Chief Executive Officer, Water Resources Management Authority, P.O. Box 45250 – 00100 NAIROBI



Form: WRMA 009A Catchment: TANA

WRMA ID:

File WRMA/40/KTI/4ED/10543/G/7

Water Resources Management Authority

BOREHOLE COMPLETION RECORD

(To be submitted in triplicate)

(Rule 76,77)

Borehole No... WRMA/40/KTI/4ED/10543/G/7 Borehole Name: JOSEPH KIKWA MISONZO

Formation....METAMORPHICS

PARTICULARS O				DETAILS				
Full name of ap			ock Letters)	JOSEPH KIKWA MISONZO				
2. Category of Ap				INDIVIDUAL	VA 1111301420			
[Association, Socie	•			INDIVIDUAL				
			dual) or Certificate of	ID. 5434919				
			roups or Companies	PIN. A112494	820			
					ress of Applic	ant		
Physical Address where water is to be used (see sketch)				Contact Add	icas of Applic	arre		
4. L/R Number(s				5. Box Num	ber	13339		
6. Village(s)/War	d(s)	MAL	KU	7. Town		NAIROB		
8. Sub-location(MAL	KU	9. Post Code	2	00200		
10. Location(s)			JLANI	11. Telephon				
				(Landline)				
12. Division(s)		KATI	JLANI	13. Telephone (Mobile)	e Contact	0723461	350	
14. District(s)	2	KATU	JLANI	15. Email Con	ntact	kikwajose	ph@gmail.com	
PARTICULARS O	F CONTR	ACTO	R					
16. Box Number		6274	5	22. License Number		WD/WRC-1781		
		Nairo		23. Gazetted On 2014				
18. Post Code		0020	0	24. Drilling Supervisor A.K			.K.Musyimi	
19. Telephone Cor	ntact						ary PRD Super drill	
(Landline)		0777	218 977	1			1500	
20. Telephone Cor	ntact		218 077					
(Mobile)								
21. Email Contact		info(hydropan.co.ke					
INTENDED USE C	F WATEI	2						
			; Domestic.; Stock,	Domestic				
other	,		,					
PARTICULARS O	F BOREH	IOLE						
Type of Borehole:	- Drilled; I	Driven;	Bored; Jetted; Other	Drilled				
Borehole Construc								
Drilling started			Drilling completed		All work co	mpleted		
(date)	13/01/2	018	(date)	08/02/2018	(date)		13/02/2018	
Total Depth:	J. ,		Measured (m)		Final (back-	filled)		
	170			170	Depth (m)	,	0	
Reported (m)			From (m)		To (m)		,	
Reported (m) Hole Diameter							170	
	215			0				
Hole Diameter	215		From (m)	0	To (m)			
Hole Diameter (mm) Hole Diameter	215		From (m)	0	To (m)			
Hole Diameter (mm)			From (m)	0	To (m)			

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WRMA ID:

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Туре	Steel	Dia:	1	15	:2	Length (m)	122	Fro	m (m)	As persk		Т	o (m))	
Туре		Diam (mm)				Length (m)		Fro	m (m)			То	(m)		
Туре		Diam (mm)				Length (m)		Fro	m (m)	-		То	(m)		
Slotted	or Perfo					*****************									
Size and				Plas	ma c	ut									
Opening		30.01.01													
Туре	, ,	Diam	1			Length	T	Fr	rom (m)	As	per	То	(m)		
. / P =	Stee			1	.52	(m)	48		,	1	tch		(,		
Туре		Diam			<u> </u>	Length	1	Fr	rom (m)			To	(m)		
Type		(mm				(m)			···· (···/			. •	()		
Screen:		(,,,,,,,	,			1 ()									
Type and	d Make														
Diamete			Leng	th (m)		set from	(m)			To (r	n)			
(mm)	'		Leng	cii (iii	'		Sections	(,,,,	_		10 (1	,			
(11111)		1											-		
Gravel P	ack														
Size of g	rains				Roundness				1	olume inserted in		- 1			
(mm)		2-4		((good	, fair, poor)	Good		ann	ular Sp	ace (m	13)) 8tones		
					From	(m)			To (m)					
Open Ho	ole													N	
Diam (m	m)				From	(m)			To (m)					
Aquifer	0.00	4													
1 st Water	Struck	at (m)	125-	142			Water R	est Le	vel (m)						
2 nd Wate				166			Water Rest Level (m)								
Main Aq			-	142			Water Rest Level (m)								
(m)				•											
Water be	earing	Fracture	d &		Fror	m (m)			To (m)					
material	_	weather	ed												
		quartzit	e gnei	ss											
Other Ad	quifers,				er is h	ighly decom	posed and	struc	tured w	ith sedi	ments	s and	d runn	ing sand	5.
		so see log				ever no diffic								_	
on page		3										and a			
Yield: S\	VL (m)	31.84			PWI	_ (m below				ischarg	e (litre	es			
	- (/	3			1	ace)	109.32		1	er minu		_	120		
After pu	mning (hours)			24	/	Recover	ed to					60		
		ction disch	arge		240	0	With pu					2)			
-vhecre	r hour)	ction disci	arge		240	•	Willi po	p 36		CIOW 3	511466	-/	150		

