JAPAN INTERNATIONAL
COOPERATION AGENCY (JICA)

No.

THE REPUBLIC OF MADAGASCAR

THE MINISTRY OF ENERGY
AND MINING (MEM)

THE STUDY
ON
THE SUSTAINABLE, AUTONOMIC DRINKING WATER SUPPLY PROGRAM
IN
THE SOUTH REGION OF MADAGASCAR

FINAL REPORT

DATA BOOK

DECEMBER 2006

JAPAN TECHNO CO., LTD.
NIPPON KOEI CO., LTD.

GE
JR
06-074

In this report water charges and project cost are estimated based on prices as of October 2006 with the last 6 months average exchange rate of US$1.00 = Japanese Yen ¥ 120.0 = Madagascar Ariary 2,160 = Euro 0.8.

THE STUDY ON THE SUSTAINABLE, AUTONOMIC DRINKING WATER SUPPLY PROGRAM IN THE SOUTH REGION OF MADAGASCAR

FINAL REPORT
DATA BOOK
2006

TABLE OF CONTENTS

Table of Contents

PART 1 DATA AND INVENTORY

DP1.1 Inventory List of Existing Water Source 1/3-Position

	0-1	0-2	1	1-1		1-2	1-5	1-6	2	2-2			2-3			2-4
GPS_ID num	Surveyor name	Date	Position information	Num ID as water point by World Bank	number ID by project	Water point name	Fokontany	Commune	GPS	Latitude			Longitude			GPS Altitude
										S d	Sm	Ss	Ed	Em	Es	m
001	Votsora François	2005/3/10		U040082		bureau commune	Anjatoka I	Ambovombe		25	10	43.9	46	5	17.5	143.7
002	Votsora François	2005/3/11		U040079		Mahavelo A3	Mahavelo	Ambovombe		25	11	6.4	46	5	21.2	136.1
003	Votsora François	2005/3/11		U040060	F18	Andaboly F18	Andaboly	Ambovombe		25	10	23.9	46	5	11.4	135.9
004	Votsora François	2005/3/11		Non		Tanambao	Tanambao	Ambovombe		25	10	31.4	46	5	38.5	136.4
005	Votsora François	2005/3/11		Non		Andaboly I	Andaboly I	Ambovombe		25	10	21.1	46	4	58.2	122.3
006	Votsora François	2005/3/11		Non		Bevoly	Anikilimafaitsy	Ambovombe		25	10	59.7	46	5	47.6	125.4
007	Votsora François	2005/3/11		U040070		Puits Ambaro II	Ambaro II	Ambovombe		25	11	8.3	46	4	47	130.1
008	Votsora François	2005/3/11		Non		Ambaro II Esingo	Ambaro II	Ambovombe		25	10	57.2	46	4	39.8	134.1
009	Votsora François	2005/3/11		U040086		Anjatoka II	Anjatoka	Ambovombe		25	10	48.3	46	5	30	133.4
010	Votsora François	2005/3/11		-		AnjatokaIII	Anjatoka	Ambovombe		25	10	46.4	46	5	50.1	140.8
011	Votsora François	2005/3/22		U040107		Ambatoraty	Betapoaky	Jafaro		24	52	37.7	45	34	43.4	276.5
012	Votsora François	2005/3/12		Non	F159	Betsumeda F159	Betsimeda	Maroalosinty		25	9	14	46	10	51.6	170.3
013	Votsora François	2005/3/12		Non	F166	Soafiry F166	Soafiry	Ambanisarika		25	9	27.7	46	2	38.5	178.0
014	Votsora François	2005/3/14		Non	F165	Ankaramena F165	Ankaramena	Ambovombe		25	9	37.8	46	3	58.9	132.1
015	Votsora François	2005/3/15		U040193		Amboliandro	Sanamaro	Antanimora		24	51	33.4	45	48	4.0	174.4
016	Votsora François	2005/3/15		U1331	F21	Manave F21	Manave-Ambony	Antanimora		24	56	32	45	45	48.1	198.6
017	Votsora François	2005/3/15		?	F20	ANTSIRA F20	Andriamanace Nord	Antanimora		24	51	18.5	45	40	36.6	267.1
018	Votsora François	2005/3/15		?	F127	AEP Antanimora F127	-	Antanimora		24	48	47.1	45	39	50.4	289.2
020	Votsora François	2005/3/15		?	FB2	AEP Antanimora FB2	-	Antanimora		24	48	46.4	45	39	52.4	286.5
021	Votsora François	2005/3/15		U040141		Ankifaly	-	Antanimora		24	48	38.6	45	40	50.3	296.3
022	Votsora François	2005/3/15		U040142	F133	AnkilyfdlyIII F133	-	Antanimora		24	48	29.8	45	40	53.2	296.8
023	Votsora François	2005/3/15		?	F134	AnkilifalyIV F134	-	Antanimora		24	48	46.8	45	41	0.9	294.3
024	Votsoqa Francois	2005/3/15		U040138	F18	Antanimore CEG F18	-	Antanimora		24	49	9.4	45	39	13.8	302.1
024	Votsora François	2005/3/16		?	F61	Ambatobe F61	Ambigovigo	Antanimora		24	47	11.5	45	42	46.9	279.0
025	Votsora François	2005/3/16		?	F136	Ihorify F136	Ambigovigo	Antanimora		24	45	3.4	45	43	21.9	258.8
026	Votsora François	2005/3/16		U040143 U1763	F62	Analamaiky F62	Analamaiky-Andoby	Antanimora		24	49	0.4	45	44	13.2	250.4
027	Votsora François	2005/3/16		U040144	F62	Analamaiky II F62	Analamaiky-Andoby	Antanimora		24	49	0.5	45	44	13.8	250.4
028	Votsora François	2005/3/22		-		Kamisy Antsakoamaro	Afondratehakeo	Jafaro		24	54	53.5	45	35	0.3	263.7
029	Votsora François	2005/3/22		U040108	U1747	Kamisy Antsakoamaro	Kamisy Antsakoamaro	Jafaro		24	55	1.8	45	35	3.9	262.9
030	Votsora François	2005/3/22		U3166		Kamisy Tanambao	Anafodratehanke	Jafaro		24	55	1.8	45	35	26.9	264.8
031	Votsora François	2005/3/22		U040120	U1754	Andemby	Jafaro	Jafaro		24	54	24.9	45	32	26.8	233.3
032	Votsora François	2005/3/22		U040119		Jafaro	Jafaro	Jafaro		24	55	31.4	45	31	14.7	228.5
033	Votsora François	2005/3/22		U040118		Jafaro	Jafaro	Jafaro		24	55	37.3	45	31	9.7	231.2
034	Votsora François	2005/3/22		U3372		Jafaro SADROI	Jafaro	Jafaro		24	55	51.4	45	31	48	227.7
035	Votsora François	2005/3/22		U040116	U1761	Jafaro besakoa	Besakoa haut	Jafaro		24	54	49.7	45	28	25.1	236.4
038	Votsora François	2005/3/22		U040109	U1749	Anjeba I	Zazafotsy II	Jafaro		24	58	21.9	45	34	3.6	238.1
039	Votsora François	2005/3/23		Non	F114	Anjeba II	Zazafotsy II	Jafaro		24	58	20.9	45	34	25.2	246.5
040	Votsora François	2005/3/23		Non	F51	Bongolava	Bongolava	Jafaro		24	58	21.3	45	37	19.3	262.6
041	Votsora François	2005/3/23		Non	F52	Bevotry	Androtsy	Antanimora		24	59	25.1	45	37	54.3	275.1
042	Votsora François	2005/3/23		Non	F53	Bevotry	Androtsy	Antanimora		25	0	10.3	45	37	6.3	285.3
043	Votsora François	2005/3/23		Non	F67	Andcananivosoa	Andcananivosoa	Jafaro		25	3	0.4	45	35	32	217.8
044	Votsora François	2005/3/23			F66	Androvamary	Betaranta	Jafaro		25	3	30.6	45	35	3.9	208.8
082	Votsora François	2005/3/28		U040110	U1762	Mandily I	Mandily I	Jafaro		25	0	50.3	45	30	22.2	198.1
083	Votsora François	2005/3/28		U040112	F163	Mandily II	Mandily II	Jafaro		25	0	31.1	45	30	19	198.8
084	Votsora François	2005/3/28		Non	F75	Ankotsobe Haut	Ankotsobe Haut	Jafaro		25	4	46.6	45	27	47.7	158.9
085	Votsora François	2005/3/28		Non	-	Ankotsobe Beraketa	Ankotsobe Beraketa	Jafaro		25	5	25.9	45	27	23	150.2
086	Votsora François	2005/3/28		Non	F161	Ankotsobe Bas Soavozo	Ankotsobe Bas Soavozo	Jafaro		25	4	33.8	45	27	44.3	158.5
087	Votsora François	2005/3/28		U040113	U1665	Ankorokoroka	Ankorokoroka	Jafaro		25	1	26	45	28	16	176.4
088	Votsora François	2005/3/29		U040133		Ankilimiary	Ankilimiary	Jafaro		24	48	58.7	45	34	49.7	293.5
089	Votsora François	2005/3/29		U040124		Lanany	Moromainty	Jafaro		24	48	35.2	45	33	10	273.8
090	Votsora François	2005/3/29		U3169		Andranohere	Ankaranandido	Jafaro		24	45	22.7	45	30	24.9	286.5
091	Votsora François	2005/3/29		U040125		Ankaranarivo	Afomarolany	Jafaro		24	47	53.9	45	24	5.2	279.0
092	Votsora François	2005/3/29		Non		Anakaranandindo	Anakaranandindo	Jafaro		24	46	52.2	45	29	51.4	293.8
093	Votsora François	2005/3/29		U040126	U1734	Antsakoaniary	Antsakoaniary	Jafaro		24	46	35	45	30	9.3	298.5
094	Votsora François	2005/3/29		U040127	U1735	Anakaranandindo I	Anakaranandindo I	Jafaro		24	46	33.5	45	29	58	292.6
095	Votsora François	2005/3/29		U040122	U1739	Anjakambana haut	Anjakambana haut	Jafaro		24	50	22.4	45	32	32.5	261.8
096	Votsora François	2005/3/29		U040121	U1740	Anjakamba bas	Maromainty	Jafaro		24	52	38.8	45	31	24.8	249.2
097	Votsora François	2005/3/29		U3146		befeno Anivorano	befeno Anivorano	Antnimora		24	47	58.3	45	39	8.1	297.0
098	Votsora François	2005/3/29		U3147		Ambaliandro Antsakabe	Ambaliandro Antsakabe	Antnimora		24	46	31.7	45	39	6.5	325.0
099	Votsora François	2005/3/29		U040189		Ambaliandro Ankitibe	Ambaliandro Ankitibe	Antnimora		24	47	7.6	45	38	23.5	326.2
100	Votsora François	2005/3/29		U040170		Bemamba Ampozy	Namolora	Antnimora		24	53	3.7	45	41	36.2	253.2
101	Votsora François	2005/3/29		U040171	F143	Bemamba Ampozy	Bemamba Ampozy	Antnimora		24	53	3.7	45	41	36.1	254.9
102	Votsora François	2005/3/29		U040172		Bemanga-Marolava	Andriamagnare-Nord	Antnimora		24	53	9.2	45	42	29.6	235.3
103	Votsora François	2005/3/29		U040169, U1333		Androtsy-Bezira	Androtsy-Bezira	Antnimora		24	55	18	45	38	35.1	255.4
104	Votsora François	2005/3/29		U040168, U1409		Androtsy II	Andriamagnare-Nord	Antnimora		24	57	29.5	45	38	4	252.3
105	Votsora François	2005/3/29		U3154		Antsira Andido	Antsira Andido	Antnimora		24	52	34.1	45	40	10.1	269.6
119	Votsora François	2005/3/17		U3102		Namolora	Andrimaganaro	Antanimora		24	53	24.4	45	40	55.6	244.0
120	Votsora François	2005/3/17		U040162		Namolora I	Namolora I	Antanimora		24	53	55.1	45	40	29.4	249.3
121	Votsora François	2005/3/15		U040163		Namolora II	Namolora II	Antanimora		24	54	1.1	45	40	23	251.3
122	Votsora François	2005/4/5		U040068		Esingo	Esigno	Ambovome		25	10	45.7	46	4	28.8	132.5
123	Votsora François	2005/4/5		Non		Mitsangana	Mitsangana	Ambovome		25	11.2	0.1	46	4	39.5	133.8
124	Votsora François	2005/4/5		Non		Mitsanoana-Marobe	Mitsanoana-Marobe	Ambovome		25	11	27.4	46	5	10	134.5
125	Votsora François	2005/3/15		U040164		Tanantsoa	Imagory	Antanimora		24	54	27.7	45	40	21.6	248.4
126	Votsora François	2005/3/17		U040165		Imangory	Imangory	Antanimora		24	55	27	45	40	19.7	237.0
127	Votsora François	2005/3/17		U040166		Imangory II	Imangory	Antanimora		24	56	5.3	45	40	11.3	225.5
128	Votsora François	2005/3/17		Non		Soalapamiary	Soalapamiary	Antanimora		24	56	18.9	45	41	33.8	208.5
129	Votsora François	2005/3/17		?	F53	Soalapamiary II	Soalapamiary II	Antanimora		24	59	2.3	45	42	1.3	204.9
130	Votsora François	2005/3/17		Laparoy		Laparoy	Laparoy	Antanimora		25	2	54..3	45	43	46.9	197.4
131	Votsora François	2005/3/18		Bemanba		Tsarapioky	Tsarapioky	Antanimora		24	55	27.3	45	44	47.4	212.3
132	Votsora François	2005/4/5		U040066		Mahavelo	Mahavelo	Ambovome		25	11	14.2	46	5	12	137.3
133	Votsora François	2005/3/18		Non	F17	AEP Antanimora F17	Antanimora	Antanimora		24	48	48	45	39	45.8	295.4
134	Votsora François	2005/4/5		U040064		Mahavelo Toby	Mahavelo Toby	Ambovome		25	11	10.7	46	5	21.8	136.2
135	Votsora François	2005/4/5		Non		AnjatokaIII	AnjatokaIII	Ambovome		25	10	58.8	46	5	35.7	136.3
136	Votsora François	2005/3/18		Non	F143	Ampozy F143	Antanimora	Antanimora		24	49	0.8	45	40	17	290.7
137	Votsora François	2005/3/18		U040134		Analalava	Laliamena	Antanimora		24	48	58.1	45	37	22.2	327.5

DP1.1 Inventory List of Existing Water Source 1/3-Position

	0-1	0-2	1	1-1		1-2	1-5	1-6	2	2-2			2-3			2-4
GPS_ID num	Surveyor name	Date	Position information	Num ID as water point by World Bank	number ID by project	Water point name	Fokontany	Commune	GPS	Latitude			Longitude			GPS Altitude
										S d	Sm	Ss	Ed	Em	Es	m
138	Votsora François	2005/3/18		U040136		Andaboly I	Andaboly I	Antanimora		24	49	9.1	45	38	59.1	308.1
139	Votsora François	2005/3/18		U3144		Andaboly II	Andaboly II	Antanimora		24	49	10.7	45	38	59.7	309.8
140	Votsora François	2005/3/18		U3145		Andaboly III	Andaboly III	Antanimora		24	49	58.6	45	39	5.4	305.0
141	Votsora François	2005/3/18		U040104		Beteny	Beteny	Antanimora		24	50	57.5	45	36	9.1	310.3
142	Votsora François	2005/3/18		U040105		Betegne	Betegne	Antanimora		24	50	57.1	45	36	8.8	312.2
143	Votsora François	2005/3/18		U040106		Beteny II	Beteny II	Antanimora		24	51	36.1	45	35	56.2	297.5
144	Votsora François	2005/4/8		U040140		Anikilifaly Soajaro	Antnimora	Antnimora		24	48	35.7	45	40	19.5	294.0
145	Votsora François	2005/4/8		Non		Antsira Andnido	Antnimora	Antnimora		24	52	33.7	45	40	8.6	262.5
146	Votsora François	2005/4/9		?	F58	Bobafane	Andemby	Antnimora		24	51	3	45	45	7	233.0
147	Votsora François	2005/4/9		U040151		Andranomasy	Analamaiky	Antnimora		24	50	45.5	45	43	34.5	251.2
148	Votsora François	2005/4/9		U040149, U1711		Betioky-Andemby	Betioky-Andemby	Antnimora		24	50	25.5	45	44	26.7	242.0
149	Votsora François	2005/4/9		U040148, U1710		Angogobo I	Angogobo I	Antnimora		24	51	12.8	45	46	23.9	223.0
150	Votsora François	2005/4/9		U040145		Angogobo II	Angogobo II	Antnimora		24	49	56.5	45	45	31.5	235.7
151	Votsora François	2005/4/9		U040231		Mitsoraka	Mitsoraka	Antnimora		24	54	5.7	45	49	33.1	195.5
152	Votsora François	2005/4/9		-	F159	Sakave	Sakave	Ambohimalaza		24	53	59.5	45	52	21.2	173.0
153	Votsora François	2005/4/10		?		Bemamba Antsatra	Bemamba Antsatra	Antnimora		24	53	36.2	45	43	15.5	235.2
154	Votsora François	2005/4/10		-	-	Bemamba Ampozy	Bemamba Ampozy	Antnimora		24	52	56.8	45	41	30.7	243.5
155	Votsora François	2005/4/10		U040157		Ambovomiaramila	Ambovomiaramila	Antnimora		24	49	16.3	45	39	33.1	304.7
156	Votsora François	2005/4/13		U040123	U1366	Tsiabetsaka	Tsiabetsaka	Jafro		24	49	9.7	45	33	7.1	268.0
157	Votsora François	2005/4/15		Non	U3367	Kobaimirafe	Kobaimirafe	Jafro		24	53	33.6	45	33	27.3	263.6
158	Votsora François	2005/4/16		U040115	U1759	Besakoa-bas-Jafaro	Besakoa	Jafaro		24	57	51.1	45	28	3	203.3
159	Votsora François	2005/4/16		Non		Namolora	Namolora	Antnimora		24	54	4.3	45	40	18.1	289.5
160	Votsora François	2005/4/16		Non		Soalaro-ahandsofa	Imagory	Antnimora		24	59	28.5	45	40	3.3	225.1
161	Votsora François	2005/4/16		U040167	U1870	Andranogiso	Andranogiso	Antnimora		25	1	47.8	45	40	11.2	216.3
162	Votsora François	2005/4/20		Non	-	Elevage	Tanambao III	Ambovombe		25	9	57.9	46	6	4.4	131.2
163	Votsora François	2005/4/20		Non	-	Elevage	Tanambao III	Ambovombe		25	10	0.4	46	5	58.4	135.8
164	Votsora François	2005/4/20		Non	-	Esalo	Esalo	Ambovombe		25	15	8.3	46	7	26.8	47.3
165	Votsora François	2005/4/20		Non	-	Esalo	Esalo	Ambovombe		25	15	21.4	46	7	24.5	12.7
166	Votsora François	2005/4/21		-	-	Ambaro II Est de rest JO	Ambaro II	Ambovombe		25	10	43.6	46	4	57.9	144.6
167	Votsora François	2005/4/21		-	-	Ambaro II pre de HANSANI	Ambaro II	Ambovombe		25	10	44.5	46	4	56.2	142.3
168	Votsora François	2005/4/21		-	-	Ambaro I vers Kotoala	Ambaro I	Ambovombe		25	11	0.7	46	4	44.7	135.8
169	Votsora François	2005/4/21		-	-	Beabo elevage	Beabo	Ambovombe		25	10	13.1	46	5	35.5	140.4
170	Votsora François	2005/4/21		-	-	Beabo elevage	Beabo	Ambovombe		25	10	12	46	5	40.3	137.8
171	Votsora François	2005/4/21		U040074	-	Lycee Ambaro	Ambaro	Ambovombe		25	10	49.9	46	5	8.4	144.4
201	Jean de Diue	2005/3/22		Non		Ambondro centtre	Ambondro Anatirova	Ambondro		25	12	53.9	45	49	24.1	138.8
202	Jean de Diue	2005/3/22		U040000		Ambondro Rova	Ambondro Rova	Ambondro		25	12	57.5	45	49	17.8	221.0
203	William	2005/3/14		U040010		Nagnera I	Ambondro	Ambondro		25	12	46.3	45	48	27.1	215.2
203	Jean de Diue	2005/3/22		U040004 U040005		Ambondro Rova	Ambondro	Ambondro		25	13	7.7	45	49	17.5	211.7
206	William	2005/3/14		U040011		Nagnera II	Ambondro	Ambondro		25	12	48.6	45	48	55.4	218.0
207	William	2005/3/14		U040013		Ambondro	Ambondro	Ambondro		25	12	55.4	45	49	8.4	227.3
208	William	2005/3/15		U040042		Sihanadiva	Marosi I & II	Ambondro		25	13	48.7	45	49	20.2	197.2
209	William	2005/3/15		U040014(41erreur?)		Sihanadiva	Marosi I & II	Ambondro		25	13	49.6	45	49	19.2	198.0
210	William	2005/3/15		Non		Amindredahy	Ambanikily-nord	Erada		25	19	40.3	45	54	51.4	11.7
211	William	2005/3/16		Non		Berehake	Berehake	Ambazoa		25	22	10.2	45	49	31.2	92.9
213	William	2005/3/16		Non		Kotoala	Kotoala	Ambazoa		25	23	19.2	45	50	8.9	7.2
215	William	2005/3/16		Non		Kotoala Ambony	Kotoala	Ambazoa		25	23	18.3	45	50	0.7	29.4
216	William	2005/3/16		U024077		Ambohitsy	Ambohitsy	Antaritarika		25	26	3.7	45	42	7.5	3.9
221	William	2005/3/16		U240049		Andranomitsinae	Maroafo	Antaritarika		25	26	7.1	45	45	42.7	15.6
222	Jean de Diue	2005/3/22		U040006		Ambondro Rova	Ambondro	Ambondro		25	13	8.4	45	49	19.5	210.3
223	William	2005/3/17		Non		Ankobabe	Antanimihery I	**Ambazoa**		25	24	12.3	45	48	45.1	12.0
224	William	2005/3/17		U040031		Malaindoza	Malaindoza	**Ambazoa**		25	21	10.2	45	53	53.8	8.0
225	William	2005/3/17		Non		Malaindoza(lrs)	Malaindoza	**Ambazoa**		25	20	54.4	45	54	6.1	28.9
226	Jean de Diue	2005/3/22		U040008		Ambondro	Ambondro	Ambondro		25	13	16	45	49	40.9	214.5
227	Jean de Diue	2005/3/22		U040043		Belemboka	Belanky	Ambondro		25	14	29.5	45	48	44.8	201.2
228	Jean de Diue	2005/3/22		U040016		Andasary	Andasary	Ambondro		25	13	59.1	45	47	52	205.8
229	Jean de Diue	2005/3/22		Non		Lamitihy sud	Lamitihy sud	Ambondro		25	18	9.6	45	50	20.5	99.2
231	Jean de Diue	2005/3/24		Non		Analatoanano	Erakoka ouest	Maloalomainty		25	13	4.28	46	12	63	52.6
232	Jean de Diue	2005/3/24		Non		Analatoanano	Erakoka ouest	Maloalomainty		25	13	4.28	46	12	63	52.6
233	Jean de Diue	2005/3/26		Non		Beaniky I	Beaniky	Ambovombe		25	16	23.3	46	4	23.4	10.3
234	Jean de Diue	2005/3/26		Non		Ionka	Ambory	Erada		25	18	29.2	45	59	25	18.3
236	Jean de Diue	2005/3/26		Non		Erakoka esr	Maroalomainty	Maroalomainty		25	13	39.2	46	11	49.1	9.3
239	Jean de Diue	2005/3/28		U040016		Maugily	Maugily	Ambondro		25	14	23.7	45	47	3.7	207.7
240	Jean de Diue	2005/3/28		U040018		Miandra	Miandra	Sihanamaro		25	15	27.9	45	46	30	163.3
241	Jean de Diue	2005/3/28		U040017		Miandra	Miandra	Sihanamaro		25	15	29.8	45	46	30.5	163.5
242	Jean de Diue	2005/3/28		Non		Miandra	Miandra	Sihanamaro		25	15	33.2	45	46	28.5	163.4
243	Jean de Diue	2005/3/28		-		Fekony	Fekony	Imongy		25	15	40.6	45	44	27	136.3
244	Jean de Diue	2005/3/28		U2100		Fekony	Fekony	Imongy		25	15	37.9	45	44	26	140.8
245	Jean de Diue	2005/3/28		U210073		Fekony	Fekony	Imongy		25	15	39.1	45	44	26.7	131.6
246	Jean de Diue	2005/3/28		U040024		Aminake	Terabova	Sihanamaro		25	12	37.3	45	45	24.6	217.5
247	Jean de Diue	2005/3/28		U040021		Aminake pres bureau commune	Terabova	Sihanamaro		25	12	35.3	45	45	36.3	219.1
248	Jean de Diue	2005/3/28		U040039		Andramanera	Andramanera	Sihanamaro		25	10	47.1	45	45	4.6	209.6
249	Jean de Diue	2005/3/28		Non		Beakanga	Itarauaka	Sihanamaro		25	9	9	45	48	3.6	222.1
250	Jean de Diue	2005/3/28		U040020		Ambohitse	Ambohitse	Sihanamaro		25	12	47.1	45	46	14.9	211.0
251	Jean de Diue	2005/3/29		-		Marokobo	Analamanoy	Sihanamaro		25	10	50.1	45	49	27.1	184.4
252	Jean de Diue	2005/3/29		-		Analamanoy	Analamanoy	Sihanamaro		25	10	49.6	45	49	28.5	194.6
253	Jean de Diue	2005/3/29		-		Namalaza II	Namalaza II	Marovato-Befeno		25	6	52.8	45	41	35.4	206.7
254	Jean de Diue	2005/3/29		-	-	Marovato	Marovato centre	Marovato-Befeno		25	6	55	45	41	30.4	217.5
256	Jean de Diue	2005/3/31		U21025		Bezara	Betanty	Betanty		25	34	3.2	45	32	0.7	9.4
257	Jean de Diue	2005/3/31		U21024		Bezara	Betanty	Betanty		25	34	3.6	45	32	0.4	13.0
258	Jean de Diue	2005/3/31		U210067		Benonoka	Benonoka	Betanty		25	32	11.9	45	26	32.3	95.2
262	Jean de Diue	2005/4/2		U040058	-	Ampamolora	Ampamolora	Ambohimalaza		25	4	46	45	59	51.7	136.0

DP1.1 Inventory List of Existing Water Source 1/3-Position

	0-1	0-2	1	1-1		1-2	1-5	1-6	2	2-2			2-3			2-4
GPS_ID num	Surveyor name	Date	Position information	Num ID as water point by World Bank	number ID by project	Water point name	Fokontany	Commune	GPS	Latitude			Longitude			GPS Altitude
										S d	Sm	Ss	Ed	Em	Es	m
263	Jean de Diue	2005/4/2		-		Bemamba rivera	Ampamolora	Ambohimalaza		25	4	49	45	59	40.6	133.4
264	Jean de Diue	2005/4/2		-	F43	Rarazy	Mahatomotsy	Ambohimalaza		25	5	38.1	45	55	37.9	130.9
265	Jean de Diue	2005/4/2		-		Anday	Mahatomotsy	Ambohimalaza		25	4	36.8	45	54	5.3	150.6
266	Jean de Diue	2005/3/29		U03999		Ifotaka	Ifotaka	Ifotaka		24	48	3.9	46	8	10.5	59.2
267	Jean de Diue	2005/3/29		U03040	F72	Bezara	Ifotaka	Ifotaka		24	48	3.4	46	8	18.1	73.2
268	Jean de Diue	2005/4/5		-		Sakave	Sakave	Ambohimalaza		24	53	57.3	45	52	20.1	172.0
269	Jean de Diue	2005/4/5				Riviera Sakave	Sakave	Ambohimalaza		24	53	57.3	45	52	20.1	172.0
270	Jean de Diue	2005/4/5		-	F150	Sakave	Sakave	Ambohimalaza		24	53	59.6	45	52	20.9	174.8
271	Jean de Diue	2005/4/6		Non		Ambaro	Ambaro	Ambovombe		25	10	59.9	46	4	44.9	130.0
272	Jean de Diue	2005/4/6		Non		Ambaro	Ambaro	Ambovombe		25	11	0.3	46	4	42	140.0
273	Jean de Diue	2005/4/6		Non		Mitsangana	Mitsangana	Ambovombe		25	11	10.1	46	4	49	137.9
274	Jean de Diue	2005/4/6		Non		Mitsangana-Marolava	Mitsangana-Marolava	Ambovombe		25	11	21.5	46	4	43.7	141.1
275	Jean de Diue	2005/4/6		Non		Mitsangana	Mitsangana	Ambovombe		25	11	27	46	5	3.1	136.7
276	Jean de Diue	2005/4/6		U040072		Ambaro I	Ambaro I	Ambovombe		25	10	59.2	46	5	11.8	139.8
277	Jean de Diue	2005/4/6		U040081		Anjatoka I	Anjatoka I	Ambovombe		25	10	50	46	5	23.9	154.9
278	Jean de Diue	2005/4/6		Non		Andamboly I	Andamboly	Ambovombe		25	10	23	46	5	0.6	138.6
279	Jean de Diue	2005/4/6		Non		Berary	Berary	Ambovombe		25	10	21.3	46	4	55.1	132.9
280	Jean de Diue	2005/4/6		Non		Andaboly I	Andaboly I	Ambovombe		25	10	16.9	46	4	57.1	135.6
281	Jean de Diue	2005/4/6		Non		Andaboly I	Andaboly I	Ambovombe		25	10	19.4	46	4	58.6	133.5
282	Jean de Diue	2005/4/6		Non		Andaboly centre	Andaboly	Ambovombe		25	10	13.8	46	5	19.7	137.9
283	Jean de Diue	2005/4/6		Non		Ambovontany	Beabo	Ambovombe		25	10	16.4	46	5	34	132.9
284	Jean de Diue	2005/4/6		Non		Beabo-Andindo	Beabo	Ambovombe		25	10	26.7	46	5	35.1	129.8
285	Jean de Diue	2005/4/5		Non		Taunaubao	Taunaubao	Ambovombe		25	10	25.3	46	5	44.2	133.0
286	Jean de Diue	2005/4/7		Non		Andaboly	Andaboly	Ambovombe		25	10	16.5	46	4	45.4	127.8
287	Jean de Diue	2005/4/7		Non		Avaradrova	Avaradrova	Ambovombe		25	10	42.6	46	5	17.6	147.3
288	Jean de Diue	2005/4/7		Non		Tanambao III	Tanambao III	Ambovombe		25	10	36.2	46	5	38.2	139.9
289	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	38.9	46	5	38.9	143.2
290	Jean de Diue	2005/4/7		Non		Tanambao	Tanambao	Ambovombe		25	10	34.6	46	5	39.6	135.1
291	Jean de Diue	2005/4/7		Non		Tanambao	Tanambao	Ambovombe		25	10	33.8	46	5	43.1	136.1
292	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	40.8	46	5	39.8	137.9
293	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	37.5	46	5	50	136.3
294	Jean de Diue	2005/4/7		Non		Ambaro II	Ambaro II	Ambovombe		25	10	43.8	46	4	58	145.4
295	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	44.4	46	5	42.1	141.5
296	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	43	46	5	44.5	138.3
297	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	48.2	46	5	45.7	137.5
298	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	53.3	46	5	51.4	138.7
299	Jean de Diue	2005/4/7		Non		AnjatokaIII	AnjatokaIII	Ambovombe		25	10	48.7	46	5	52.9	140.9
301	William	2005/3/18		U040026 U040027 U040028		Tondroke	Tondroke	Sihanamaro		25	11	15.8	45	47	3.0	218.9
302	William	2005/3/18		Non		Nlsoa	Analaosoka	Sihanamaro		25	10	47.6	45	46	27.6	220.8
303	William	2005/3/18		U040033		Amagne	Analaosoka	Sihanamaro		25	11	48	45	46	40.2	213.9
304	William	2005/3/18		U040037		Mientse	Amborokelake	Marnato Befeno		25	9	41.6	45	41	9.8	193.6
305	William	2005/3/18		non		Namosirana	Namosirana	Marnato Befeno		25	8	20.2	45	41	50.1	214.3
500	Jean de Diue	2005/4/7		Non		Andranokoake	Tsimaronolo	Ambovombe		25	10	52.1	46	6	1.3	135.1
501	Jean de Diue	2005/4/7		Non		Andranokoake	Tsimaronolo	Ambovombe		25	10	53.8	46	6	7.6	137.0
502	Jean de Diue	2005/4/7		U040077 U040078		Andranokoake	Tsimaronolo	Ambovombe		25	10	59.2	46	6	9.6	132.4
503	Jean de Diue	2005/4/7		U040095 U040096 U040093		Bevoly	Anikilimafaitsy	Ambovombe		25	11	3.7	46	5	53.8	130.4
504	Jean de Diue	2005/4/7		U040402		Bevoly	Anikilimafaitsy	Ambovombe		25	11	1.8	46	5	47.9	?
505	Jean de Diue	2005/4/10		U040075		Tanambao II	Tanambao II	Ambovombe		25	10	30.7	46	5	32.7	137.5
506	Jean de Diue	2005/4/10		Non		Andranokoake	Anjatoka	Ambovombe		25	10	48.4	46	5	50.6	138.9
508	Jean de Diue	2005/4/10		Non		Andranokoake	Anjatoka III	Ambovombe		25	10	50	46	5	53.1	139.8
509	Jean de Diue	2005/4/10		Non		Bevoly	Maromalaina	Ambovombe		25	10	59.3	46	5	48.5	132.1
510	Jean de Diue	2005/4/10		Non		Bevoly	Anikilimafaitsy	Ambovombe		25	10	56.5	46	5	52.9	135.8
511	Jean de Diue	2005/4/10		U040100		Bevoly	Anikilimafaitsy	Ambovombe		25	11	0.8	46	5	55	128.7
512	Jean de Diue	2005/4/10		Non		Bevoly	Anikilimafaitsy	Ambovombe		25	11	0.8	46	5	55.1	128.7
513	Jean de Diue	2005/4/10		Non		Bevoly	Anikilimafaitsy	Ambovombe		25	10	59.7	46	5	54.8	136.0
514	Jean de Diue	2005/4/11		Non		Bevoly	Anjatoka III	Ambovombe		25	11	0.9	46	5	47.1	130.8
515	Jean de Diue	2005/4/11		Non		Bevoly	Anjatoka III	Ambovombe		25	11	2.3	46	5	48.4	128.3
516	Jean de Diue	2005/4/11		Non		Bevoly	Anjatoka III	Ambovombe		25	10	56.5	46	5	51.3	136.5
517	Jean de Diue	2005/4/11		Non		Bevoly	Anjatoka III	Ambovombe		25	10	56.9	46	5	51.2	137.3
518	Jean de Diue	2005/4/11		Non		Andranokoake	Tsimaronolo	Ambovombe		25	11	0.1	46	6	10.6	132.9
519	Jean de Diue	2005/4/11		Non		Andranokoake	Tsimaronolo	Ambovombe		25	10	58.4	46	6	10.8	130.4
520	Jean de Diue	2005/4/12		U03032	-	Belela	Vahavola centre	Sampona		25	11	1.9	46	20	41.1	13.4
521	Jean de Diue	2005/4/12		U03034		Elanja	Elanja	Sampona		25	11	45.3	46	17	47.4	9.7
522	Jean de Diue	2005/4/12		U03033		Elanja	Elanja	Sampona		25	11	45.1	46	17	45.4	?
601	Votsora François	2005/3/11		Non	F11	CAPJ F11	Tanambao	Ambovombe		25	10	30.1	46	5	52.5	163.8

