

14.3 Pumping Test Report for Lots 2 and 4

REPORT FOR PUMPING TEST. (LOT NO. 2 AND LOT NO. 4)

GOVERNORATES

SANA'A - TAIZ

RURAL WATER SUPPLY FOR COMPONENT OF THE STUDY FOR
WATER RESOURCES MANAGEMENT AND RURAL WATER
SUPPLY IMPROVEMENT IN THE REPUBLIC OF YEMEN

ABDULHALEG M. ALGHOLI



SUBMITTED BY

ALI AL-GUNAID

SEPTEMBER 2006

PUMING TEST
REPORT SHEET

GOVERNORATES OF

SANA'A

&

TAIZ

Information for Pumping Test Wells

Governorate	District	Site Code	Site Name	Well Code	Target Water Source	Latitude N			Longitude E			Altitude (m)	Const. Year	Depth (m)	SWL (G.L.-m)	Remarks
						°	'	"	°	'	"					
Sana'a	Hamdan	S-02	Jarben	S-02	New projected deep well	15	34	49.2	44	03	01.1	2,642	2005	450	345.31	Constansl discharge & recovery test only
		Belad Al Rous	S-05	Alesh	S-05	Existing projected deep well	15	04	23.5	44	13	31.2	2,006	1996	300	
	Sanhan & Bany Bahlool	S-06	Al Lejam	S-06	Existing projected deep well	15	16	56.6	44	21	38.7	2,435	1993	300	148.09	
		S-07	Bait Al Hadrami	S-07	New projected deep well	15	14	44.0	44	17	23.6	2,374	2005	410	193.22	
		S-09	Ruhm	S-09	New projected deep well	15	11	04.1	44	14	34.0	2,395	2003	470	191.85	
	Al Hesn	S-10	Tawa'ar	S-10/1	Existing projected deep well	15	03	19.1	44	29	18.2	2,230	1994	280	134.78	
		S-11	Al Hesn-Al Abyad	S-10/2	Existing projected deep well	15	00	13.8	44	28	54.4	2,259	2004	310	144.74	
	Jehana	S-11	Al Hesn-Al Abyad	S-11/1	New projected deep well	15	11	33.3	44	27	49.8	2,310	2005	350	152.82	Canceled (test equipments can not be salted)
		S-12	Mandah	S-11/2	Existing projected deep well	15	11	43.1	44	27	44.9	2,300	1980	180	---	
	Nehm	S-12	Mandah	S-12	New projected deep well	15	09	06.7	44	28	16.0	2,315	2005	350	57.78	
		S-14	Al Ghall	S-14	Existing projected deep well	15	38	46.4	44	29	21.4	2,117	1985	185	73.28	Canceled (well collapsed, dirty water)
	Mawiyeh	T-01	Al Muzayteeb	T-01	New projected deep well	13	39	32.5	44	13	12.6	1,291	2005	300	139.17	Step test only. High temperature water (60°C)
T-02		Bani Al Suror	T-02/1	Bir 1 Existing projected deep well	13	22	51.9	43	58	00.7	1,271	1982	230	183.88		
Al Ma'afar	T-02	Bani Al Suror	T-02/3	Bir 3 Existing projected deep well	13	23	52.6	43	58	25.6	1,209	2001	251	117.62		
	T-03	Sheb Humran	T-02/4	Bir 4 New projected deep well	13	21	52.2	43	58	24.2	1,226	1998	190	134.92		
Al Mawaset	T-03	Sheb Humran	T-03/1	Al Jan (1) New projected deep well	13	20	50.1	44	02	55.2	1,257	2005	400	22.22		
	T-04	Yafaq Bani Hamad	T-03/4	Al Meashaar(4) Existing proj. deep well	13	23	54.8	44	01	07.0	1,366	1998	260	24.19		
Al Shamayaten	T-04	Yafaq Bani Hamad	T-04	Existing projected deep well	13	18	46.5	44	05	46.8	1,381	1982	220	124.10		
	T-05	Al Azaez	T-05/1	Mardata Alhomay(1) Existing proj. deep well	13	13	34.5	44	02	17.8	1,377	1985	120	8.20	Replace T-05/3	
Al Waziyah	T-05	Al Azaez	T-05/3	Wadi Masan (3) Existing proj. deep well	13	12	44.0	44	02	38.0	1,468	1996?	160	---	Canceled (few water)	
	T-06	Al Khunha	T-06	New projected deep well	13	06	21.0	43	45	03.9	539	2004	200	-0.53		

Wells to be tested	20
Cancelled wells	2
Total wells tested	18

Pumping Testis Informations

Governorate	District	Site Code	Site Name	Well Code	Target Water Source	Depth (m)	SWL (G.L.-m)	Pump depth (G.L.-m)	Step Drawdown						Constant discharge & Recovery Test					
									Step Drawdown discharge rate (l/sec)						I.W.L (m)	F.W.L (m)	Draw down (m)	Expect discharge rate (l/sec)	Constant discharge rate (l/sec)	
									1st	2nd	3rd	4th	5th	6th						
Sana'a	Hamdan	S-02	Jarban	S-02	New projected deep well	450	345.31	370	---	---	---	---	---	346.04	346.10	0.06	---	---	---	
	Belad Al Rous	S-05	Afesh	S-05	Existing projected deep well	300	212.97	270	0.7	1.4	2.1	2.8	3.5	213.69	231.93	18.24	4.0	---	---	---
		S-06	Al Lejam	S-06	Existing projected deep well	300	148.09	265	1.3	2.6	3.9	5.2	6.5	148.67	150.17	1.50	5.2	---	---	---
	Sanhan & Bany Bahlood	S-07	Bail Al Hadrami	S-07	New projected deep well	410	193.22	291	1.9	3.8	5.7	7.6	9.5	193.80	197.70	3.90	4.0	---	---	---
		S-09	Ruhm	S-09	New projected deep well	470	191.85	291	1.0	2.0	3.0	4.0	5.0	193.10	228.55	35.45	3.8	---	---	---
	Al Hesn	S-10	Tawa'ar	S-10/1	Existing projected deep well	280	134.78	220	0.9	1.8	2.7	3.6	4.5	135.40	181.24	45.84	2.7	---	---	---
		S-11	Al Hesn-Al Abyad	S-10/2	Existing projected deep well	310	144.74	220	1.7	3.4	5.1	6.8	8.5	145.36	156.49	11.13	4.1	---	---	---
	Jehana	S-11/1	Al Hesn-Al Abyad	S-11/1	New projected deep well	350	152.82	248	1.2	2.4	3.6	4.8	6.0	154.78	219.79	65.01	4.8	---	---	---
		S-12	Mahdah	S-12	New projected deep well	350	57.78	246	1.3	2.6	3.9	5.2	6.5	58.60	77.34	18.74	2.8	---	---	---
	Mawiyah	T-01	Al Muayteeb	T-01	New projected deep well	300	139.17	213	1.0	2.0	3.0	4.0	5.0	---	---	---	---	---	---	---
		Al Ma'afer	T-02	Bani Al Suror	T-02/1	Bir 1 Existing projected deep well	230	183.88	200	1.6	3.2	4.8	6.5	---	184.20	186.74	2.54	6.4	---	---
	T-02/3		Bani Al Suror	T-02/3	Bir 3 Existing projected deep well	251	117.62	178	1.6	3.2	4.8	6.4	8.0	118.93	140.04	21.11	3.2	---	---	---
T-02/4	Bir 4		T-02/4	Bir 4 New projected deep well	190	134.92	154	1.7	3.4	5.1	6.8	8.5	137.91	140.16	2.25	6.8	---	---	---	
T-03	Sheb Humran		T-03/1	Al Jah (1) New projected deep well	400	22.22	284	2.2	3.6	5.1	6.6	8.0	22.81	45.10	22.29	4.9	---	---	---	
Al Mawasel	T-04	Yafiq Bani Hamad	T-03/4	Al Meashaar(4) Existing proj deep well	260	24.19	184	2.2	3.3	4.4	5.5	6.6	24.95	28.99	4.04	5.3	---	---	---	
	T-05	Al Azaez	T-04	Existing projected deep well	220	124.10	156	1.2	2.4	3.6	4.8	6.0	125.30	127.21	1.91	3.6	---	---	---	
Al Wazieyah	T-06	Al Khunha	T-05/1	Marda'a Alhomay(1) Existing proj deep well	120	8.20	94	1.0	1.5	2.0	2.5	3.0	8.99	54.18	45.19	2.5	---	---	---	
	T-06	Al Khunha	T-06	New projected deep well	200	-0.53	142	2.2	4.4	6.6	8.8	11.0	0.68	6.35	5.67	8.8	---	---	---	

DATA FOR SANA'A

Pumping Test Report Sheet

Well code: S-02 Site code: S-02 Site name: Jarban

District: Hamdan Governorate: Sana'a

Target water source: New projected deep well Well depth: 450 m

Contractor: Abdulkhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Mohammed Azeen

Date of start of the test: 18/8/2006 Date of end of the test: 19/8/2006

Pump type: Submersible pump Engine: 37kW

Pump installation depth: 370 m Datum level: 0.73 m S.W.L.: G.L.-363.31 m

Step drawdown test

Date/hour started: --- Date/hour finished: --- Total hours: ---

Yield (l/sec): 1st step --- 2nd step --- 3rd step --- 4th step --- 5th step ---

Water level before start the test (G.L.-m): ---

Water level after end of 5th step (G.L.-m): ---

Water level after recovery (G.L.-m): --- Recovery hours: ---

Constant discharge test

Date/hour started: 18-8-2006-1:30pm Date/hour finished: 19-8-2006-3:50pm Total hours: 27:20

Yield (l/sec): 2.00

Water level before start of the test (G.L.-m): 345.31

Water level after end of test (G.L.-m): 345.37

Water level after recovery (G.L.-m): 345.31 Recovery hours: 3:20

Drawdown (m): 0.06

Revised by:

Name :

Date:

Constant Discharge & Recovery Test (1/2)

Well Code: S-02 Site code: S-02

Site name: Jarban

Pump on date/hour: 18-8-2006-1:30pm

District: Hamdan

Pump off date/hour: 13/8/2006 2:00pm

Governorate: Sana'a

End of recovery hour: 19-8-2006-3:50pm

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 346.04

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 346.10

Operator: Mohammed Azeen

Yield (l/sec): 2.0

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	346.04	0.00		346.10	0.06		
0.5	346.04	0.00		346.09	0.05		
1.0	346.05	0.01		346.09	0.05		
1.5	346.05	0.01		346.09	0.05		
2.0	346.05	0.01		346.09	0.05		
2.5	346.06	0.02		346.09	0.05		
3.0	346.06	0.02		346.09	0.05		
3.5	346.06	0.02		346.09	0.05		
4.0	346.06	0.02		346.09	0.05		
4.5	346.07	0.03		346.09	0.05		
5.0	346.07	0.03		346.09	0.05		
6.0	346.07	0.03		346.09	0.05		
7.0	346.08	0.04		346.09	0.05		
8.0	346.08	0.04		346.09	0.05		
9.0	346.08	0.04		346.08	0.04		
10.0	346.09	0.05		346.08	0.04		
12.0	346.09	0.05		346.08	0.04		
14.0	346.10	0.06		346.08	0.04		
16.0	346.10	0.06		346.08	0.04		
18.0	346.10	0.06		346.08	0.04		
20.0	346.10	0.06		346.07	0.03		
25.0	346.10	0.06		346.07	0.03		
30.0	346.10	0.06		346.07	0.03		
35.0	346.10	0.06		346.07	0.03		
40.0	346.10	0.06		346.07	0.03		
45.0	346.10	0.06		346.07	0.03		
50.0	346.10	0.06		346.07	0.03		
55.0	346.10	0.06		346.06	0.02		
60.0	346.10	0.06		346.06	0.02		

