedule, and their effects on the project (if any)

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant (Confidential until the Bidding)

Components		Cost (Million Yen)	
Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
1. Construction			
2. Software Component			
3. Consultant Services			
4. Contingencies expenses			
Total			

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components		Cost (1,000 Yen)	
Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
1. Advising Commission for Authorization to Pay (A/P) and Payment commission to the Bank		818	
2. Construction of guard house for solar pumping system		6,345	
3. Initial deposit fund for operation and maintenance		1,127	
4. Salary, allowance and transport fees for DWR staff		183	
5. Motivator's allowance		654	
6. Motivator's fuel for transportation		447	
Total		9,574	

Note: 1) Date of estimation: February 2019
2) Exchange rate: 1 EUR = 128.61 JPY

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original *(at the time of outline design)* Name: Department of Water Resources (DWR) Role: Policy making and regulation in rural water supply. Sector planning, project supervision and monitoring of water supply construction/rehabilitation Financial situation: The budget is estimated to be around GMD 190 million annually. Institutional and organizational arrangement (organogram): DWR consists of six divisions (Management division, Meteorology division, Water Quality Monitoring and Control division, Rural Water Supply division, Hydrology division, Computer and Data Analysis division). Human resources (number and ability of staff): Number of staff is about 190, the staff have a certain level of skills and experience necessary for project supervision and monitoring.
Actual *(PMR)*

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spare parts, etc.)

Original *(at the time of outline design)* Village Water Committee (VWC) is a leading entity for operation and maintenance of water supply facilities. VWC is composed of approximately 10 members including president, vice president, secretary, accountant, auditor and advisor (several). In addition, as a working team for operation and maintenance of the facility, VWC places a facility operator (operator), nighttime security guard for pumping equipment (sometimes performed by the operator), public tap meter reader (sometimes performed by VWC member or by the operator) and Tap Attendants.
Actual *(PMR)*

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original *(at the time of outline design)* Water tariff in the Gambia is based on volume of water consumption, and the unit rate of 2.3 GMD/m^3 has been adopted since the completion of Rural Water Supply (Phase III) in the operation and maintenance contract. According to the balance of income and expenditure analysis, the tariff to GMD 3.0/m^3 or higher will be necessary to continue the operation of the facility in the project.
Actual *(PMR)*

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks (*at the time of outline design)*

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
Actual Situation and Countermeasures	
(PMR)	