DP1.1 Inventory List of Existing Water Source 2/3 - Characteristic

		4	5-1	5-2	6	6-1	6-2		6-3	6-4	6-5	6-6	7	7-1	7-2	7-3	7-4	8	8-1	8-2	8-3	8-4	8-5	8-6
GPS_ID num	Construction	Type	Construction year	Project name	Structure	Diameter Int	Depth	Rep=	SWL	Q	Seasonal evolution	DWL	Water Quality	Température (immediately)	pH	EC(ATC)	NO3	Exploitation	Volume exploitation (interview/estimate)	Nmb. vendor who exploit (interview)	Conssom. by habitants (interview)	Conssom par be livestock (interview)	Frequency exploited (interview)	Total nmbr beneficiary (interview)
		1. Borehole 2. Duggwell 3. Vovo protected 4. Vovo no protection			1.mesure 2.estimate	mm	m/Rep		m/Rep	L/min	m	m/Rep		°C		mS/m	mg/L		m3/d	psn	L/d	L/d	1.intermittent 2.always 3.sometimes 4.other ()	per/d
001		2	1960	MEM	1	1,000	20.4	1.05	18.44	imp	imp	imp		28.6	6.93	596	>45		0.75	0	0.75	0	1	imp
002		2	1994	JICA	1	1,500	22	1.1	20.32	50	0.6	imp		?	8.08	262	20		24	AES	?	0	1	AES
003		1	1984	AES	1	100	22.6	0.55	17.46	8	imp	imp		27.5	7	850	>45		imp	0	0	90	1	?
004		4	Imp	prive	1	?	10.7	0	10.5	imp	0.1	imp		26.7	7.35	965	>45		0.6	0	200	0	3	60
005		4	ancien	prive	1	1,000	13.1	0	13.15	imp	exist	imp		28.8	7.47	393	>45		0.4	1	0	0	1	100
006		4	?	prive	1	1,000	12.8	0	12.9	imp	imp	imp		26.8	7.47	170	20		1.15	0	0.1	39	1	30
007		2	2004	ptive	1	1,000	13.51	1	13.36	imp	imp	imp		28.1	7.48	270	45		0.15	0	16,000	0	1	80
008		4	1991	prive	1	1,000	11.80	0	11.6	imp	imp	imp		28.4	7.65	170	5		1	1	1,000	0	1	1
009		2	?	?	1	1,180	18.9	0.52	18.3	imp	exist	imp		27.7	7.2	440	>45		5.6	5	5.6	-	2	28
010		4	1999	prive	1	1,000	14.15	0	14.5	imp	exist	imp		28	7.6	170	45		2652	3	1,400	52	1	4
011		1	1994	unicef	1	110	14.94	0.53	5.45	imp	0	imp		27.5	8.19	210	20		6.16	0	4,000	2,160	2	80
012		1	1985	AES	2	imp	56	imp	imp	imp	imp	imp	-	-	-	-	-	-	-	-	-	-	-	-
013		1	1992	AES	2	imp	imp	imp	imp	imp	imp	imp	-	-	-	-	-	-	-	-	-	-	-	-
014		1	1992	AES	2	imp	imp	imp	imp	imp	imp	imp		imp	imp	imp	imp	imp	imp	imp	imp	imp	imp	imp
015		1	1985	AES	1	68	20	0.45	14.73	imp	imp			26.5	7.85	394	<1		-	-	-	-	-	-
016		1	1983	AES	1	imp	68.4	0.54	22.73	imp	stable	?		29.4	7.23	170	1		2.7	0	0.10	2,600	2	?
017		1	1983	AES	1	?	37.5	0.8	3.5	18.2	?	imp		28	7.74	180	5		0.4	0	120	288	2	?
018		1	1990	AES	1	?	11.45	0.2	4.09	5	?	?		-	-	-	-	-	-	-	-	-	-	-
020		1	1990	AES	1	125	78	0.87	5.63	20.7	?	20.7		27.1	7.68	140	2		30.28	9	1,900	1,000	2	7,029
021		1	1990	AES	1	110	19.75	0.83	10.95	1	?	?		27.8	7.43	170	>45		0.1	0	?	0	3	
022		1	1990	AES	1	170	13.5	0.5	7.1	1	?	?		28.2	7.14	340	>45		0.5	0	0.5	0	1	?
023		1	1990	AES	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
024		1	1985	AES	2	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-		-	-
024		1	1985	AES	2	PVC 8"	20	?	9	1.8	exist	imp		-	-	-	-		-	-	-	-	-	-
025		1	1990	AES	2	?	26	?	2.5	4	No	imp		-	-	-	-		-	-	-	-	-	-
026		1	1994	AES	1	PVC 8"	42.39	0.53	9.16	imp	exist	imp		28.6	7.05	60	1		0.2	0	i	5,200	3	100
027		1	1985	AES	1	110	18	0.26	8.42	1.5	exist	imp		28.1	7.11	40	1		0.2	-	-	-	3	-
028		1	1990	AES	2	?	32	0.2	4.9	imp	imp	imp		imp	imp	imp	imp		imp	imp	imp	imp	imp	imp
029		1	1994	unicef	1	110	25.3	0.51	2.8	imp	0	imp		28.7	7.56	333	>45		4.72	0	4,000	720	2	150
030		1	2005	PAEPAR	1	110	19.3	0.1	4.5	imp	imp	imp		28.2	7.43	73	<1		8	0	8,000	0	2	240
031		1	1994	unicef	1	110	16	0.52	1.79	imp	0	imp		28.1	7.62	319	45		9.2	0	2,000	7,200	2	300
032		2	?	prive	1	?	10.7	0.65	10.7	0	-	-		-	-	-	-		-	-	-	-	-	-
033		1	1994	unicef	1	110	19.8	0.56	10.92	9	exist	imp		29.1	7.37	159	20		3	0	3,000	0	1	300
034		1	2005	PAEPAR	1	110	14.55	0.2	2.95	imp	imp	imp		28.2	7.42	49	<1		-	-	-	-	-	-
035		1	1994	unicef	2	110	18.80	0.52	6.27	imp	0	imp		28.3	7.3	46	2		1.72	0	1,000	720	2	97
038		1	1994	unicef	2	110	23.41	0.53	3.6	imp	0	imp		-	-	-	-		2	0	2,000	0	2	200
039		1	1989	AES	2	?	18	0.2	17.79	imp	imp	imp		-	-	-	-		-	-	-	-	-	-
040		1	1985	AES	2	?	20.6	0.4	14	2.5	imp	imp		-	-	-	-		-	-	-	-	-	-
041		1	1984	AES	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
042		1	1985	AES	2	?	30	0.25	17.62	3.5	exist	imp		26.6	7.48	102	20		1	0	1,000	0	1	200
043		1	1985	AES	2	?	38	0.2	22.7	9	-	-		-	-	-	-		-	-	-	-	-	-
044		1	1985	AES	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
082		1	1994	unicef	1	110	20.6	0.53	15.51	imp	imp	imp		-	-	-	-		3	0	3,000	0	2	350
083		1	1991	AES	2	?	56	0.2	17.15	imp	imp	imp		-	-	-	-		2	-	2,000	0	2	250
084		1	1988	AES	2	?	12.05	0.2	6	imp	imp	imp		-	-	-	-		-	-	-	-	-	150
085		2	1975	prive	?	imp	imp	imp	imp	-	-	-		-	-	-	-		0.14	-	400	-	1	160
086		1	1991	AES	2	?	17.2	0.2	4.83	imp	imp	imp		28.2	7	678	45		-	-	-	-	-	150
087		1	1994	unicef	2	110	40.78	0.53	13.1	imp	0	imp		29.7	7.15	610	20		7.52	0	5,000	2,520	2	110
088		1	1994	unicef	2	110	12.68	0.52	5.6	imp	0	imp		27.9	8.01	262	1		2	0	2,000	0	2	150
089		1	1994	unicef	2	110	25.64	?	4.7	imp	imp	imp		-	-	-	-		6	0	6,000	0	2	150
090		1	2004	PAEPAR	1	?	31.75	0.15	9.95	imp	imp	imp		29.6	7.78	85	1		imp	imp	imp	imp	imp	imp
091		1	1994	unicef	1	110	17.54	0.52	1.99	imp	0	imp		29.4	7.75	108	5		8.52	0	6,000	2,520	2	230
092		1	2004	PAEPAR	1	110	21.7	0.12	4.85	imp	imp	imp		29.8	7.35	135	20		4.6	0	1,000	3,600	2	200
093		1	1994	unicef	1	110	14.54	0.53	7.18	imp	0	imp		28.6	7.54	156	5		11.4	0	6,000	5,400	2	250
094		1	1994	unicef	1	110	14.6	0.52	4.17	imp	0	imp		28.5	7.38	236	20		13.2	0	6,000	7,200	2	130
095		1	1994	unicef	1	110	18.6	0.53	3.85	imp	0	imp		27.7	7.8	162	45		2	0	2,000	0	2	300
096		1	1994	unicef	1	110	23.4	0.53	10.43	imp	0	imp		28	7.71	224	20		4	0	4,000	0	2	640
097		1	2004	PAEPAR	1	110	14.33	0.21	3.66	imp	imp	imp		27.2	7.49	306	5		imp	imp	imp	imp	imp	imp
098		1	2004	PAEPAR	1	110	17.51	0.21	5.52	imp	imp	imp		27.6	9.38	58	1		imp	imp	imp	imp	imp	imp
099		1	1994	unicef	1	110	22.92	0.6	10.11	imp	0	imp		27.1	7.58	551	>45		8.88	0	6,000	2,880	2	230
100		1	1994	unicef	1	110	28.92	0.6	5.74	imp	0	imp		27.4	7.65	76	2		24	0	6,000	18,000	2	130
101		1	1990	AES	2	110	20	0.24	7.12	imp	imp	imp		imp	imp	imp	imp		imp	imp	imp	imp	imp	imp
102		1	1994	unicef	1	110	36.4	0.53	13.53	imp	0	imp		28.7	8.1	15	1		16	0	1,000	15,000	2	500
103		1	1994	unicef	2	imp	34.64	0.52	10.26	imp	0	imp		28.4	7.89	114	10		2.44	0	1,000	1,440	2	60
104		1	1994	unicef	2	imp	34.5	0.5	16.42	imp	0	imp		28.6	7.19	359	20		4.52	0	2,000	2,520	2	130
105		1	2004	PAEPAR	1	110	20.32	0.2	6.95	imp	imp	imp		27.4	7.84	86	2		imp	imp	imp	imp	imp	imp
119		1	2005	PAEPAR	1	110	17	0.15	10.94	imp	imp	imp		-	-	-	-		-	-	-		-	-
120		1	1994	unicef	1	?	25.41	0.58	11.79	imp	imp	imp		29.3	770	150	5		6	0	6,000	0	2	700
121		1	1985	AES	2	PVC	imp	0.3	imp	imp	imp	imp		-	-	-	-		-	-	-	-	-	-
122		2	1950	prive	1	1,000	2.4	0.9	18.43	imp	imp	imp		21.27	7.03	711	1		9.6	0	6,000	3,600	1	160
123		4	?	prive	1	1,000	12.8	0	13.15	imp	0	imp		26.8	8.12	200	45		6	6	6,000	0	2	100
124		4	2005	prive	1	1,000	13.35	0	13.35	imp	0	imp		26.9	7.7	189	10		2.288	3	2,000	288	2	150
125		1	1994	unicef	1	PVC	53.7	0.52	16.75	imp	0	imp		27.7	7.25	200	5		4	0	4,000	0	2	400
126		1	1994	unicef	1	PVC	30.3	0.55	18.12	?	0	imp		26.6	7.54	190	10		8	0	8,000	0	2	900
127		2	?	?	1	1,200	imp	0.7	14.3	imp	imp	imp		-	-	-	-		-	-	-	-	-	-
128		1	2004	PAEPAR	1	110	48	0.19	23.55	imp	imp	imp		27	7.3	556	2							
129		1	1985	AES	2	?	?	imp	imp	imp	imp	imp		-	-	-								
130		1	1985	AES	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
131		1	1985	AES	1	?	44.8	0.18	28.43	0.2	imp	imp		27	709	97	2		-	-	-	-	-	-
132		2	1983	JICA	1	2,000	27.17	0.95	24.52	imp	0	imp		26	7.41	405	>45		3.72	1	3,000	720	2	230
133		1	1985	AES	-	-	-	-	-	-	-	-		-	-	-	-							
134		2	1990	AES	1	1,000	26.93	0.9	23.5	imp	0	imp		26.1	7.13	211	1		-	-	-	-	-	-
135		4	2000	prive	1	2,500	14.35	0	14	2.08	0	imp		24.8	7.96	63.7	10		3	0	3,000	0	1	80
136		1	1985	AES	-	-	-	-	-	-	-			-	-	-	-	-						
137		1	1994	unicef	1	?	17.7	0.51	6.12	imp	0	imp		27.4	7.48	120	20		2.56	0	1,000	1,560	2	90

DP1.1 Inventory List of Existing Water Source 2/3 - Characteristic

		4	5-1	5-2	6	6-1	6-2		6-3	6-4	6-5	6-6	7	7-1	7-2	7-3	7-4	8	8-1	8-2	8-3	8-4	8-5	8-6
GPS_ID num	Construction	Type	Construction year	Project name	Structure	Diameter Int	Depth	Rep=	SWL	Q	Seasonal evolution	DWL	Water Quality	Température (immediately)	pH	EC(ATC)	NO3	Exploitation	Volume exploitation (interview/estimate)	Nmb. vendor who exploit (interview)	Conssom. by habitants (interview)	Conssom par be livestock (interview)	Frequency exploited (interview)	Total nmbr beneficiary (interview)
		1. Borehole 2. Duggwell 3. Vovo protected 4. Vovo no protection			1.mesure 2.estimate	mm	m/Rep		m/Rep	L/min	m	m/Rep		°C		mS/m	mg/L		m3/d	psn	L/d	L/d	1.intermittent 2.always 3.sometimes 4.other ()	per/d
138		2	colon	prive	1	?	5.2	0.6	4.9	imp	0	imp		26.6	8.16	68	5		0.2	0	200	0	1	1,000
139		1	2005	PAEPAR	1	110.0	16.6	0.2	1.63	imp	imp	imp		27	7.9	47	5		-	-	-	-	-	-
140		1	2005	PAEPAR	1	110	15.65	0	4.33	imp	imp	imp		28.4	7.9	64	2		-	-	-	-	-	-
141		1	1994	unicef	1	110	38.75	0.47	4.07	imp	imp	imp		28	8	233	45		1.6	0	1,000	600	2	500
142		1	1988	AES	2	?	44	0.15	4	-	-	-		-	-	-	-		-	-	-	-	-	
143		1	1988	AES	1	110	24.3	0.1	8.16	imp	imp	imp		28.5	8	164	5		0.2	0	200	0	2	80
144		1	1994	unicef	?	?	?	?	?	imp	0	imp		26.3	7.57	89	2		1.5	0	1,500	0	2	110
145		2	1989	AES	1	1,900	11.45	0.85	8.95	imp	exist	imp		26.7	7.67	129	>45		1	0	1,000	0	1	330
146		1	1985	AES	1	110	31.68	0.15	18.4	imp	0	imp		26.3	7.3	269	1		45	0	9,000	36,000	2	200
147		2	1950	prive	1	800	11.6	0.3	9.8	imp	exist	imp		25.9	7.25	317	1		11.8	0	1,000	10,800	1	?
148		1	1994	unicef	1	110	20.85	0.52	5.82	imp	0	imp		26.6	7.18	235	20		34.8	0	6,000	29	2	150
149		1	1994	unicef	1	110	19.8	0.5	14.5	imp	0	imp		28.1	7.17	228	2		13.2	0	6,000	7,200	2	80
150		1	1994	unicef	1	110	23.4	0.5	12.43	imp	o	imp		28,4	7.15	254	5		13.2	0	6,000	7,200	2	80
151		1	1985	AES	1	110	29.8	0.35	4.9	imp	0	imp		29,2	7.13	803	1		19.2	0	12,000	7,200	2	150
152		1	1985	AES	1	110	42.0	0.15	25.35	imp	exist	imp		28	7.6	487	1		1	0	1,000	0	1	600
153		1	2004	PAEPAR	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
154		2	1950	MEM	1	1,000	13	0.54	6.73	sec	sec	imp		-	-	-	-		-	-	-	-	-	-
155		2	1945	senegalais	1	1,000	7.53	0.64	4.95	imp	exist	imp		24.7	7.73	110	1		1	0	1,000	0	1	200
156		1	1994	unicef	1	110	?	?	5.63	imp	0	imp		-	-	-	-		2.7	0	2,000	720	2	140
157		1	2004	PAEPAR	2	-	60	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
158		1	1994	unicef	1	110	36.1	0.52	7.99	imp	0	imp		28.9	7.4	144	<1		1.7	0	1,700	0	2	130
159		2	1976	MEM	1	1,000	14.77	0.8	sec	sec	sec	imp		-	-	-	-		-	-	-	-	-	-
160		1	1985	AES	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
161		1	1994	unicef	1	110	39.1	0.5	15.2	imp	0	imp		27.1	7.1	171	1		1.3	0	1,300	0	2	130
162		2	1950	colonie fransais	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
163		1	1983	AES	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
164		2	-	-	1	860	32	0.8	sec	sec	sec	sec		-	-	-	-		-	-	-	-	-	-
165		4	-	-	-	-	-	-	-	-	-	-		24.9	740	997	20		-	-	-	-	-	-
166		4	2004	prive	1	-	-	0	14.09	imp	imp	imp		25.9	8.21	614	-		-	-	-	-	-	-
167		4	2003	prive	1	900	13.23	0.21	13.05	imp	0	imp		27.1	7.05	1024	>45		0.2	0	200	0	2	30
168		2	1989	prive	1	1500	9.62	0.24	8.75	imp	0	imp		25.2	8.3	214	?		2	0	2000	0	2	90
169		2	?	?	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
170		2	1945	colonie fransais	1	?	15.54	0	15.47	imp	0	imp		23.6	7.9	293	>45		0.4	0	400	0	1	12
171		2	1950	colonie fransais	1	?	17.05	0.45	16.65	imp	0	imp		26.4	7.34	823	>45		1	0	1,000	0	-	100
201		2	1966	MEM	1	1,100	12.25	0	11	0.6	imp	imp		25.9	7.1	832	>45		0.6	0	600	0	1	8
202		3	1966	MEM	1	1,200	11.9	0.8	10.9	0.42	imp	imp		25.4	7.15	452	>45		0.6	1	600	0	2	50
203		2	1982	JICA	1	2,100	10.21	0.88	5.42	imp	imp	imp		26.9	7.6	158	45		3	0	3,000	0	1	700
203		4	1980	FLM	1	1,200	imp	-	imp	imp	imp	imp		-	-	-	-		-	-	-	-	-	-
206		2	1982	JICA	1	2,100	10.1	0.88	4.28	imp	imp	imp		27.3	7.43	270	45		3	0	3,000	0	1	700
207		2	1982	JICA	1	2,100	12	0.88	-	-	-	-		-	-	-	-		0	0	0	0	-	0
208		2	1984	SYNODE FLM	2	1,200	8	0.8	5	imp	imp	imp		-	-	-	-		-	-	-	-	-	0
209		2	1960	MEM	2	800	8	0.8	5	imp	imp	imp		-	-	-	-		-	-	-	-	-	-
210		2	1997	LANCE DE SUD (FE	1	1,250	10.95	0.8	10.65	imp	imp	imp		25.8	7.7	1,015	30		8	0	6,000	2,000	2	1,200
211		1	1983	AES	1	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
213		2	1990	FLM SYNODE	1	1,200	imp	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
215		1	1960	Service des mines	1	imp	imp	imp	imp	imp	imp	imp		-	-	-	-	-	-	-	-	-	-	-
216		2	1995	AES/Fondem	1	1,420	8.18	0.8	5.34	imp	imp	imp		26.5	7.57	87.9	<1		6.5	0	5,000	1,000	2	800
221		2	1976	Prive et Communautaire(fok outane)	1	1,750	7.8	0.015	8.5	imp	imp	imp		25	8.06	505	45		8.5	0	6,000	2,500	2	1,800
222		2	1960	MEM	1	1,400	?	0.5	4.55	imp	imp	imp		23.7	7.85	259	>45		-	-	-	-	-	-
223		2	1995	LANCE DE SUD (FE	1	1,000	3.5	0.85	3.5	imp	imp	imp		24.4	7.79	684	45		6	0	5,000	1,000	2	1,056
224		2	1997	LANCE DE SUD (FE	1	1,000	4.94	0.55	4.77	imp	imp	imp		25.5	8.05	477	>10		4	0	4	0		1,050
225		2	1955	Colon	1	1,250	12.95	0.3	sec	imp	imp	imp		-	-	-	-		-	-	-	-	-	-
226		2	1980	FLM	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
227		2	1959	MEM	1	1,000	18.8	0.55	10.45	0.42	2	imp		25.2	7.25	344	>45		1	0	1,000	0	2	300
228		2	1969	FLM	1	1,100	5.67	0.5	2.41	0.42	2.2	imp		25.7	7.55	164.4	>45		0.6	0	600	0	2	300
229		1	1960	?	-	-	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
231		2	1999	relance du sud(FED	1	1,200	12.3	0.8	11	10	0	imp		25.3	7.74	270	>45		1.3	0	1,300	0	2	900
232		2	1960	Fokoulona	1	1,000	7.8	0.5	7.4	10	0	imp		23.1	7.74	6.41	15		2.6	0	0	2,600	2	0
233		2	1995	Fokoulona	1	1,000	5.4	0	5	0.9	0	imp		25.8	7.28	1448	30		1.3	0	0	1,300	2	0
234		4	1998	Fokoulona	1	1,100	?	0	5.8	10	imp	imp		25.6	7.83	590	>45		1.3	0	1,300	-	2	500
236		2	1915	Fokoulona	1	900	6.8	0.3	5.7	3.6	0	imp		27.5	7.34	1340	45		5.4	0	0	5,400	2	0
239		2	1960	MEM	1	1,200	SEC	0	SEC	0	-	-		-	-	-	-		-	-	-	-		-
240		2	1954	Colon francais	1	1,100	6	0	sec	0	-	-		-	-	-	-	-	-	-	-	-		
241		2	1982	FLM	1	1,200	12	0	SEC	0	-	-		-	-	-	-		-	-	-	-		-
242		2	1954	Colon francais	1	1,100	12	0	SEC	0	-	-		-	-	-	-	-	-	-	-	-		-
243		2	1960	MEM	1	1,100	16.8	0	SEC	0	-	-		-	-	-	-	-	-	-	-	-		
244		2	1962	MEM	1	1,200	7	0.5	SEC	0	-	-												
245		2	1962	MEM	1	1,100	6	0	SEC	0	-	-		-	-	-	-							
246		2	1969	MEM	1	1,200	5.8	0.8	2.1	0.14	2	imp		26.6	7.78	130.6	<2		0.14	0	140	0	2	40
247		2	1969	MEM	1	1,200	7.74	0.7	3.93	0.7	0	imp		27.7	7.75	430	>45		1	0	1,000	0	2	50
248		2	1982	FLM	1	1,200	12	0	SEC	0	0	imp		-	-	-	-		-	-	-			
249		2	1968	MEM	1	1,200	15	0.8	3.5	6.6	0	imp		28.3	7.6	60.8	20		0.4	0	400	0	1	20
250		2	1982	FLM	1	1,200	3.91	0.8	2.5	0.7	0	imp		26.1	7.55	577	<20		1	0	1,000	0	1	10
251		2	1956	Colon francais	1	1,100	3.3	0	2	0.7	0	imp		25.7	6.57	76.4	<1		0	0	0	0	0	0
252		2	1974	MEM	1	1,200	14.34	0.7	SEC	0	imp	imp		-	-	-	-		-	-	-	-	-	-
253		2	1985	FLM	1	1,200	11.56	1.28	8.75	0	0	imp		26.6	7.72	107.9	2		0	0	0	0	-	0
254		4	1960	Fokotany	2	2,500	10	0	9.5	0.37	0	imp		26.4	6.3	45.2	<1		0.13	0	130	-	2	60
256		2	1950	Colon francais	1	1,200	6.6	0.8	6.25	imp	0	imp		26	8	330	>45		12	3	10,000	2,000	2	2,000
257		2	1950	Colon francais	1	2,000	7.5	1.7	7	imp	0	imp		27.7	8.11	515	>45		12	3	10,000	2,000	2	2,000
258		1	-	-	2	7"	170-175	?	-	-	-	-		-	-	Saumatre	-		-	-	-	-	-	-
262		2	1950	d'Ambovombe(Sene	2	1,200	25	0.2	1.7	imp	imp	imp		-	-	Saumatre	-		-	-	-	-	-	-