Constant Discharge & Recovery Test (2/2)

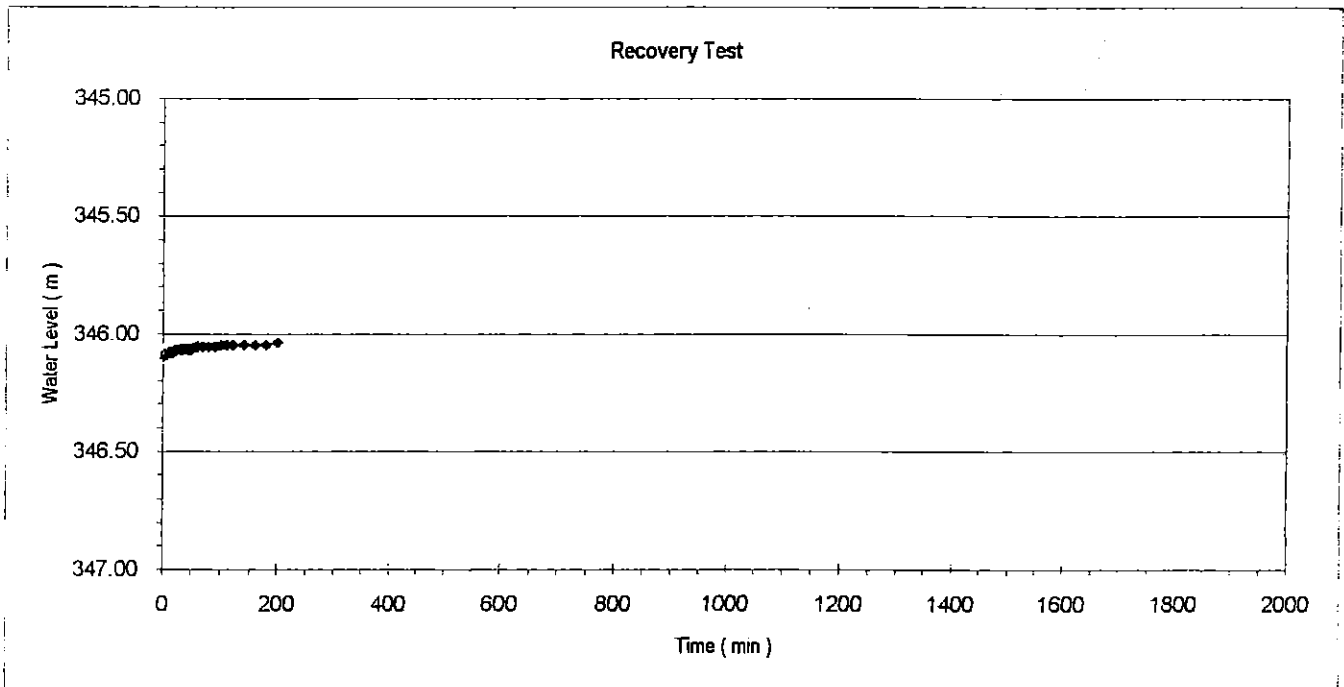
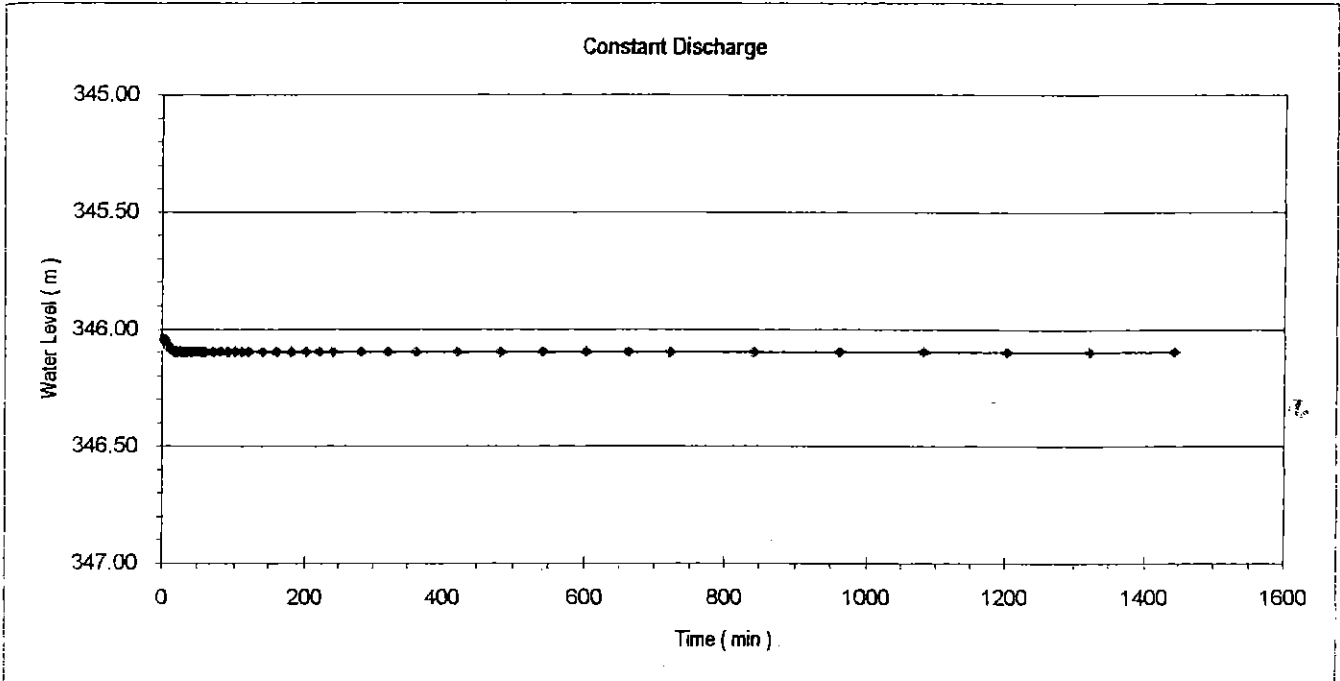
Well Code: S-02 Site code: S-02 Site name: Jarban
 District: Hamdan Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity (μ S/cm)	
70.0	346.10	0.06		346.06	0.02		
80.0	346.10	0.06		346.06	0.02		
90.0	346.10	0.06		346.06	0.02		
100.0	346.10	0.06		346.05	0.01		
110.0	346.10	0.06		346.05	0.01		
120.0	346.10	0.06		346.05	0.01		
140.0	346.10	0.06		346.05	0.01		
160.0	346.10	0.06		346.05	0.01		
180.0	346.10	0.06		346.05	0.01		
200.0	346.10	0.06		346.04	0.00		
220.0	346.10	0.06					
240.0	346.10	0.06					
280.0	346.10	0.06					
320.0	346.10	0.06					
360.0	346.10	0.06					
420.0	346.10	0.06					
480.0	346.10	0.06					
540.0	346.10	0.06					
600.0	346.10	0.06					
660.0	346.10	0.06					
720.0	346.10	0.06					
840.0	346.10	0.06					
960.0	346.10	0.06					
1080.0	346.10	0.06					
1200.0	346.10	0.06					
1320.0	346.10	0.06					
1440.0	346.10	0.06					
1560.0							
1680.0							
1800.0							

Constant Discharge Test

Well Code: S-02
Site Code: S-02
S.W.L. (m): 346.04
Yield (L/sec): 2.0

Site Name: Jarban
D.W.L. (m): 346.10 Drawdown (m): 0.06



Pumping Test Report Sheet

Well code: S-05 Site code: S-05 Site name: Afesh
District: Belad Al Rous Governorate: Sana'a

Target water source: Existing projected deep well Well depth: 150 m

Contractor: Abdulkhaleg M. AL- Goli
Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid
Operator: Mohammed Azeen

Date of start of the test: 02/08/2006 Date of end of the test: 05/08/2006
Pump type: Vertical pump Engine: Iveco aifo
Pump installation depth: 270 m Datum level: 0.72 m S.W.L.: G.L.-212.97 m

Step drawdown test

Date/hour started: 3-8-2006-8:40am Date/hour finished: 4-8-2006-8:35am Total hours: 23:55
Yield (l/sec): 1st step 1.00 2nd step 2.00 3rd step 3.00 4th step 4.00 5th step 5.00
Water level before start the test (G.L.-m): 212.97
Water level after end of 5th step (G.L.-m): 245.67
Water level after recovery (G.L.-m): 212.97 Recovery hours: 13:55

Constant discharge test

Date/hour started: 4-8-2006-8:40am Date/hour finished: 5-8-2006-8:20pm Total hours: 36:00
Yield (l/sec): 3.20
Water level before start of the test (G.L.-m): 212.97
Water level after end of test (G.L.-m): 231.93
Water level after recovery (G.L.-m): 20.97 Recovery hours: 12:00
Drawdown (m): 18.96

Revised by:

Name :

Date:

Step Drawdown Test

Well Code: S-05 Site code: S-05 Pump on date/hour: 3-8-2006-8:40am
 Site name: Afesh Pump off date/hour: 3-8-2006-6:40pm
 District: Belad Al Rous End of recovery hour: 4-8-2006-8:35am
 Governorate: Sana'a S.W.L (m): 213.69

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	213.69	1.00	219.92	2.00	224.31	3.00	234.59	4.00	237.63	5.00	246.39
0.5	218.50		220.08		224.86		234.71		237.99		239.40
1.0	218.75		220.67		224.88		234.89		238.00		234.42
1.5	218.81		220.96		225.00		235.02		240.16		231.22
2.0	218.84		221.19		225.11		235.21		241.07		229.11
2.5	218.89		221.48		225.60		235.55		241.82		227.03
3.0	218.91		221.79		225.81		235.73		242.09		226.17
3.5	218.94		221.88		225.99		235.94		242.56		225.41
4.0	218.97		222.00		226.00		236.16		243.09		224.82
4.5	218.98		222.29		226.07		236.24		243.51		224.41
5.0	218.99		222.41		226.11		236.29		243.62		223.36
6.0	219.00		222.68		226.80		236.32		243.92		222.43
7.0	219.27		222.91		228.24		236.37		243.93		221.81
8.0	219.40		223.11		228.48		236.54		243.98		221.03
9.0	219.48		223.27		228.55		236.76		244.32		220.64
10.0	219.54		223.58		228.60		236.83		244.60		220.45
12.0	219.60		223.65		229.00		236.83		244.71		220.14
14.0	219.69		223.78		230.69		236.92		244.72		220.04
16.0	219.69		223.91		231.19		236.92		244.75		219.66
18.0	219.74		224.00		231.57		236.95		245.02		219.47
20.0	219.80		224.06		231.61		236.96		245.24		219.15
25.0	219.85		224.11		231.97		236.98		245.59		218.84
30.0	219.87		224.13		232.00		237.02		245.94		218.12
35.0	219.89		224.15		232.41		237.05		246.22		217.79
40.0	219.90		224.18		232.74		237.11		246.23		217.46
45.0	219.90		224.18		232.96		237.15		246.27		217.23
50.0	219.90		224.18		233.10		237.21		246.29		217.03
55.0	219.90		224.19		233.62		237.26		246.37		216.95
60.0	219.90		224.19		233.85		237.32		246.37		216.81
70.0	219.90		224.20		234.01		237.45		246.37		216.69
80.0	219.90		224.21		234.09		237.56		246.38		216.24
90.0	219.91		224.25		234.17		237.59		246.38		216.01
100.0	219.91		224.29		234.26		237.61		246.39		215.96
110.0	219.92		224.31		234.47		237.62		246.39		215.79
120.0	219.92		224.31		234.59		237.63		246.39		215.69
695.0	8:35am										213.69