Pumping Test Record in Summary (Detailed test records on a	attached sheets): (al	depth measurements to
be in metres below ground surface)	8 7.	
5	Test No. 1	Test No. 2
Date of Test (day, month, year)	12/02/2018	

Chief Executive Officer, Water Resources Management Authority, P.O. Box 45250 - 00100 NAIROBI



Form: WRMA oogA Catchment: TANA

WRMA ID:

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Depth of Borehole at time of test (m)	170	
Water Entry (perforations or screen setting at time of test)	From (m)	From (m)
	To (m)	To (m)
Static Water (SWL) before test (m)	31.84	
Type of Pump (Bailer) used	Grundfoss SP5A-60	
Depth of Pump intake (m)	150	
Discharge (in litres per minute)	120	
Pumping Water Level (PWL m)	109.32	
After pumping continuously for (hours)	24	
Time of Recovery to Original SWL (minutes)	60	
Rate of Recovery-WL after 5 minutes (m)	100.80	
Rate of Recovery-WL after 20 minutes (m)	92.77	
Rate of Recovery-WL after 60 minutes (m)	84.11	

(Additional pumping tests to be mentioned in REMARKS and included with file). Government representative witnessing the test.....

Quality of Water					
Sample (Yes/No)		Collected at		On (date)	
	Yes	(hour)	24 th		13/02/2018
Sediment	None	Taste	Good	Odour	None
Colour		Temperature		Spec.	
	Clear	(oc)		Conductivity	
				(µmho/cm³)	

Remarks: (drilling	
difficulties, gravel-pack	No difficulties were experienced in drilling, construction and
details, all pertinent	in the completion of the borehole.
information about the	
drilling and completion of	
the hole)	

Drilling Supervisor	Drilling Contractor	
Signature	Signature	A comm
Name	Name	ALBERT K. MUSYIMI
Date	Date	P. O. BOX 62745 - 00200, NAIROBI Tel: 020 2538 977
		11 1 0722 210 077 / 0733 218 977

Chief Executive Officer, Water-Resources Management Authority, P.O. Box 45250 – 00100 NAIROBI



Form: WRMA 009A Catchment: TANA WRMA ID:

File WRMA/40/KTI/4ED/10543/G/7

Borehole No	
12. Sketch of Borehole Construction:	

1. Driller's Log.

From (m.)	To (m.)	Drilling Rate (m.	Description of Formation Penetrated
0	1.2	/hr.)	Top brown sandy loam soils
2	10		Highly weathered micaceous gneiss
10	13		Highly fractured and weathered biotite hornblende gneiss
13	26		Highly weathered biotite gneiss
. 26	30		Highly fractured and weathered biotite hornblende gneiss
30	35	1	Fractured hornblende gneiss
35	48		Highly fractured and weathered quartz-mica gneiss
48	94		Highly fractured / decomposed biotite granitoid gneiss
94	103		Weathered granitoid gneiss
103	112		Weathered granitoig gneiss
112	139		Fractured and decomposed hornblende gneiss
139	156		Fractured clayed hornblende gneiss
156	161		Highly weathered granitic gneiss
161	170		Slightly weathered gneiss

Ground	Metres (m.)