DP1.1 Inventory List of Existing Water Source 2/3 - Characteristic

		4	5-1	5-2	6	6-1	6-2		6-3	6-4	6-5	6-6	7	7-1	7-2	7-3	7-4	8	8-1	8-2	8-3	8-4	8-5	8-6
GPS_ID num	Construction	Type	Construction year	Project name	Structure	Diameter Int	Depth	Rep=	SWL	Q	Seasonal evolution	DWL	Water Quality	Température (immediately)	pH	EC(ATC)	NO3	Exploitation	Volume exploitation (interview/estimate)	Nmb. vendor who exploit (interview)	Conssom. by habitants (interview)	Conssom par be livestock (interview)	Frequency exploited (interview)	Total nmbr beneficiary (interview)
		1. Borehole 2. Duggwell 3. Vovo protected 4. Vovo no protection			1.mesure 2.estimate	mm	m/Rep		m/Rep	L/min	m	m/Rep		°C		mS/m	mg/L		m3/d	psn	L/d	L/d	1.intermittent 2.always 3.sometimes 4.other ()	per/d
263		rivera	-	-	-	-	-	-	-	-	-	-		27.3	9.09	23.3	0		-	-	-	-		-
264		1	1970	MEM	2	7"	?	?	?	?	?	imp		-	-	-	-		-	-	-	-	-	-
265		2	1950	France	2	1,100	20	0	sec	0	-	-		-	-	-	-		-	-		-		-
266		2	1962	Francais	2	1,200	30	0	?	?	?	?		29.7	8.07	31.6	0		4	0	4,000	0	2	1,600
267		1	1987	AES	?	4-1/2	24	0	7.4	167	?	?		28.1	8.16	34.9	0		4	0	4,000	0	1	1,600
268		2	1965	Francais	1	1,050	12	0.7	0	0	imp	imp		-	-	-	-		-	-	-	-	-	-
269		rivera	-	-	-	-	-	-	-	-	-	-		27.5	8.32	26.5	0		-	-	-	-	2	-
270		1	1990	AES	1	4.5"	>50	0.2	25.2	25	0	imp		27.9	7.4	473	0		0.65	0	650	0	2	600
271		4	2002	prive	1	1,400	8.8	0	8.5	0.55	0	imp		24.1	7.98	224	10		0.8	3	800	0	2	20
272		4	1975	prive	1	1,400	10.8	0	10.45	0.56	imp	imp		21.8	8.45	88.9	5		0.8	1	800	0	2	80
273		4	2002	prive	1	2,000	12.6	0	12.5	0.14	0	imp		24.8	7.54	507	>45		0.2	1	0	200	2	0
274		4	2000	prive	1	3,000	10	0	0	0	0	imp		-	-	-	-		-	-	-	-	-	-
275		4	2000	prive	1	2,000	14.24	0	14	0.28	0	imp		24.9	8.18	194.3	5		0.4	1	400	0	2	100
276		2	1968	prive	1	800	16.4	0.55	16.2	0.14	0	imp		25.7	7.62	426	>45		0.2	0	200	0	2	8
277		2	1979	prive	1	1,200	25.8	0.6	25.5	0.14	0	imp		25.1	7.6	354	>45		0.2	0	200	0	2	100
278		4	2001	prive	1	1,500	11.8	0	11.62	0.14	imp	imp		25.2	7.7	131	>45		0.2	1	200	0	2	20
279		4	2001	prive	1	2,000	0	7	0	imp	imp	imp		-	-	-	-		-	-	-	-	-	-
280		4	2000	prive	1	1,500	12.95	0	12.68	0.28	0	imp		27	8.69	57.8	>45		0.4	1	400	0	2	10
281		4	2002	prive	1	1,500	13.47	0	13.1	0.14	imp	imp		24.6	8.22	108.7	>45		0.2	1	200	0	2	20
282		4	1980	pedagogigue Ambo	2	2,000	12	0	0	0	0	0		-	-	-	-		4	-	4,000	-	2	100
283		4	2002	prive	1	1,500	7.8	0	7.36	0.56	0	imp		24.7	7.76	660	10		0.8	1	400	400	2	50
284		4	2001	prive	1	1,500	8.2	0	7.92	0.56	0	imp		24.9	8.15	215	>45		0.8	1	800	0	2	40
285		4	1970	Ancien Ambattoir	1	2,000	11.7	0	11.65	0.14	imp	imp		24.5	7.84	131.7	15		0.2	0	-	200	1	0
286		4	2003	prive	1	1,500	4	0	sec	sec	imp	imp		-	-	-	-		-	-	-	-	-	-
287		2	1954	prive	1	1,200	19.96	0.6	18.13	0.56	0	imp		20.8	7.7	605	>45		0.8	0	800	0	2	20
288		4	1962	prive	1	1,000	14	0	13.2	2.78	0	imp		25.9	7.21	992	>45		0.13	1	130	0	2	?
289		2	1966	prive	1	1,100	14.87	0.25	14.18	1.39	0	imp		26.1	7.23	716	>45		1	1	1,000	0	2	40
290		4	1975	prive	1	1,000.0	12.7	0	12.25	0.14	0	imp		26.3	7.97	1058	>45		0.13	0	130	0	2	10
291		4	1980	prive	1	800	12.0	0	11.65	0.21	imp	imp		26.1	7.32	486	>45		0.3	1	100	200	2	10
292		2	1980	prive	1	700	13.4	0.6	12.84	0.83	0	imp		26.3	7.67	378	>45		0.4	1	400	0	2	30
293		4	1990	prive	1	1,200	10.3	0	10	0.69	0	imp		24.2	7.77	178.8	>45		1	1	1,000	0	2	40
294		4	2002	prive	1	1,500	14.19	0	13.1	0.14	imp	imp		25.5	7.97	489	>45		0.1	0	100	0	2	15
295		4	2004	prive	1	1,500	13.3	0	12.8	0.14	0	imp		25	7.83	313	>45		0.2	1	200	0	2	16
296		4	2004	prive	1	1,500	13.7	0	12.73	0.14	0	imp		25.3	7.52	231	>45		0.2	1	200	0	2	16
297		4	2004	prive	1	1,200	15.05	0	14.83	0.83	0	imp		24.9	7.33	175.6	>45		1.2	1	1,200	0	2	96
298		4	2005	prive	1	1,500	14.2	0	13.87	0.14	0	imp		24.5	8.05	92.7	10		0.2	0	200	0	2	6
299		4	1990	prive	1	800	15.67	0	14.9	0.28	0	imp		24.5	8.04	127	15		0.4	2	400	0	2	40
301		2	1988	FLM SYNODE	1	110	4.92	0.95	2.4	imp	imp	imp		27.1	7.28	287	>45		8	0	8,000	0	?	500
302		2	1985	FLM SYNODE	1	1,000	11.6	0.93	3.7	imp	imp	imp		27.1	7.99	403	2		0	0	0	0	?	300
303		2	1988	FLM SYNODE	1	1,000	5.11	0.58	2.88	imp	imp	imp		27.6	7.37	885	<1		0.6	0	600	0	-	300
304		2	1988	FLM SYNODE	1	1,000	3.0	0.78	2.8	imp	imp	imp		26.9	8.58	5760	5		3	0	3,000	0	3	1,500
305		2	1958	MEM(Eolienne)	1	1,200	-	-	-	-	-	-		-	-	-	-		-	-	-	-	-	-
500		4	2005	prive	1	1,400	18.6	0	18.25	2.78	0	imp		23.1	8.3	103.4	10		4	1	4,000	0	2	200
501		4	2005	prive	1	1,600	14.17	0	14.05	0.28	imp	imp		24.3	7.92	86.7	20		0.4	1	400	0	2	60
502		2	1955	?	1	1,200	8.94	0.5	sec	-	-	-		-	-	-	-		-	-	-	-	-	-
503		2	1954	?	1	1,150	7	0.8	sec	-	-	-		-	-	-	-		-	-	-	-	-	-
504		2	1954	?	1	1,200	14	0.8	sec	0	0	imp		-	-	-	-		-	-	-	-	-	-
505		2	1960	prive	1	1,000	14.35	0.75	13.56	0.83	0	imp		26.3	7.35	668	>45		0.36	0	360	-	2	20
506		4	1985	prive	1	2,000	14.5	0	14.2	0.69	imp	imp		25.6	8.19	153.6	45		1	1	1,000	0	2	20
508		4	2004	prive	1	1,500	15.5	0	15.35	1.39	0	imp		32.5	7.73	84.4	10		2	1	2,000	0	2	40
509		4	2001	prive	1	1,500	12.2	0	12.15	1.11	0	imp		24.4	7.47	153.5	>45		1.6	1	1,400	200	2	40
510		4	2002	prive	1	1,900	14.7	0	14	1.39	0	imp		25	8.02	113.2	10		2	1	1,200	800	2	200
511		2	?	?	1	1,200	5	0.4	sec	0	imp	imp		-	-	-	-	-	-	-	-	-	-	-
512		4	2004	prive	1	1,900	11	0	10.6	0.14	imp	imp		24	7.75	95.1	45		0.2	0	200	0	2	20
513		4	2004	prive	1	1,500	11.7	0	11.62	0.56	0	imp		27.7	7.89	82.3	10		0.8	1	800	0	2	40
514		4	2000	prive	1	1,500	12.9	0	12.8	0.42	0	imp		25.8	7.6	65.2	10		0.6	3	600	0	2	20
515		4	2004	prive	1	1,500	11.62	0	11.45	0.56	0	imp		25	7.67	72.1	10		0.8	2	800	0	2	15
516		4	2002	prive	1	3,000	13.8	0	13	0.28	0	imp		25.8	8.14	80.8	10		0.4	1	400	0	2	200
517		4	2004	prive	1	1,100	11.65	0	11.53	1.39	0	imp		26.4	8.17	75.1	45		2	1	2,000	0	2	110
518		2	1985	prive	1	1,160	11.03	0.25	10.5	0.28	imp	imp		26.2	7.47	331	10		0	0	0	0	-	0
519		4	1984	prive	1	1,400	9.67	0	9.56	0.21	0	imp		25.5	7.4	109.8	>45		0.3	0	0	300	2	0
520		2	2001	Fokonolona	1	1,350	9.22	0.3	9.02	5.56	0	imp		29.1	7.15	681	45		8	0	4,000	4,000	2	20,000
521		2	1997	relance du sud (FED)	1	1,200	6.92	0.8	6.8	8.3	0	imp		28.3	7.66	371	>45		12	0	8,000	4,000	2	20,000
522		2	1996	relance du sud (FED)	1	1,200	7.96	0.8	7.84	1.39	0	imp		26.1	7.81	202	>45		2	0	2,000	0	2	1,000
601		1	1982	AES	2	-	35	-	14.3	imp	imp	imp	-	-										

DP1.1 Inventory List of Existing Water Source 3/3- Condition

	9	9-1	9-2	9-3	10	10-1	10-2	11	11-1	11-2	11-3	11-4	12	12-1	12-2
GPS_ID num	Sanitation surrounding	Livestock (pollution)	Toilet (pollution)	Drainage (Drainage return)	Tariff of water	Tariff bucket (13L)	Other tariff	Maintenance	Pump	type de pump 1. Vergnet old 2. Vergnet HPV60, 3. India Mark II 4. Windmill 5. solar pump 6. Submersible 7. autour ( ) 8. India Mark III	Cover	Cover type	Evaluation	Exploitation 1.Possible 2.Impossible 3.rehabiltation	reason of abandonee 1.Sanitary 2.Taste 3.Quantity 4.Dry 5.Closed 6.pump failure 7.etc.
		1.Yes 2.No	1.Yes 2.No	1.Yes 2.No		Fmg	Fmg		1.Yes 2.No		1.Yes 2.No	1.weld 2.screw 3.plate			
001		2	2	1		100	2,000f/fûts		1	1	1	2		1	-
002		2	2	2		AES	0		1	7	1	3		1	-
003		1	1	1		0	0		1	1	1	2		1	-
004		2	2	2		0	0		2	-	1	3		1	-
005		2	1	2		500	-		2	-	2	3		1	-
006		1	2	2		250	5000/fûts		2	-	2	-		1	-
007		2	1	2		500	5000/fûts		2	-	2	-		1	
008		2	2	2		500	10,000/Fûts		2	-	2	-		1	-
009		2	2	2		500	5,000f/fûts		2	-	2	-		1	-
010		1	2	2		250	2,500f/fûts		2	-	2	-		1	-
011		1	1	1		0	cot/famil		1	3	1	2		1	-
012	-	-	-	-	-	-	-	-	-	-	-			2	5
013	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5
014	imp	imp	imp	imp	imp	imp	imp	imp	imp	imp	imp	imp		2	4
015	-	-	-	-		-	-		2	4	2	3		1	-
016		1	1	1		no existe	cot/famil		1	3	1	2		1	-
017		1	1	1		no existe	cot/famil		1	3	1	2		1	-
018	-	-	-	-	-	-	-	-	2	-	-	-	-	1	6. reserve B2
020		2	2	1		200	0		1	5	1	2		1	-
021		1	2	1		no existe	cot/famil		1	3	1	2		1	-
022		2	2	2		no existe	cot/famil		1	3	1	2		1	-
023	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4
024		-	-	-	-	-	-	-	-	-	-	-	-	2	4
024		-	-	-		-	-		2	-	2	3		?	?
025		-	-	-		-	-		2	1	2	-		2	5
026		1	1	1		Non	cot/famil		1	3	1	2		1	faible debit
027		?	?	?		Non	cot/famil		1	1	1	2		1	faible debit
028		2	2	2		-	-		1	7. elephant	1	-		2	bouche
029		1	1	1		0	cot/famil		1	3	1	2		1	-
030		2	2	1		0	cot/famil		1	2	1	2		1	-
031		1	1	1		0	cot/famil		1	3	1	2		1	-
032		2	2	2		0	0		2	-	2	-		2	4
033		2	1	1		0	cot/famil		1	3	1	2		1	-
034		2	2	1		-	-		1	2	1	2		1	pas encore
035		1	1	1		0	cot/famil		1	3	1	2		1	-
038		2	1	1		0	cot/famil		1	3	1	2		1	6
039		2	2	2		-	-		2	-	2	-		2	4
040		2	2	2		-	-		2	-	2	-		2	6
041		2	2	2	-	-	-		2	-	2	-		2	6
042		2	1	1		0	cot/famil		1	1	1	2		1	sec pendant sech
043		-	-	-		-	-		2	-	2	-		2	bouche
044		-	-	-		-	-		2	-	2	-		1	bouche
082		2	1	1		0	cot/famil		1	3	1	2		1	6
083		2	1	1		0	cot/famil		1	1	1	2		1	6
084		-	-	-		0	0		2	Ancian lencino	2	-		2	6
085		2	2	2		0	0		1	1	1	2		1	4
086		2	2	1		0	0		1	1	1	2		1	6
087		1	1	1		0	cot/famil		1	3	1	2		1	-
088		2	1	1		0	cot/famil		1	3	1	2		1	0
089		2	1	1		0	0		1	3	1	2		1	6
090		2	1	1		0	0		2	2	1	2		1	pas encore installer
091		1	1	1		0	cot/famil		1	3	1	2		1	-
092		1	1	1		0	cot/famil		1	2	1	2		1	-
093		1	1	1		0	cot/famil		1	3	1	2		1	-
094		1	1	1		0	cot/famil		1	3	1	2		1	-
095		2	1	1		0	cot/famil		1	3	1	2		1	-
096		2	1	1		0	cot/famil		1	3	1	2		1	-
097		2	2	1		0	0		2	2	1	2		1	pas encore installer
098		2	1	1		0	0		2	2	1	2		1	pas encore installer
099		1	1	1		0	cot/famil		1	3	1	2		1	-
100		1	1	1		0	cot/famil		1	8	1	2		1	-
101		imp	imp	imp		imp	imp		2	-	2	ciment		2	5
102		1	1	1		0	0		1	3	1	2		1	-
103		2	1	1		0	cot/famil		1	3	1	2		1	-
104		1	1	1		0	cot/famil		1	3	1	2		1	-
105		imp	imp	imp		imp	imp		2	2	1	2		1	pas encore installer
119		-	-	-		-	-		1	2	1	2		1	pas encore utilser
120		1	1	1		0			1	8	1	2		3	-
121		-	-	-		-	-		-	1	-	-		2	7
122		1	2	1		0	0		2	-	2	3		1	-
123		2	2	1		500	4,000fmg/fute		2	-	2	3		1	-
124		1	2	1		500	4,000fmg/fute		2	-	2	3		1	-
125		1	1	1		0	cot/famil		1	3	1	2		1	-
126		1	1	1		0	cot/famil		1	3	1	2		1	-
127		2	2	2		0	0		2	-	1	3		1	-
128														1	
129									2	-	2	-		2	bouche
130		-	-	-	-	-	-		-	-	-	-		-	4
131		-	-	-	-		-		1	2	1	2		2	6
132		2	2	2		100	2000fmg/fute		1	5	1	1		1	-
133									2	1	2	-		2	bouche
134		2	2	1		0	0		2	-	1	beton		1	?
135		2	2	1		500	0		2	-	2	3		3	?
136									2	1	2	-		2	bouche
137		1	1	1		0	cot/famil		1	3	1	2		1	-

DP1.1 Inventory List of Existing Water Source 3/3- Condition

	9	9-1	9-2	9-3	10	10-1	10-2	11	11-1	11-2	11-3	11-4	12	12-1	12-2
GPS_ID num	Sanitation surrounding	Livestock (pollution)	Toilet (pollution)	Drainage (Drainage return)	Tariff of water	Tariff bucket (13L)	Other tariff	Maintenance	Pump	type de pump 1. Vergnet old 2. Vergnet HPV60, 3. India Mark II 4. Windmill 5. solar pump 6. Submersible 7. autour ( ) 8. India Mark III	Cover	Cover type	Evaluation	Exploitation	reason of abandonee 1.Sanitary 2.Taste 3.Quantity 4.Dry 5.Closed 6.pump failure 7.etc.
		1.Yes 2.No	1.Yes 2.No	1.Yes 2.No		Fmg	Fmg		1.Yes 2.No		1.Yes 2.No	1.weld 2.screw 3.plate		1.Possible 2.Impossible 3.rehabiltation	
138		2	2	1		0	cot/famil		2	-	2	-		1	-
139		-	-	-		-	-		1	2	1	2		1	-
140		2	2	1		-	-		1	2	1	2		1	-
141		1	1	1		0	cot/famil		1	3	1	2		1	-
142									2	-	1	3		3	7 cause de constrictionde forage unicef
143		2	1	1		0	cot/famil		1	2	1	2		1	-
144		2	1	1		0	cot/famil		1	8	1	2		1	-
145		2	2	1		0	cot/famil		2	LEONCINO ancien	1	3		3	pompe en panne
146		1	2	1		0	cot/famil		1	1	1	2		1	panne
147		1	2	1		0			2	-	2	-		1	-
148		1	1	1		0	?		1	3	1	2		1	-
149		1	1	1		0	cot/famil		1	3	1	2		1	-
150		1	1	1		0	cot/famil		1	3	1	2		1	-
151		1	1	1		0	cot/famil		1	1	1	2		1	-
152		2	2	2		0	0		2	1	1	2		1	-
153		-	-	-		-	-		2	-	2	-		2	4
154		-	-	-		-	-		2	-	2	3		?	4
155		2	1	1		0	0		2	-	2	3		1	-
156		1	1	1		0	cot/famil		1	3	1	2		1	6
157		-	-	-		-	-		-	-	-	-		2	4
158		2	1	1		0	cot/famil		1	3	1	2		1	?
159		-	-	-		-	-		2	-	2	-		2	4
160		-	-	-		-	-		2	-	2	-		2	4
161		2	1	1		0	cot/famil		1	3	1	2		1	-
162		-	-	-		-	-		2	-	2	-		2	-
163		-	-	-		-	-		2	-	2	-		2	-
164		-	-	-		-	-		2	-	2	-		2	-
165		-	-	-		0	0		2	-	2	-		2	-
166		2	1	2		-	-		2	-	2	-		2	3
167		2	1	2		0	0		2	-	1	3		1	-
168		2	1	1		500	0		2	-	1	3		1	-
169		-	-	-	-	-	-		2	-	2	-		2	4
170		2	2	1		0	0		2	-	2	3		1	-
171		2	1	1		50	-		2	-	1	3		1	-
201		2	2	2		0	0		2	-	1	3		2	2
202		2	2	2		125	0		2	-	1	3		1	-
203		2	2	2		250	-		1	5	1	1		1	-
203		-	-	-		-	-		2	-	2	-		2	4
206		2	2	2		250	-		1	5	1	1		1	-
207		2	2	2		-	-		2	-	2	-		2	4
208	-	2	2	2		-	-		2	-	2	-		2	4
209	-	2	2	2		-	-		2	-	2	-		2	4
210		2	2	2		0	0		2	-	2	-		1	-
211		-	-	-		-	-		2	-	2	-		2	5
213		2	2	2		-	-		2	-	2	-		3	5 bouchonee par sable
215		2	2	2		-	-		2	4	2	-		2	5
216		2	2	2		0	0		1	5	1	1		1	-
221		2	2	2		0	0		2	-	2	-		1	-
222		-	-	-		-	-		2	-	2	-		2	2
223		2	2	2		0	0		2	-	2	-		1	-
224		2	2	2		0	0		2	-	2	-		1	-
225		2	2	2		-	-		2	-	2	-		3	4
226		-	-	-		-	-		2	-	2	-		2	1
227		2	2	2		0	0		2	-	2	-		3	-
228		2	2	2		0	0		2	-	1	3		3	-
229		-	-	-		-	-		2	-	2	-		2	5
231		2	2	2		0	0		2	-	2	-		1	-
232		1	2	2		0	0		2	-	2	-		2	2
233		1	2	2		0	0		2	-	2	-		2	2
234		2	2	2		0	0		2	-	2	-		3	creze
236		1	2	2		0	0		2	-	2	-		2	2
239		-	-	-		-	-		-	-	2	-		2	4
240		-	-	-		-	-		2	-	2	-		3	4
241		-	-	-		-	-		2	-	2	-		3	4
242		-		-		-	-		2	-	2	-		2	2,4
243									2	-	2	-		2	4
244									2	-	2	-		2	4
245									2	-	2	-		2	4
246		2	2	2		0	0		2	-	2	-		3	4
247		2	2	2		0	0		2	-	2	-		3	-
248						-	-		2	-	1	3		2	4
249		2	2	2		0	0		2	-	1	3		3	-
250		2	2	2		0	0		2	-	2	-		3	-
251		2	2	2		0	0		2	-	2	-		3	1
252		-	-	-		-	-		2	-	1	3		3	4
253		2	2	2		0	0		2	-	2	-		3	4
254		2	2	2		0	0		2	-	2	-		1	-
256		1	2	2		750-1000	3000 sech		2	-	2	-		1	-
257		1	2	1		750-1000	750-1000		2	-	2	-		1	-
258		-	-	-		-	-		1	6	2	-		2	5
262		-	-	-		-	-		2	-	2	-		2	1

DP1.1 Inventory List of Existing Water Source 3/3- Condition

	9	9-1	9-2	9-3	10	10-1	10-2	11	11-1	11-2	11-3	11-4	12	12-1	12-2
GPS_ID num	Sanitation surrounding	Livestock (pollution)	Toilet (pollution)	Drainage (Drainage return)	Tariff of water	Tariff bucket (13L)	Other tariff	Maintenance	Pump	type de pump 1. Vergnet old 2. Vergnet HPV60, 3. India Mark II 4. Windmill 5. solar pump 6. Submersible 7. autour ( ) 8. India Mark III	Cover	Cover type	Evaluation	Exploitation 1.Possible 2.Impossible 3.rehabiltation	reason of abandonee 1.Sanitary 2.Taste 3.Quantity 4.Dry 5.Closed 6.pump failure 7.etc.
		1.Yes 2.No	1.Yes 2.No	1.Yes 2.No		Fmg	Fmg		1.Yes 2.No		1.Yes 2.No	1.weld 2.screw 3.plate			
263		-	-	-		-	-		-	-	2	-		-	-
264		-	-	-		-	-		2	-	2	-		2	5
265		-	-	-		-	-		2	-	2	-		2	4,5
266		2	2	2		0	1000fmg/f/mois		1	5	1	3		1	-
267		2	2	2		0	1000fmg/p/mois		1	3	1	2		1	-
268		-	-	-		-	-		2	-	2	-		2	4
269		-	-	-		-	-		-	-	-	-		-	-
270		2	2	2		0	0		1	1	1	3		3	6
271		2	2	2		500	0		2	-	2	-		1	-
272		2	2	2		500	0		2	-	2	-		1	-
273		2	2	2		500	0		2	-	2	-		1	-
274		-	-	-		-	-		2	-	2	-		2	4
275		2	2	2		500	0		2	-	1	3		1	-
276		2	2	2		0	0		2	-	2	-		1	-
277		2	2	2		0	0		2	-	1	3		1	-
278		2	2	2		250	0		2	-	2	-		1	-
279		2	2	2		-	-		2	-	2	-		2	4
280		2	2	2		250	0		2	-	2	-		1	-
281		2	2	2		250	0		2	-	2	planche		1	-
282		2	2	2		0	0		2	-	2	-		2	boche il ya 4ans
283		2	2	2		250	0		2	-	2	-		1	-
284		2	2	2		500	0		2	-	2	-		1	-
285		2	2	2		0	0		2	-	2	-		3	-
286		-	-	-		-	-		2	-	2	-		2	4
287		2	2	2		0	0		1	BRIAU	2	-		1	-
288		2	2	2		250	0		2	-	2	-		2	2
289		2	2	2		250	0		2	-	1	3		1	-
290		2	2	2		0	0		2	-	2	-		2	2
291		2	2	2		500	0		2	-	2	-		1	-
292		2	2	2		250	0		2	-	2	-		1	-
293		2	2	2		500	0		2	-	2	-		1	-
294		2	2	2		0	0		2	-	2	-		2	2
295		2	2	2		500	0		2	-	2	-		1	-
296		2	2	2		250	0		2	-	2	-		1	-
297		2	2	2		500	0		2	-	1	planche		1	-
298		2	2	2		0	0		2	-	2	-		1	-
299		2	2	2		150	0		2	-	2	-		1	-
301		2	2	2		0	0		2	-	1	3		1	-
302		2	2	2		0	0		2	-	1	3		3	-
303		2	2	2		0	0		2	-	1	3		3	-
304		2	2	?		0	0		2	-	1	1		1	-
305		2	2	2		-	-		2	-	-	-		1	?
500		2	2	2		500	0		2	-	2	-		1	-
501		2	2	2		500	0		2	-	2	-		1	-
502		-	-	-		-	-		2	-	2	-		2	4
503		-	-	-		-	-		2	-	2	-		2	4
504		-	-	-		-	-		2	-	2	-		2	4
505		2	2	2		0	0		2	-	1	3		1	-
506		2	2	2		500	0		2	-	2	-		1	-
508		2	2	2		500	0		2	-	2	-		1	-
509		2	2	2		500	0		2	-	2	-		1	-
510		2	2	2		500	0		2	-	2	-		1	-
511		-	-	-		-	-		2	-	2	-		2	4
512		2	2	2		0	0		2	-	2	-		1	-
513		2	2	2		500	0		2	-	2	-		1	-
514		2	2	2		500	0		2	-	2	-		1	-
515		2	2	2		500	0		2	-	2	-		1	-
516		2	2	2		500	0		2	-	2	-		1	-
517		2	2	2		500	0		2	-	2	-		1	-
518		2	2	2		0	0		2	-	2	-		3	1
519		2	2	2		0	0		2	-	2	-		1	-
520		1	2	2		0	0		2	-	2	-		1	-
521		1	2	2		0	0		2	-	2	-		1	-
522		2	2	2		0	0		2	-	2	-		1	-
601														2	5

DP1.2 Satellite Image

The following themes of analyzing satellite images are attached

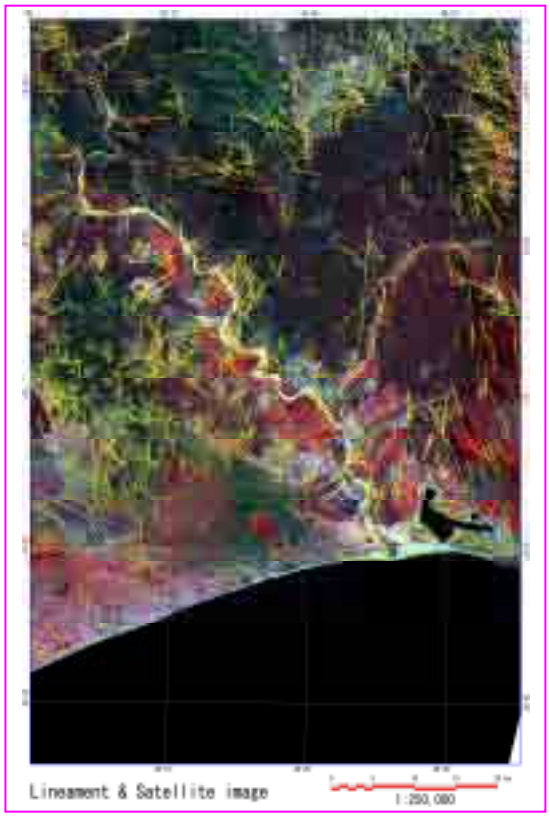
- Lineament detection manually with visual judgments, scale 1/250,000
- Lineaments detection processed automatically (by the algorithm prepared by the software provider), scale 1/250,000
- Superimposed image with 1/100,000 topographic map, scale 1/125,000.

  The utilized ID numbers of topographic maps are as follows number 61-63 means line number and Alphabet means row number.

	I	J	K	L
61	○	○	○	○
62	○	○	○	○
63	○	○	○	

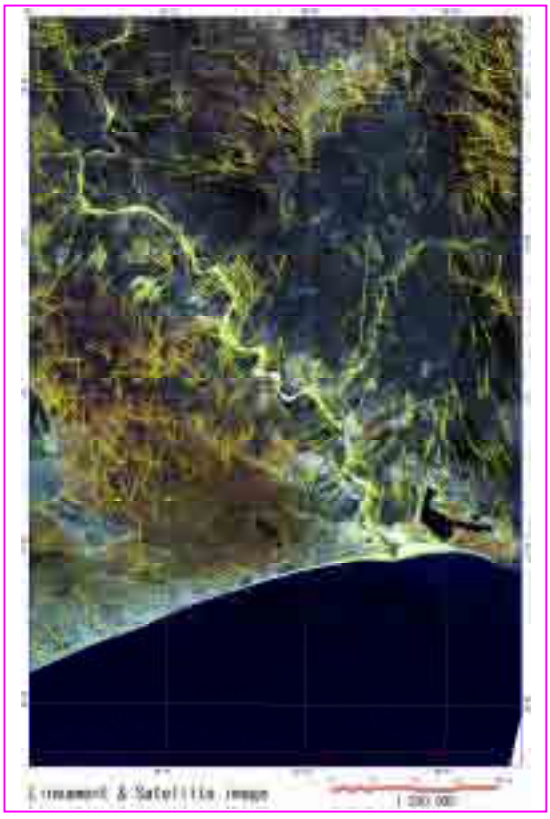
- Superimposed image with 1/500,000 geology map, scale 1/500,000
- River system and boundary detection by automatic, scale 1/400,000
- Depression detection, scale 1/400,000
- Surface openings and underground openings, scale 1/400,000
- A bird's eye view, 1/400,000, scale 1/400,000
- Shades interpreted from DEM data, 1/400,000, scale 1/400,000
- Altitude contour and colored, scale 1/400,000
- Slope interpretation, scale 1/400,000
- Cross section, scale 1/500,000
- Vegetation, scale 1/400,000

Lineament A West false



Lineament A East false

Lineament A West true



Lineament A East true

Figure DP1.2-1 Lineament automatic detection

Lineament M West false

Lineament M East false

Lineament M West true

Lineament M East true

Figure DP1.2-2 Lineament manual detection

	
Superimposed image I61	Superimposed image J61
	
Superimposed image I62	Superimposed image J62

Figure DP1.2-3 Super imposed image with topographic map

Superimposed image K61

Superimposed image L61

Superimposed image K62

Superimposed image L62

Figure DP1.2-4 Super imposed image with topographic map

Superimposed image I63

Superimposed image J63

Superimposed image K63

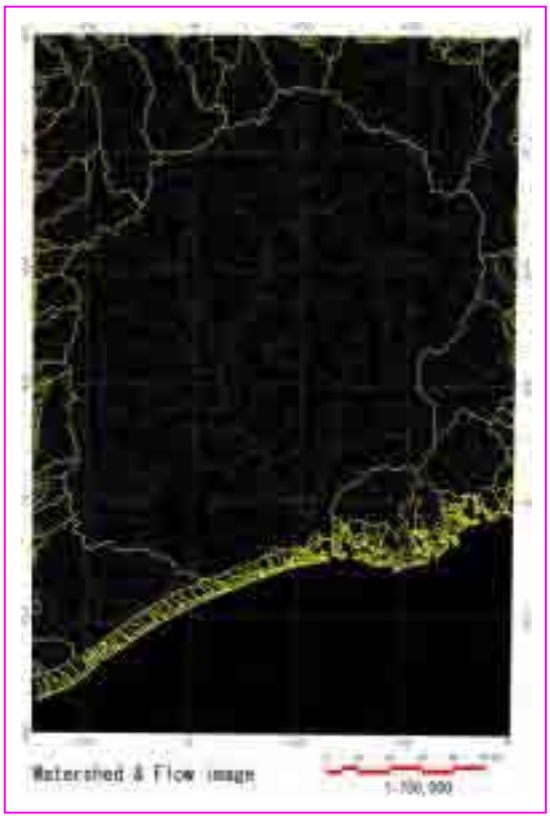
Figure DP1.2-5 Super imposed image with topographic map

Superimposed image with geology

Superimposed image with geology

Geology map

Figure DP1.2-6 Superimposed image with geological amp



River system and boundary detection

River system and boundary detection

Superimposed image with boundary

Superimposed image with boundary

Figure DP1.2-7 River system and boundary of basin

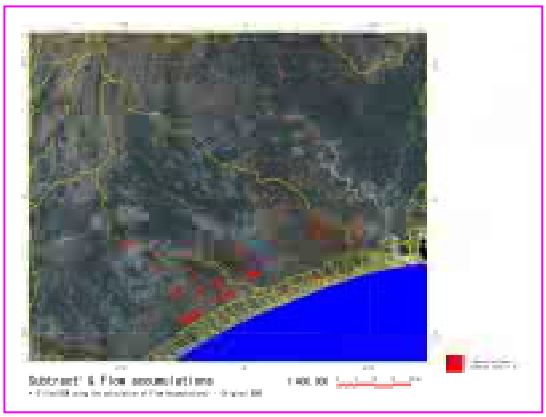
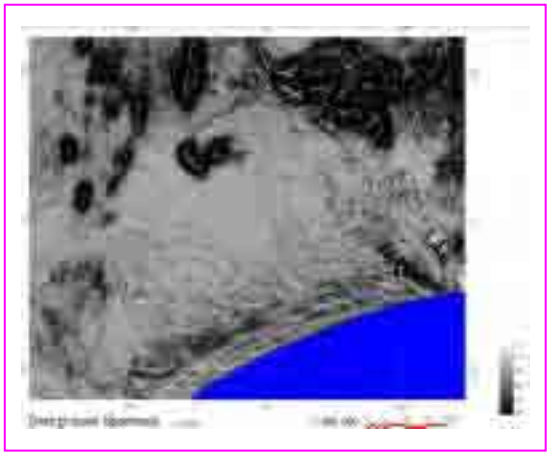
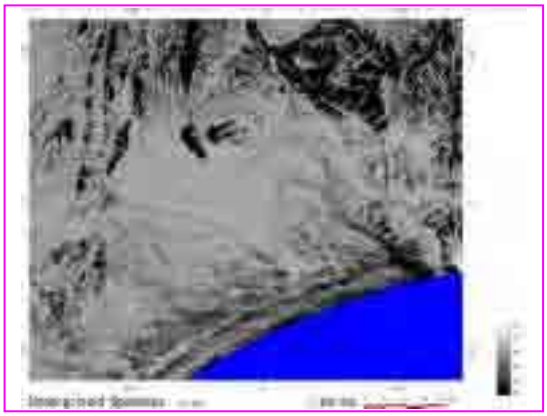
	