Constant Discharge & Recovery Test (1/2)

Well Code: S-05 Site code: S-05

Site name: Afesh

Pump on date/hour: 4-8-2006-8:40am

District: Belad Al Rous

Pump off date/hour: 5-8-2006-8:40am

Governorate: Sana'a

End of recovery hour: 5-8-2006-8:20pm

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 213.69

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 231.93

Operator: Mohammed Azeen

Yield (l/sec): 3.2

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	213.69	0.00		231.93	18.24		
0.5	214.50	0.81		228.13	14.44		
1.0	216.82	3.13		222.43	8.74		
1.5	217.11	3.42		221.35	7.66		
2.0	218.99	5.30		220.90	7.21		
2.5	219.85	6.16		219.82	6.13		
3.0	221.18	7.49		218.50	4.81		
3.5	222.86	9.17		217.50	3.81		
4.0	223.63	9.94		216.48	2.79		
4.5	224.72	11.03		216.27	2.58		
5.0	225.38	11.69		216.23	2.54		
6.0	226.00	12.31		216.06	2.37		
7.0	226.45	12.76		215.95	2.26		
8.0	226.63	12.94		215.46	1.77		
9.0	226.80	13.11		215.13	1.44		
10.0	227.11	13.42		215.01	1.32		
12.0	227.23	13.54		214.89	1.20		
14.0	227.47	13.78		214.68	0.99		
16.0	227.56	13.87		214.60	0.91		
18.0	227.79	14.10		214.49	0.80		
20.0	227.79	14.10		214.45	0.76		
25.0	227.98	14.29		214.40	0.71		
30.0	228.06	14.37		214.36	0.67		
35.0	228.18	14.49		214.32	0.63		
40.0	228.28	14.59		214.28	0.59		
45.0	228.64	14.95		214.26	0.57		
50.0	229.12	15.43		214.22	0.53		
55.0	229.54	15.85		214.18	0.49		
60.0	230.43	16.74		214.14	0.45		

Constant Discharge & Recovery Test (2/2)

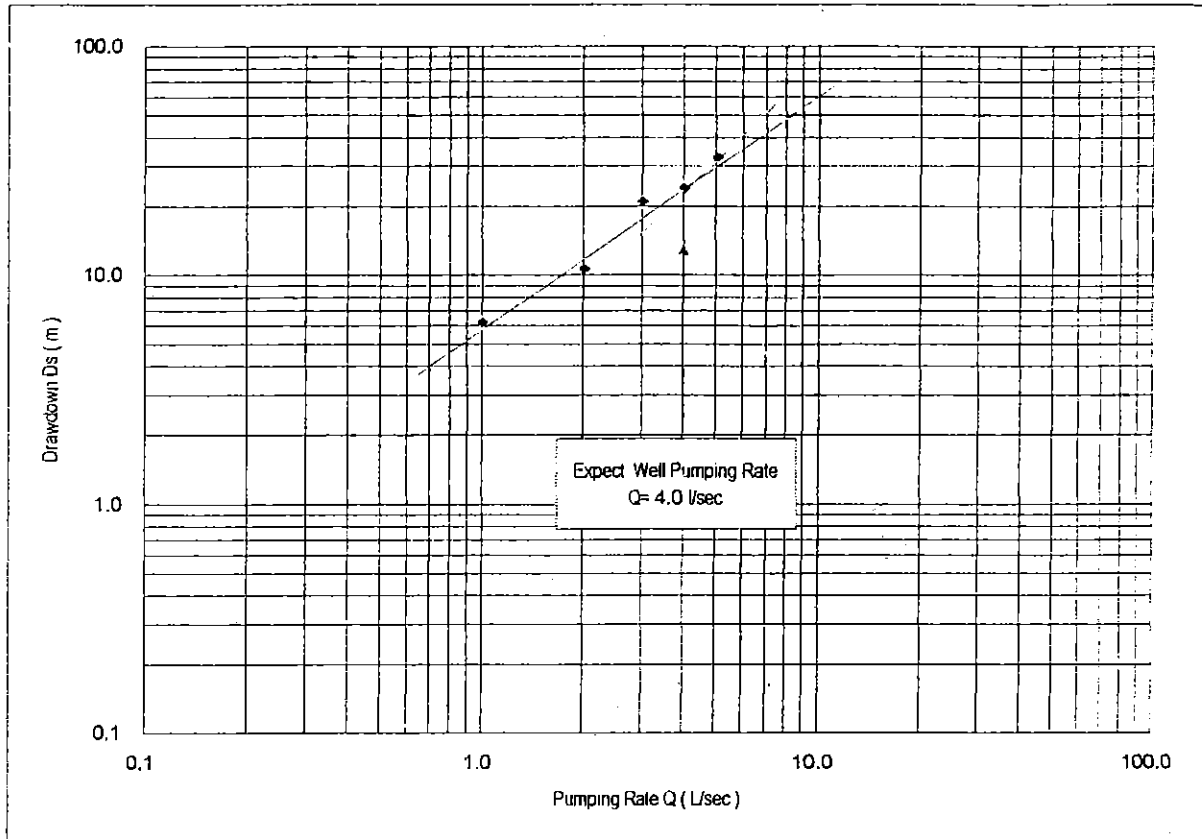
Well Code: S-05 Site code: S-05 Site name: Afesh
 District: Belad Al Rous Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	230.88	17.19		214.06	0.37		
80.0	230.99	17.30		214.00	0.31		
90.0	231.42	17.73		213.94	0.25		
100.0	231.48	17.79		213.88	0.19		
110.0	231.54	17.85		213.82	0.13		
120.0	231.64	17.95		213.76	0.07		
140.0	231.69	18.00		213.76	0.07		
160.0	231.69	18.00		213.75	0.06		
180.0	231.70	18.01		213.74	0.05		
200.0	231.73	18.04		213.73	0.04		
220.0	231.73	18.04		213.72	0.03		
240.0	231.73	18.04		213.70	0.01		
280.0	231.75	18.06		213.70	0.01		
320.0	231.76	18.07		213.70	0.01		
360.0	231.78	18.09		213.70	0.01		
420.0	231.78	18.09		213.70	0.01		
480.0	231.79	18.10		213.70	0.01		
540.0	231.81	18.12		213.70	0.01		
600.0	231.85	18.16		213.70	0.01		
660.0	231.88	18.19		213.70	0.01		
720.0	231.89	18.20		213.69	0.00		
840.0	231.91	18.22					
960.0	231.91	18.22					
1080.0	231.91	18.22					
1200.0	231.92	18.23					
1320.0	231.92	18.23					
1440.0	231.93	18.24					

Step Drawdown Test

Well Code: S-05
 Site Code: S-05
 S.W.L. : 213.69 m

Site Name: Afesh

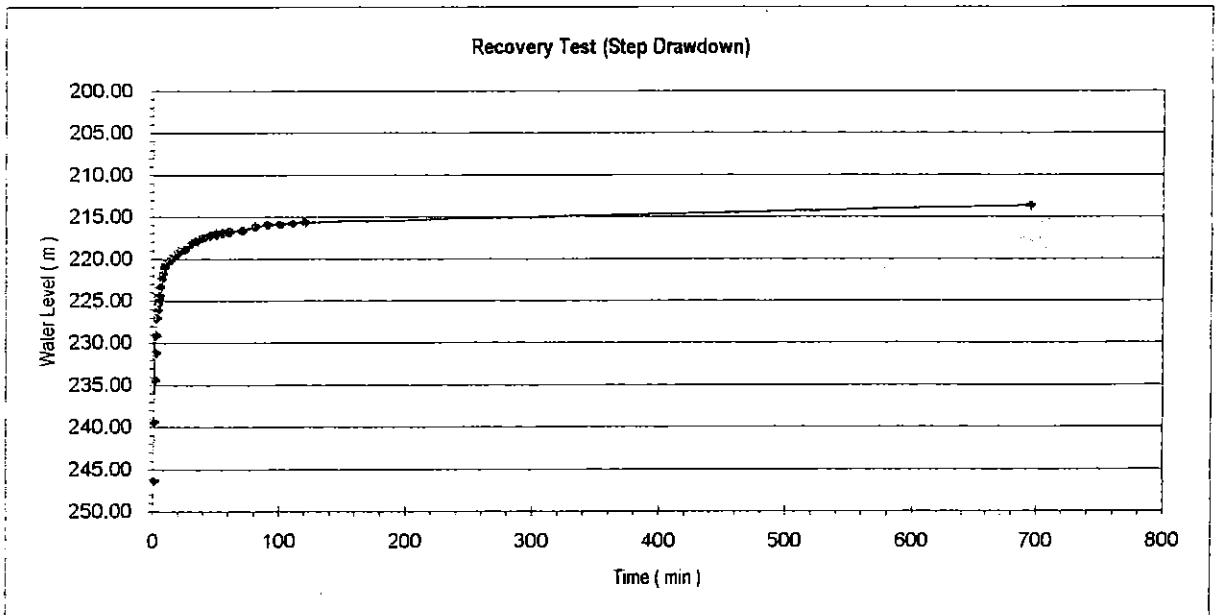
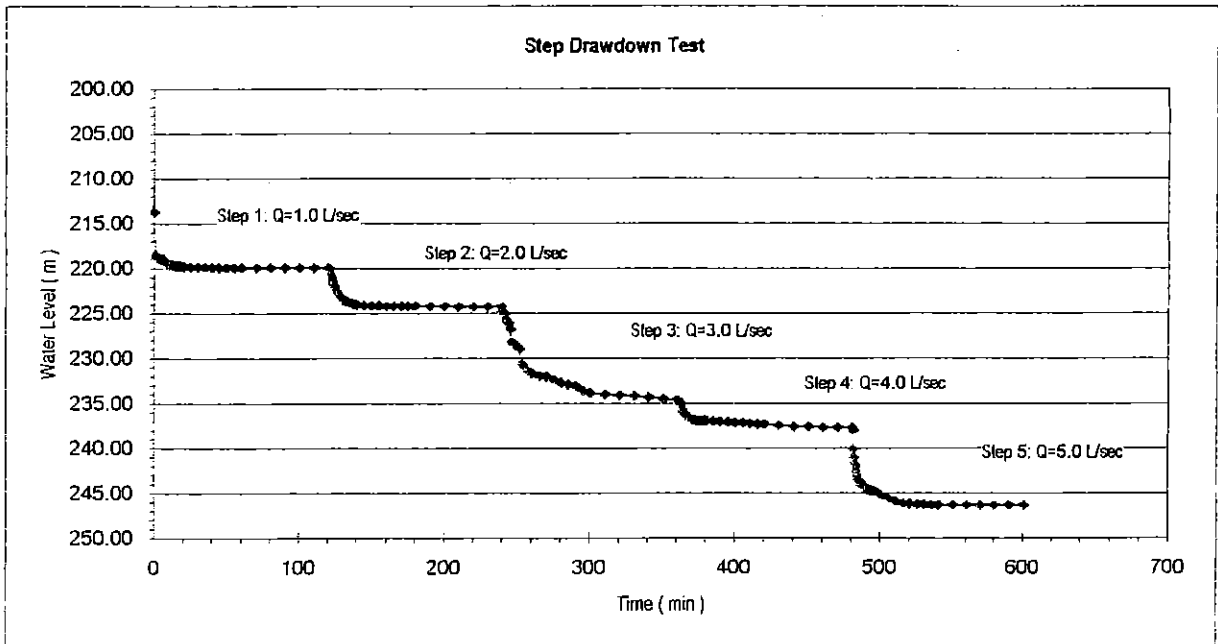