Geologist's log on attached sheets). Remarks or additional information on Driller's log, or on sketch o Borehole:	ıf

Total depth 170M

(Sketch to include: - depth and changes of hole diameter; casing positions, manner of casing (of different diam.) connections, and casing connection to screen; depths of screens or slotted casing lengths; how casing is closed at bottom; formation caving zones; and any other pertinent information).

Chief Executive Officer, Water Resources Management Authority, P.O. Box 45250 – 00100 NAIROBI

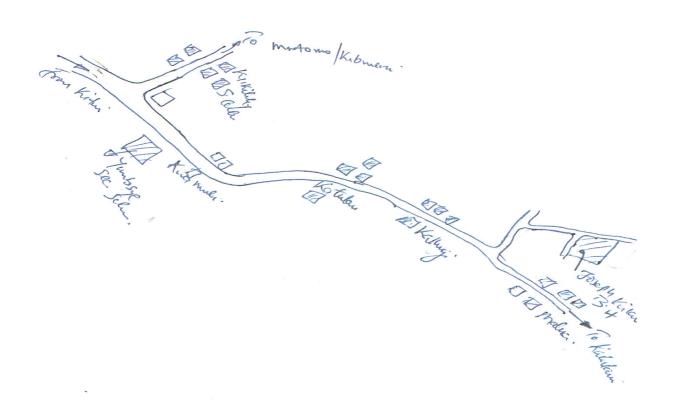
Official Use Only



Form: WRMA 009A Catchment: TANA WRMA ID: File WRMA/40/KTI/4ED/10543/G/7

For

13. Location Sketch: (To be sketched by the driller on the site, showing roads, tracks and prominent land marks, with road distances to the nearest town or trading centre and to water source).



All Borehole Completion Records duly completed should be sent to the appropriate WRMA Regional Office.

Chief Executive Officer, Water Resources Management Authority, P.O. Box 45250 - 00100 **NAIROBI**

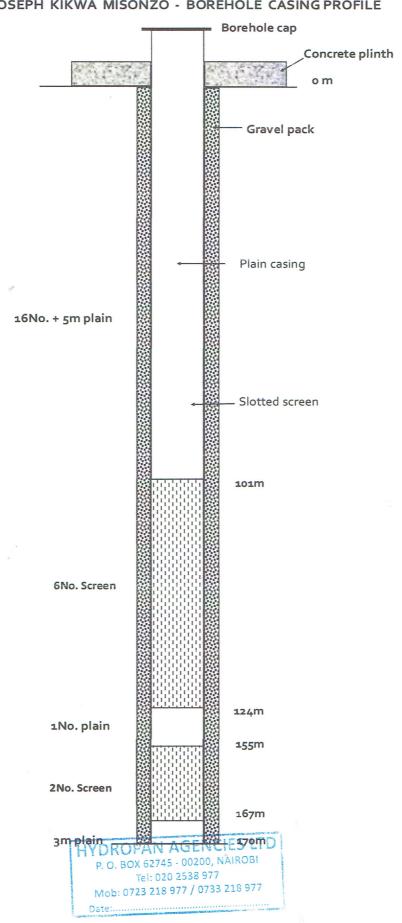


Form: WRMA oogA Catchment: TANA

WRMA ID:

File WRMA/40/KTI/4ED/10543/G/7

JOSEPH KIKWA MISONZO - BOREHOLE CASING PROFILE



Well No:

Contract: Client:

BOREHOLE TESTPUMPING

DANIEL MUEMA KIKWA

Location: Well Type: MALIKU-KITUI AIR DRILLED

Testing Contractor: HYDROPAN AGENCIES LTD

Static Water Level: 36.02Metres bgl

Total Depth of Well:

Depth of Pump Intake: Datum Level:

Pump Type:

Pipe Type &Size: Power Source:

Pumping Water Level:

170.0Metres bgl 150.0Metres bgl. o.5Metres bgl. Grundfos SP8A - 25

DAYLIFF 1.5" Generator 18 KVA 109.35Metres bgl.