Lowest point at boundary	Depression detection
	
Bird’s eye view false	Bird’s eye view true

Figure DP1.2-8 Complex analysis



Surface opening

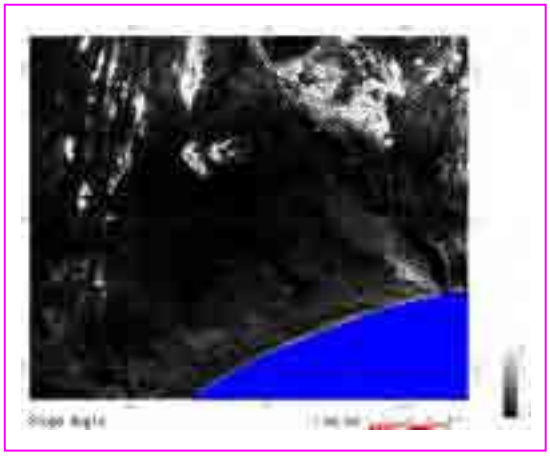


Ground opening

Shading

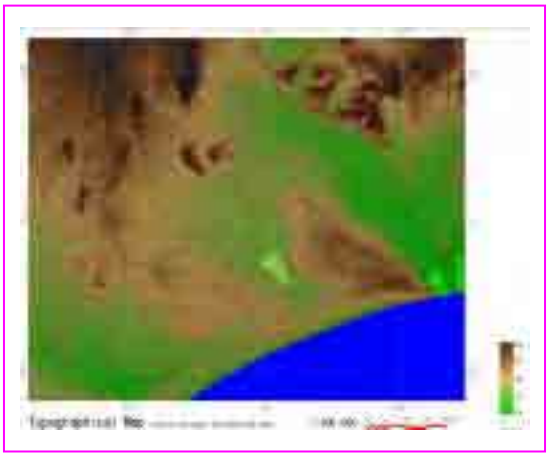
Shading with topography

Figure DP1.2-9 Complex analysis

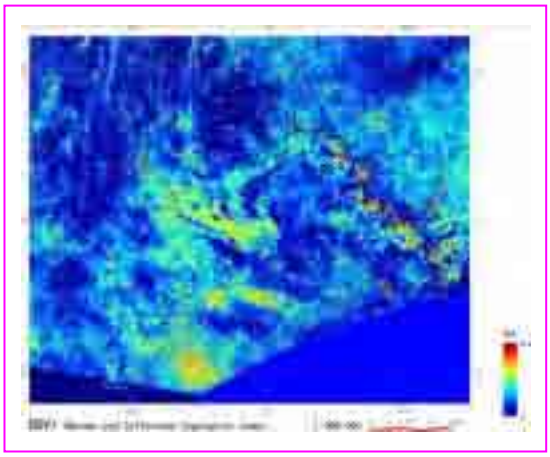


Slope distribution

Shading with topography



Water system and topography



Vegetation

Figure DP1.2-10 Complex analysis

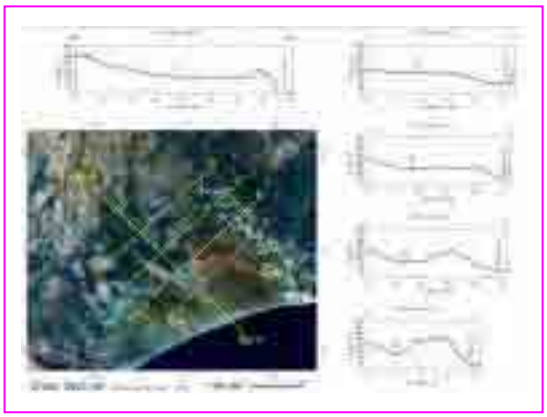
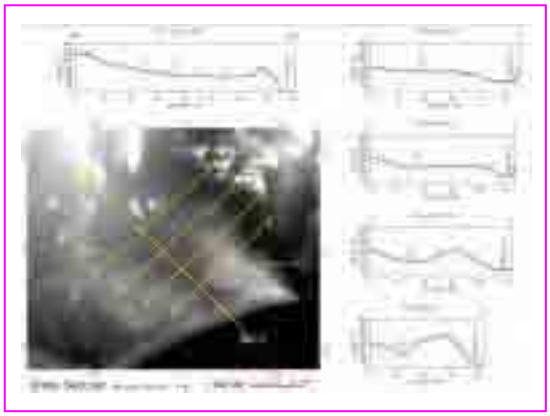
	
Cross section false	Cross section true
	
Cross section DEM	

Figure DP1.2-11 Cross section

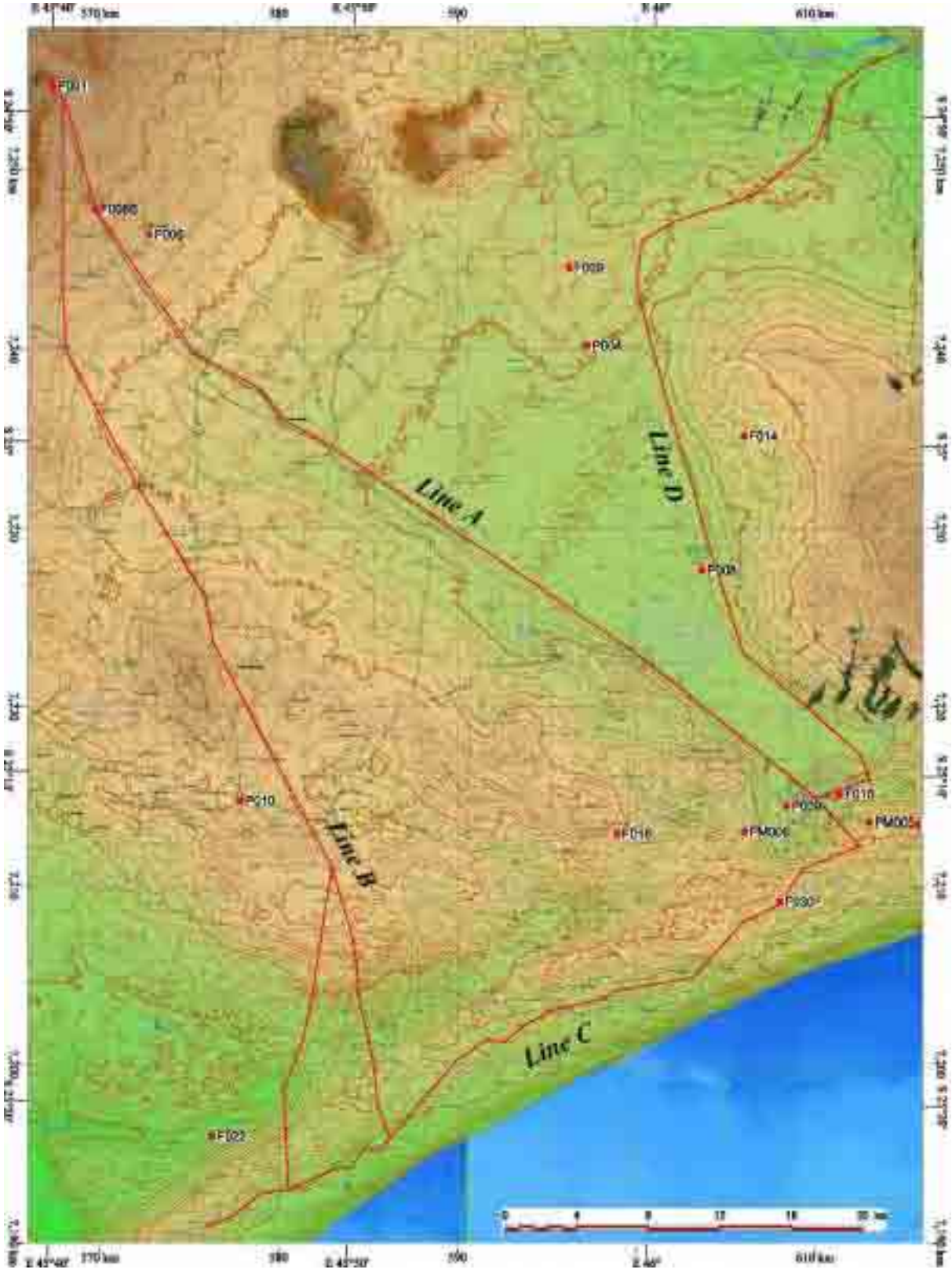
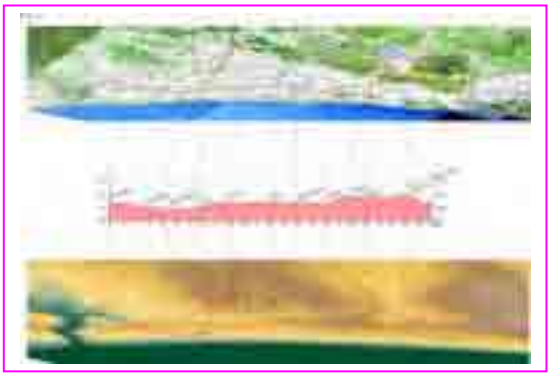


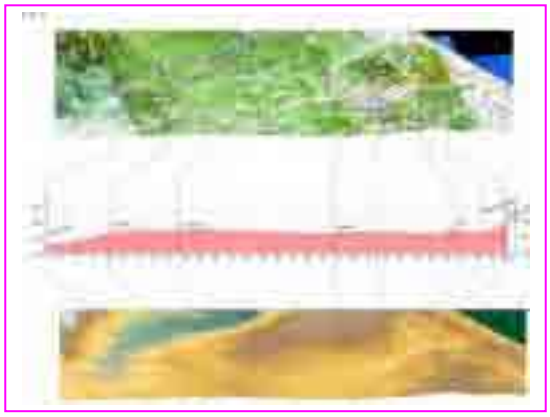
Figure DP1.2-12 Reconnaissance of pipeline route

Line A

Line B



Line C



Line D

Figure DP1.2-13 Reconnaissance pipeline

DP1.3-7 Tasks of each CPE member

Location Code	Function	Planned tasks	Tasks accomplished		Recorded in the reports or minutes	
			monitoring 1	monitoring 2	monitoring 1	monitoring 2
P009	President	Permit expenses according to the procedures	yes	yes	no	no
	President	Sign cheques and contract	yes	yes	yes	yes
	President	Follow financial management and decision making	yes	yes	no	no
	President	Chair meetings and GA	not realised	no	no	no
	President	Call up for GA	yes	yes	no	no
	Secretary	Write a minute of GA and CPE meetings	not realised	no	no	no
	Secretary	Take care of the records	yes	yes	yes	yes
	Secretary	Set up user's list	not realised	no	no	no
	Treasurer	Hold cash book and bank	yes	yes	no	no
	Treasurer	Pay and collect money according to CPE instruction	yes	yes	yes	yes
	Treasurer	Keep the money	yes	yes	no	no
	Treasurer	Save the money to 'Tsinjo lavitra' account every 15 days	not realised	no	no	no
	Treasurer	Sign cheques	not realised	no	no	no
	RAPH	Monitor hygiene and cleanliness of water source	yes	yes	no	no
	RAPH	Consciousness raising on hygiene and cleanliness in the village and household level	yes	yes	no	no
	Tap attendants	Hold the water sale cash book	not realised	no	no	no
	Tap attendants	Collect money	yes	yes	no	no
	Tap attendants	Pay collected money to treasurer	yes	yes	no	no
F006	President	Permit expenses according to procedures	yes	no	no	
	President	Signs cheques and contracts	yes	yes	yes (PV)	yes
	President	Follow financial management and decision making	yes	no	no	
	President	Chair meetings and GA	yes	yes	no	yes
	President	Call up for GA	yes	yes	no	yes
	Secretary	Write a minute of GA and CPE meetings	no	yes	no	yes
	Secretary	Take care of the records	no	yes	no	
	Secretary	Set up user's list	no	no	no	
	Treasurer	Hold cash book and bank	no	yes	no	
	Treasurer	Pay and collect money according to CPE instruction	no	yes	no	
	Treasurer	Keep the cash money	no	yes	no	
	Treasurer	Save the money to 'Tsinjo lavitra' account every 15 days	no	yes	no	yes
	Treasurer	Sign cheques	no	no	no	
	RAPH	Monitor hygiene and cleanliness of water source	no	yes	no	
	RAPH	Consciousness raising on hygiene and cleanliness in the village and household level	no	yes	no	
	Contribution collectors	Update the list of paid-up members	no	yes	no	yes
	Contribution collectors	collect contribution	yes	yes	no	yes
	Contribution collectors	Pay collected money to treasurer	yes	yes	no	
F009	President	Permit expenses according to procedures	no	no	no	
	President	Signs cheques and contracts	signature of contract	no	PV	
	President	Follow financial management and decision making	no	no	no	
	President	Chair meetings and GA	no	yes	no	yes
	President	Call up for GA	no	yes	no	
	Secretary	Write a minute of GA and CPE meetings	no	yes	no	
	Secretary	Take care of the records	no	no	no	
	Secretary	Set up user's list	no	no	no	
	Treasurer	Hold cash book and bank	no	yes	no	
	Treasurer	Pay and collect money according to CPE instruction	no	no	no	
	Treasurer	Keep the cash money	no	no	no	
	Treasurer	Save the money to 'Tsinjo lavitra' account every 15 days	no	yes	no	
	Treasurer	Sign cheques	no	no	no	
	RAPH	Monitor hygiene and cleanliness of water source	no		no	
	RAPH	Consciousness raising on hygiene and cleanliness in the village and household level	no		no	
	Tap attendants	Hold the water sale cash book	no		no	
	Tap attendants	Collect money	no		no	
	Tap attendants	Pay collected money to treasurer	no		no	
	Contribution collectors	Update the list of paid-up members	no		no	
	Contribution collectors	collect contribution	no		no	
	Contribution collectors	Pay collected money to treasurer	no		no	
	Village Technicians	Maintenance of pump	no		no	
	Village Technicians	Maintenance of water source	no		no	
	Village Technicians	Ensure the repair of minor breakdowns	no		no	

	President	Permit expenses according to procedures	yes	no	yes	
	President	Signs cheques and contracts	yes	yes	yes	yes
	President	Follow financial management and decision making	yes	no	no	
	President	Chair meetings and GA	yes	yes	no	yes
	President	Call up for GA	no	yes	no	yes
	Secretary	Write a minute of GA and CPE meetings	no		no	
	Secretary	Take care of the records	no	yes	no	yes
	Secretary	Set up user's list	no	yes	no	
	Treasurer	Hold cash book and bank	no	no	no	
	Treasurer	Pay and collect money according to CPE instruction	no	yes	no	
	Treasurer	Keep the cash money	no	yes	no	
	Treasurer	Save the money to 'Tsinjo lavitra' account every 15 days	no	yes	no	
F022	Treasurer	Sign cheques	no	yes	no	yes
	RAPH	Monitor hygiene and cleanliness of water source	yes	no	yes	
	RAPH	Consciousness raising on hygiene and cleanliness in the village and household level	yes	yes	yes	
	Tap attendants	Hold the water sale cash book	yes	yes	yes	
	Tap attendants	Collect money	yes	yes	yes	yes
	Tap attendants	Pay collected money to treasurer	yes	yes	yes	yes
	Contribution collectors	Update the list of paid-up members		yes		
	Contribution collectors	collect contribution		yes		
	Contribution collectors	Pay collected money to treasurer				
	Village Technicians	Maintenance of pump	yes			
	Village Technicians	Maintenance of water source	no			
	Village Technicians	Ensure the repair of minor breakdowns	no			
	President	Permit expenses according to procedures	yes	yes	no	yes
		Signs cheques and contracts	yes	yes	PV	yes
		Follow financial management and decision making	yes	yes	no	yes
		Chair meetings and GA	yes	yes	cf/report	yes
		Call up for GA	yes	yes	cf/report	yes
	Secretary	Write a minute of GA and CPE meetings	yes	yes	cf/report	yes
		Take care of the records	yes	yes	minute	yes
		Set up user's list	yes	yes	cf/report	yes
	Treasurer	Hold cash book and bank	yes	yes		
		Pay and collect money according to CPE instruction	yes	yes		
		Keep the cash money	yes	yes		
		Save the money to 'Tsinjo lavitra' account every 15 days	no	yes		
P010		Sign cheques	no	no		
	Responsible of hygiene a	Monitor hygiene and cleanliness of water source		yes		
		Consciousness raising on hygiene and cleanliness in the village and household level		At water source level		
	Tap attendants	Hold the water sale cash book		yes		
		Collect money		yes		
		Pay collected money to treasurer		yes		
	Contribution collectors	Update the list of paid-up members	yes	yes	cf/report	
		collect contribution	yes	yes	cf/report	
		Pay collected money to treasurer	yes	yes	cf/report	
	Village Technicians	Maintenance of pump	yes	yes	no	yes
		Maintenance of water source	yes	yes	no	
		Ensure the repair of minor breakdowns	no	yes	no	

DP1.4 Water Quality of Testwell

Sample Name	Temp.	Odor	Taste	Color	pH	EC	Potassium	Sodium
							K	Na
	℃					mS/m	mg/L	mg/L
WHO standard								*200*
Mdg standard					*6.5-9.0*	*300*		
P003	25.1	None	Salty	Clear	7.9	**1070**	34.06	**211.89**
P004	No data due to dry well							
P008	No data due to dry well							
P009	27.7	None	Brackish	Clear	7.5	220	14.87	**267.21**
P010	No data due to dry well							
FM001	24.9	None	Very salty	Clear	7.35	**2665**	52.05	**3146.85**
PM005	No data due to dry well							
PM006	No data due to dry well							
F001	31.3	None	None	Clear	8.3	155.6	2.154	124.9
F006	26.6	None	None	Clear	8.2	68.1	5.59	176.98
F006B	28.6	None	None	Clear	8.15	125	6.31	**225.75**
F009	31.3	None	Brackish	Clear	7.8	**442**	29.45	**815.57**
F014	28.7	None	Brackish	Clear	7.56	**513**	44.55	**620.69**
F015	28.7	None	Brackish	Clear	7.56	**302**	16.7	**501.24**
F018	27.3	None	Salty	Clear	7.44	**1545**	90.9	**4064**
F019	No data due to dry well							
F022	29.7	None	Brackish	Clear	7.54	**548**	36.15	**734.39**
F030	No data due to dry well							
F032	No data due to dry well							
FP010	No data due to dry well							
NBASE1	No data due to dry well							
NBASE2	No data due to dry well							
NBASW1	27.3	None	Brackish	Clear	7.5	**720**	30.4	**694.81**
NBASW2	No data due to dry well							
NBANW	No data due to dry well							

Sample Name	Calcium	Magnesium	Iron	Manganese	Arsenic	Chloride	Sulfate	Bicarbonate
	Ca	Mg	Fe	Mn	As	Cl	SO4	HCO3
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WHO standard			*0.3*	*0.5*	*0.01*	*250*	*250*	
Mdg standard	*200*	*50*	*0.5*	*0.05*	*0.05*	*250*	*250*	
P003	**716**	**634.23**	0.01	0.082	0	**3337**	27.42	297.68
P004	No data due to dry well							
P008	No data due to dry well							
P009	32.8	19.93	0.002	0.038	0	227.2	51.08	244
P010	No data due to dry well							
FM001	1216	**1006.02**	0.01	0.116	0	**8875**	**1174.51**	214.72
PM005	No data due to dry well							
PM006	No data due to dry well							
F001	29.6	30.62	0	0.131	0	127.8	37.75	405.04
F006	29.6	20.9	0.02	0.002	0	37.27	52.09	296.46
F006B	27.2	24.79	0	0.106	0	142	174.5	649.04
F009	70.4	**166.21**	0.04	**1.274**	0	**1530.05**	99.4	507.52
F014	160	**143.86**	0.06	0.084	0	**1505.2**	41.59	190.32
F015	75.2	40.82	0.01	0	0	**678.05**	206.28	605.12
F018	**350.49**	**359.64**	0.01	0.009	0	**5307.25**	**713.7**	163.48
F019	No data due to dry well							
F022	**224**	**123.44**	0.01	0.051	0	**1533.6**	**335.26**	329.4
F030	No data due to dry well							
F032	No data due to dry well							
FP010	No data due to dry well							
NBASE1	No data due to dry well							
NBASE2	No data due to dry well							
NBASW1	**238.4**	**165.24**	0	0.046	0	**1459.05**	125.35	280.6
NBASW2	No data due to dry well							
NBANW	No data due to dry well							

Sample Name	Nitrite	Nitrate	Ammonium	Fluoride	Turbidity	T-Hardness	DO	M-Alkality
	NO2	NO3	NH4	F				
	mg/L	mg/L	mg/L	mg/L	NTU	F	mg/L	mg/L
WHO standard	*3*	*50*	*1.5*	*1.5*	*5*			
Mdg standard	*0.1*	*50*	*0.5*	*1.5*		*50*		
P003	0.56	11.24	0	0.72	1.92	**454**	5.4	24.4
P004	No data due to dry well							
P008	No data due to dry well							
P009	0.03	45.81	0.01		2.35	33.8	4.3	20
P010	No data due to dry well							
FM001	2.33	8.6	0	6.1	3.28	**704**	3.5	17.6
PM005	No data due to dry well							
PM006	No data due to dry well							
F001	0.02	2.55	0.53	0.62	3.86	19.2	4.5	33.2
F006	0.64	7.19	0.06	0	1.29	9.7	4.4	24.3
F006B	0.02	0.46	0.09	0.61	2.86	17.2	5.4	53.2
F009	0.5	3.96	0.07	0	**5.12**	86	4.5	41.6
F014	0.04	0.33	0.11	0	**12.9**	**91.2**	6.3	15.6
F015	0.01	0.11	0.06	0	3.37	40	5.6	49.6
F018	0.17	31.88	0.02	0	**7.06**	**384**	5.7	13.4
F019	No data due to dry well							
F022	0.84	**63.55**	0	0.89	1.97	**106.8**	5.8	57.58
F030	No data due to dry well							
F032	No data due to dry well							
FP010	No data due to dry well							
NBASE1	No data due to dry well							
NBASE2	No data due to dry well							
NBASW1	0.04	5.53	0.13	0.35	**14.9**	92.8	4.5	23
NBASW2	No data due to dry well							
NBANW	No data due to dry well							

Sample Name	CO2	Boron	E. Coli	Bacteria
		B		
	mg/L	mg/L	numb/mL	numb/mL
WHO standard		*0/3*	*0*	
Mdg standard			*0*	
P003	0.6	0	4	6
P004	No data due to dry well			
P008	No data due to dry well			
P009	1.2	0	6	6
P010	No data due to dry well			
FM001	1.5	0	8	9
PM005	No data due to dry well			
PM006	No data due to dry well			
F001	0.3	0	5	6
F006	0.3	0	5	4
F006B	0.7	0	4	7
F009	1.3	0	8	10
F014	0.8	0	6	12
F015	2.6	0	12	11
F018	0.9	0	5	12
F019	No data due to dry well			
F022	3.2	0	10	10
F030	No data due to dry well			
F032	No data due to dry well			
FP010	No data due to dry well			
NBASE1	No data due to dry well			
NBASE2	No data due to dry well			
NBASW1	1.4	0	7	5
NBASW2	No data due to dry well			
NBANW	No data due to dry well			

DP.1.5 Summery of test hole results

DP.1.5 Summery of test hole results 1/2

ID	Village	Commune	Altitude			Drilling plan		Screen length		Site visited	Equip	Drill work		drill depth	casing	Screen 1		Screen 2		Screen 3		Development				
			point	drill	SWL	plan	Stop	plan	real	with contr.	Equip	Start	Comp-let	(m)	(m)	top	bottom	top	bottom	top	bottom	Comp-let	duration	Of m^3/h	µS/cm	NS m
	Dug wells																									
P 003	Ambalantsaraky	Sihanmaro	161	140.75	141.56	25	Aq+3m	3	3	12-Sep	TA	26-Sep-05	27-Feb-06	20.25	20.25	16	19	NA	NA	NA	NA	NA	NA	NA	NA	NA
P 004	Ampanihy	Ambohimalaza	162	158.3	NA	25	Aq+3m	3	1	12-Sep	TB	26-Sep-05	5-Nov-05	3.7	3.7	2.7	3.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
P 008	Betioky	Ambohimalaza	138.3	113.3	NA	25	Aq+3m	3	3	12-Sep	TC	26-Sep-05	15-Dec-05	25	25	21	24	NA	NA	NA	NA	NA	NA	NA	NA	NA
P 009	Marobey	Ambovombe	130	109.79	110.69	25	Aq+3m	3	3	28-Oct	TB	30-Oct-05	17-Feb-06	20.21	20.21	16	19	NA	NA	NA	NA	NA	NA	NA	NA	NA
P 010	Anlaisoka	Sihanmaro	130	109	<109	25	Aq+3m	3	3	12-Dec	TA	18-Dec-05	15-Mar-06	21	15	11	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Boreholes																									
FM 001	Maroafo	Antaritarika	82.82	-17.18	2.08	100	Td	30	53.39	11-Oct	3	21-Feb-06	25-Feb-06	100	96.84	17.56	28.8	40.04	54.09	65.33	93.43	26-Feb-06	6H	1.8	10,000	80.8
PM 005	Lavaadranda	Ambovombe	211	129	< 129	80	Td	15	22,5	11-Oct	2	21-Oct-05	14-Nov-05	82	81.65	29.42	40.66	51.9	57.52	74.38	80	15-Nov-05	15H	<0	2550	< 80
PM 006	Tsimihevo	Tsimananada	156.1	104.96	< 104.96	50	Td	15	2,85	15-Sep	2	18-Oct-05	20-Oct-05	51.14	50.69	43.72	49.34	NA	NA	NA	NA	20-Oct-05	4H20	0	NA	< 51
F 001	Fianrenantsoa-Amposy	Antanimora	292.13	212.13	276.13	80	Td	24	42.16	21-Dec	3	15-Feb-06	17-Feb-06	80	67.74	20.98	40.66	43.46	65.94	NA	NA	17-Feb-06	5H	9	1,460	16
F 006	Bemamba-Antsatra	Antanimora	228.17	150.17	212.22	120	Td	36	42.15	21-Dec	3	8-Feb-06	14-Feb-06	78	75.76	27.35	52.64	58.26	75.12	NA	NA	14-Feb-06	5H	9	730	15.98
F 006B	Bemamba-Antsatra	Antanimora	234.23	171.08	219.93	60	-	-	25.3	-	3	19-Feb-06	21-Feb-06	63.15	61.82	35.08	60.37	0	0	NA	NA	21-Feb-06	5H	9	1,140	-
F 009	Lefonjavy	Ambovombe	179	97	130.65	100	rock	30	39.3	9-Dec	3	26-Jan-06	5-Feb-06	82	78.48	16.36	24.79	30.41	38.84	55.7	78.18	05-Feb-06	13H	0.06	2,820	56.73
F 014	Ankoba-Mikazy	Ambovombe	181	56.82	79.85	120	rock	36	36.5	21-Dec	2	20-Jan-06	24-Jan-06	124.18	120.29	41.32	49.75	91.9	120	NA	NA	25-Jan-06	5H15	2.18	5,040	101.23
F 015	Mangarivotra Tananbao	Ambovombe	140.12	-9.88	6.08	150	rock	45	33.7	11-Oct	1	21-Oct-05	8-Nov-05	150	150	73.06	78.69	120.83	148.93	NA	NA	08-Nov-06	10H	1.74	4,620	134.1
F 018	Ambanisarika	Ambanisarika	203.4	3.4	50.45	200	rock	60	68,4	12-Sep	1	30-Sep-06	21-Oct-05	200	199.84	30.55	46.9	55.33	60.95	72.19	80.62	22-Oct-06	44H20	0.08	15,240	164
F 019	Ambazozmirafy	Ambovombe	220	17	<17	200	rock	60	59	7-Nov	1	16-Nov-05	27-Dec-05	203	189.54	99.42	121.8	133.14	150	166.86	186.53	05-Jan-06	45H30	< 0,1	2,870	179
F 022	Anjira	Antaritarika	77.8	-48.2	19.00	120	rock	36	52.2	10-Nov	3	15-Feb-06	20-Feb-06	126	114.51	12.05	32.72	38.34	57	78.87	86.11	02-Mar-06	7H50	2.01	3,780	60
F 030	Ekonka	Ambovombe	180	-25	4.46	200	rock	60	64.6	12-Sep	1	17-Dec-05	2-Jan-06	205	188.06	26.29	31.91	79.68	88.11	135.88	186.46	03-Jan-06	8H18	<0.02	2,760	181.4
F 032	Behabobo	Ambovombe	229	24	< 24	200	rock	60	53.4	12-Sep	1	9-Jan-06	19-Jan-06	205	193.29	104.88	110.5	113.31	121.74	152.65	191.99	21-Jan-06	9H10	<0.02	3,400	191.77
	Shallow boreholes																									
SE1	Anjatoka III	Ambovombe	130	86	< 86	30	PA	6	0	-	3	9-Feb-06	10-Feb-06	44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SE1	Anjatoka III	Ambovombe	130	106	< 86	30	PA	6	14	-	3	10-Feb-06	11-Feb-06	24	24	6.84	20.89	NA	NA	NA	NA	11-Feb-06	4H	<0.02	3,060	19.98
SW1	Mitsangana	Ambovombe	130	97	107.65	30	PA	6	11.2	-	3	11-Feb-06	12-Feb-06	33	30.3	10.33	15.95	21.57	27.19	NA	NA	13-Feb-06	21H30	< 0.01	6,650	23.4
SW2	Ambaro	Ambovombe	130	106	< 106	30	PA	6	8.4	-	3	3-Mar-06	4-Mar-06	24	20.32	5.97	11.59	14.4	17.21	NA	NA	6-Mar-06	5H	<0.01	2,350	NA
FP010	Analaisoka	Shihanamaro	130	99	<99	30	PA	6	16.9	-	3	13-Feb-06	14-Feb-06	31	30.16	9.13	20.37	23.18	28.8	NA	NA	15-Feb-06	10H	<0.01	770	NA
NW	Beabo	Ambovombe	130	111	<111	30	PA	6	8.4		3	24-Feb-06	26-Feb-06	19	15.9	3.36	8.98	11.79	14.6	NA	NA	5-Mar-06	5H	<0.01	1,245	NA

Topographic survey data,
Estimated

Td : Tenders PA : Perched Aquifer

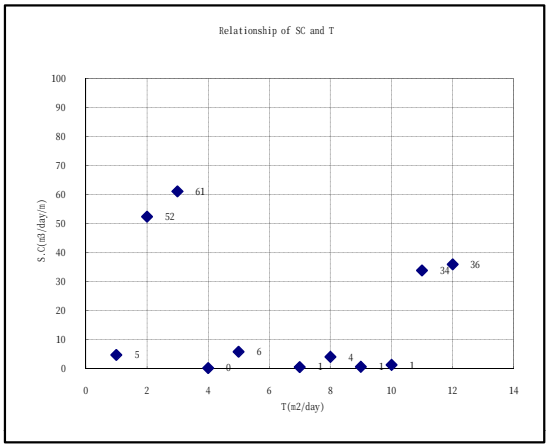
Altitude of SWL is claculated as point - SWL of pumping test