Step	Q (l/sec)	O.W.L. (m)	Ds (m)
1	1.0	219.92	6.23
2	2.0	224.31	10.62
3	3.0	234.59	20.90
4	4.0	237.63	23.94
5	5.0	246.39	32.70

Step Drawdown Test

Well Code: S-05
Site Code: S-05
S.W.L. : 213.69 m

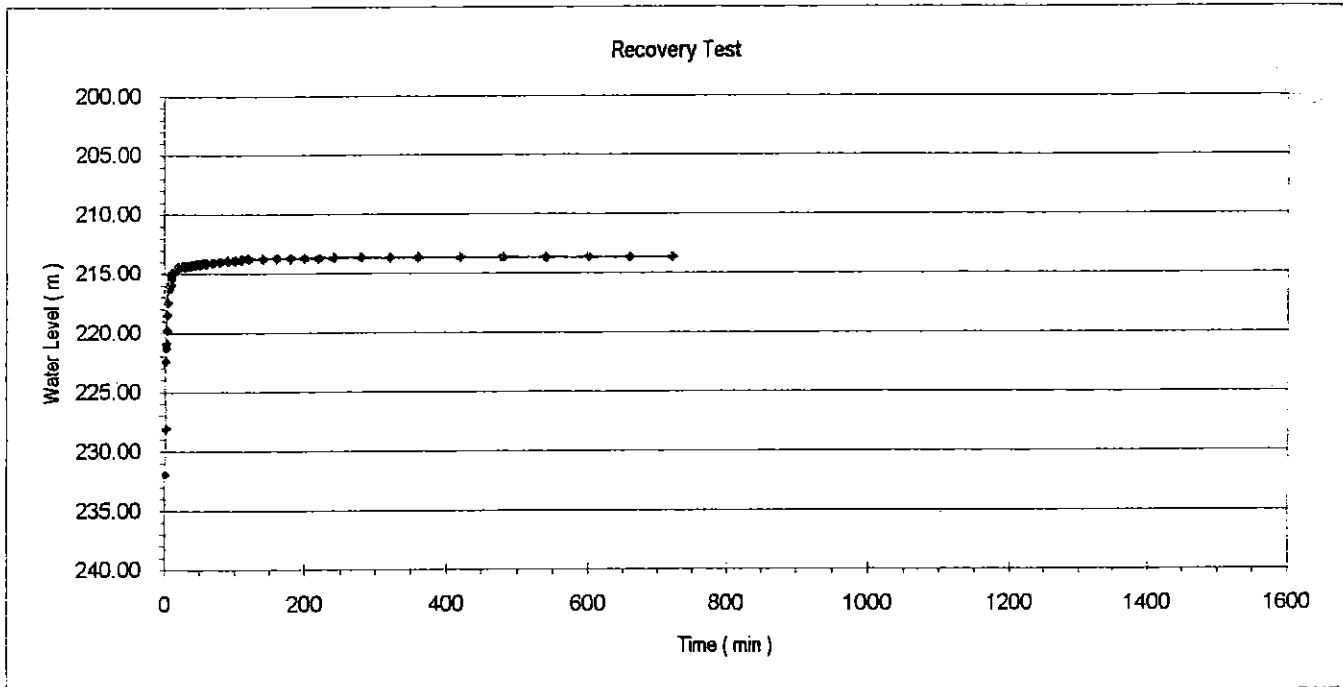
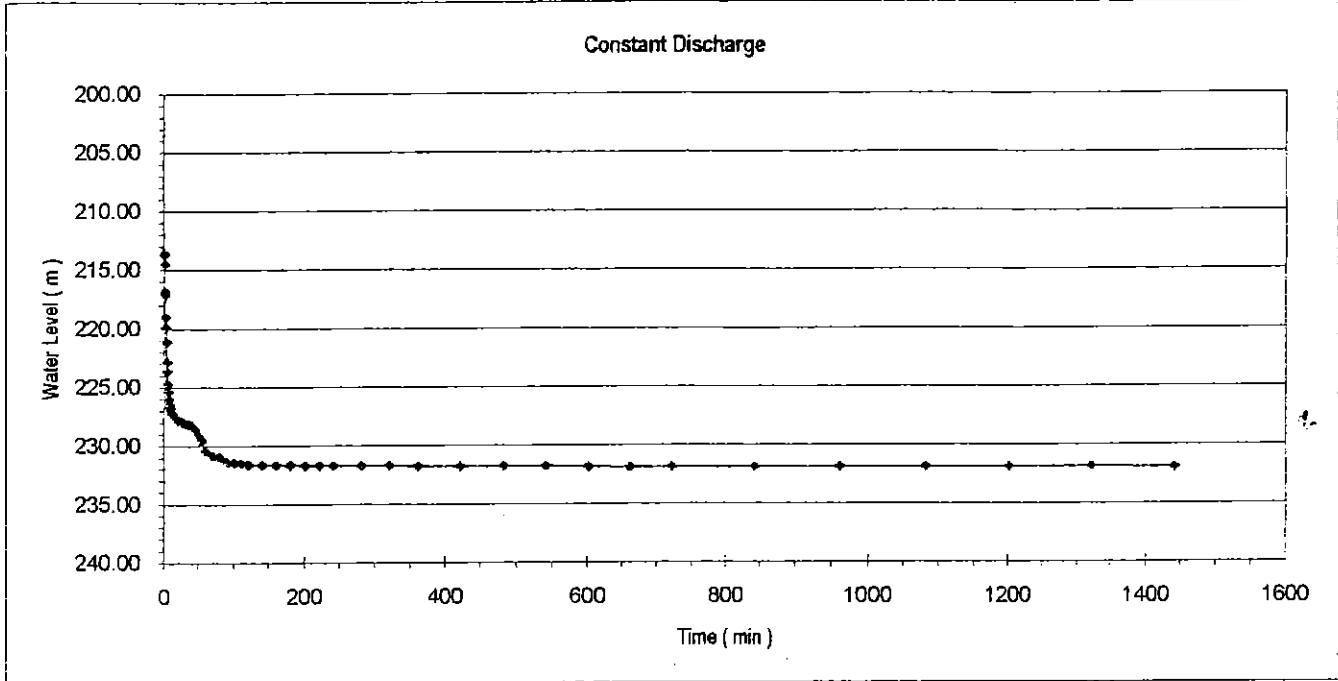
Site Name: Afesh



Constant Discharge Test

Well Code: S-05
Site Code: S-05
S.W.L. (m): 213.69
Yield (L/sec): 3.2

Site Name: Afesh
D.W.L. (m): 237.93 Drawdown (m): 18.24



Pumping Test Report Sheet

Well code: S-06 Site code: S-06 Site name: Al Lejam

District: Sanhan & Bany Bahlool Governorate: Sana'a

Target water source: Existing projected deep well Well depth: 310 m

Contractor: Abdukhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Mohammed Azeen

Date of start of the test: 21/8/2006 Date of end of the test: 24/8/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 220 m Datum level: 0.58 m S.W.L.: G.L.-148.09 m

Step drawdown test

Date/hour started: 22-8-2006-10:30am Date/hour finished: 22-8-2006-8:48pm Total hours: 10:18

Yield (l/sec): 1st step 1.30 2nd step 2.60 3rd step 3.90 4th step 5.20 5th step 6.50

Water level before start the test (G.L.-m): 148.09

Water level after end of 5th step (G.L.-m): 149.95

Water level after recovery (G.L.-m): 148.09 Recovery hours: 0:18

Constant discharge test

Date/hour started: 23-8-2006-6:00am Date/hour finished: 24-8-2006-3:00pm Total hours: 33:00

Yield (l/sec): 3.80

Water level before start of the test (G.L.-m): 148.09

Water level after end of test (G.L.-m): 149.59

Water level after recovery (G.L.-m): 148.10 Recovery hours: 9:00

Drawdown (m): 1.50

Revised by: _____

Name :

Date:

Provisional Step Drawdown Test

Well Code: S-06 Site code: S-06 Pump on date/hour: 21-8-2006-3:50pm
 Site name: Al Lejam Pump off date/hour: 21-8-2006-6:20pm
 District: Sanhan & Bany Bahlool End of recovery hour: 21-8-2006-6:30pm
 Governorate: Sana'a S.W.L (m): 148.67

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	148.67	1.30	148.83	2.60	148.92	3.90	149.43	5.20	149.93	6.50	150.51
0.5	148.74		148.86		149.25		149.81		150.27		148.92
1.0	148.76		148.89		149.41		149.85		150.38		148.87
1.5	148.77		148.91		149.42		149.88		150.44		148.81
2.0	148.77		148.92		149.42		149.92		150.45		148.77
2.5	148.79		148.92		149.42		149.93		150.47		148.71
3.0	148.79		148.92		149.43		149.93		150.51		148.69
3.5	148.79		148.92		149.43		149.93		150.51		148.68
4.0	148.80		148.92		149.43		149.93		150.51		148.68
4.5	148.80		148.92		149.43		149.93		150.51		148.68
5.0	148.81		148.92		149.43		149.93		150.51		148.68
6.0	148.81		148.92		149.43		149.93		150.51		148.67
7.0	148.81		148.92		149.43		149.93		150.51		148.67
8.0	148.81		148.92		149.43		149.93		150.51		148.67
9.0	148.82		148.92		149.43		149.93		150.51		148.67
10.0	148.82		148.92		149.43		149.93		150.51		148.67
12.0	148.83		148.92		149.43		149.93		150.51		
14.0	148.83		148.92		149.43		149.93		150.51		
16.0	148.83		148.92		149.43		149.93		150.51		
18.0	148.83		148.92		149.43		149.93		150.51		
20.0	148.83		148.92		149.43		149.93		150.51		
22.0	148.83		148.92		149.43		149.93		150.51		
24.0	148.83		148.92		149.43		149.93		150.51		
26.0	148.83		148.92		149.43		149.93		150.51		
28.0	148.83		148.92		149.43		149.93		150.51		
30.0	148.83		148.92		149.43		149.93		150.51		
35.0											
40.0											
45.0											
50.0											
60.0											
70.0											
80.0											
90.0											
110.0											
120.0											
240.0											
300.0											
360.0											
420.0											

Step Drawdown Test

Well Code: S-06 Site code: S-06 Pump on date/hour: 22-8-2006-10:30am
 Site name: Al Lejam Pump off date/hour: 22-8-2006-8:30pm
 District: Sanhan & Bany Bahlool End of recovery hour: 22-8-2006-8:48pm
 Governorate: Sana'a S.W.L (m): 148.67