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

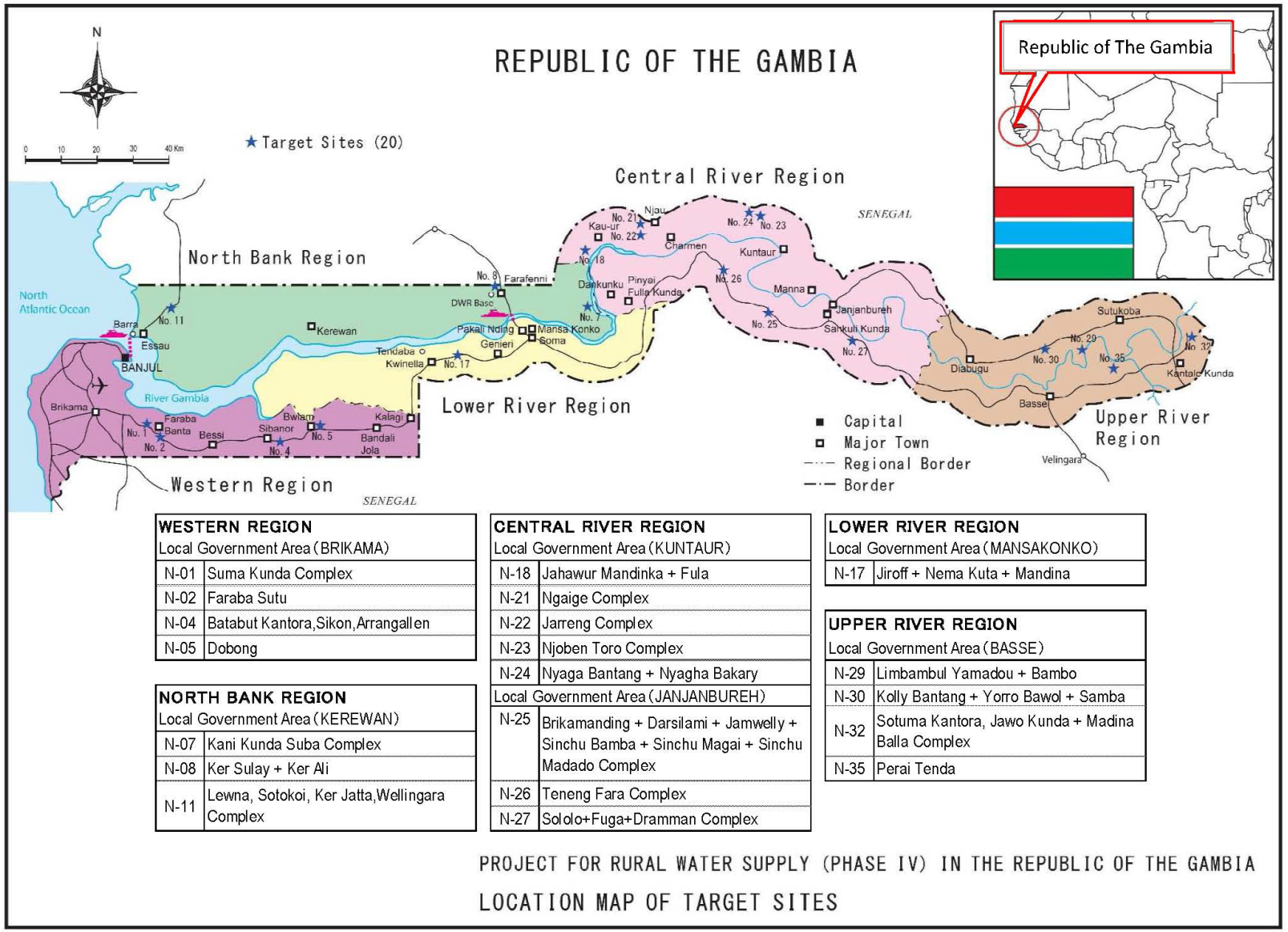
Attachment

1. Project Location Map
2. Specific obligations of the Recipient which will not be funded with the Grant
3. Monthly Report submitted by the Consultant

Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
- Contractor's Main Staff List

4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final)only)
8. Pictures (by JPEG style by CD-R) (PMR (final)only)
9. Equipment List (PMR (final)only)
10. Drawing (PMR (final)only)
11. Report on RD (After project)

Attachment 1: Project Location Map



WESTERN REGION	
Local Government Area (BRIKAMA)	
N-01	Suma Kunda Complex
N-02	Faraba Sutu
N-04	Batabut Kantora,Sikon,Arrangallen
N-05	Dobong

NORTH BANK REGION	
Local Government Area (KEREWAN)	
N-07	Kani Kunda Suba Complex
N-08	Ker Sulay + Ker Ali
N-11	Lewna, Sotokoi, Ker Jatta,Wellingara Complex

CENTRAL RIVER REGION	
Local Government Area (KUNTAUR)	
N-18	Jahawur Mandinka + Fula
N-21	Ngaige Complex
N-22	Jarreng Complex
N-23	Njoben Toro Complex
N-24	Nyaga Bantang + Nyagha Bakary
Local Government Area (JANJANBUREH)	
N-25	Brikamanding + Darsilami + Jamwelly + Sinchu Bamba + Sinchu Magai + Sinchu Madado Complex
N-26	Teneng Fara Complex
N-27	Sololo+Fuga+Dramman Complex

LOWER RIVER REGION	
Local Government Area (MANSAKONKO)	
N-17	Jiroff + Nema Kuta + Mandina

UPPER RIVER REGION	
Local Government Area (BASSE)	
N-29	Limbambul Yamadou + Bambo
N-30	Kolly Bantang + Yorro Bawol + Samba
N-32	Sotuma Kantora, Jawo Kunda + Madina Balla Complex
N-35	Perai Tenda

PROJECT FOR RURAL WATER SUPPLY (PHASE IV) IN THE REPUBLIC OF THE GAMBIA

LOCATION MAP OF TARGET SITES

Attachment 2: Specific obligations of the Recipient which will not be funded with the Grant

The following tables show obligations of the Gambian side by category.