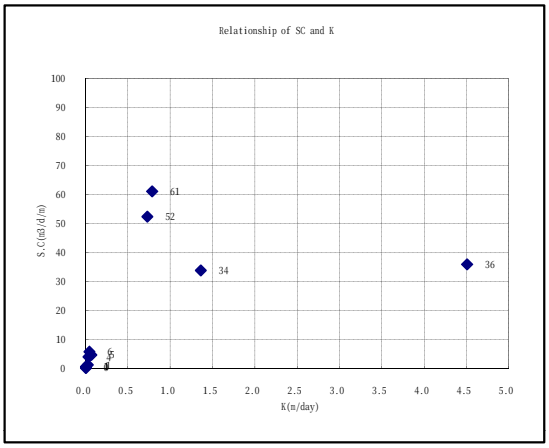
DP.1.5 Summery of test hole results 2/2

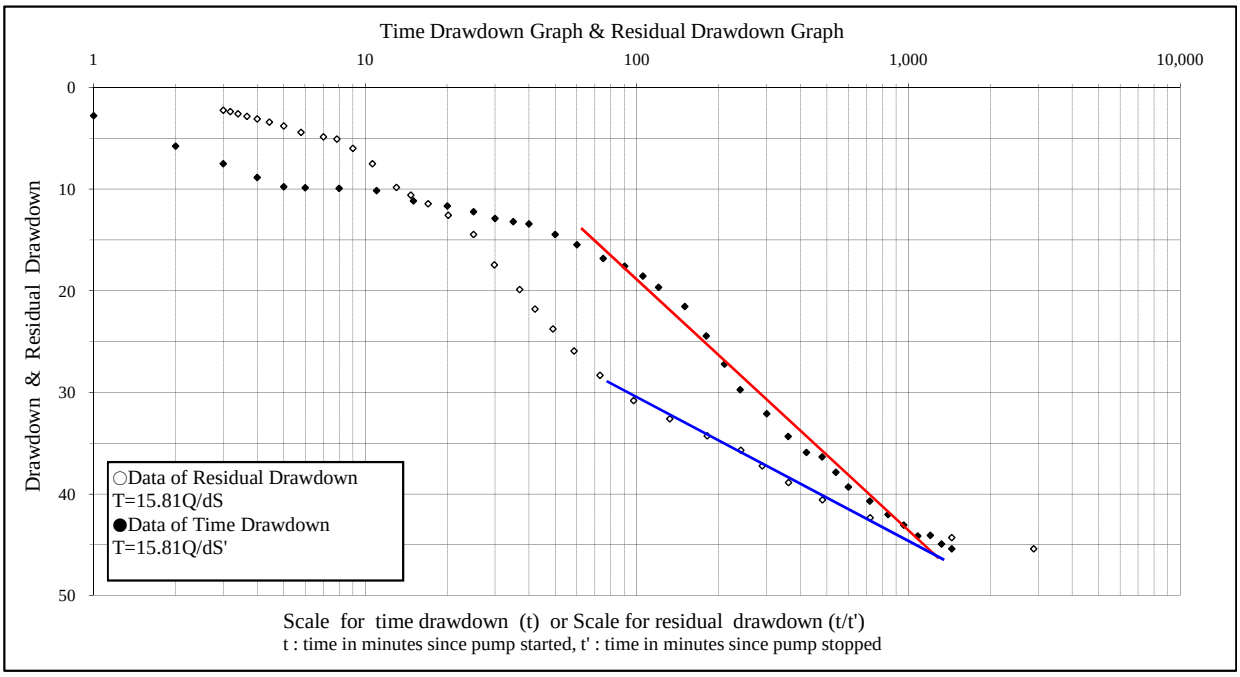
ID	Step																			constant discharge								Column	profiling
	Start	Complet	SWL	Q1m3/h	DWL1	µS/cm	Q2m3/h	DWL2	µS/cm	Q3m3/h	DWL3	µS/cm	Q4m3/h	DWL4	µS/cm	Q5m3/h	DWL5	µS/cm	Start	Comp-let	SWL	Q m3/h	DWL	µS/cm	pH	Temp	m	
P 003	11-Mar-06	11-Mar-06	19.44	0.24	19.61	10,480	0.51	19.66	10,350	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	0.81	x
P 004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	0.00	x
P 008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	0.00	x
P 009	18-Feb-06	18-Feb-06	19.31	0.36	19.54	2,200	0.69	19.54	2,230	1.35	19.54	2,240	2.38	19.54	2,230	3	20	2,200	NA	NA	NA	NA	NA	NA		NA	0.90	1
P 010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	0	x
																											0	x
FM 001	03-Mar-06	04-Mar-06	80.74	0.26	89.95	25,600	0.52	89.95	25,900	0.78	89.95	26,200	1.1	89.95	26,400	1.31	89.95	26,600	NA	NA	NA	NA	NA	NA		NA	16.1	**1**
PM 005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	0	x
PM 006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	0	x
F 001	23-Feb-06	24-Feb-06	16	2.04	17.56	1,546	3.72	19.22	1,554	6.12	26.9	1,556	7.98	32.43	1,548	9.87	58	1,520	25-Feb-06	26-Feb-06	16.95	8.18	62.33	1556	8.31	31.3	51.74	**1**
F 006	19-Feb-06	20-Feb-06	15.95	1.73	16.45	718	2.76	17.2	710	5.28	19.5	718	7.15	20.5	708	9.39	22	709	21-Feb-06	22-Feb-06	16.28	10.41	21.22	681	8.25	26.6	59.81	**1**
F 006B	27-Feb-06	28-Feb-06	14.3	2.04	14.6	1,241	4.01	14.7	1,268	5.83	14.8	1,254	7.90	15.2	1,250	9.90	16	1,248	01-Mar-06	02-Mar-06	14.41	10.8	18.65	1250	8.15	28.6	47.52	**1**
F 009	15-Feb-06	18-Feb-06	48.35	0.32	27min	4,970	0.58	14min	4,420	0.86	8min	4,840	1.29	6min	4,620	1.59	4min	4,620	NA	NA	NA	NA	NA	NA	NA	NA	30.13	**1**
F 014	04-Feb-06	05-Feb-06	101.15	1.1	102.93	5,060	2.02	104	5,050	3.02	105.03	5,040	3.81	107.17	5,130	5.06	110	5,060	27-Jan-06	28-Jan-06	101.19	2,75	114.75	5130	7.36	31.6	19.14	**1**
F 015	07-Feb-06	08-Feb-06	134.04	2.09	134.16	3,270	3.2	134.22	3,270	4.49	134.26	3,200	6.19	134.34	3,190	7.2	124.39	3,170	20-Dec-06	21-Dec-06	134	7.2	134.43	3060	7.65	28.8	15.96	**1**
F 018	14-Feb-06	15-Feb-06	152.95	0.96	30min	15,070	2.02	18min	15,310	2.88	6min	15,450	3.82	5min	15,860	3.98	4min	15,670	NA	NA	NA	NA	NA	NA	7.43	28.4	46.89	**1**
F 019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	x
F 022	05-Mar-06	08-Mar-06	58.8	0.34	63.03	9,440	0.63	65.4	906	0.9	67.66	8,850	1.34	69.68	8,730	1.92	74.55	7,980	07-Mar-06	08-Mar-06	58.78	1.4	67.02	5760	7.65	28.9	55.71	**1**
F 030	NA	NA	175.54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.52	**1**
F 032	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	x
SE1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	x
SE1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	x
SW1	02-Mar-06	03-Mar-06	22.35	0.19	20min	5,780	0.45	7min	6,050	0.51	5min	6,450	0.93	4min	6,750	2.09	3min	7,020	NA	NA	NA	NA	NA	NA	NA	NA	7.95	x
SW2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	x
FP010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	x
NW	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	x

DP1.6 Pumping Test

Well No.	SWL(m)	Q(lit/min)	Q(m3/h)	Q(m3/day)	SC(m3/d/m)	D.D.(m)	T (m3/day/m) T (m2/day)	K (cm/sec)	K (m3/day/m2) K (m/day)
F001	17.0	150	9.00	216.0	4.8	45.38	2.89	7.95E-05	6.87E-02
F006	16.3	180	10.80	259.2	52.5	4.94	30.76	8.45E-04	7.30E-01
F006b	14.4	180	10.80	259.2	61.1	4.24	19.92	9.11E-04	7.87E-01
F009	48.4	5	0.32	7.7	0.3	26.05	0.08	2.26E-06	1.95E-03
F014	101.2	55	3.30	79.2	5.8	13.56	1.64	5.21E-05	4.50E-02
F015	134.0	125	7.50	180.0	418.6	0.43	956.69	3.28E-02	2.84E+01
F018	153.0	16	0.96	23.0	0.6	40.65	0.18	3.30E-06	2.85E-03
F022	58.8	23	1.40	33.6	4.1	8.24	1.81	3.73E-05	3.23E-02
FM001	80.7	4	0.26	6.2	0.7	9.21	0.17	3.76E-06	3.25E-03
SW-1	22.4	3	0.19	4.6	1.3	3.47	0.28	2.86E-05	2.47E-02
P003	19.4	4	0.24	5.8	33.9	0.17	4.08	1.57E-03	1.36E+00
P009	19.3	6	0.36	8.6	36.0	0.24	13.53	5.22E-03	4.51E+00



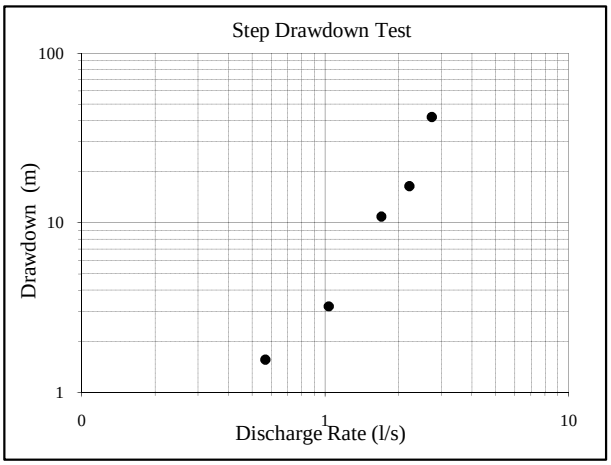


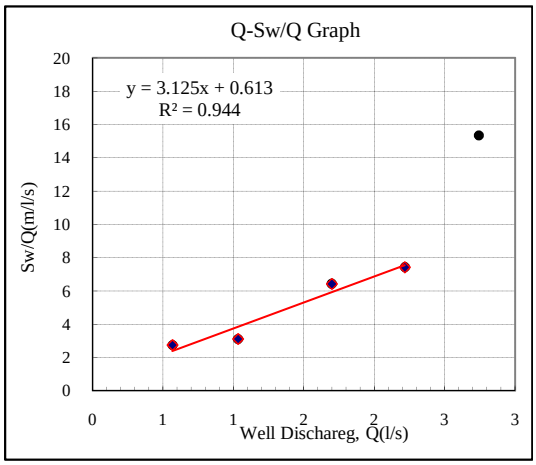


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
16.95	2.5	45.38	0.06

Transmissivity (m2/day)			
dS=	26.00	T=	1.52
dS'=	13.66	T=	2.89

Hydraulic coefficient (cm/sec)			
T=	1.52	K=	4.17E-05
T=	2.89	K=	7.95E-05
Length of screen=		42.15	m



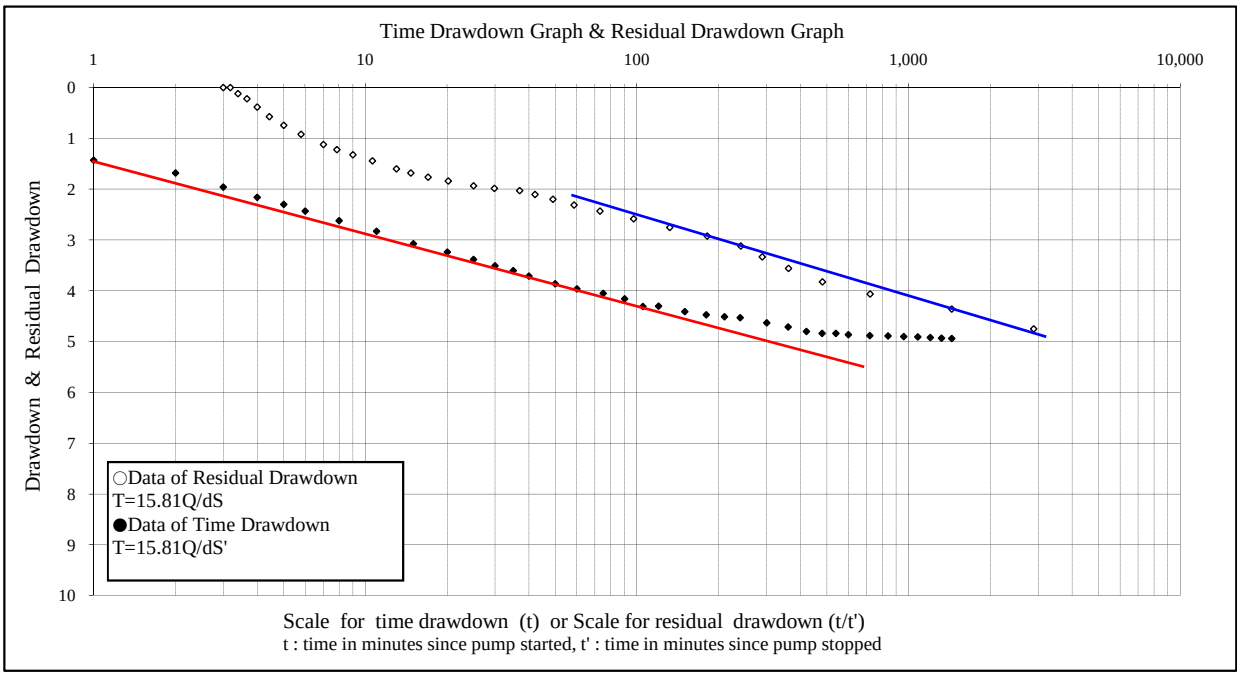


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
34.0	0.6	1.56	2.7529
62.0	1.0	3.22	3.1161
102.0	1.7	10.90	6.4118
133.0	2.2	16.43	7.4120
164.5	2.7	42.07	15.3447

Aquifer Loss	:B	0.613
Well Loss	:C	3.12

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	**D**
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

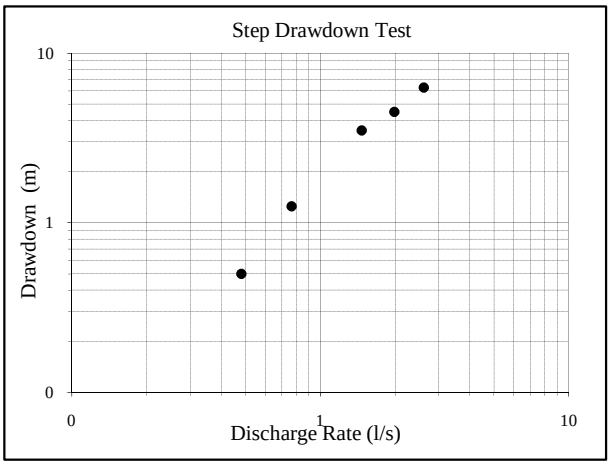
*Walton classification

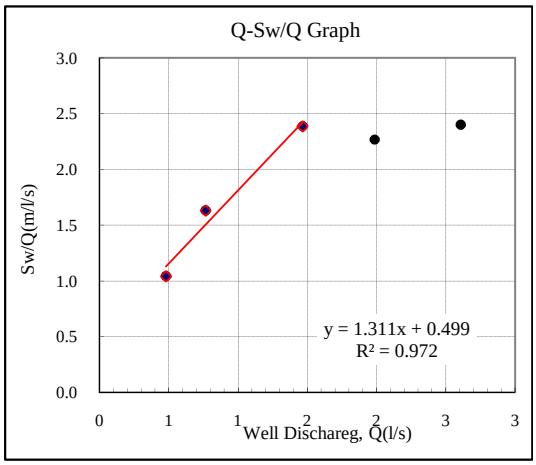


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
16.28	3.0	4.94	0.61

Transmissivity (m2/day)			
dS=	1.49	T=	31.94
dS'=	1.54	T=	30.76

Hydraulic coefficient (cm/sec)			
T=	31.94	K=	8.77E-04
T=	30.76	K=	8.45E-04
Length of screen=		42.15	m



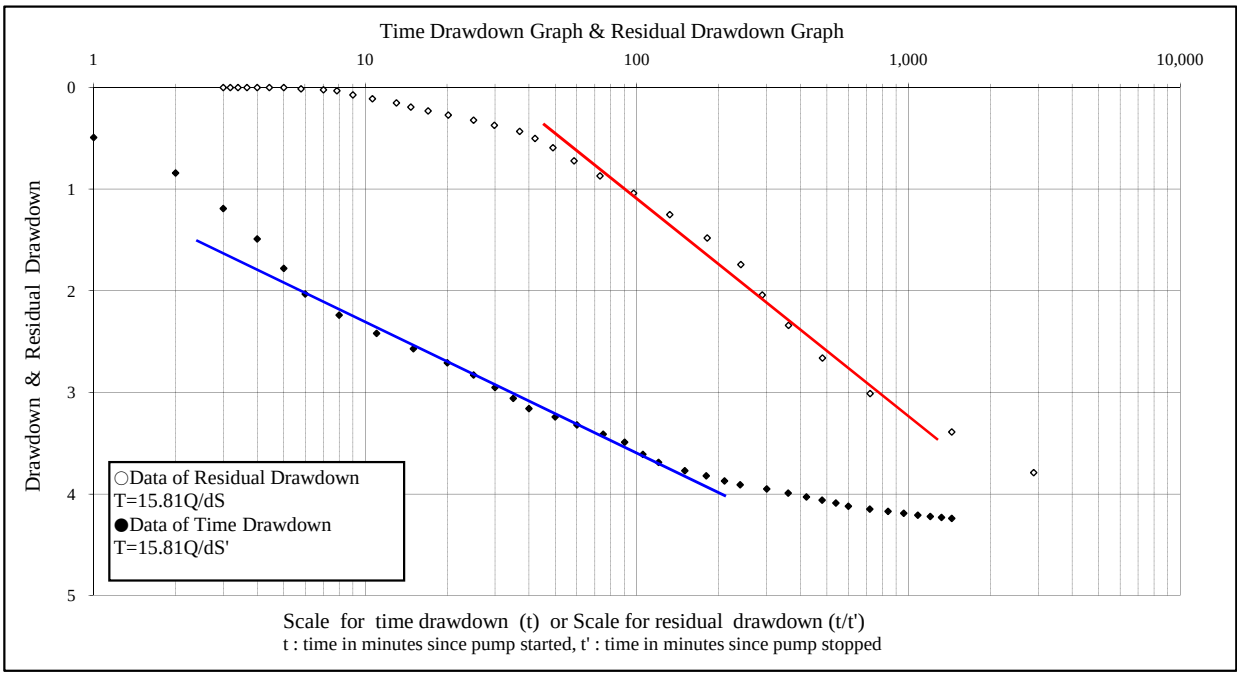


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
28.8	0.5	0.50	1.0405
46.0	0.8	1.25	1.6304
88.0	1.5	3.50	2.3864
119.2	2.0	4.50	2.2657
156.5	2.6	6.26	2.4000

Aquifer Loss	:B	0.499
Well Loss	:C	1.31

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	**D**
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

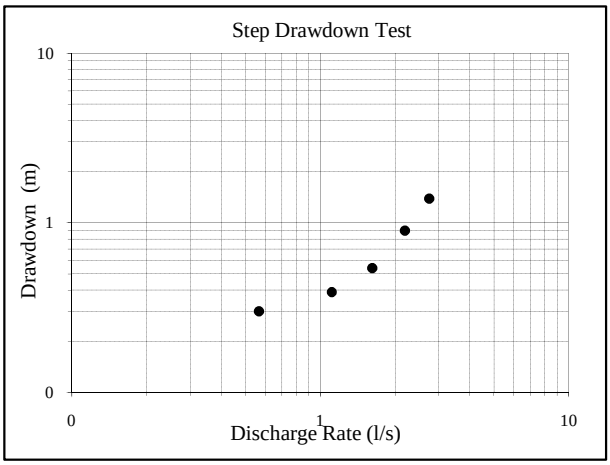
*Walton classification

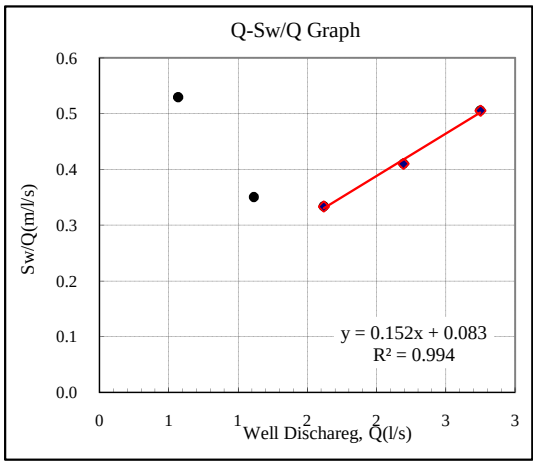


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
14.41	3.0	4.24	0.71

Transmissivity (m2/day)			
dS=	1.24	T=	38.20
dS'=	2.38	T=	19.92

Hydraulic coefficient (cm/sec)			
T=	38.20	K=	1.75E-03
T=	19.92	K=	9.11E-04
Length of screen=	25.29	m	



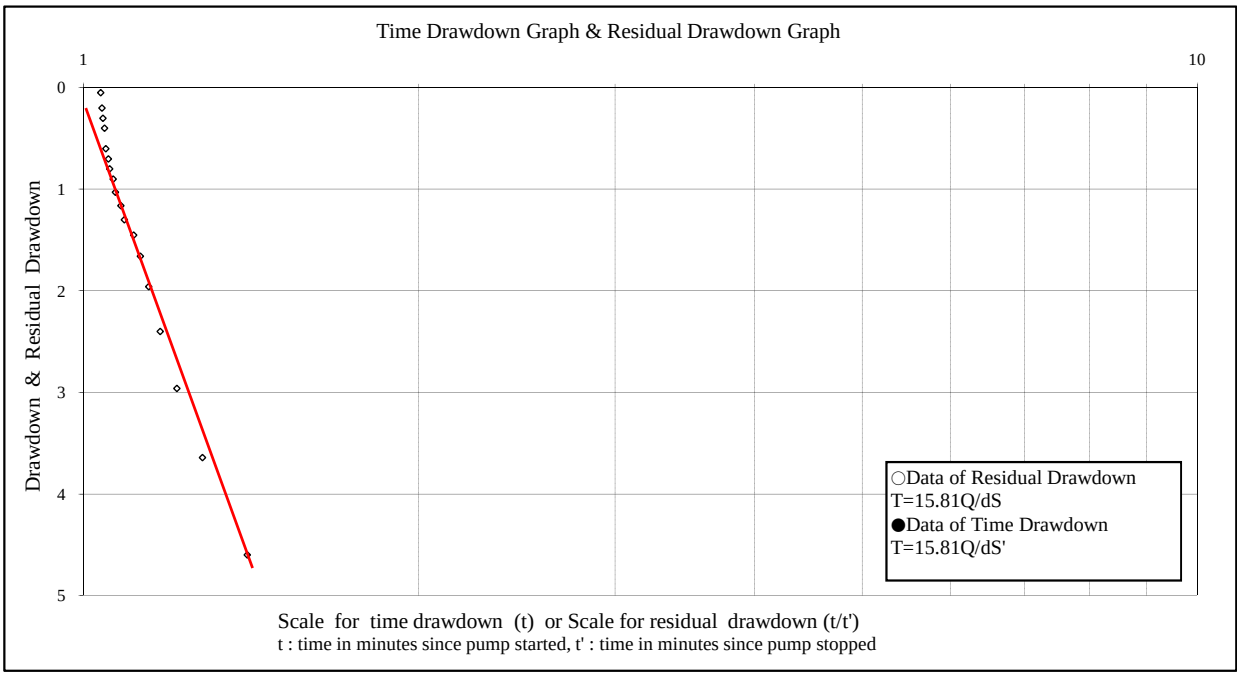


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
34.0	0.6	0.30	0.5294
66.8	1.1	0.39	0.3501
97.2	1.6	0.54	0.3334
131.7	2.2	0.90	0.4101
165.0	2.8	1.39	0.5055

Aquifer Loss	:B	0.084
Well Loss	:C	0.15

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	**D**
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

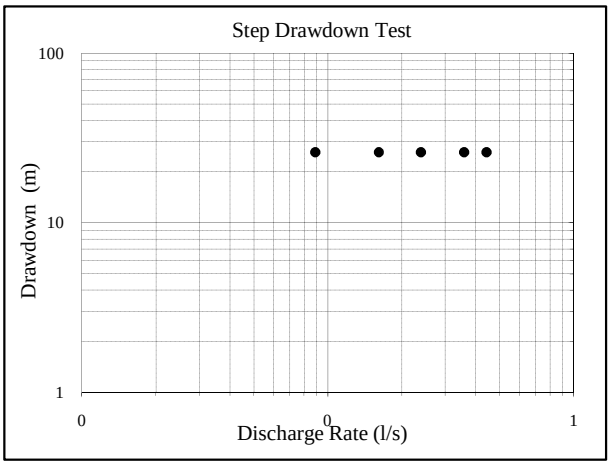
*Walton classification

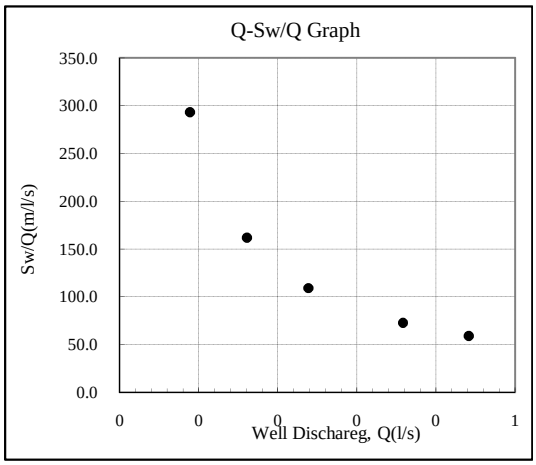


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
48.35	0.09	26.05	0.00

Transmissivity (m2/day)			
dS=		T=	
dS'=	18.29	T=	0.08

Hydraulic coefficient (cm/sec)			
T=		K=	
T=	0.08	K=	2.26E-06
Length of screen=		39.34	m



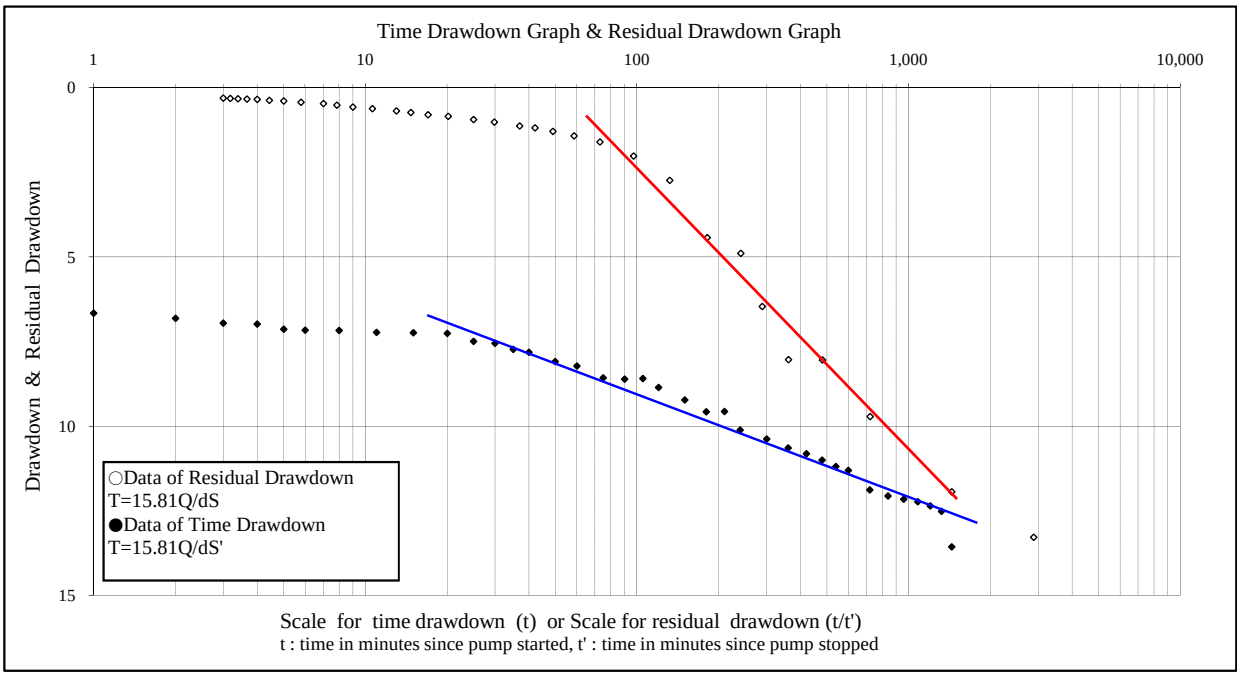


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
5.3	0.1	26.05	293.0625
9.7	0.2	26.05	161.6897
14.3	0.2	26.05	109.0465
21.5	0.4	26.05	72.6977
26.5	0.4	26.05	58.9811

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

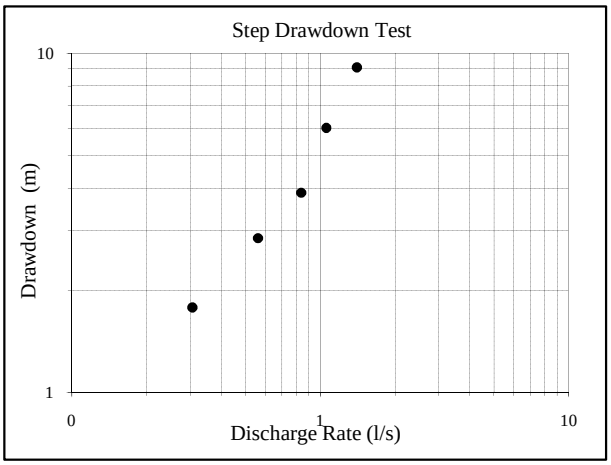
*Walton classification

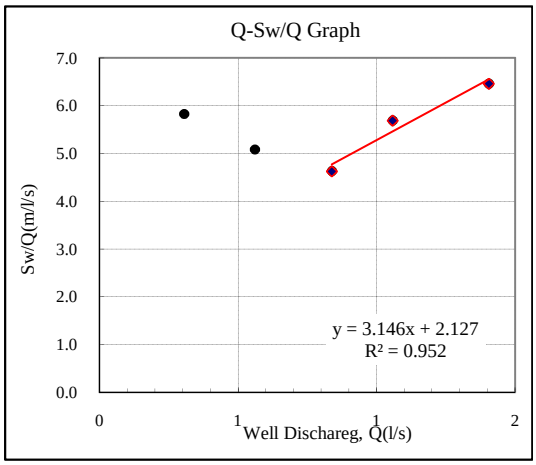


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
101.19	0.9	13.56	0.07

Transmissivity (m2/day)			
dS=	3.13	T=	4.63
dS'=	8.81	T=	1.64

Hydraulic coefficient (cm/sec)			
T=	4.63	K=	1.47E-04
T=	1.64	K=	5.21E-05
Length of screen=		36.53	m