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	148.67	1.30	148.81	2.60	149.24	3.90	149.74	5.20	150.23	6.50	150.53
0.5	148.74		149.18		149.54		150.12		150.34		148.95
1.0	148.76		149.19		149.65		150.20		150.37		148.87
1.5	148.77		149.20		149.67		150.21		150.39		148.83
2.0	148.78		149.21		149.67		150.21		150.40		148.78
2.5	148.78		149.21		149.68		150.21		150.43		148.75
3.0	148.79		149.22		149.68		150.21		150.43		148.71
3.5	148.79		149.22		149.70		150.22		150.43		148.69
4.0	148.80		149.22		149.70		150.22		150.44		148.69
4.5	148.81		149.22		149.70		150.22		150.44		148.69
5.0	148.81		149.22		149.70		150.22		150.44		148.69
6.0	148.81		149.22		149.70		150.22		150.44		148.68
7.0	148.81		149.22		149.70		150.22		150.45		148.68
8.0	148.81		149.22		149.70		150.23		150.45		148.67
9.0	148.81		149.23		149.70		150.23		150.45		148.67
10.0	148.81		149.23		149.70		150.23		150.45		148.67
12.0	148.81		149.23		149.70		150.23		150.45		148.67
14.0	148.81		149.23		149.70		150.23		150.46		148.67
16.0	148.81		149.23		149.71		150.23		150.46		148.67
18.0	148.81		149.23		149.71		150.23		150.47		148.67
20.0	148.81		149.23		149.71		150.23		150.48		
25.0	148.81		149.23		149.71		150.23		150.48		
30.0	148.81		149.23		149.72		150.23		150.48		
35.0	148.81		149.23		149.72		150.23		150.48		
40.0	148.81		149.23		149.72		150.23		150.48		
45.0	148.81		149.23		149.72		150.23		150.49		
50.0	148.81		149.23		149.72		150.23		150.50		
55.0	148.81		149.23		149.72		150.23		150.51		
60.0	148.81		149.23		149.72		150.23		150.51		
70.0	148.81		149.23		149.72		150.23		150.52		
80.0	148.81		149.23		149.73		150.23		150.52		
90.0	148.81		149.24		149.73		150.23		150.52		
100.0	148.81		149.24		149.74		150.23		150.52		
110.0	148.81		149.24		149.74		150.23		150.53		
120.0	148.81		149.24		149.74		150.23		150.53		

Constant Discharge & Recovery Test (1/2)

Well Code: S-06 Site code: S-06

Site name: Al Lejam

Pump on date/hour: 23-8-2006-6:00am

District: Sanhan & Bany Bahlool

Pump off date/hour: 24-8-2006-6:00am

Governorate: Sana'a

End of recovery hour: 24-8-2006-3:00pm

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 148.67

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 150.17

Operator: Mohammed Azeen

Yield (l/sec): 4.2

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	148.67	0.00		150.17	1.50		
0.5	149.58	0.91		149.62	0.95		
1.0	149.73	1.06		149.24	0.57		
1.5	149.77	1.10		149.12	0.45		
2.0	149.80	1.13		148.96	0.29		
2.5	149.81	1.14		148.84	0.17		
3.0	149.81	1.14		148.78	0.11		
3.5	149.82	1.15		148.78	0.11		
4.0	149.83	1.16		148.78	0.11		
4.5	149.83	1.16		148.77	0.10		
5.0	149.83	1.16		148.77	0.10		
6.0	149.83	1.16		148.76	0.09		
7.0	149.83	1.16		148.76	0.09		
8.0	149.83	1.16		148.76	0.09		
9.0	149.83	1.16		148.76	0.09		
10.0	149.83	1.16		148.76	0.09		
12.0	149.84	1.17		148.74	0.07		
14.0	149.84	1.17		148.74	0.07		
16.0	149.84	1.17		148.73	0.06		
18.0	149.84	1.17		148.74	0.07		
20.0	149.84	1.17		148.71	0.04		
25.0	149.84	1.17		148.69	0.02		
30.0	149.84	1.17		148.69	0.02		
35.0	149.84	1.17		148.69	0.02		
40.0	149.84	1.17		148.69	0.02		
45.0	149.84	1.17		148.69	0.02		
50.0	149.84	1.17		148.69	0.02		
55.0	149.84	1.17		148.69	0.02		
60.0	149.84	1.17		148.69	0.02		

Constant Discharge & Recovery Test (2/2)

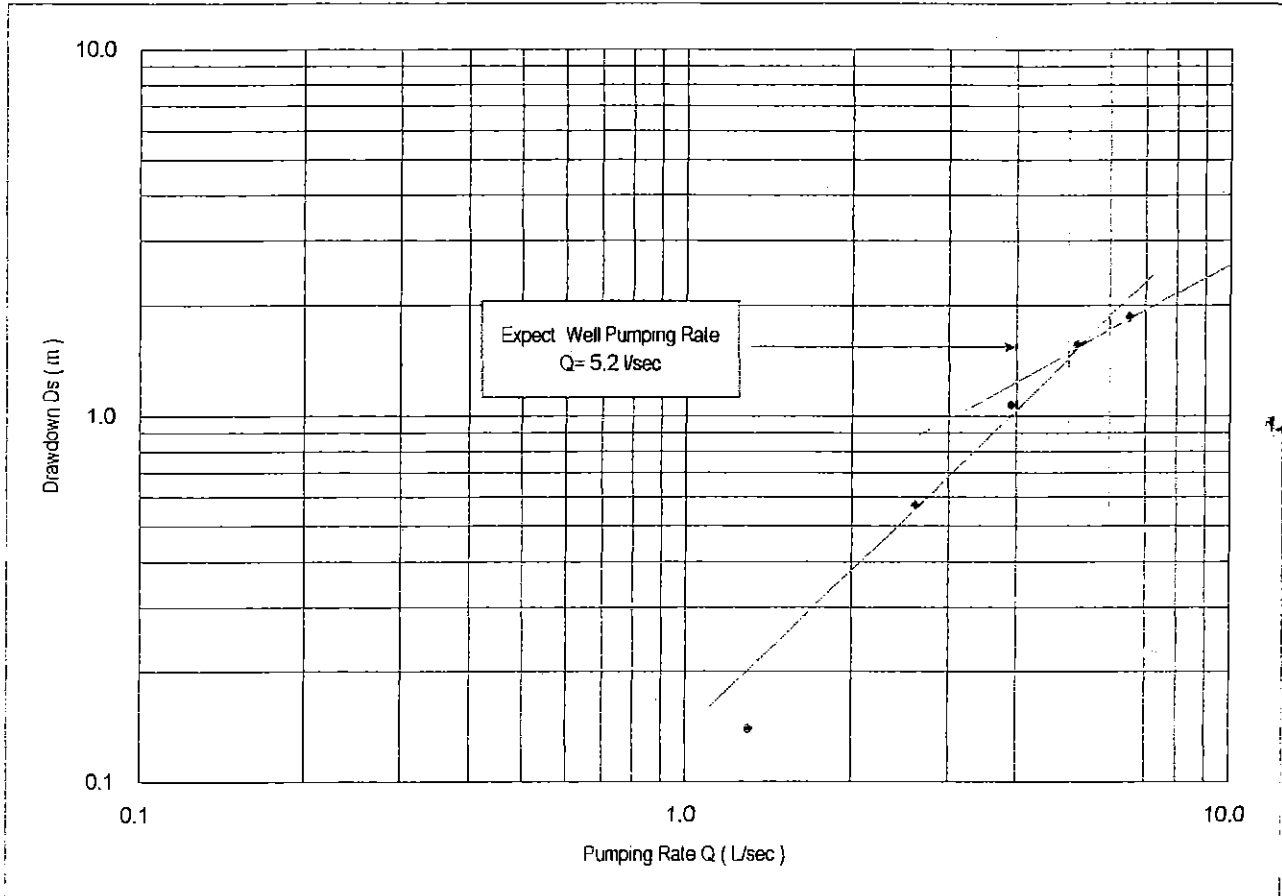
Well Code: S-06 Site code: S-06 Site name: Al Lejam
 District: Sanhan & Bany Bahlool Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	149.84	1.17		148.69	0.02		
80.0	149.84	1.17		148.69	0.02		
90.0	149.85	1.18		148.69	0.02		
100.0	149.85	1.18		148.69	0.02		
110.0	149.85	1.18		148.69	0.02		
120.0	149.86	1.19		148.69	0.02		
140.0	149.86	1.19		148.69	0.02		
160.0	149.87	1.20		148.69	0.02		
180.0	149.87	1.20		148.68	0.01		
200.0	149.88	1.21		148.68	0.01		
220.0	149.88	1.21		148.68	0.01		
240.0	149.89	1.22		148.68	0.01		
280.0	149.89	1.22		148.68	0.01		
320.0	149.90	1.23		148.68	0.01		
360.0	149.91	1.24		148.68	0.01		
420.0	149.95	1.28		148.68	0.01		
480.0	149.93	1.26		148.68	0.01		
540.0	149.93	1.26		148.68	0.01		
600.0	149.93	1.26					
660.0	149.95	1.28					
720.0	149.95	1.28					
840.0	150.09	1.42					
960.0	150.09	1.42					
1080.0	150.12	1.45					
1200.0	150.13	1.46					
1320.0	150.16	1.49					
1440.0	150.17	1.50					