【Before Bidding】

No.	Item	Deadline	Organization in charge
1	To open a bank account（Bank Arrangement (B/A)）	Within 1 month after the signing of the G/A	DWR
	To issue Authorization to Pay (A/P) to the bank in Japan for payment to the consultant	Within 1 month after the signing of the contract.	DWR
	To bear the following commissions to the bank in Japan for the banking services based upon the B/A 1) Advising commission of A/P 2) Payment commissions for A/P	1) Within 1 month after the signing of the contract. 2) Every payment	DWR
2	To clear and maintain access road to the sites (as needed)	Before notice of the bidding document	DWR
	To secure land necessary for the construction of water supply facilities such as pumping station, elevated water tank, water pipes and public tap stand etc	Before notice of the bidding document	DWR and The Target Sites
	To secure land acquisition/ clearance necessary for the construction of two field offices (40m x 50m) on the north bank and one on the south bank of the river	Before notice of the bidding document	DWR
	To secure stock yards and store to maintain construction materials (as needed)	Before notice of the bidding document	DWR
	To obtain the necessary permit for the implementation of the project from the concerned organization (road crossing of pipeline, and others)	Before notice of the bidding document	DWR
3	To assign counterparts for the Survey Team during Detail Design Survey(as needed)	Soon after starting Detail Design Survey starts	DWR
4	To assign counterparts for software component activities	Soon after starting Detail Design Survey starts	DWR
5	To submit Project Monitoring Report (with the result of Detailed Design)	Before preparation of bidding documents	DWR
6	To secure land necessary for construction of the wells	Before the construction will start	DWR
7	To obtain consent for borehole construction from the target village	Before the construction will start	DWR
	To protect and not use the test boreholes constructed during this preparatory survey	Until the project will start	DWR

【During the Project Implementation】

No.	Item	Deadline	Organization in charge
1	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the contractors	Within 1 month after contract(s) signing	DWR
	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 for A/P	1)Within 1 month after the signing of the contract 2) Every payment	DWR
2	To ensure prompt customs clearance	During the project	DWR
3	To accord Japanese nationals and/or physical persons of the third countries 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	During the project	DWR
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be borne by its designated authority without using the Grant	During the project	DWR
5	To build watchman houses and allocate resident watchmen for the solar pumping systems	During the project	DWR and The Target Sites
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the project	During the project	DWR
7	1) To submit the Project Monitoring Report 2) To submit Project Monitoring Report (Final)	1) Every month 2)Within one month after signing of Certificate of Completion for the works under the contract(s)	DWR
	To submit a report concerning completion of the project	Within six months after completion of the project	DWR
8	Supervision of construction and coordination between relevant organizations during the construction period	During the project	DWR
9	To assign counterparts for the soft-component activities	During the project	DWR
10	Public relations in The Gambia at an opportunities such as completion ceremony	During the project	DWR

【After Completion of the Project】

No.	Item	Deadline	Organization in charge
1	To maintain and use properly and effectively the facilities constructed under the Grant Aid	After the project completion	DWR and The Target Sites
2	Observation of the contract between VWC and maintenance company	After completion of the construction	DWR

Attachment 6: Monitoring sheet on price of specified materials (Quarterly)

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C−D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st ●month, 2015	2nd ●month, 2015	3rd ●month, 2015	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)

（Actual Expenditure by Construction and Equipment each）

		Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost		(A/D%)	(B/D%)	(C/D%)	
	Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
	others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost		(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost		(A/D%)	(B/D%)	(C/D%)	
Total		(A/D%)	(B/D%)	(C/D%)	