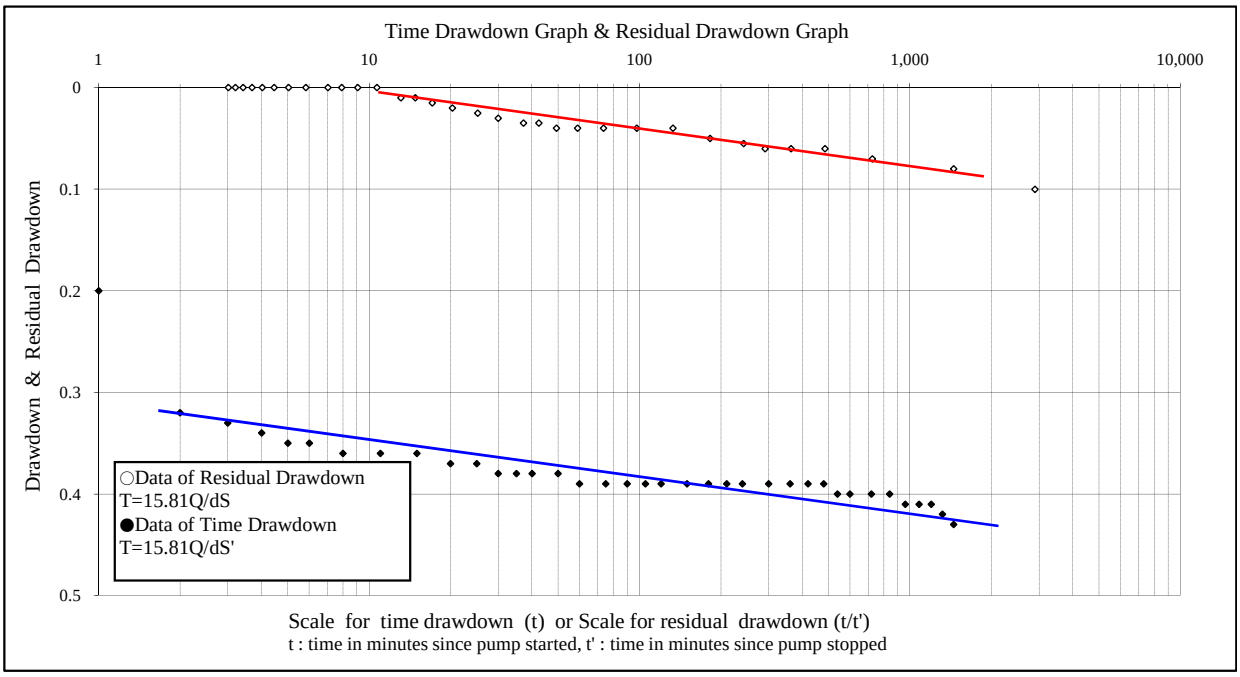


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
18.3	0.3	1.78	5.8255
33.7	0.6	2.85	5.0792
50.3	0.8	3.88	4.6252
63.5	1.1	6.02	5.6882
84.3	1.4	9.08	6.4601

Aquifer Loss	:B	2.127
Well Loss	:C	3.15

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	**D**
D	> 0.0144	Difficult to restore well	

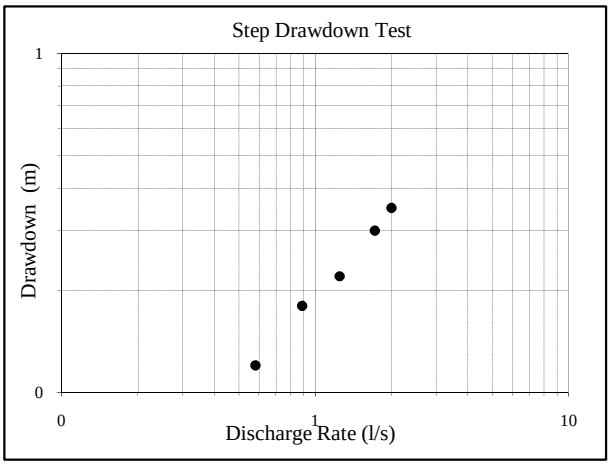
*Walton classification

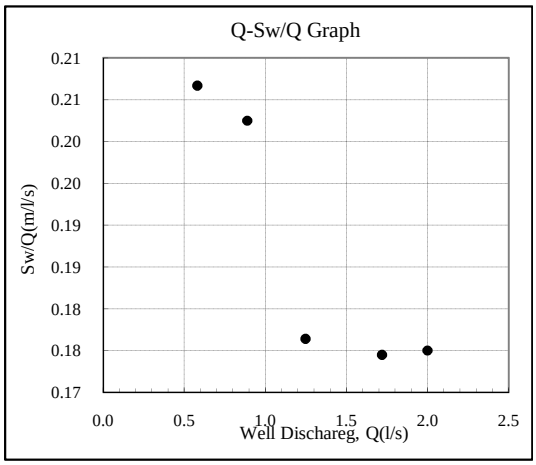


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
134.00	2.1	0.43	4.84

Transmissivity (m2/day)			
dS=	0.026	T=	1,283
dS'=	0.034	T=	957

Hydraulic coefficient (cm/sec)			
T=	1,283	K=	4.40E-02
T=	957	K=	3.28E-02
Length of screen=		33.73	m



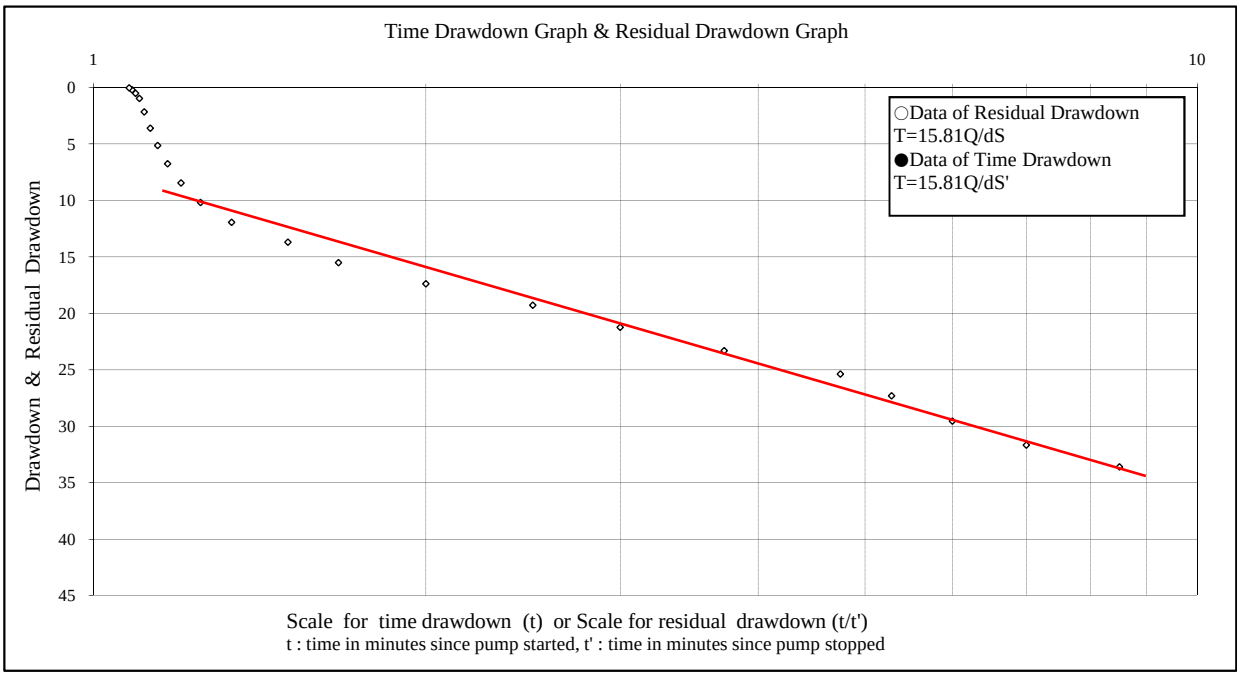


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
34.8	0.6	0.12	0.2067
53.3	0.9	0.18	0.2025
74.8	1.2	0.22	0.1764
103.2	1.7	0.30	0.1745
120.0	2.0	0.35	0.1750

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

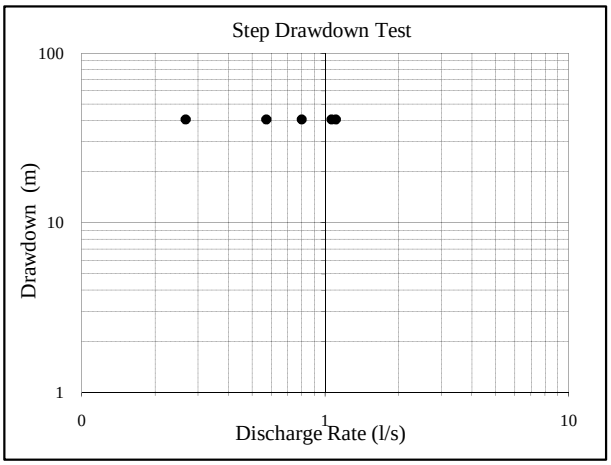
*Walton classification

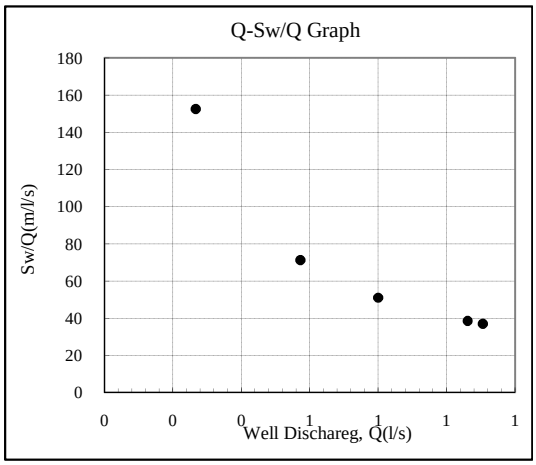


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
152.95	0.27	40.65	0.01

Transmissivity (m2/day)			
dS=		T=	
dS'=	22.90	T=	0.18

Hydraulic coefficient (cm/sec)			
T=		K=	
T=	0.18	K=	3.30E-06
Length of screen=		64.63	m



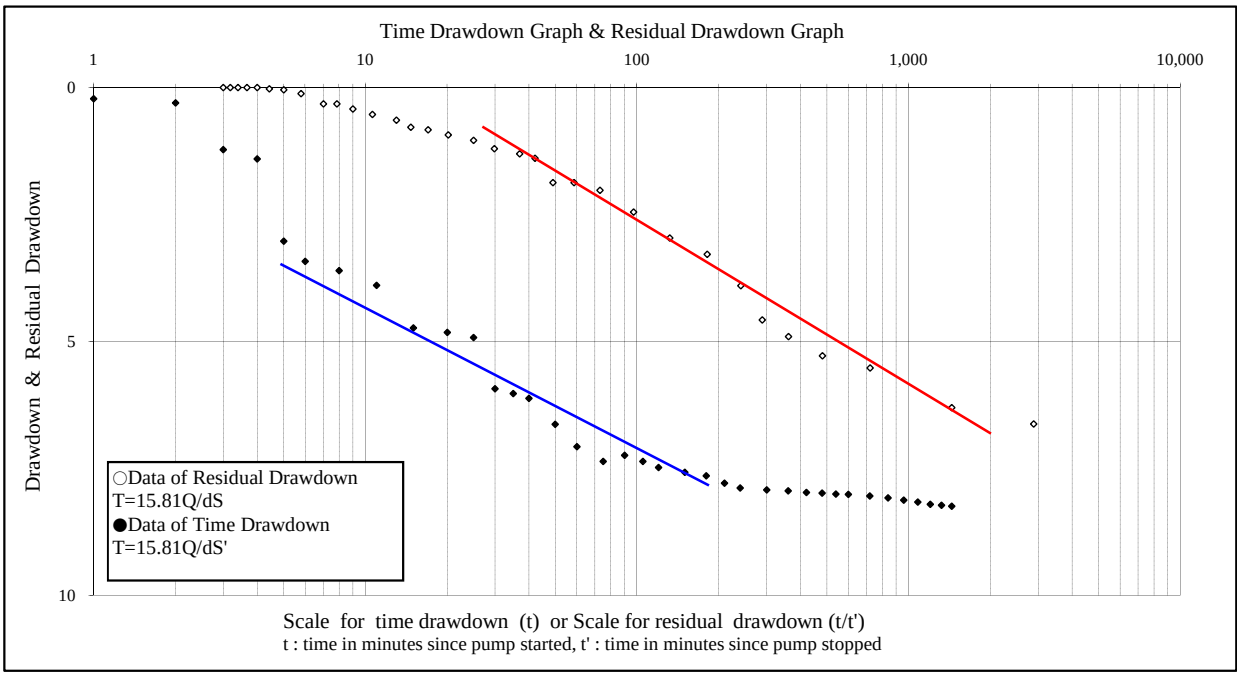


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
16.0	0.3	40.65	152.4375
34.3	0.6	40.65	71.0388
48.0	0.8	40.65	50.8125
63.7	1.1	40.65	38.3089
66.3	1.1	40.65	36.7688

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

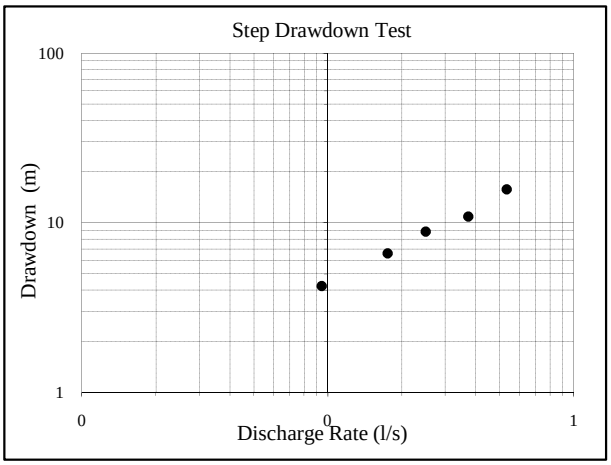
*Walton classification

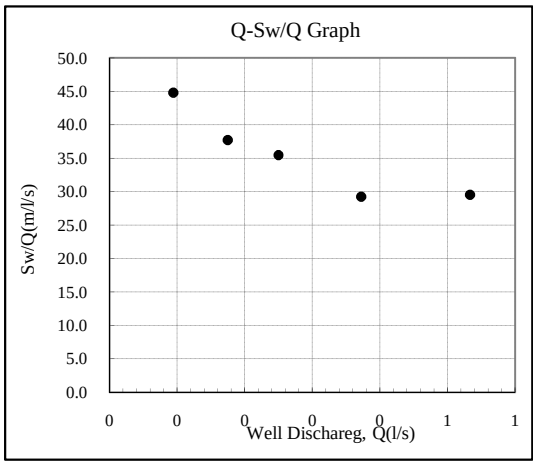


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
58.78	0.4	8.24	0.05

Transmissivity (m2/day)			
dS=	3.05	T=	2.01
dS'=	3.39	T=	1.81

Hydraulic coefficient (cm/sec)			
T=	2.01	K=	4.14E-05
T=	1.81	K=	3.73E-05
Length of screen=		56.2	m



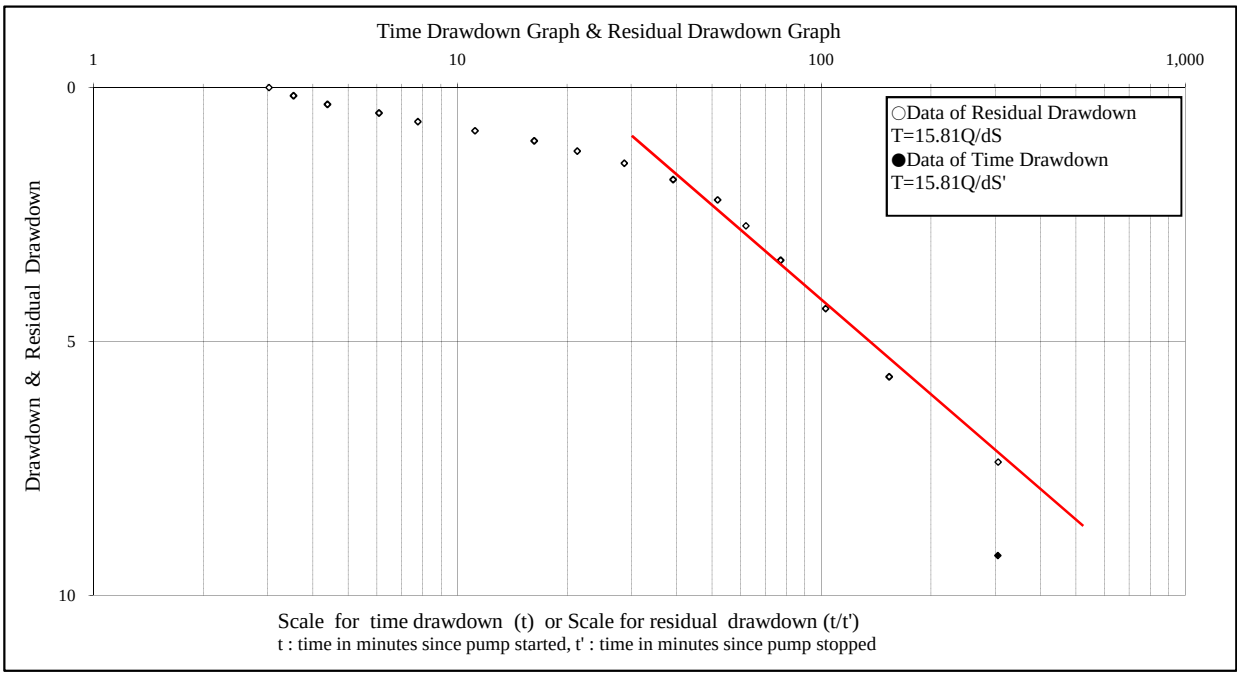


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
5.7	0.1	4.23	44.7882
10.5	0.2	6.60	37.7143
15.0	0.3	8.86	35.4400
22.3	0.4	10.88	29.2299
32.0	0.5	15.75	29.5313

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

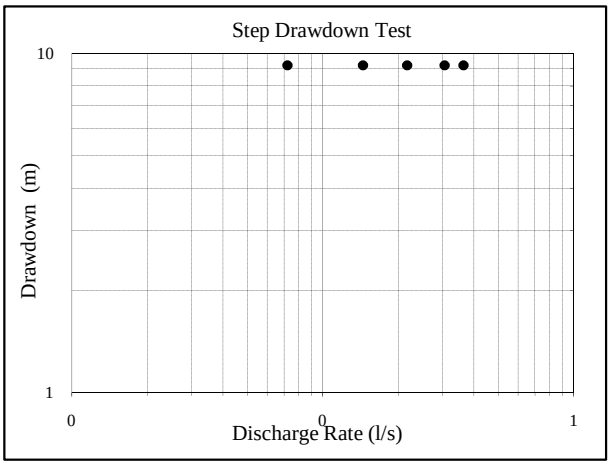
*Walton classification

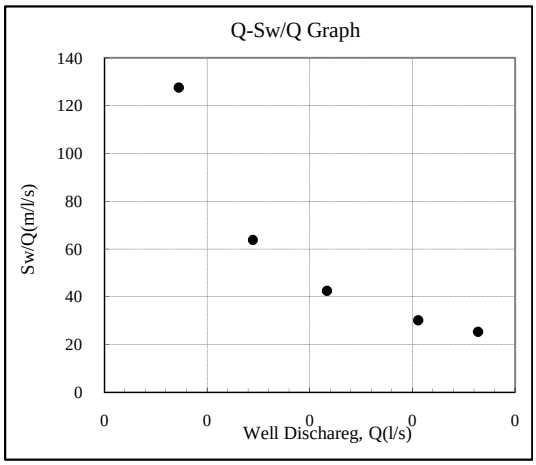


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
80.74	0.07	9.21	0.01

Transmissivity (m2/day)			
dS=		T=	
dS'=	6.57	T=	0.17

Hydraulic coefficient (cm/sec)			
T=		K=	
T=	0.17	K=	3.76E-06
Length of screen=		53.39	m



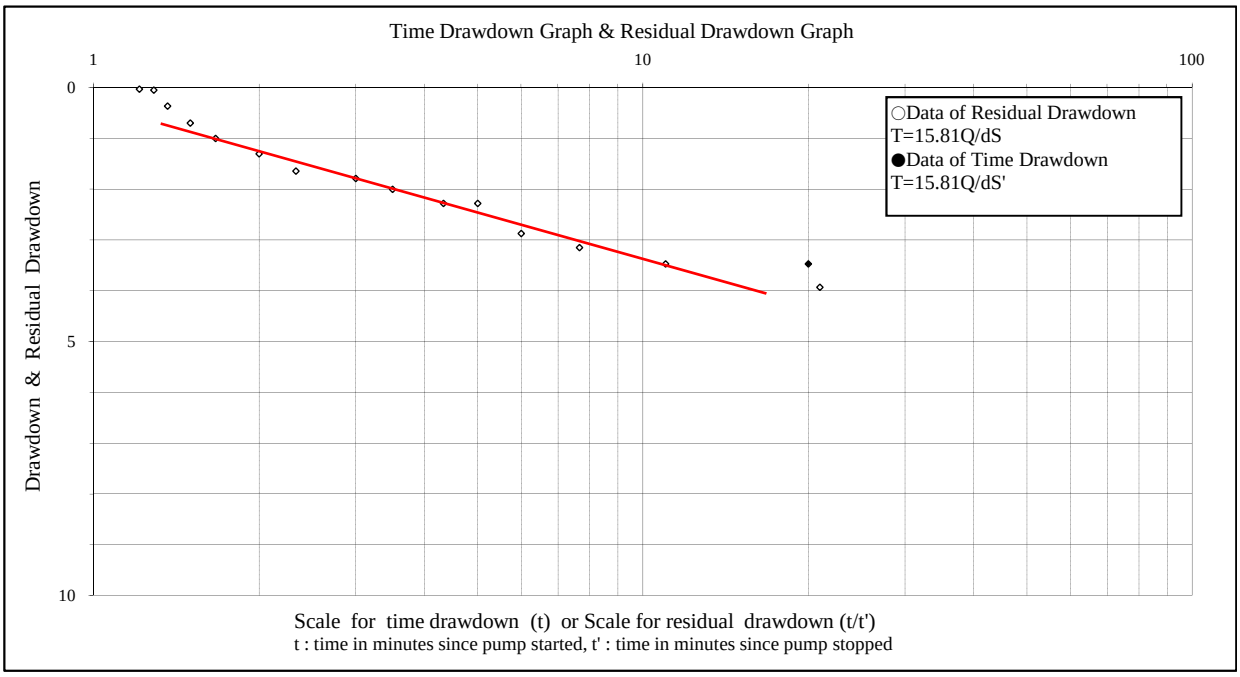


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
4.3	0.1	9.21	127.5231
8.7	0.1	9.21	63.7615
13.0	0.2	9.21	42.5077
18.3	0.3	9.21	30.1418
21.8	0.4	9.21	25.3099

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

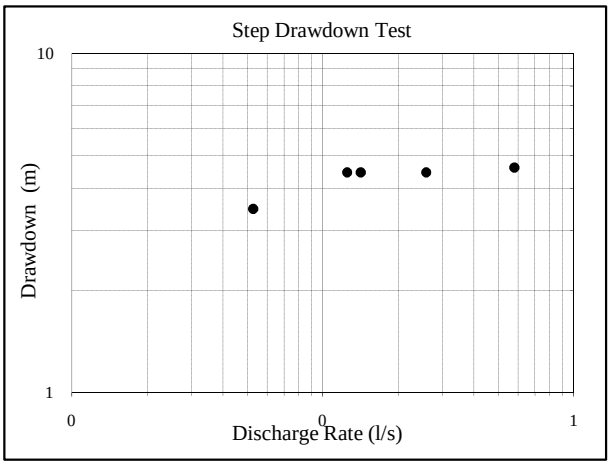
*Walton classification

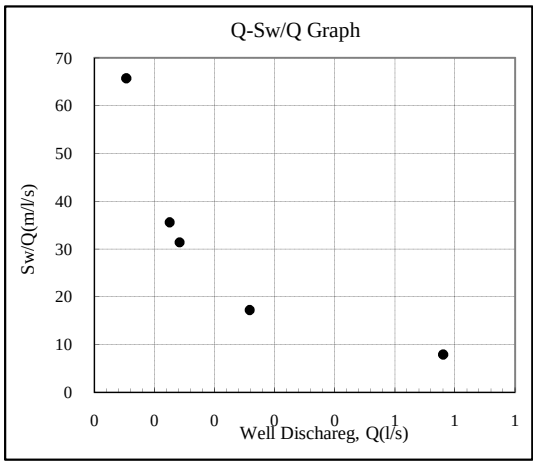


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
22.35	0.05	3.47	0.02

Transmissivity (m2/day)			
dS=		T=	
dS'=	3.01	T=	0.28

Hydraulic coefficient (cm/sec)			
T=		K=	
T=	0.28	K=	2.86E-05
Length of screen=		11.24	m



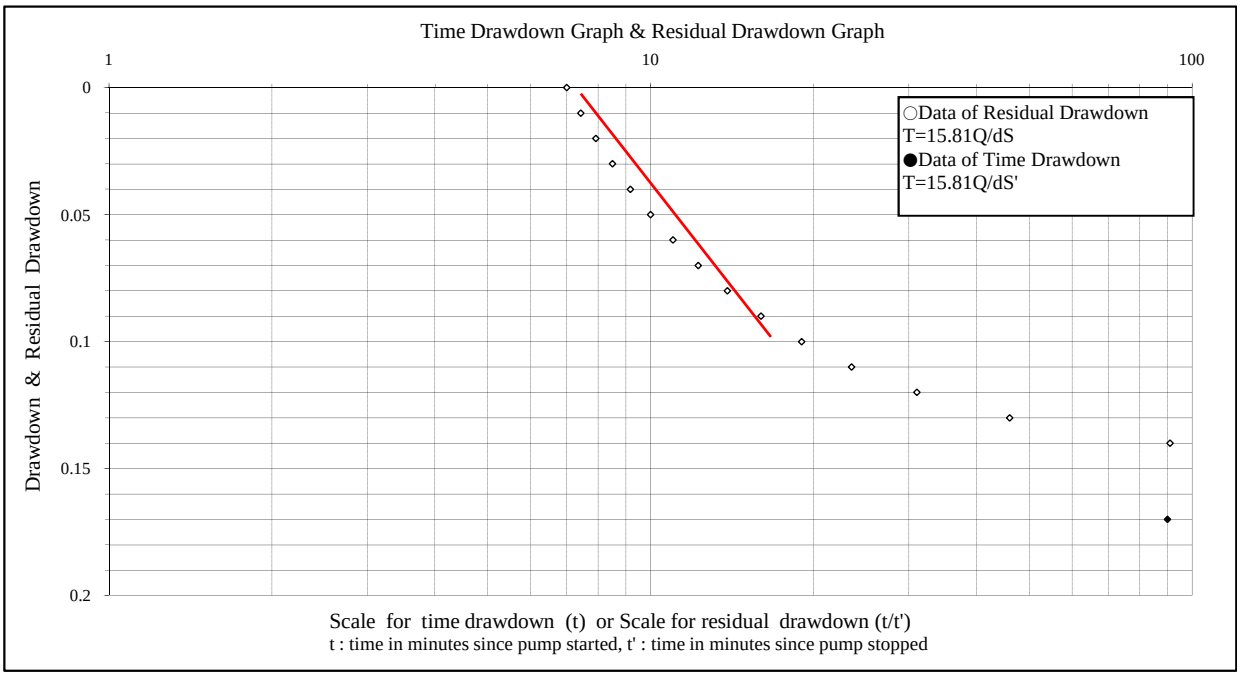


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
3.2	0.1	3.47	65.7474
7.5	0.1	4.45	35.6000
8.5	0.1	4.45	31.4118
15.5	0.3	4.45	17.2258
34.8	0.6	4.6	7.9234

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

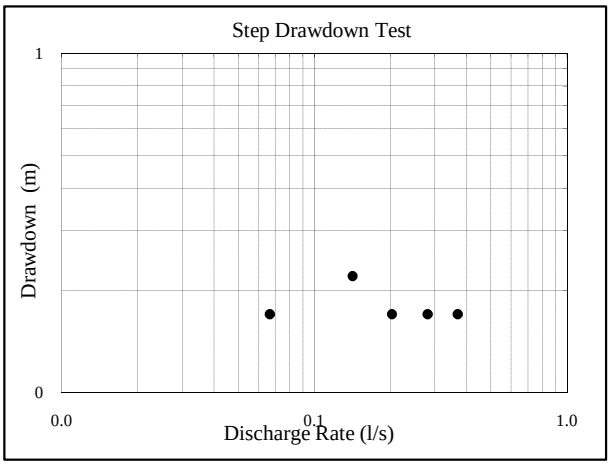
*Walton classification

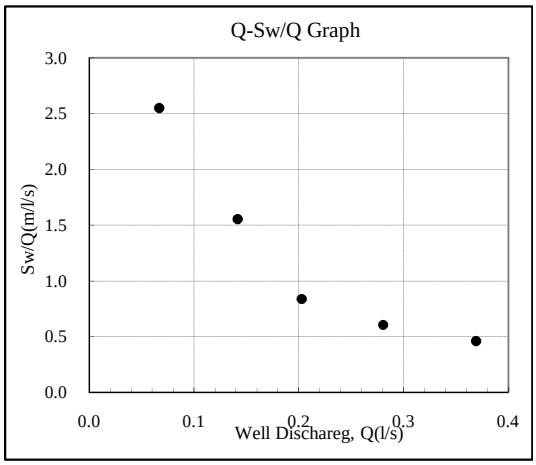


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
19.44	0.07	0.17	0.39

Transmissivity (m2/day)			
dS=		T=	
dS'=	0.26	T=	4.08

Hydraulic coefficient (cm/sec)			
T=		K=	
T=	4.08	K=	1.57E-03
Length of screen=		3	m



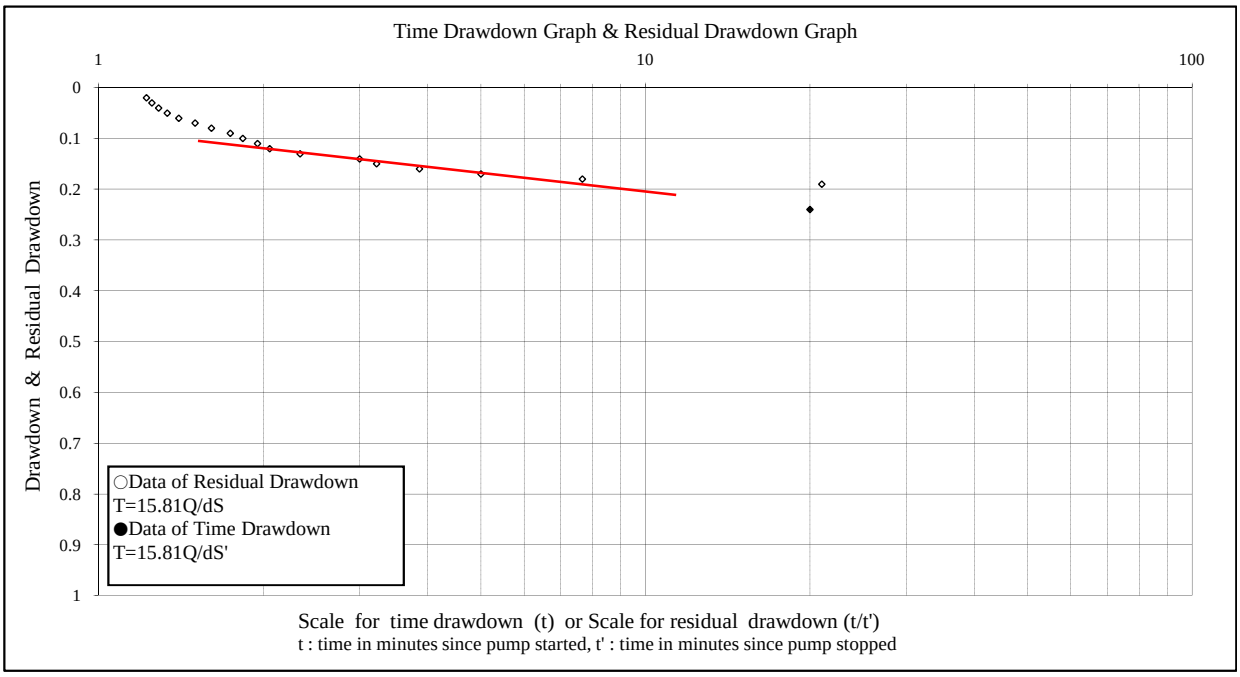


Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
4.0	0.1	0.17	2.5500
8.5	0.1	0.22	1.5529
12.2	0.2	0.17	0.8384
16.8	0.3	0.17	0.6059
22.2	0.4	0.17	0.4602

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

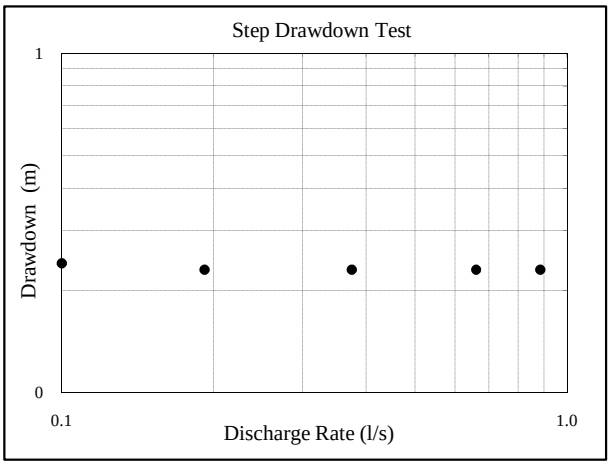
*Walton classification

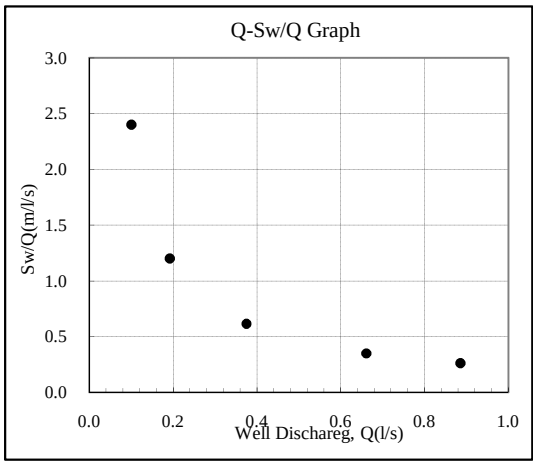


Time Drawdown Test			
SWL(m)	Q(l/s)	Drawdown(m)	Q/Sw(l/s/m)
19.31	0.10	0.24	0.42

Transmissivity (m2/day)			
dS=		T=	
dS'=	0.12	T=	13.53

Hydraulic coefficient (cm/sec)			
T=		K=	
T=	13.53	K=	5.22E-03
Length of screen=		3	m





Step Drawdown Test			
Q(l/min)	Q(l/s)	Drawdown(m)	Sw/Q(m/l/s)
6.0	0.1	0.24	2.4000
11.5	0.2	0.23	1.2000
22.5	0.4	0.23	0.6133
39.7	0.7	0.23	0.3479
53.2	0.9	0.23	0.2596

Aquifer Loss	:B	-
Well Loss	:C	-

Class	C Range	Well Condition	Class
A	< 0.0018	Properly designed and developed	-
B	0.0018 - 0.0036	Mild deterioration or clogging	
C	0.0036 - 0.0144	Severe deterioration or clogging	
D	> 0.0144	Difficult to restore well	

*Walton classification

DP1.7 Water Quality Profiling Survey

To understand water quality distribution within the study area is essential to evaluate potential of water resources of the targeted area. In the Study, vertical distribution and time-series fluctuation of water quality of groundwater is observed.