Step Drawdown Test

Well Code: S-06
 Site Code: S-06
 S.W.L.: 148.67 m

Site Name: Al Lejam

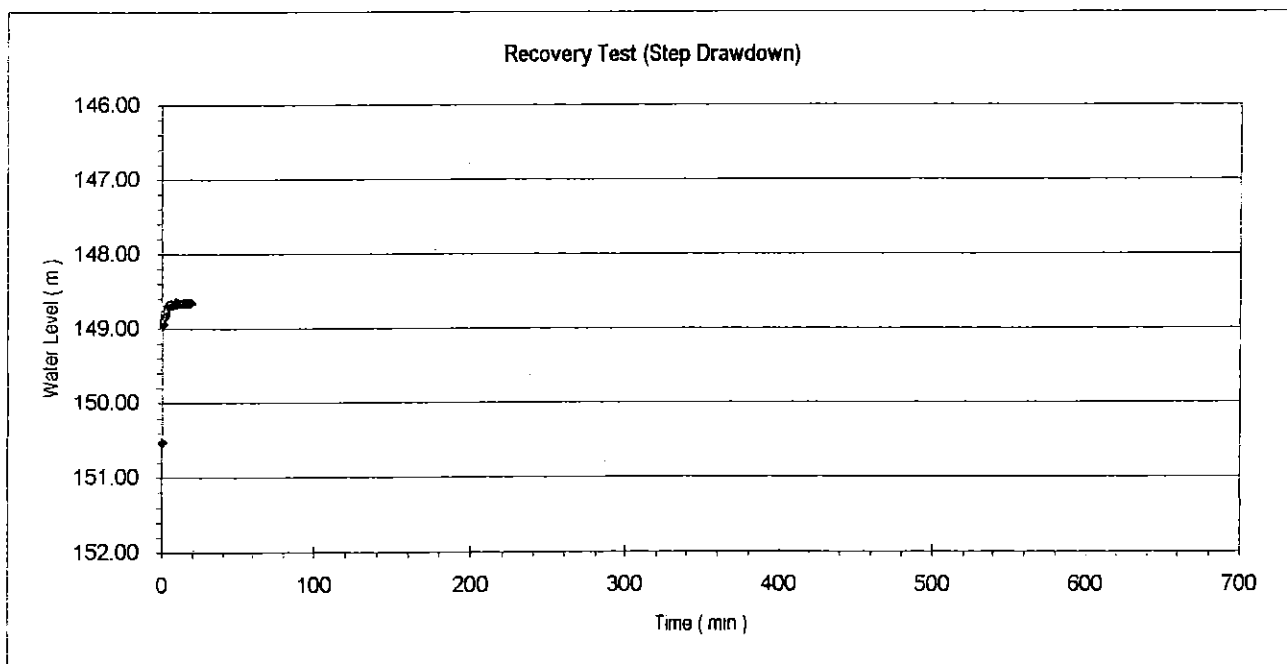
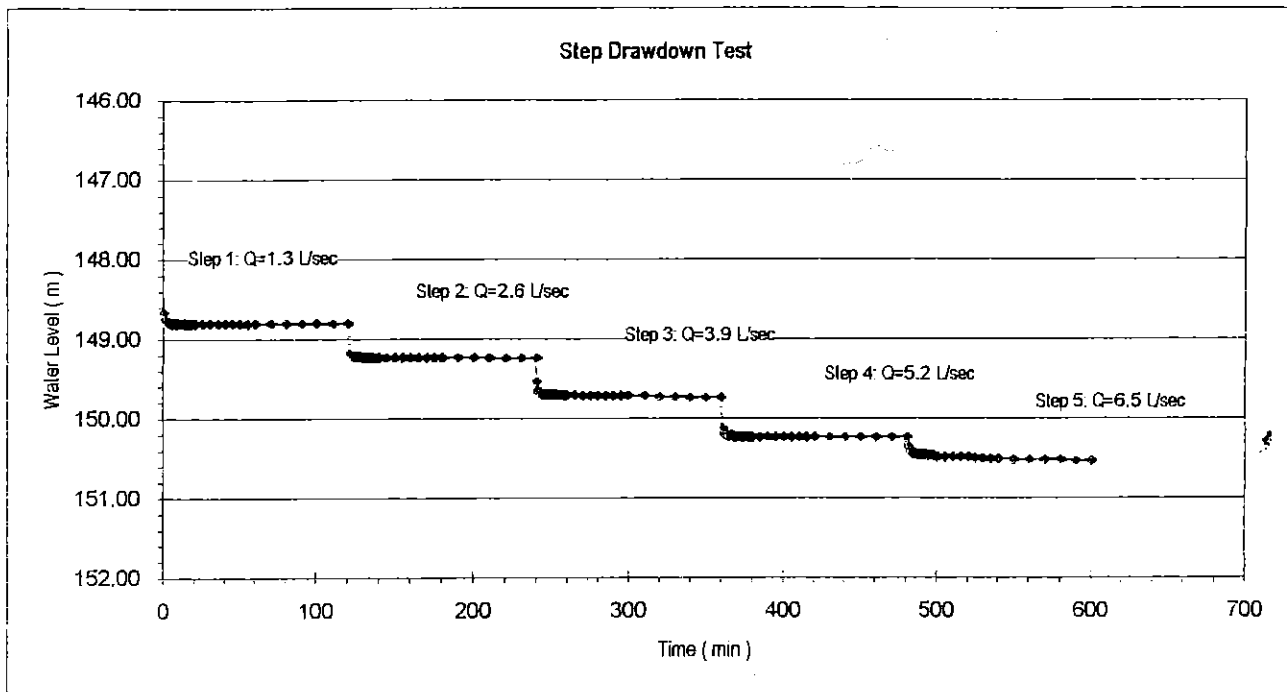


Step	Q (l/sec)	D.W.L. (m)	D _s (m)
1	1.3	148.81	0.14
2	2.6	149.24	0.57
3	3.9	149.74	1.07
4	5.2	150.23	1.56
5	6.5	150.53	1.86

Step Drawdown Test

Well Code: S-06
Site Code: S-06
S.W.L.: 148.67 m

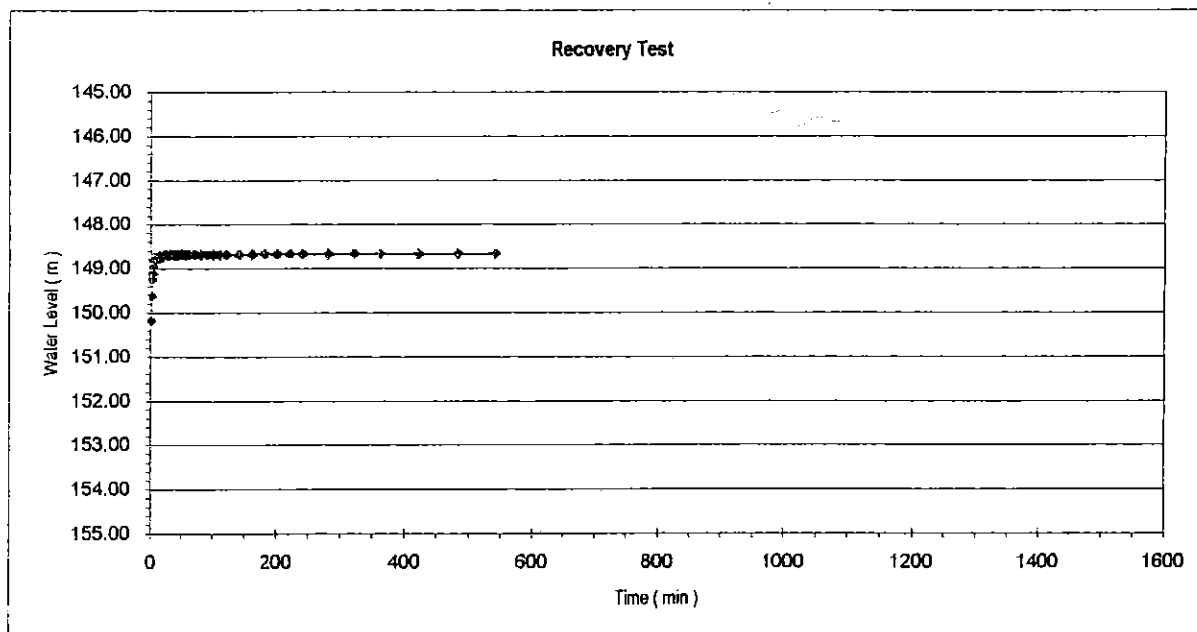
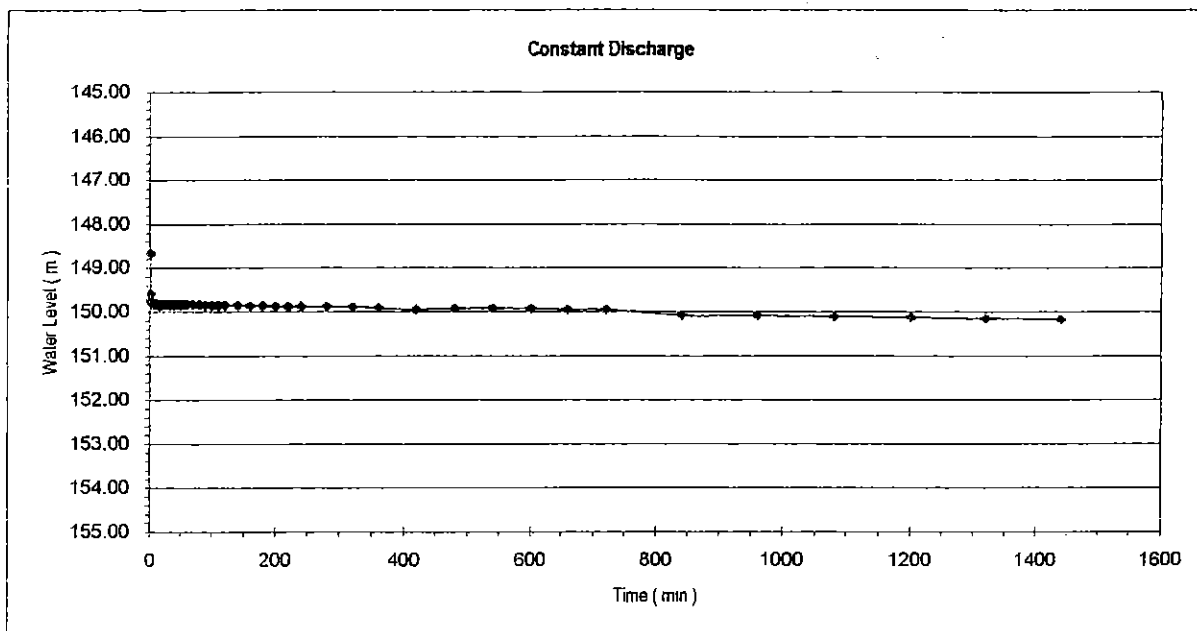
Site Name: Al Lejam



Constant Discharge Test

Well Code: S-06
Site Code: S-06
S.W.L. (m): 148.67
Yield (L/sec): 4.2

Site Name: Al Lejam
D.W.L (m): 150.17 Drawdown (m): 1.50



Pumping Test Report Sheet

Well code: S-07 Site code: S-07 Site name: Bait Al Hadrami

District: Sanhan & Bany Bahlool Governorate: Sana'a

Target water source: Existing projected deep well Well depth: 410 m

Contractor: Abdulkhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Bulul

Date of start of the test: 31/07/2006 Date of end of the test: 04/08/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 291 m Datum level: 0.58 m S.W.L.: G.L.-193.22 m

Step drawdown test

Date/hour started: 1-8-2006-9:55pm Date/hour finished: 2-8-2006-2:55pm Total hours: 17:00

Yield (l/sec): 1st step 1.90 2nd step 3.80 3rd step 5.70 4th step 7.60 5th step 9.50

Water level before start the test (G.L.-m): 193.22

Water level after end of 5th step (G.L.-m): 200.27

Water level after recovery (G.L.-m): 193.22 Recovery hours: 7:00

Constant discharge test

Date/hour started: 2-8-2006-10:40pm Date/hour finished: 4-8-2006-3:40am Total hours: 29:00

Yield (l/sec): 3.20

Water level before start of the test (G.L.-m): 193.22

Water level after end of test (G.L.-m): 200.29

Water level after recovery (G.L.-m): 193.22 Recovery hours: 5:00

Drawdown (m): 7.07

Revised by:

Name :

Date:

Provisional Step Drawdown Test

Well Code: S-07 Site code: S-07 Pump on date/hour: 31-7-2006-11:00pm
 Site name: Bait Al Hadrami Pump off date/hour: 31-7-2006-1:30am
 District: Sanhan & Bany Bahlool End of recovery hour: 1-8-2006-8:15am
 Governorate: Sana'a S.W.L (m): 193.80