DISCHARGE DRAWDOWN TEST

Date	Time	Elapsed Time (min)	Water Level (m bdl)	Drawdown (m)	Yield (m3/hr)	EC (uS/cm)	Remarks
12.02.2018	18:12:00	0	36.02	0.00		Ì	Start of constant discharge te
	18:13:00	1	41.02	5.00			Gate valve adjusted
	18:14:00	2	44.52	8.50	14.40		Greyish water
	18:15:00	3	47.83	11.81			
	18:16:00	4	50.93	14.91			
	18:17:00	5	53.55	17.53			
	18:18:00	6	55.87	19.85			
	18:19:00	7	58.04	22.02			
	18:20:00	8	60.15	24.13			
	18:21:00	9	62.13	26.11			
	18:22:00	10	63.56	27.54	12.00		Gate valve adjusted
	18:24:00	12	66.38	30.36			Greyish water
	18:26:00	14	68.73	32.71			
	18:28:00	16	70.83	34.81			
	18:30:00	18	72.31	36.29			slightly clear water
	18:32:00	20	73.73	37.71	10.30		Gate valve adjusted
	18:37:00	25	76.53	40.51			
	18:42:00	30	78.27	42.25			
	18:47:00	35	79.47	43.45			
	18:52:00	40	80.37	44.35			Clear water
	18:57:00	45	81.07	45.05			
	19:02:00	50	81.92	45.90			
	19:07:00	55	82.54	46.52			
	19:12:00	60	83.11	47.09	9.00		Gate valve adjusted
	19:27:00	75	84.49	48.47			
	19:42:00	90	86.13	50.11			Clear water
	19:57:00	105	88.07	52.05			
	20:12:00	120	91.72	55.70	0		Catalandiated
	20:42:00	150	92.12	56.10	8.00		Gate valve adjusted
	21:12:00	180	93.99	57.97			
	21:42:00	210	95.06	59.04			
	22:12:00	240	96.86	60.84	7.00		Gate valve adjusted
13.02.2018	23:12:00	300 360	98.70	63.48	7.20		Gate valve adjusted
13.02.2016	01:12:00	420	99.50	64.12			
	02:12:00	480	100.14	65.21			
	02:12:00	540	101.23	66.42			
	03:12:00	600	102.44	67.26	7.20		Clear water
	05:12:00	660	104.59	68.57	7.20		Clear water
	06:12:00	720	105.27	69.25			
	07:12:00	780	108.33	72.31			
	08:12:00	840	108.71	72.69			
	09:12:00	900	108.92	72.90	7.20		Clear water
	10:12:00	960	109.12	73.10	7.20		2.24, 114.61
	11:12:00	1020	109.23	73.21			
	12:12:00	1080	109.32	73.30			
	13:12:00	1140	109.33	73.31			
	14:12:00	1200	109.33	73.31	7.20	1	Clear water
	15:12:00	1260	109.34	73.32	,		
	16:12:00	1320	109.34	73.32			
	17:12:00	1380	109.35	73.33			Collected water sample for FC
	18:12:00	1440	109.35	73-33	7.20		End of 24 hours drawdown tes

HYDROPAN AGENCIES LTD P. O. BOX 62745 - 00200, NAIROBI Tel: 020 2538 977 Mob: 0723 218 977 / 0733 218 977

Well No:

Contract: Client:

BOREHOLE TESTPUMPING

DANIEL MUEMA KIKWA

Location: Well Type: MALIKU-KITUI

AIR DRILLED

Testing Contractor: HYDROPAN AGENCIES LTD

Static Water Level: 36.02Metres bal

Total Depth of Well:

Depth of Pump Intake:

Datum Level:

Pump Type:

Pipe Type &Size:

Power Source: Pumpina Water Level: 170.0Metres bgl

150.oMetres bgl. o.5Metres bgl.

Grundfos SP8A - 25

DAYLIFF 1.5" Generator 18 KVA

109.35Metres bal.