DP1.7.1 Vertical Profiling of Water Quality

(1) Objective

Objective of water quality profile survey is to observe vertical distribution of groundwater quality within the study area. The survey was conducted in the middle of March, 2006 using potable water quality profiling probe (MP TROLL 9000).

Through the survey, electric conductivity, temperature was measured at the selected wells together with water pressure which was used to estimate measured depth of the probe.

(2) Surveyed Points

Figure 1.7-1 shows location map of surveyed points within study area. As shown in the figure, 12 points are selected for this survey. Out of 12 points, 11 points are selected from test wells which were drilled through this study. And 1 point is selected from existing wells within the study area to get information of the area without any test well.

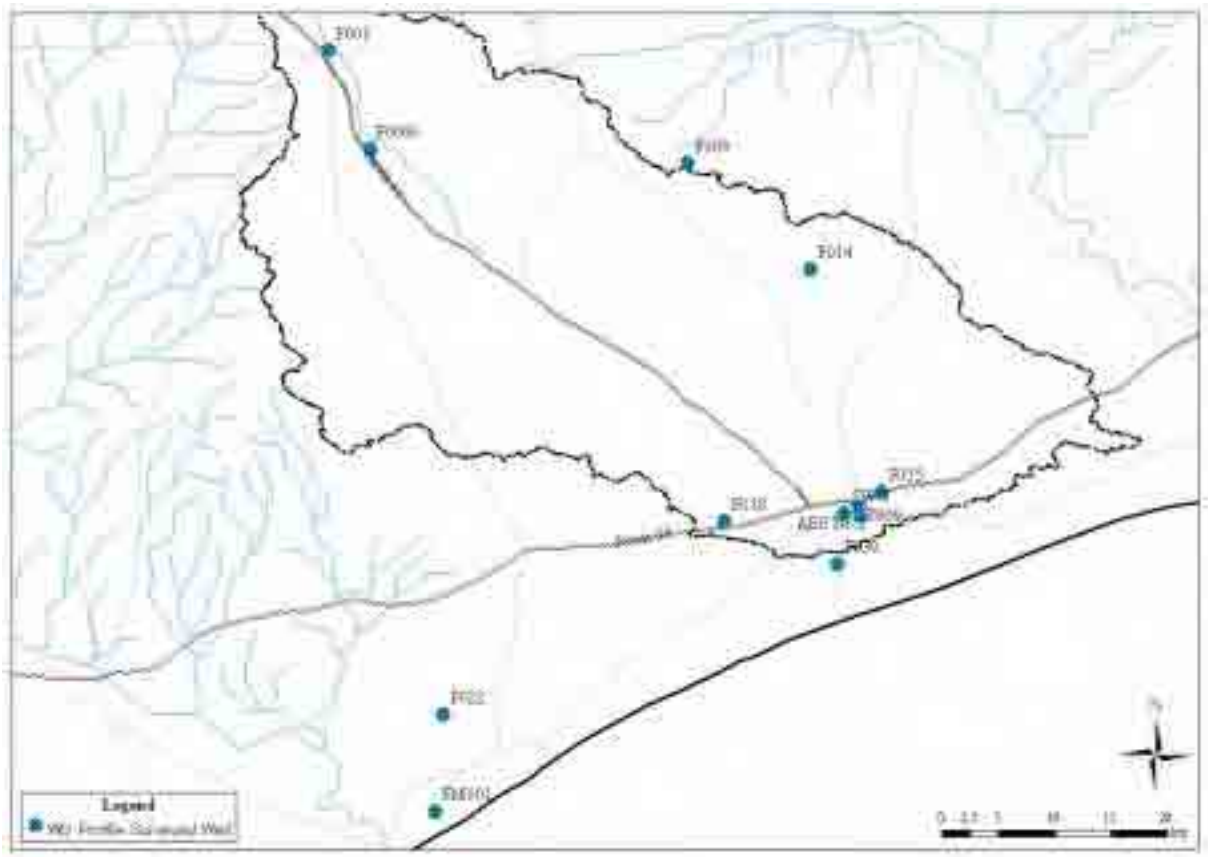


Figure DP1.7-1(a) Location map of Surveyed Points

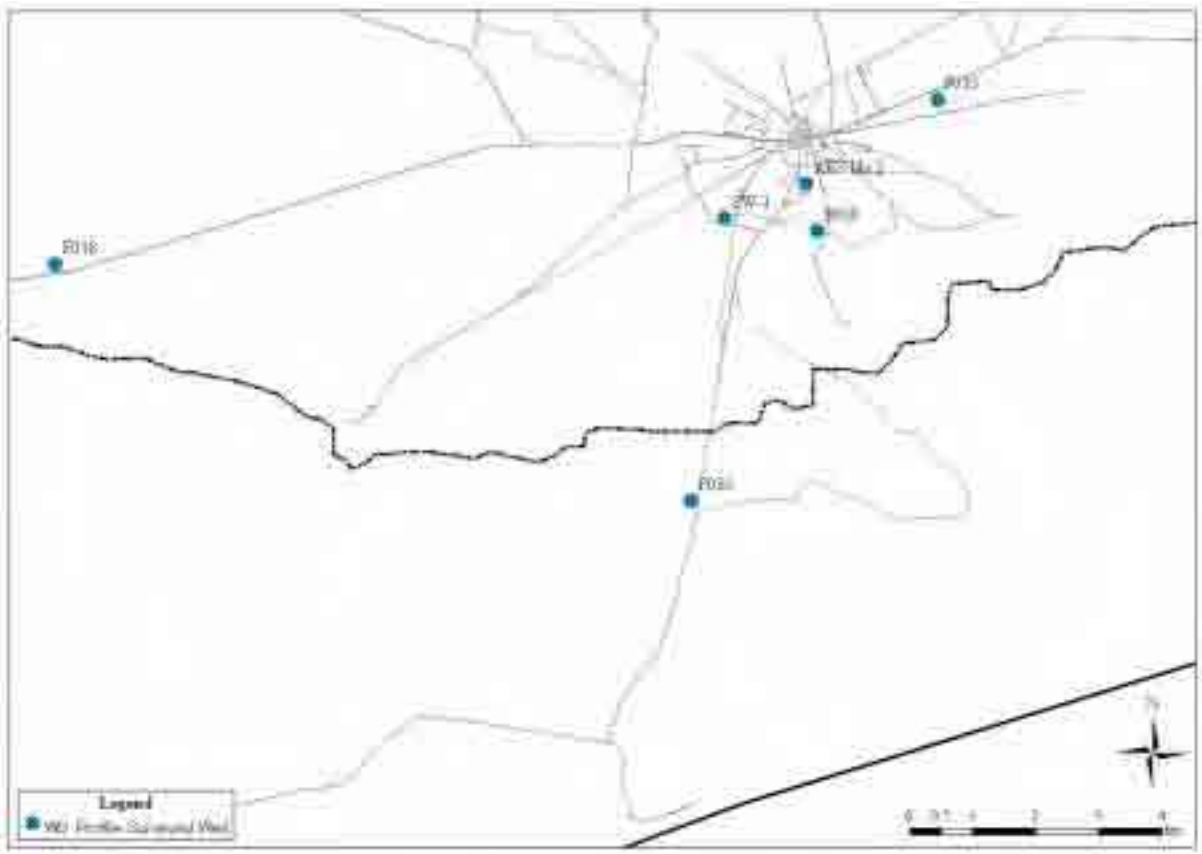


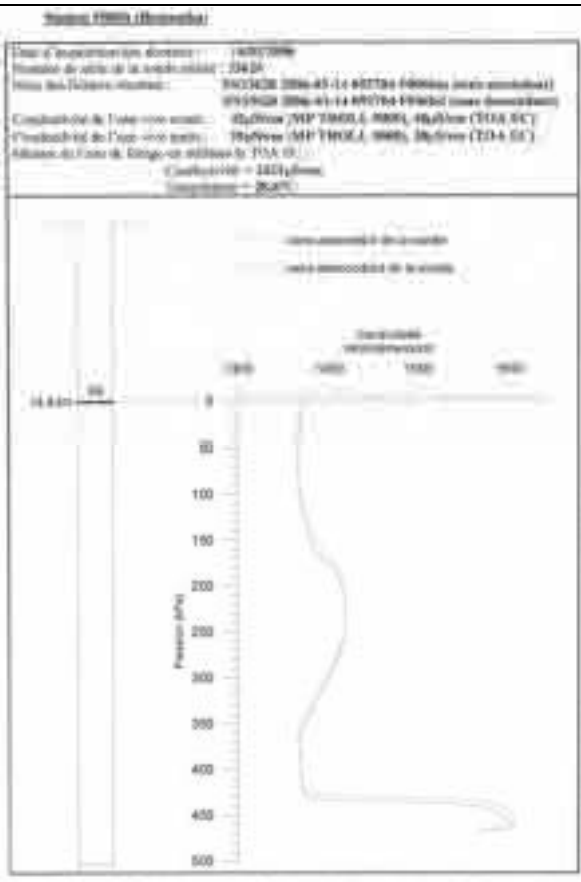
Figure DP1.7-1 (b) Location map of Surveyed Points (Ambovombe city area)

Table1 DP1.7-1 List of Surveyed Points

No.	Well No.	Commune	Depth (m)	GWL (m)	Remarks
1	P009	Ambovombe	21	19.5	Test Well (Dug Well)
2	F001	Antanimora	80	16.9	Test Well (Tube Well)
3	F006b	Antanimora	63	14.4	Test Well (Tube Well)
4	F009	Ambovombe	82	48.3	Test Well (Tube Well)
5	F014	Ambovombe	124	101.2	Test Well (Tube Well)
6	F015	Ambovombe	153	134	Test Well (Tube Well)
7	F018	Ambanisarika	202	152.9	Test Well (Tube Well)
8	F022	Antaritarika	126	58.8	Test Well (Tube Well)
9	F030	Ambovombe	205	181.4	Test Well (Tube Well)
10	FM001	Antaritarika	100	80.7	Test Well (Tube Well)
11	SW-1	Ambovombe	33	23.3	Test Well (Tube Well)
12	AES No.2	Ambovombe	22	20.3	Existing Well

FM001

F001



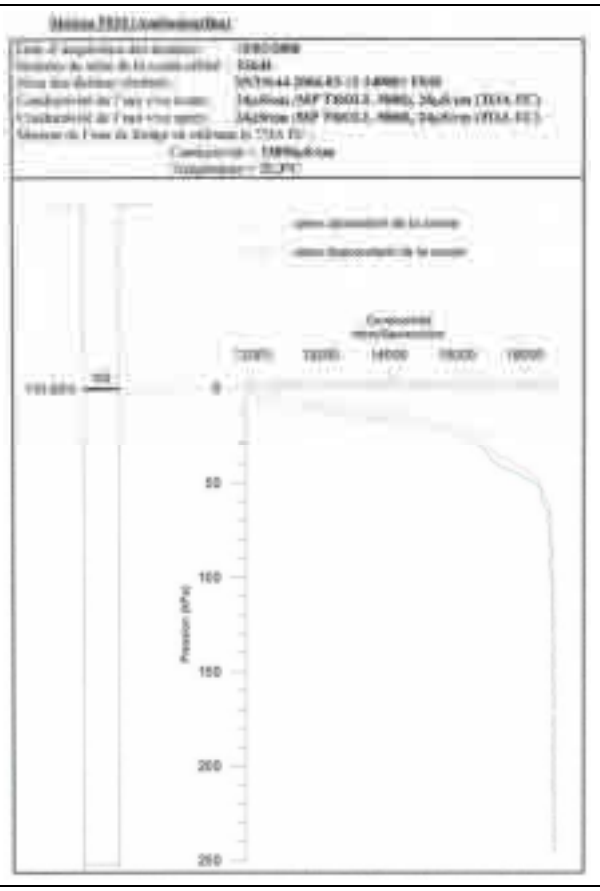
F006b

F009

Figure DP1.7-3 (a) Results of vertical profiling

F014

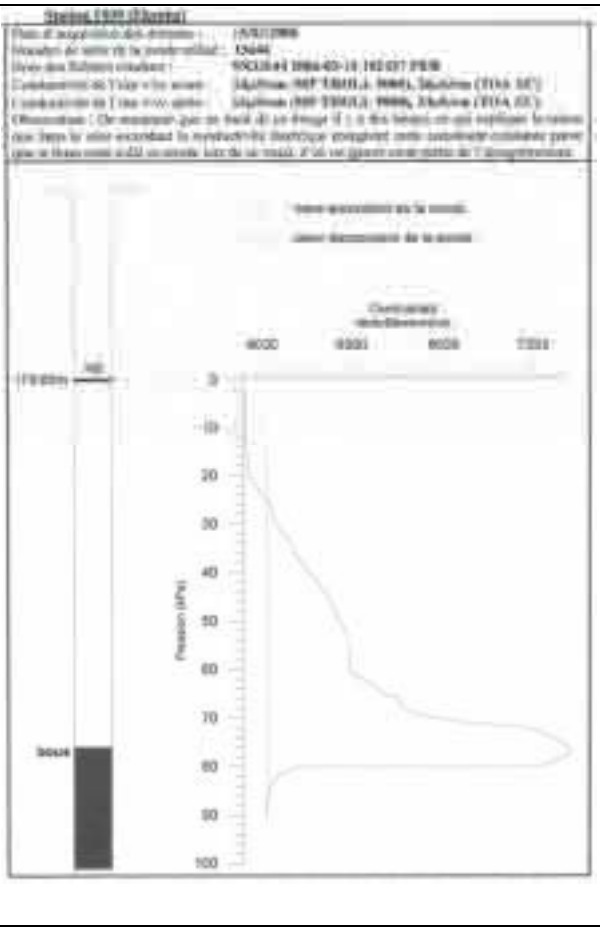
F015



F018

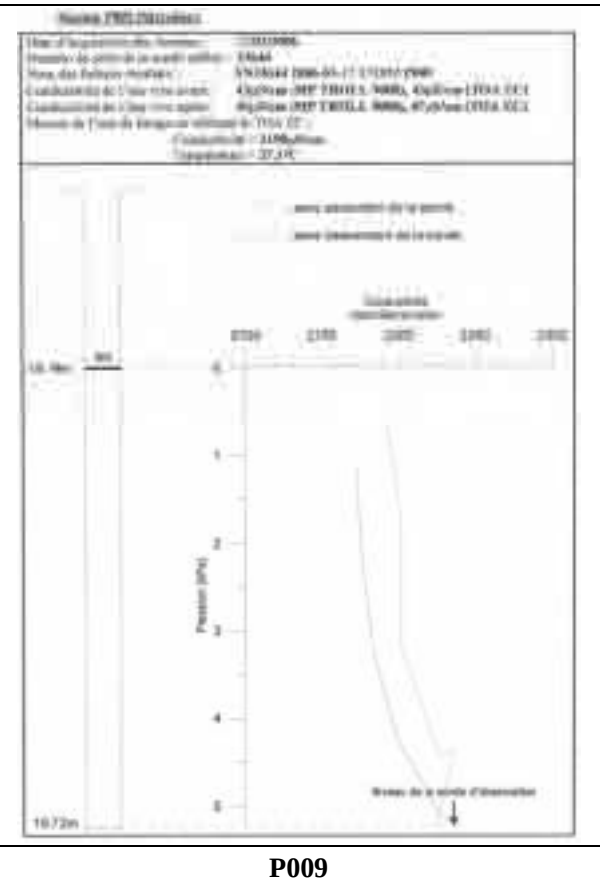
F022

Figure DP1.7-3 (b) Results of vertical profiling



F030

SW-1



P009

AES No.2(A3AES)

Figure DP1.7-3 (c) Results of vertical profiling

DP1.8 Inventory of Impluvium

Number and condition of Impluvium is summarized

- C: Number for counting
- ID: Identification number coincides with one in the social survey
- Good: It means functioning without significant leakage
- Partly: It means that water can stay if water level low, tank has leakage at upper part of side wall
- Bad: It means water doesn't stay at all in the tank.
- Water source: Existence groundwater source in the Fokontany
- Position: GPS coordination presented in degree only.

Many of fokontany were divided after base line survey was executed, so that, position information isn't indicated. Information about Impluvium is collected June-July 2006 by JICA study team by hearing at commune.

List DP1.8-1 Inventory of Impluvium

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F335	Amobondro	Ambondro Anatirova	0				1	25.21673	45.81910
2	F170	Amobondro	Andasary Sud	0				1	25.22633	45.79315
3	F334	Amobondro	Andobaka	0					25.23430	45.80108
4		Amobondro	Ankazoabo II	1		JICA				
5	F253	Amobondro	Ankileromotse	1	OS				25.27047	45.85542
6	F220	Amobondro	Antrotry Faliakandro	0					25.27360	45.87208
7	F168	Amobondro	Antsotry Be	0					25.27457	45.83365
8	F232	Amobondro	Bebea	1		1			25.23547	45.90172
9	F231	Amobondro	Belay Marolava	0					25.27425	45.90388
10	F336	Amobondro	Betioky Zanavo	0					25.17025	45.88832
11	F331	Amobondro	Lamitihy Ambario	0					25.28837	45.86758
12	F229	Amobondro	Lamitihy Ampisandrata	0				1	25.25468	45.81785
13	F221	Amobondro	Lamitihy Ankasy	0					25.28602	45.83770
14	F332	Amobondro	Lamitihy Ankitry	0					25.23413	45.80178
15	F251	Amobondro	Lamitihy Atsimo	0				1	25.23533	45.80173
16	F167	Amobondro	lamitihy Belangy	1		JICA			25.25073	45.81607
17	F252	Amobondro	Lamitihy tsibo	1		JICA			25.28437	45.84328
18	F234	Amobondro	Marosy I						25.25058	45.83407
19	F169	Amobondro	Marosy Terakabo						25.23777	45.87317
20	F230	Amobondro	Ramagna Magnefa	1		JICA			25.25978	45.75237
21	F233	Amobondro	Tsimanankiarike	1		JICA			25.22937	45.86970
22	F333	Amobondro	Vazoa						25.23688	45.80170
			Total	7	1	6	0	4		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F271	Ambonaivo	Ambokoka	1		1			25.26648	45.92067
2	F300	Ambonaivo	Ankarandoha	2			2		25.25635	45.91288
3	F308	Ambonaivo	Ankazoabo	0					25.23875	45.92007
4	F298	Ambonaivo	Bealoka	1	OS				25.21947	45.92027
5	F303	Ambonaivo	Belalitsy	1		1			25.25203	45.92343
6	F302	Ambonaivo	Beratro I	1	OS				25.23160	45.93428
7	F301	Ambonaivo	Beratro II	1		1			25.23428	45.92422
8	F304	Ambonaivo	Marofohy	2		2			25.25400	45.93622
9	F307	Ambonaivo	Marofoty	1		1			25.25415	45.93630
10		Ambonaivo	Marolava	1		1				
11		Ambonaivo	Maromainty	1		1				
12	F305	Ambonaivo	Nagnalo	0					25.22618	45.93103
13	F306	Ambonaivo	Nandrosoa	1		1			25.25297	45.92183
14	F299	Ambonaivo	Sihanamale	2		2			25.21900	45.92867
15	F309	Ambonaivo	Tanalavao	1	OS				25.25525	45.93985
			Total	16	3	11	2	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F310	Ambanisarika	Ambanisarika centre	2			2	0	25.19167	45.97665
2	F320	Ambanisarika	Androndroho	1		1		0	25.15537	46.02035

3	F318	Ambanisarika	Ankako	1			1	0	25.20890	45.98870
4	F315	Ambanisarika	Ankasokaso Antsakoamamy	1	OS			0	25.19022	45.98503
5	F314	Ambanisarika	Ankilemara	0				0	25.23837	45.95947
6	F311	Ambanisarika	Ankororoke Ambolimoka	1		1		0	25.19583	45.98470
7	F317	Ambanisarika	Etsoha Marofoty	0				0	25.19995	45.96257
8	F312	Ambanisarika	Mahaloto	2			2	0	25.20343	45.98463
9	F316	Ambanisarika	Marofoty	2		2		0	25.18837	45.98447
10	F313	Ambanisarika	Mitreaky Androvasoa	0				0	25.19940	45.96530
11		Ambanisarika	Retoka	0				0		
12	F319	Ambanisarika	Sifiry Antanantsoa	1		1		0	25.20522	45.98870
			Total	11	1	5	5	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F051	Erada	Ambanikily Nord	1	JICA			0	25.29147	45.92425
2	F053	Erada	Ambanikily Sud	0				0	25.29285	45.94223
3	F050	Erada	Ambory I	1			1	0	25.27260	45.98383
4	F052	Erada	Ambory II	0				0	25.27293	45.97582
5	F046	Erada	Ankarahabo Nord	1			1	0	25.27328	45.93975
6	F049	Erada	Ankarahabo Sud	0				0	25.27500	45.93540
7	F045	Erada	Ankaranabo	1			1	0	25.25418	45.96792
8	F054	Erada	Ankazomanitse	0				0	25.27785	45.97552
9	F055	Erada	Anketa	0				0	25.27697	45.98135
10	F056	Erada	Belatsaky	1			1	0	25.28790	45.97060
11	F048	Erada	Belaza	1			1	0	25.25570	45.97208
12	F061	Erada	Erada I	1			1	0	25.28580	45.94133
13	F057	Erada	Erada II	0				0	25.28530	45.95238
14	F059	Erada	Erada III	1	OS			0	25.28512	45.94090
15	F047	Erada	Misoronga	0				0	25.26160	45.97402
16	F058	Erada	Mitreaky	1	OS			0	25.27050	45.95667
17	F060	Erada	Vohibaoe	0				0	25.26953	45.98970
			Total	9	3	0	6	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F007	Ambazoa	Ambanimantsake	1		1		0	25.33342	45.87320
2	F022	Ambazoa	Ambasy	1	OS			0	25.33905	45.85502
3	F021	Ambazoa	Ambazoa I	1	1			0	25.31375	45.89750
4	F001	Ambazoa	Ambazoa II	0				0	25.31685	45.89125
5	F002	Ambazoa	Ambazoamazava	1	JICA			0	25.35873	45.84668
6	F023	Ambazoa	Amboromonendra	0				0	25.36145	45.84903
7	F029	Ambazoa	Ampaipaike	1			1	0	25.32290	45.88990
8	F027	Ambazoa	Ampihe	0				0	25.31985	45.89093
9	F006	Ambazoa	Antanamalange	0				0	25.33997	45.85267
10	F031	Ambazoa	Antanimihery I	1			1	0	25.37423	45.80080
11	F030	Ambazoa	Antanimihery II	0				0	25.37388	45.80050
12	F069	Ambazoa	Antanimihery Terabovo	0				0	25.37465	45.75630
13	F028	Ambazoa	Beraketa II	1	JICA			0	25.30572	45.84280
14	F026	Ambazoa	Berehake II	1			1	0	25.36770	45.82222
15	F004	Ambazoa	Halomboro	0				0	25.32023	45.89157
16	F024	Ambazoa	Ikotoala Bemozotse	0				0	25.37465	45.75630
17	F025	Ambazoa	Ikotoala centre	1			1	0	25.36770	45.82372
18	F005	Ambazoa	Malaindoza	1		1		0	25.32473	45.88885
19	F244	Ambazoa	satria I	1	OS			0	25.30243	45.91875
20	F003	Ambazoa	Tsifahera	1			1	0	25.27385	45.89073
			Total	12	5	2	5	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F084	Tsimananada	Ambagnemba	0				0	25.02088	46.09772
2	F087	Tsimananada	Ambitika	0				0	25.02795	46.06740
3	F089	Tsimananada	Anjamaro	0				0	25.19727	46.02420
4	F083	Tsimananada	Anjeky Mahasoa	0				0	25.21867	46.02157
5	F081	Tsimananada	Anjeky Miavotse	0				0	25.22132	46.02293
6	F080	Tsimananada	Ankiliandro Nord	0				0	25.24823	46.01640
7	F076	Tsimananada	Ankiliandro Sud	1		1		0	25.24978	46.01362
8	F078	Tsimananada	Ankilimanintsy Ouest	0				0	25.24453	45.99180
9	F075	Tsimananada	Ankilirandro Ambanisarika	0				0	25.23785	46.00640
10	F085	Tsimananada	Botreoke	0				0	25.04577	46.08503
11	F074	Tsimananada	Marofoty centre	0				0	25.24887	46.01442
12	F082	Tsimananada	Marohafotse	1	OS			0	25.21890	46.02407
13	F077	Tsimananada	Mokofo I	1	OS			0	25.24092	45.99665
14	F079	Tsimananada	Mokofo II	0				0	25.24817	45.99642

15	F086	Tsimananada	Soalioke	0				0	24.96635	46.11287
16	F088	Tsimananada	Esanta III	0				0	25.23085	46.11323
17	F073	Tsimananada	Tsimananada	0				0	25.21920	46.02557
			Total	3	2	1	0	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water		
				Total	good	partly	bad	source	XD	YD
1	F107	Maroalomainty	Ambaro Mahazoarivo	1			1	0	25.19968	46.18990
2	F111	Maroalomainty	Ambonaivo Ampihamibe	0				0	25.19965	46.19057
3	F036	Maroalomainty	Ampihamibe Mahazosoa	1	FID			0	25.19800	46.21763
4	F100	Maroalomainty	AnkilemanintsyI	0				0	25.13283	46.20508
5	F129	Maroalomainty	Ankilemiare	0				0		
6	F040	Maroalomainty	Ankilihogo Ambony	0				0	25.19272	46.17778
7	F041	Maroalomainty	Ankilihogo Marolava	0				0	25.17743	46.14828
8	F110	Maroalomainty	Ankilimanintsy II	1			1	0	25.15402	46.20270
9	F037	Maroalomainty	Ankilimaroaloky	1	OS			0	25.20032	46.15337
10	F103	Maroalomainty	Ankilitsimagnarito	0				0	25.19745	46.19130
11	F032	Maroalomainty	Ankilivotro	1			1	0	25.19695	46.22097
12	F034	Maroalomainty	Ankororoky Mahazosoa	0				0	25.19352	46.21855
13	F109	Maroalomainty	Antanisoa	1	FID			0	25.18028	46.22210
14	F102	Maroalomainty	Behabobo Ampatiolotse	0				0	25.14448	46.18615
15	F039	Maroalomainty	Betsimeda	1			1	0	25.18222	46.18418
16	F097	Maroalomainty	Erakoka Ambolovohitse	0				0	25.20012	46.19027
17	F104	Maroalomainty	Erakoka Anjatoka	0				0	25.19968	46.19020
18	F101	Maroalomainty	Erakoka Est	0				0		
19	F099	Maroalomainty	Erakoka Ouest	0				0	25.19965	46.19023
20	F098	Maroalomainty	Erakoka Sud	0				0	25.19087	46.19172
21	F106	Maroalomainty	Ianakafe Marosola	0				0	25.19700	46.18737
22	F038	Maroalomainty	Mareagne	0				0	25.22507	46.16245
23	F108	Maroalomainty	Marobey	0				0	25.19910	46.19487
24	F033	Maroalomainty	Radabetsimivaky	1			1	0	25.18688	46.21918
25	F035	Maroalomainty	Vahavola Ampihamibe	1			1	0	25.19375	46.17340
26	F044	Maroalomainty	Vahavola Ankilisoa	1			1	0	25.16963	46.15595
27	F128	Maroalomainty	Vahavola Centre	0				0	25.19475	46.17345
28	F043	Maroalomainty	Volankira Ambatoabo	0.5	OS			0	25.22108	46.16942
29	F105	Maroalomainty	Zanavo Nord	1			1	0	25.20088	46.19205
30	F042	Maroalomainty	Zanavo Sud	0.5	OS			0	25.22153	46.16962
			Total	12	4	0	8	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F132	Maroalopoty	Abehanta Ambaromasay	0				0	25.19795	46.20213
2	F133	Maroalopoty	Ambaro I	0				0	25.17382	46.24270
3	F152	Maroalopoty	Ambaro II	0				0	25.17392	46.24125
4	F193	Maroalopoty	Ambaro III	0				0	25.12062	46.20760
5	F159	Maroalopoty	Amboasary I	1			1	0	25.17083	46.25332
6	F155	Maroalopoty	Amponavy Fatotsambo	0				0	25.16012	46.20985
7	F144	Maroalopoty	Analamitsetake Est	0				0	25.18537	46.16510
8	F195	Maroalopoty	Analamitsetaky	0				0	25.18537	46.16510
9	F162	Maroalopoty	Ankilimasy Belambo	0				0	25.09292	46.20277
10	F197	Maroalopoty	Ankilimieva	0				0	25.19167	46.20378
11	F135	Maroalopoty	Ankilivinonjy	0				0	25.19528	46.20838
12	F196	Maroalopoty	Ankobo Agnalamizitse	0				0	25.10928	46.23992
13	F164	Maroalopoty	Antsomantsoy	1	JICA			0	25.18790	46.15235
14	F241	Maroalopoty	Behabobo Ambaro Nord	0				0	25.13392	46.17468
15	F137	Maroalopoty	Belemboke Ambany	1			1	0	25.19815	46.19957
16	F154	Maroalopoty	Belemboke Sevohitse	0				0	25.15972	46.20813
17	F156	Maroalopoty	Belomboke Ambony	0				0	25.18160	46.20540
18	F131	Maroalopoty	Belomboke Marosaragna	0				0	25.19917	46.20032
19	F158	Maroalopoty	Maneva	0				0	25.17002	46.25098
20	F165	Maroalopoty	Maroalopoty I	0				0	25.17090	46.25252
21	F192	Maroalopoty	Maroalopoty II	1			1	0	25.17492	46.26853
22	F136	Maroalopoty	Maroalopoty III	0				0	25.17130	46.25292
23	F187	Maroalopoty	Marodo Ankilimasy	0				0	25.15217	46.24268
24	F130	Maroalopoty	Marofoty	1	OS			0	25.17297	46.24007
25	F166	Maroalopoty	Marokoe Antsomontsoe II	0				0	25.18790	46.15235
26	F142	Maroalopoty	Maropia	0				0		
27	F161	Maroalopoty	Maropia Ampisopiso	0				0	25.13342	46.22085
28	F134	Maroalopoty	Maropia Ankilibe	0				0	25.17345	46.23635
29	F223	Maroalopoty	Maropia Nord	0				0	25.11683	46.22222
30	F242	Maroalopoty	Mavokake Centre	0				0	25.14353	46.20727
31	F188	Maroalopoty	Sarivalala	0				0		
32	F194	Maroalopoty	Savara centre	0				0	25.18240	46.19917