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Bulul

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	193.80	1.90	198.10	3.80	198.89	5.70	199.60	7.60	200.14	9.50	200.85
0.5	197.15		198.45		199.21		199.86		200.42		198.22
1.0	197.72		198.61		199.33		199.91		200.52		197.11
1.5	197.86		198.73		199.41		199.99		200.62		196.02
2.0	197.93		198.76		199.42		200.05		200.73		195.07
2.5	198.00		198.80		199.46		200.08		200.75		194.53
3.0	198.00		198.80		199.48		200.08		200.76		193.51
3.5	198.00		198.80		199.48		200.08		200.78		193.49
4.0	198.00		198.80		199.48		200.08		200.78		193.32
4.5	198.00		198.80		199.48		200.08		200.79		193.07
5.0	198.00		198.80		199.48		200.08		200.80		194.06
6.0	198.00		198.80		199.89		200.10		200.81		194.06
7.0	198.00		198.80		199.50		200.11		200.82		194.05
8.0	198.01		198.82		199.51		200.12		200.82		194.05
9.0	198.02		198.84		199.53		200.12		200.82		194.04
10.0	198.03		198.86		199.55		200.12		200.83		194.04
12.0	198.04		198.88		199.56		200.12		200.83		194.04
14.0	198.06		198.88		199.56		200.13		200.83		194.03
16.0	198.07		198.88		199.56		200.13		200.84		194.03
18.0	198.08		198.88		199.57		200.13		200.84		194.03
20.0	198.09		198.88		199.57		200.13		200.84		194.03
22.0	198.10		198.88		199.58		200.14		200.84		194.02
24.0	198.10		198.88		199.58		200.14		200.84		194.01
26.0	198.10		198.88		199.58		200.14		200.85		194.00
28.0	198.10		198.89		199.59		200.14		200.85		193.99
30.0	198.10		198.89		199.60		200.14		200.85		193.99
35.0											193.98
40.0											193.97
45.0											193.95
50.0											193.94
60.0											193.94
70.0											193.93
80.0											193.93
90.0											193.93
110.0											193.88
120.0											193.85
240.0											193.81
300.0											193.80
360.0											193.80
420.0											193.80

Step Drawdown Test

Well Code: S-07 Site code: S-07 Pump on date/hour: 1-8-2006-9:55pm
 Site name: Bait Al Hadrami Pump off date/hour: 2-8-2006-7:55am
 District: Sanhan & Bany Bahlool End of recovery hour: 2-8-2006-2:55pm
 Governorate: Sana'a S.W.L (m): 193.80

Contractor: Abdulkhaleq M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Bulul

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	193.80	1.90	197.24	3.80	198.03	5.70	199.21	7.60	200.16	9.50	200.87
0.5	195.33		197.62		198.35		199.65		200.25		198.25
1.0	196.50		197.85		198.71		200.00		200.35		197.26
1.5	196.20		198.00		198.89		200.00		200.43		196.83
2.0	196.21		198.00		198.91		200.00		200.47		196.35
2.5	196.23		198.00		198.99		200.00		200.50		196.02
3.0	196.26		198.00		199.00		200.00		200.53		195.85
3.5	196.31		198.00		199.00		200.00		200.57		195.23
4.0	196.37		198.00		199.00		200.00		200.59		195.00
4.5	196.42		198.00		199.00		200.01		200.63		194.72
5.0	196.48		198.01		199.00		200.01		200.65		194.71
6.0	196.55		198.01		199.00		200.01		200.65		194.70
7.0	196.61		198.01		199.01		200.02		200.65		194.55
8.0	196.66		198.01		199.01		200.02		200.65		194.47
9.0	196.72		198.01		199.01		200.03		200.65		194.40
10.0	196.77		198.01		199.01		200.04		200.65		194.36
12.0	196.80		198.01		199.02		200.05		200.65		194.35
14.0	196.92		198.01		199.03		200.06		200.65		194.29
16.0	196.95		198.01		199.05		200.07		200.67		194.28
18.0	196.98		198.02		199.07		200.08		200.73		194.25
20.0	197.00		198.02		199.07		200.10		200.79		194.19
25.0	197.05		198.02		199.08		200.12		200.85		194.19
30.0	197.07		198.02		199.09		200.13		200.87		194.17
35.0	197.14		198.03		199.10		200.14		200.87		194.17
40.0	197.18		198.03		199.11		200.15		200.87		194.17
45.0	197.20		198.03		199.12		200.15		200.87		194.16
50.0	197.21		198.03		199.13		200.16		200.87		194.15
55.0	197.21		198.03		199.14		200.16		200.87		194.14
60.0	197.22		198.03		199.15		200.16		200.87		194.13
70.0	197.23		198.03		199.17		200.16		200.87		194.10
80.0	197.23		198.03		199.19		200.16		200.87		194.07
90.0	197.23		198.03		199.21		200.16		200.87		194.05
100.0	197.24		198.03		199.21		200.16		200.87		194.04
110.0	197.24		198.03		199.21		200.16		200.87		194.02
120.0	197.24		198.03		199.21		200.16		200.87		193.97
180.0											193.88
240.0											193.85
300.0											193.83
420.0											193.80

Constant Discharge & Recovery Test (1/2)

Well Code: S-07 Site code: S-07

Site name: Bait Al Hadrami

Pump on date/hour: 2-8-2006-10:40pm

District: Sanhan & Bany Bahlool

Pump off date/hour: 3-8-2006-10:40pm

Governorate: Sana'a

End of recovery hour: 4-8-2006-3:40am

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 193.80

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 197.70

Operator: Bulul

Yield (l/sec): 3.2

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	193.80	0.00		197.70	3.90		
0.5	196.23	2.43		196.78	2.98		
1.0	197.07	3.27		196.33	2.53		
1.5	197.21	3.41		195.88	2.08		
2.0	197.33	3.53		195.33	1.53		
2.5	197.41	3.61		195.08	1.28		
3.0	197.50	3.70		194.99	1.19		
3.5	197.51	3.71		194.91	1.11		
4.0	197.52	3.72		194.82	1.02		
4.5	197.52	3.72		194.73	0.93		
5.0	197.53	3.73		194.66	0.86		
6.0	197.53	3.73		194.58	0.78		
7.0	197.54	3.74		194.51	0.71		
8.0	197.54	3.74		194.23	0.43		
9.0	197.54	3.74		194.12	0.32		
10.0	197.55	3.75		194.05	0.25		
12.0	197.55	3.75		194.02	0.22		
14.0	197.55	3.75		193.99	0.19		
16.0	197.55	3.75		193.98	0.18		
18.0	197.55	3.75		193.97	0.17		
20.0	197.55	3.75		193.96	0.16		
25.0	197.55	3.75		193.94	0.14		
30.0	197.55	3.75		193.92	0.12		
35.0	197.55	3.75		193.91	0.11		
40.0	197.55	3.75		193.90	0.10		
45.0	197.55	3.75		193.88	0.08		
50.0	197.55	3.75		193.87	0.07		
55.0	197.55	3.75		193.86	0.06		
60.0	197.55	3.75		193.85	0.05		

Constant Discharge & Recovery Test (2/2)

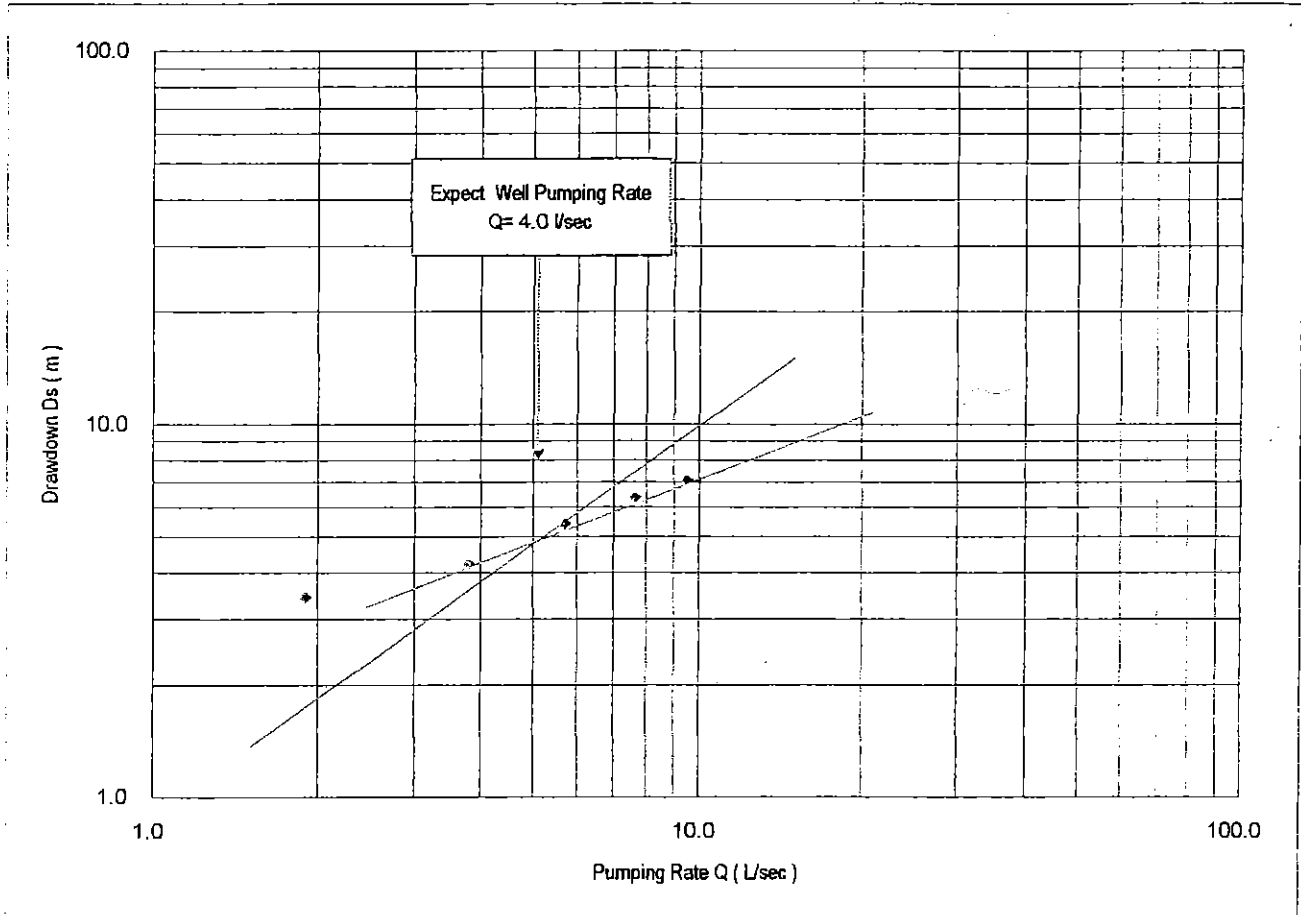
Well Code: S-07 Site code: S-07 Site name: Bait Al Hadrami
 District: Sanhan & Bany Bahlool Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	197.55	3.75		193.84	0.04		
80.0	197.56	3.76		193.84	0.04		
90.0	197.56	3.76		193.83	0.03		
100.0	197.56	3.76		193.83	0.03		
110.0	197.57	3.77		193.83	0.03		
120.0	197.57	3.77		193.82	0.02		
140.0	197.57	3.77		193.82	0.02		
160.0	197.58	3.78		193.81	0.01		
180.0	197.58	3.78		193.81	0.01		
200.0	197.59	3.79		193.81	0.01		
220.0	197.59	3.79		193.80	0.00		
240.0	197.59	3.79		193.80	0.00		
280.0	197.60	3.80		193.80	0.00		
320.0	197.62	3.82		193.80	0.00		
360.0	197.63	3.83					
420.0	197.65	3.85					
480.0	197.67	3.87					
540.0	197.68	3.88					
600.0	197.68	3.88					
660.0	197.70	3.90					
720.0	197.70	3.90					
840.0	197.70	3.90					
960.0	197.70	3.90					
1080.0	197.70	3.90					
1200.0	197.70	3.90					
1320.0	197.70	3.90					
1440.0	197.70	3.90					