Static Water Level:	36.02Metres bgi			Pumping water Level:		109.35Metres bgi.
Date	Time	Elapsed Time (min)	Water level (m bdl)	Residual Drawdown (m)	Recovery %	Remarks
13.02.2018	18:12:00	0	109.35	Pump off	0.00	Start recovery observations
	18:13:00	1	106.34	106.34	4.11	
	18:14:00	2	104.20	104.20	7.02	
	18:15:00	3	102.76	102.76	8.99	
	18:16:00	4	101.36	101.36	10.90	
	18:17:00	5	100.80	100.80	11.66	
	18:18:00	6	99.70	99.70	13.16	
	18:19:00	7	98.21	98.21	15.19	
	18:20:00	8	98.49	98.49	14.81	
	18:21:00	9	97.62	97.62	16.00	
	18:22:00	10	97.19	97.19	16.58	
	18:23:00	11	96.82	96.82	17.09	
	18:24:00	12	96.18	96.18	17.96	
	18:25:00	13	95.50	95.50	18.89	
	18:26:00	14	95.04	95.04	19.52	
	18:27:00	15	94.66	94.66	20.04	
	18:28:00	16	93.81	93.81	21.19	
	18:29:00	17	93.32	93.32	21.86	
	18:30:00	18	93.01	93.01	22.29	
	18:31:00	19	92.81	92.81	22.56	
	18:32:00	20	92.77	92.77	22.61	
	18:34:00	22	92.14	92.14	23.47	
	18:36:00	24	91.50	91.50	24.35	
	18:38:00	26	91.07	91.07	24.93	
	18:40:00	28	90.66	90.66	25.49	
	18:42:00	30	90.41	90.41	25.83	
	18:47:00	35	89.11	89.11	27.61	
	18:52:00	40	88.60	88.60	28.30	
	18:57:00	45	88.07	88.07	29.02	
	19:02:00	50	87.86	87.86	29.31	
	19:07:00	55	86.41	86.41	31.29	
	19:12:00	60	84.11	84.11	34.42	End of 1 hour Recovery

HYDROPAN AGENCIES LTD

P. O. BOX 62745 - 00200, NAIROBI Tel: 020 2538 977 Mob: 0723 218 977 / 0733 218 977



KENYA WATER INSTITUTE

Telephone: Nairobi 6003893,6003905,6007433/25 Fax No. 6006718, Mobile:0722 20 77 57 E-mail:info@kewi.or.ke Website:www.kewi.or.ke

When replying please quote KEWI/ISO/LAB/FC/101

PHYSICAL/CHEMICAL WATER ANALYSIS REPORT

Sample No.935/2018 (private sample) Source:Kitui

Purpose of sampling: Domestic

Submitted by: Hydropan Agencies L.T.D

Ole Shapara Avenue Nairobi South C P.O BOX 60013-00200 NAIROBI

Date of Sampling:14/02/2018
Date Received:16/02/2018
Submission form No.935
Client Name: Daniel M. Kikwa

PARAMETERS	UNIT	RESULTS	KENYA BUREAU OF STANDARDS THIRD EDITION 2007
pH	pH scale	8.12	6.5-8.5
Colour	Hazen	5	≤15
Turbidity	N.T.U	5	≤5.0 NTU
Alkalinity	Mg/l CaCO ₃	41.1	≤500
Conductivity (25C)	μS/cm	4780	≤2000
Iron	Mg/L Fe	0.51	≤0.3
Calcium	Mg/l CO3	168.4	≤150
Magnesium	mg/L MgCO3	114.3	≤100
Total hardness	mg/L CaCO ₃	360	≤300
Chloride	mg/L Cl-	163.5	≤250
Fluoride	Mg/L F-	1.18	≤1.5
Nitrates	mg/L NO ₃₋	6.4	≤50
Sulphate	mg/L SO ₄ -2	16.5	≤400
Manganese	mg/L Mn ²⁺	0.04	≤0.5
Total dissolved solids	Mg/l ions	2963.6	≤1000
Ammonia	Mg/L NH ₄ OH	ND	≤0.5
Carbon dioxide	Mg/l CO2	28	N/S

ND: Not detected

This report refers to a privately submitted sample, and all details in respect of the source and test results of similar products are not verified or confirmed.

COMMENTS: Hard water with dissolved solids.

Chemist....

Kenya water Institute
Water Quality Laboratory

The results contained herein apply only to a particular sample(s) tested whose sample submission form serial number is herein quoted and specific tests carried out as detailed in the Test Report.No extract abridgement from a Test Report may be published or used to advertise a product without the consent of the **Director, KEWI.**