33	F153	Maroalopoty	Savara Tanandava	0				0	25.18555	46.20067
34	F191	Maroalopoty	Soatamea	0				0	25.12297	46.20423
35		Maroalopoty	Soatsifa Ambany	1			1	0		
36	F222	Maroalopoty	Tanambao I F222	0				0	25.17652	46.09035
37	F190	Maroalopoty	Tanambao Nord	1		1		0	25.11727	46.21833
38	F189	Maroalopoty	Tanambao Sud	1	1			0	25.12095	46.20742
39	F143	Maroalopoty	Tsimikaboke	1	OS			0	25.17043	46.22608
40	F160	Maroalopoty	Tsirandrane	0				0	25.17070	46.25220
41	F243	Maroalopoty	Vohimiare	0				0	25.13635	46.18923
				9	4	1	4	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1		Beanantara	Ambaliandro Marobey	1	OS					
2		Beanantara	Ambatomainty	0						
3	F237	Beanantara	Amboroke I	1			1		25.03970	46.19455
4	F213	Beanantara	Amboroke II	0					25.04017	46.19468
5	F201	Beanantara	Amboroke Maroho	0					25.02487	46.21020
6	F212	Beanantara	Analavelo Bearivo	0					25.08815	46.23715
7	F337	Beanantara	Anjeke Enikonty	0					25.06472	45.25800
8	F227	Beanantara	Anjeky Beievitre	0					25.06515	46.21810
9	F206	Beanantara	Anjeky Erada	1	OS				25.05015	46.22242
10	F205	Beanantara	Anjoty Behabobo	0					25.07660	46.21312
11	F226	Beanantara	Ankilevalo I	0					25.02645	46.13758
12	F235	Beanantara	Ankilikira I	1		1			25.06948	46.25002
13	F235	Beanantara	Ankilikira II	0		0			25.06948	46.25002
14	F199	Beanantara	Ankilinkira Sud	0					25.07035	46.25142
15		Beanantara	Ankilivalo Central	0						
16	F236	Beanantara	Ankilivalo II	0					25.02842	46.18037
17		Beanantara	Beanantara I	1		1				
18	F211	Beanantara	Beanantara Sud	0					25.06052	46.23957
19	F202	Beanantara	Bearivo Ambaro	0					25.08905	46.23898
20	F207	Beanantara	Mahabo	0						
21	F225	Beanantara	Marofoty Avaradrova F225	0					25.06468	46.19385
22	F203	Beanantara	Marolava I	0					25.06405	46.22452
23	F096	Beanantara	Marolava II	0					25.15242	46.18645
24	F228	Beanantara	Marovaho	0					25.08175	46.19577
25	F200	Beanantara	Tombodriha	0					25.00875	46.13953
26	F214	Beanantara	Zafindramiry	0					25.06915	46.24905
				5	2	2	1	0		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F094	Ambovombe	Ambanefengoke	0						
2	F068	Ambovombe	Ambaro	0					25.17982	46.08448
3	F114	Ambovombe	Ambazoamirafy centre	1	OS				25.19113	46.12032
4	F115	Ambovombe	Amboasary II	0					25.19065	46.13453
5	F092	Ambovombe	Ambolobe	0					25.19398	45.09585
6	F264	Ambovombe	Ambolomareagne	0					25.17675	46.14132
7	F120	Ambovombe	Amboro (Ambaro?)	0						
8	F172	Ambovombe	Anafondrakady (Anafindrakaly)	0					25.21938	46.10480
9	F063	Ambovombe	Andaboly	0				1	25.17217	46.08660
10	F065	Ambovombe	Anjatoka	0				1	25.18108	46.09277
11	F262	Ambovombe	Ankanka (Ankaka?)	0					25.15992	46.14722
12	F171	Ambovombe	Ankaramena	1		1			25.17458	46.06595
13	F254	Ambovombe	Ankilemafaitse Bas	0					25.19243	46.10380
14	F259	Ambovombe	Ankilemafaitse Haut	0					25.19210	46.10693
15	F255	Ambovombe	Ankilivinonjy	0					25.13578	46.14633
16	F127	Ambovombe	Antetibe	0					25.22388	46.06333
17	F116	Ambovombe	Antseky Nord	1	commune				25.23778	46.05257
18	F140	Ambovombe	Antseky Sud	1	commune				25.24128	46.04928
19	F062	Ambovombe	Avaradrova	0					25.17670	46.08872
20	F112	Ambovombe	Beabo	1			1	1	25.17178	46.09160
21	F121	Ambovombe	Beanike I	1	OS				25.26497	46.06072
22	F208	Ambovombe	Beanike II	0						
23	F256	Ambovombe	Behabobo I	1		1			25.12777	46.15573
24	F257	Ambovombe	Behabobo II	0					25.12167	46.18292
25	F267	Ambovombe	Bekokako	0					25.27002	46.02358
26	F064	Ambovombe	Berary	0				1	25.17563	46.08183
27	F122	Ambovombe	Beroroha	1	1				25.25227	46.06778
28	F260	Ambovombe	Bevato	0					25.08572	46.13448
29	F138	Ambovombe	Ekonka Marofoty	1	1					
30	F093	Ambovombe	Esalo	1	1				25.23095	46.09850

31	F088	Ambovombe	Esanta III	1		1			25.23085	46.11323
32	F090	Ambovombe	Esanta Marofoty	0					25.23108	46.11282
33	F071	Ambovombe	Esingo	0				1	25.18193	46.07407
34	F258	Ambovombe	Lavandrandra	1	1				25.19123	46.12218
35	F072	Ambovombe	Mahavelo	0				1	25.18578	46.08512
36	F119	Ambovombe	Marolava	0					25.21880	46.10028
37	F091	Ambovombe	Maromainte (Tranobe Maromainty?)	0					25.22893	46.11417
38	F113	Ambovombe	Maromalay	1	1				25.20652	46.12305
39	F268	Ambovombe	Milahame Fenoarivo	0						
40	F070	Ambovombe	Mitsangana	0				1	25.18993	46.08233
41	F266	Ambovombe	Sarehangy	1	1				25.11632	46.11298
42	F117	Ambovombe	Talaky centre	1	1				25.21237	46.09228
43	F210	Ambovombe	Talaky Marofoty	0					25.21138	46.09320
44	F067	Ambovombe	Tanambao I	0				1	25.17618	46.08937
45	F066	Ambovombe	Tanambao II	0				1	25.17773	46.09035
46	F118	Ambovombe	Tranobe Maromainty	0					25.22893	46.11417
47	F261	Ambovombe	Tseredreo Tsgnoriha (Tseredreo?)	1	1				25.12710	46.15790
48	F263	Ambovombe	Tsialihe	0				1	25.11848	46.14260
49	F209	Ambovombe	Tsingivilahy	0					25.22030	46.10152
50	F265	Ambovombe	Tsirangoty	1	OS				25.22977	46.08770
51	F269	Ambovombe	Varesoa	0						
				17	13	3	1	10		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F179	Ambohimalaza	Ampamolora	1			1	1	25.07888	45.99827
2	F174	Ambohimalaza	Androvasoa	0					25.15872	45.65017
3	F141	Ambohimalaza	Ankaramena F141	1			1		25.09337	45.93298
4	F180	Ambohimalaza	Ankilesana	0						
5	F181	Ambohimalaza	Betioky	0					25.06353	46.02645
6	F163	Ambohimalaza	Bevoalavo	1					25.11350	45.96908
7	F178	Ambohimalaza	Etsoha	1		1			25.12603	45.98442
8		Ambohimalaza	Etsoha Ankilimotse	1			1			
9	F173	Ambohimalaza	Kileroe Marolava	0					25.09588	45.93168
10	F157	Ambohimalaza	Kobaimirafy	1			1		25.14305	45.97210
11	F177	Ambohimalaza	Mahatomotse	1		1			25.09307	45.93202
12	F239	Ambohimalaza	Miarintsoa	1		1				
13	F139	Ambohimalaza	Sakave	0					24.88947	45.87435
14	F176	Ambohimalaza	Taty	1	OS				26.01392	45.99673
15	F175	Ambohimalaza	Taviramongy	0				1	25.10793	45.98777
			Total	9	1	3	4	2		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F289	Sihanamaro	Ambohitse	0				0	25.20697	45.75550
2		Sihanamaro	Analahova	0						
3	F294	Sihanamaro	Analaisoke	1			1	1	25.23903	45.75848
4		Sihanamaro	Analamanoy	1		1		0		
5		Sihanamaro	Analamasy					1		
6		Sihanamaro	Andramanera					0		
7		Sihanamaro	Aninake-Terabovo					1		
8		Sihanamaro	Ankazomanga							
9		Sihanamaro	Ankiliabo Nord					1		
10		Sihanamaro	Ankilimiharatra							
11		Sihanamaro	Anorike Analahova	1			1			
12	F291	Sihanamaro	Ankilimiharatse	0					25.24050	45.76005
13		Sihanamaro	Belindo Analahova	1			1			
14		Sihanamaro	Benonoka	1			1			
15	F276	Sihanamaro	Ehavo	0					25.00708	45.82102
16		Sihanamaro	Eraho	0				1		
17		Sihanamaro	Ianakafy					1		
18		Sihanamaro	Imantsaka					1		
19		Sihanamaro	Kotovelo					1		
20	F295	Sihanamaro	Manjasoaloke	1			1		25.24510	45.73708
21		Sihanamaro	Miandra					1		
22	F297	Sihanamaro	Motombey	0					25.24010	45.76028
23	F293	Sihanamaro	Savilava	1	OS				25.23875	45.75683
24	F287	Sihanamaro	Sihanamitohy Marolava	1		1			25.23677	45.75858
25	F288	Sihanamaro	Silimosa	0					25.23907	45.75853
26	F290	Sihanamaro	Tanandava	0					25.23585	45.77252
27	F292	Sihanamaro	Terabovo	0				1	25.20622	45.75485

28	F296	Sihanamaro	Tondroke	0					25.23683	45.75867
			Total	8	1	2	5	10		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F249	Antaritarika	Afotsifale Ouest	0	0			1	25.22330	45.75355
2	F204	Antaritarika	Afotsifale Est	1	1			1	25.37400	45.77020
3	F126	Antaritarika	Ambaromanoy	0					25.39367	45.76177
4		Antaritarika	AmbaromanoyII	0	0					
5	F248	Antaritarika	Ambavatany	0					25.33973	45.76838
6	F125	Antaritarika	Ambohitse	0				1	25.41672	45.72012
7	F182	Antaritarika	Ambonaivo	0					25.41905	45.72098
8	F147	Antaritarika	Anakania	1	1					
9	F246	Antaritarika	Anakanimo	0					25.37575	45.71197
10	F247	Antaritarika	Andraketalahy	0					25.37105	45.71655
11	F124	Antaritarika	Andranopoly	o					25.40838	45.71952
12	F149	Antaritarika	Androvamare	o						
13	F183	Antaritarika	Anjira	1			1	1	25.35028	45.75845
14	F245	Antaritarika	Ankoritsike	0					25.33950	45.69192
15	F150	Antaritarika	Antaritarika Centre	0					25.39480	45.75920
16	F123	Antaritarika	Antaritarika II	0					25.39480	45.75587
17	F185	Antaritarika	Antsakoamanga	1			1		25.27845	45.81582
18	F151	Antaritarika	Bemozotsy	0						
19	F186	Antaritarika	Fanarano	1	1				25.37445	45.70602
20	F145	Antaritarika	Maroafo	0					25.42840	45.75255
21	F184	Antaritarika	Maromainty	1			1			
22	F250	Antaritarika	Marosy Ambondro II	0					25.25085	45.83407
23	F148	Antaritarika	Mokabe	0						
24	F224	Antaritarika	Talake Bas	0					25.43620	45.70488
25	F146	Antaritarika	Tsianoha Ihodo	0						
			Total	4	1	0	3	1		

C	ID	Commune	Fokontany	Nbr Impluvium				water	Position	
				Total	good	partly	bad	source	XD	YD
1	F323	Analamary	Afondrakady	1	OS			0		
2	F272	Analamary	Anafondravoay	1	1			0		
3	F324	Analamary	Analamary	1			1	0		
4	F326	Analamary	Analasoa	0			0	0		
5	F328	Analamary	Andoharano	0				1		
6	F325	Analamary	Anjamanilike	0				0		
7	F275	Analamary	Ankazomanitse F275	1			1	0		
8	F274	Analamary	Ankilemalange	0				0		
9	F322	Analamary	Ankilemivory	0				0		
10	F327	Analamary	Ankilitelo	0				0		
11	F273	Analamary	Antanandava	0				0		
12	F330	Analamary	Homelatsy	0				0		
13	F329	Analamary	Manindra	0				0		
14	F321	Analamary	Marolava F321	0				0		
			Total	4	2	0	2	1		

****

DP1.9 WATER SUPPLY PLAN

A1.1 New water charge estimation

Plan 1 AMBOVOMBE GROUNDWATER SOURSE

Water Supply Condition: Minimum discharge for profitable line (400m3/day) : 13 l/Bucket

Items	Unit	Unit Cost 13 l/Bucket	Income month	Expense month	Profit	Remarks
1.Operation and Maintenance Cost per month				¥2,240/m3	¥70/m3	
Running cost				¥900,000	¥28,000	400m3/day
1)Fuel	Ar	10		9,230,769		
2)Salary	Ar	-		5,213,000		30 persons
3)Repair (3%/year of Construction Cost (20 million Ar/year)	Ar	-		1,666,667		¥1,000,000
Sub Total	Ar			**16,110,436**		400m3/day
2. Production Unit Cost	**Ar/Bucket**	**17**				**13l/Bucket**
3. Charge Income	**Ar**	**18**	16,615,385		504,949	
4. Renewable Charge						Construction Cost : only Pump & Generator ¥30,000,000
Facility renew found (600 million Ar for 15yeAr excluding interest)	Ar/month		3,333,333			
	Ar/Bucket	4				
Total	Ar/month		19,948,718			400m3/day
Production Unit Cost including Capital Charge	**Ar/Bucket**	**22**				**13l/Bucket**

Plan 2 ANTANIMORA GROUNDWATER SOURCE (Plan 2-1)

Water supply condition: Minimum discharge for profitable line of 200m3/day

Items	Unit	Unit Cost	Income	Expense	Profit	Remarks
Cost		**13l/Bucket**	**month**	**month**		
1. Operation and Maintenance Cost per month				¥2,900/m3	¥5.6/m3	
Running cost				¥580,000	¥1,100	200m3/day
1)Fuel	Ar	4		1,846,154		
2)Salary	Ar	-		5,213,000		30 persons
3)Repair (3%/year of Construction Cost + patrol car (40millon Ar/year)	Ar	-		3,333,333		¥2,000,000
Total	Ar			10,392,487		200m3/day
Production Unit Cost	Ar/Bucket	23				
2) Charge Income	Ar	23	10,615,385		222,897	
2. Capital charge	Ar/Bucket					Construction Cost : only Pump & Generator ¥50,000,000
Facility renew found (600million Ar for 15yeAr excluding interest)	Ar		5,555,556			
	Ar/Bucket	12				
Total	Ar		16,170,941			200m3/day
Production Unit Cost including Capital Charge	Ar/Bucket	35				**13l/Bucket**

Plan 2-2 ANTANIMORA GROUNDWATER SOURCE (Plan 2-2)

Water supply condition: Minimum discharge for profitable line of 500m3/day

Items	Unit	Unit Cost	Income	Expense	Profit	Remarks
Cost		**13l/Bucket**	**month**	**month**		
1. Operation and Maintenance Cost per month				¥1,460/m3	¥2.7/m3	
Running cost				¥731,000	¥1,370	500m3/day
1)Fuel	Ar	4		4,615,385		
2)Salary	Ar	-		5,213,000		30 persons
3)Repair (3%/year of Construction Cost + patrol car (40millon Ar/year)	Ar	-		3,333,333		¥2,000,000
Total	Ar			13,161,718		500m3/day
Production Unit Cost	Ar/Bucket	11	13,846,154			
2) Charge Income	Ar	12	13,846,154		684,436	
2. Capital charge	Ar/Bucket					Construction Cost : only Pump & Generator ¥50,000,000
Facility renew found (600million Ar for 15yeAr excluding interest)	Ar		5,555,556			
	Ar/Bucket	5				
Total	Ar		19,401,709			500m3/day
Production Unit Cost including Capital Charge	Ar/Bucket	17				**13 l/Bucket**

Plan 3 Rehabilitation of Tihombe-Beloha Existing Pipeline

Water supply minimum discharge for profitable line of 50m3/day

Items	Unit	Unit Cost	Income	Expense	Profit	Remarks
Cost			**month**	**month**		
1. Operation and Maintenance Cost per month				¥9,500/m3	¥120/m3	
Running cost		-		¥475,000	¥6,000	50m3/day
1)Fuel	Ar	-		0		
2)Salary	Ar			5,213,000		30 persons
3)Repair (3%/year of Construction Cost + patrol car (40millon Ar/year)	Ar			3,333,333		¥2,000,000+
Total	Ar			8,546,333		
Production Unit Cost	Ar/Bucket			74		
2) Charge Income	**Ar**	**75**	**8,653,846**		**107,513**	**13 l/Bucket**
2. Capital charge						Construction Cost : only Pump & Generator ¥50,000,000
Facility renew found (600million Ar for 15yeAr excluding interest)	Ar		5,555,556			
	Ar/Bucket	48				
Total	Ar/month		8,653,846			50m3/day
Production Unit Cost including Capital Charge	**Ar/Bucket**	**123**				**13 l/Bucket**

Note) Management of the organization and human resources:

1) 30 staffs are necessary in each system for O/M work and service work. Water supply engineer as a chief, and several mechanics, electricians are necessary. Other service staffs are appointed from local employee.

DP1.10 Water Supply Alternative Plan : Construction Cost

1.Anbovombe Suburbs [F015]

1.1 Anbovombe Suburbs [F015]/Diesel generator： Anbovombe city Water Supply Plan **D-1**

	Facilities	Specification	Unit Price	Quantity	Cost	
Intake Facilities	Borehole	Well Diamete=8" Depth150m	9,220,000	2	18,440,000	
	Borehole Pit		380,000	2	760,000	
	Submersible Moter Pum	50m3 /hr x 160m 37kW	2,980,000	2	5,960,000	
Transmission Facilities	Pump Station	5m*7m=35m2	7,740,000	2	15,480,000	
	Diesel generator	100KVA , Fuel consumption 6.3 l/hr	9,270,000	2	18,540,000	
	Transmission Pipeline	SGP φ150,	6,070	500	3,035,000	Well－Reservoir Tank
	Reservoir Tank	300m3	9,300,000	1	9,300,000	
	Fence	20m*4=80m	552,000	2	1,104,000	
Distrivtion Facilities	Distrivtion Pipeline	PE φ150 (Polyethylene pipe)	7,740	2,000	15,480,000	
		PE φ100 (Polyethylene pipe)	5,250	2,000	10,500,000	
		PE φ75 (Polyethylene pipe)	3,810	3,000	11,430,000	
		PE φ 50 (Polyethylene pipe)	3,490	1,000	3,490,000	
	Public Faucet :2Tap	Branch	214,000	20	4,280,000	
	Valve Box	(Gate Valve,Air Valve,it includes.)	175,000	25	4,375,000	
Costrction Cost	**Sub Total**				**122,174,000**	
Mobilization,Demobilization and Temporary Works	Transportation packing charge			1		
	Transport costs			1		
	Sub total				**48,869,600**	Costrction Cost x 40%
	Total				**171,043,600**	

1.2 Anbovombe Suburbs [F015]/Commercial electric power-JIRAMA： Anbovombe city Water Supply Plan **D-2**

	Facilities	Specification	Unit Price	Quantity	Cost	
Intake Facilities	Borehole	Well Diamete=8" Depth150m	9,220,000	2	18,440,000	
	Borehole Pit		380,000	2	760,000	
	Submersible Moter Pum	50m3 /hr x 160m 37kW	2,980,000	2	5,960,000	
Transmission Facilities	Pump Station	5m*7m=35m2	7,740,000	2	15,480,000	
	Transmission Pipeline	SGP φ150	6,070	500	3,035,000	Well－Reservoir Tank
	Elevating Tank	50m3 x 15m	15,070,000	1	15,070,000	
	Reservoir Tank	300m3	9,300,000	1	9,300,000	
	Fence	20m*4=80m	552,000	2	1,104,000	
Distrivtion Facilities (Ambovomebe city)	Distrivtion Line	PE φ150 (Polyethylene pipe)	7,740	2,000	15,480,000	
		PE φ100 (Polyethylene pipe)	5,250	2,000	10,500,000	
		PE φ75 (Polyethylene pipe)	3,810	3,000	11,430,000	
		PE φ 50 (Polyethylene pipe)	3,490	1,000	3,490,000	
	Public Faucet :2Tap	Branch	214,000	20	4,280,000	
	Valve Box	(Gate Valve,Air Valve,it includes.)	175,000	25	4,375,000	
Costrction Cost	**Sub Total**				**118,704,000**	
Mobilization,Demobilization and Temporary Works	Transportation packing charge			1		
	Transport costs			1		
	Sub total				**47,481,600**	Costrction Cost x 40%
	Total				**166,185,600**	

1.3 Anbovombe Suburbs [F015]/Diesel generator：Seashore dune area Water Supply Plan **D-3**

	Facilities	Specification	Unit Price	Quantity	Cost	
Intake Facilities	Borehole	Well Diamete=8" Depth150m	9,220,000	2	18,440,000	
	Borehole Pit		380,000	2	760,000	
	Submersible Moter Pum	50m3 /hr x 160m 37kW	2,980,000	2	5,960,000	
Transmission Facilities	Pump Station	5m*7.0m=35m2	7,740,000	2	15,480,000	
	Diesel generator	100KVA , Fuel consumption 6.3 l/hr	9,270,000	2	18,540,000	
	Booster Pump Station	5m*7.0m=35m2	7,740,000	1	7,740,000	
	Booster Pump	Horizontal Double Suction Volute Pump：15kw	1,950,000	2	3,900,000	
	Diesel generator	100KVA , Fuel consumption 6.3 l/hr	9,270,000	2	18,540,000	
	Reservoir Tank	300m3	9,300,000	1	9,300,000	
	Booster Tank	Ground Tank 200m3	8,380,000	1	8,380,000	
	Pumping Main	SGP φ150	6,070	500	3,035,000	Well－Reservoir Tank
	Transmission Pipeline	SGP φ150	6,070	60,000	364,200,000	
	Fence	20m*4=80m	552,000	2	1,104,000	
Distrivtion Facilities [Ambovomebe city]	Reservoir Tank	Ground Tank 50m3	3,130,000	4	12,520,000	
		Ground Tank 100m3	4,490,000	2	8,980,000	
	Distrivtion Pipeline	HPVC φ200(Polythylene Vinyl Pipe)	5,930	0	0	
		PE φ150 (Polyethylene pipe)	7,740	2,000	15,480,000	
		PE φ100 (Polyethylene pipe)	5,250	2,000	10,500,000	
		PE φ75 (Polyethylene pipe)	3,810	3,000	11,430,000	
		PE φ 50 (Polyethylene pipe)	3,490	1,000	3,490,000	
	Public Faucet :2Tap	Branch	214,000	20	4,280,000	
	Valve Box	(Gate Valve,Air Valve,it includes.)	175,000	25	4,375,000	
Costrction Cost	**Sub Total**				**546,434,000**	
Mobilization,Demobilization and Temporary Works	Transportation packing charge			1		
	Transport costs			1		
	Sub total				**218,573,600**	Costrction Cost x 40%
	Total				**765,007,600**	

2.Antanimora Suburbs [F006B]

2.1 Antanimora Suburbs [F006B]/Solar System：Anbovombe city + Seashore dune area Water Supply Plan **D-4**

	Facilities	Specification	Unit Price	Quantity	Cost	
Intake Facilities	Borehole	Well Diamete=6"	2,000,000	6	12,000,000	
	Borehole Pit		380,000	6	2,280,000	
	Submersible Moter Pum	50m3/hr x 40m 5kw	1,340,000	2	2,680,000	
Power and Transmission Facilities [Antanimora－Ambovomebe]	Pump Station	5m*7m=35m2	7,740,000	2	15,480,000	
	Solar System	Materials (includes in the establishment construction.)	12,630,000	4	50,520,000	
	Diesel generator	30KVA , Fuel consumption	3,500,000	4	14,000,000	Material：2350000*1．5
	Reservoir Tank	Ground Tank 800m3	25,780,000	1	25,780,000	
	Pumping Main	DIP φ300, 69,000￥/6m*0.8	17,980	3,000	53,940,000	
	Transmission Pipeline	DIP φ300, 69,000￥/6m*0.8	17,980	60,000	1,078,800,000	
	Transmission Pipeline attachment	Transmission Pipeline*20%	1	226,548,000	226,548,000	
	Fence	20m*4=80m	552,000	2	1,104,000	
Distrivtion Facilities [Ambovomebe－Antaritarika]	Distrivtion Tank	Ground Tank 50m3	3,130,000	8	25,040,000	Three
		Ground Tank 100m3	4,480,000	2	8,960,000	
	Elevating Tank	50m3 x 15m	15,070,000	1	15,070,000	
	Transmission Pipeline	DIPφ200(Ductile cast-iron pipes)	12,710	30,000	381,300,000	
		DIPφ150(Ductile cast-iron pipes)	10,290	20,000	205,800,000	
	Distrivtion Pipeline	PE φ150 (Polyethylene pipe)	7,740	2,000	15,480,000	
		PE φ100 (Polyethylene pipe)	5,250	2,000	10,500,000	
		PE φ75 (Polyethylene pipe)	3,810	3,000	11,430,000	
		PE φ 50 (Polyethylene pipe)	3,490	1,000	3,490,000	
	Public Faucet :2Tap	Branch	214,000	20	4,280,000	
	Valve Box	(Gate Valve,Air Valve,it includes.)	175,000	50	8,750,000	
Costrction Cost	**Sub Total**				**2,173,232,000**	
Mobilization,Demobilization and Temporary Works	Transportation packing charge			1		
	Transport costs			1		
	Sub total				**869,292,800**	Costrction Cost x 40%
	Total				**3,042,524,800**	

2.2 Antanimora Suburbs [F006B]/Diesel generator：Anbovombe city + Seashore dune area Water Supply Plan **D-5**

	Facilities	Specification	Unit Price	Quantity	Cost	
Intake Facilities	Borehole	Well Diamete=6"	2,000,000	3	6,000,000	
	Borehole Pit		380,000	3	1,140,000	
	Submersible Moter Pum	50m3/hr x 40m 11kw	1,340,000	3	4,020,000	
Power and Transmission Facilities [Antanimora－Ambovomebe]	Pump Station	5m*7m=35m2	7,740,000	3	23,220,000	
	Diesel generator	30KVA , Fuel consumption	3,500,000	6	21,000,000	Material：2350000＊1．5
	Reservoir Tank	Ground Tank 800m3	25,780,000	1	30,936,000	800m3/600m3=1.2
	Pumping Main	DIP φ300, 69,000￥/6m*0.8	17,980	3,000.0	53,940,000	
	Transmission Pipeline	DIP φ300, 69,000￥/6m*0.8	17,980	60,000	1,078,800,000	
	Transmission Pipeline attachment	Transmission Pipeline*20%	1	226,548,000	226,548,000	
	Fence	20m*4=80m	552,000	3	1,656,000	
Distrivtion Facilities [Ambovomebe－Antaritarika]	Distribution Tank	Ground Tank 50m3	3,130,000	8	25,040,000	
		Ground Tank 100m3	4,480,000	2	8,960,000	
	Elevating Tank	50m3 x 15m	15,070,000	1	15,070,000	
	Transmission Pipeline	DIPφ200(Ductile cast-iron pipes)	12,710	30,000	381,300,000	
		DIPφ150(Ductile cast-iron pipes)	10,290	20,000	205,800,000	
	Distrivtion Pipeline	PE φ150 (Polyethylene pipe)	7,740	2,000	15,480,000	
		PE φ100 (Polyethylene pipe)	5,250	2,000	10,500,000	
		PE φ75 (Polyethylene pipe)	3,810	3,000	11,430,000	
		PE φ 50 (Polyethylene pipe)	3,490	1,000	3,490,000	
	Public Faucet :2Tap	Branch	214,000	20	4,280,000	
	Valve Box	(Gate Valve,Air Valve,it includes.)	175,000	50	8,750,000	
Costrction Cost	**Sub Total**				**2,137,360,000**	
Mobilization,Demobilization and Temporary Works	Transportation packing charge			1		
	Transport costs			1		
	Sub total				**854,944,000**	Costrction Cost x 40%
	Total				**2,992,304,000**	

2.3 Antanimora Suburbs [F006B]//Diesel generator：Anbovombe city Water Supply Plan **D-6**

	Facilities	Specification	Unit Price	Quantity	Cost	
Intake Facilities	Borehole	Well Diamete=6"	2,000,000	6	12,000,000	
	Borehole Pit		380,000	6	2,280,000	
	Submersible Moter Pum	50m3/hr x 40m 5kw	1,340,000	2	2,680,000	
Transmission Facilities [Antanimora－Ambovomebe]	Pump Station	5m*7m=35m2	7,740,000	2	15,480,000	
	Solar System	Materials (includes in the establishment construction.)	12,630,000	4	50,520,000	
	Diesel generator	30KVA , Fuel consumption	3,500,000	4	14,000,000	Material：2350000＊1．5
	Reservoir Tank	Ground Tank 200m3	8,380,000	1	8,380,000	
	Pumping Main	DIP φ300, 69,000￥/6m*0.8	17,980	3,000	53,940,000	
	Transmission Pipeline	DIP φ300, 69,000￥/6m*0.8	17,980	60,000	1,078,800,000	
	Transmission Pipeline attachment	Transmission Pipeline*20%	1	226,548,000	226,548,000	
	Fence	20m*4=80m	552,000	2	1,104,000	
Distrivtion Facilities [Ambovomebe city]	Elevating Tank	50m3 x 15m	15,070,000	1	15,070,000	
	Distrivtion Pipeline	PE φ150 (Polyethylene pipe)	7,740	2,000	15,480,000	
		PE φ100 (Polyethylene pipe)	5,250	2,000	10,500,000	
		PE φ75 (Polyethylene pipe)	3,810	3,000	11,430,000	
		PE φ 50 (Polyethylene pipe)	3,490	1,000	3,490,000	
	Public Faucet :2Tap	Branch	214,000	20	4,280,000	
	Valve Box	(Gate Valve,Air Valve,it includes.)	175,000	50	8,750,000	
Costrction Cost	**Sub Total**				**1,534,732,000**	
Mobilization,Demobilization and Temporary Works	Transportation packing charge			1		
	Transport costs			1		
	Sub total				**613,892,800**	Costrction Cost x 40%
	Total				**2,148,624,800**	