Step Drawdown Test

Well Code: S-07
 Site Code: S-07
 S.W.L.: 193.80 m

Site Name: Bait Al Hadrami

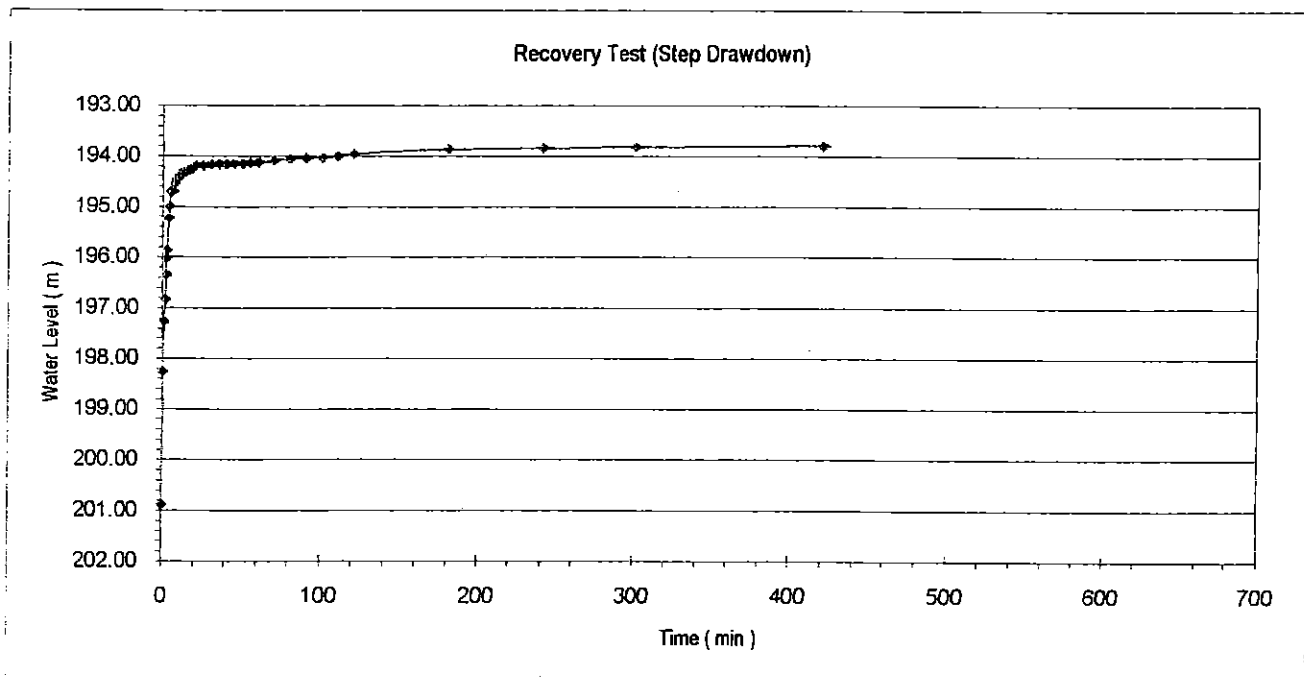
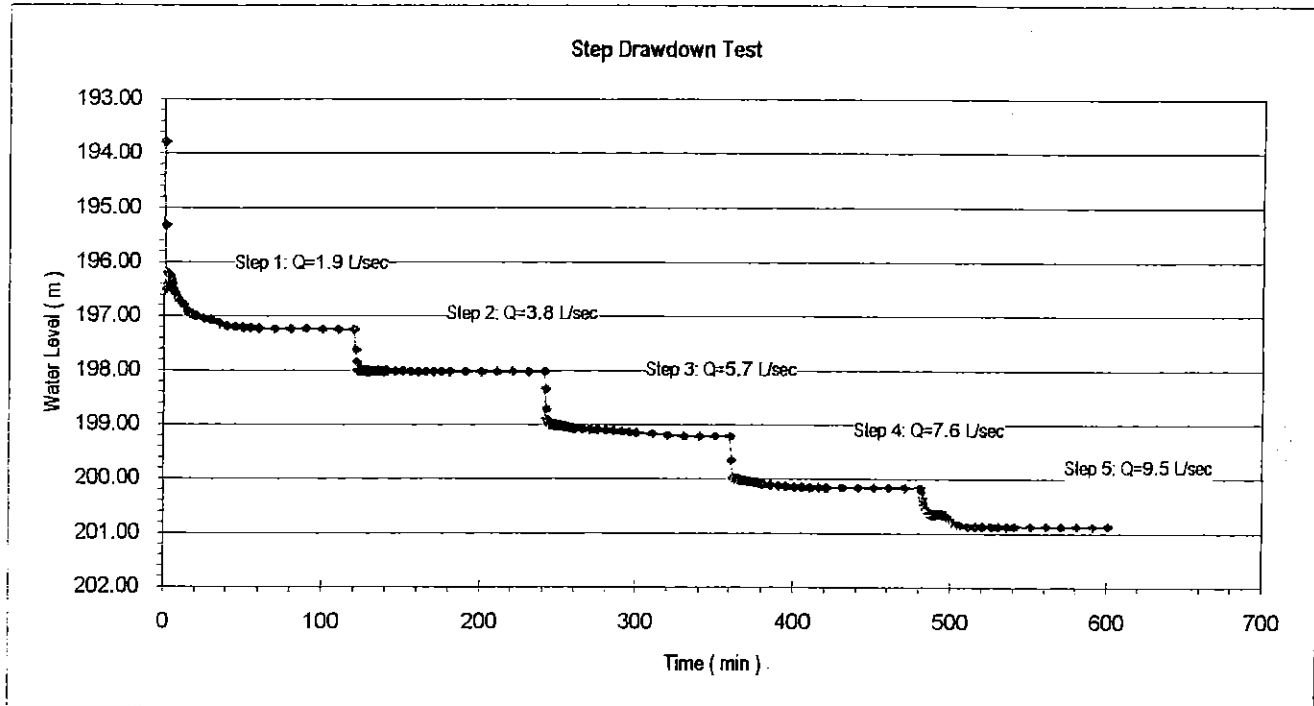


Step	Q (l/sec)	D.W.L.(m)	D s (m)
1	1.9	197.24	3.44
2	3.8	198.03	4.23
3	5.7	199.21	5.41
4	7.6	200.16	6.36
5	9.5	200.87	7.07

Step Drawdown Test

Well Code: S-07
Site Code: S-07
S.W.L.: 193.80 m

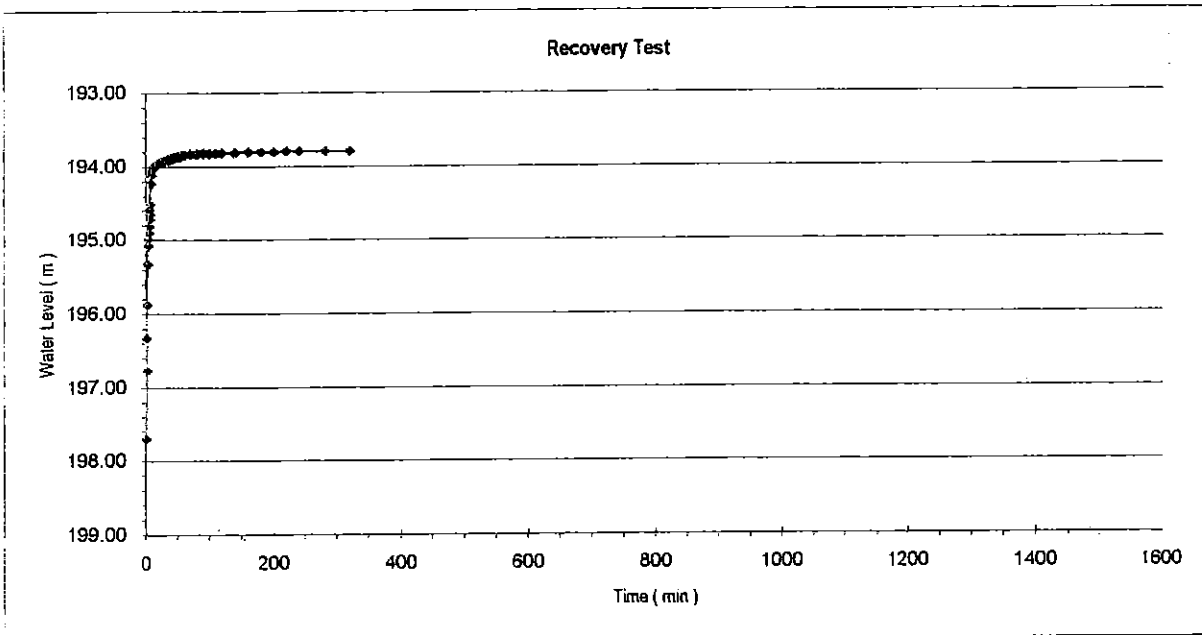
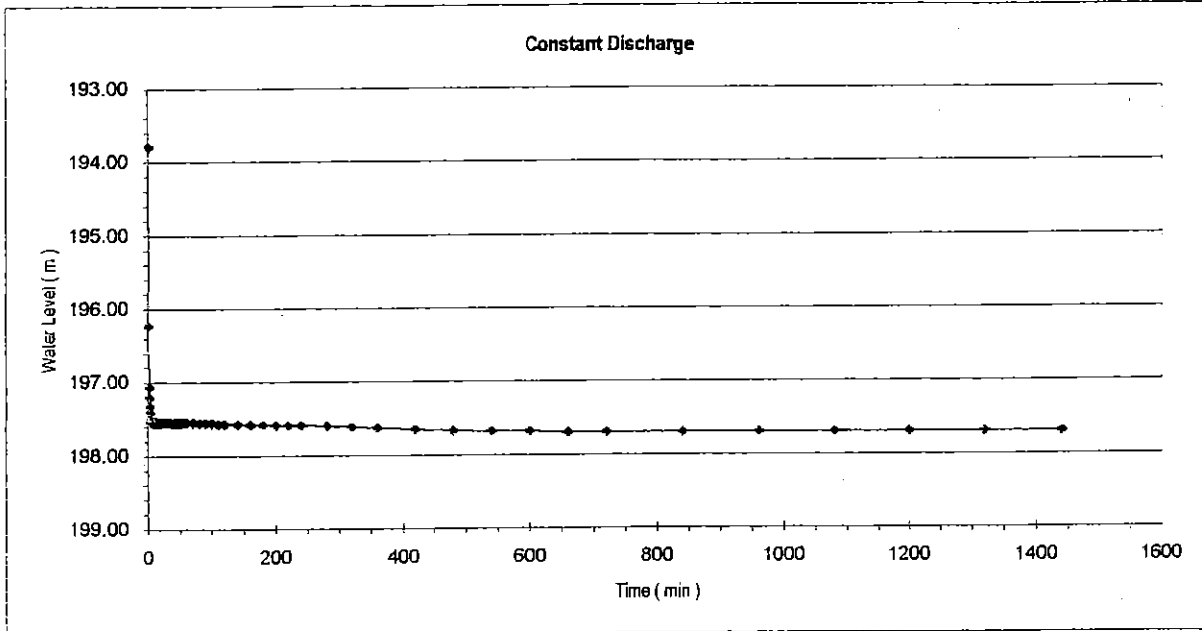
Site Name: Bait Al Hadrami



Constant Discharge Test

Well Code: S-07
Site Code: S-07
S.W.L. (m): 193.80
Yield (L/sec): 3.2

Site Name: Bait Al Hadrami
D.W.L. (m): 197.70 Drawdown (m): 3.90



Pumping Test Report Sheet

Well code: S-09 Site code: S-09 Site name: Ruhm

District: Sanhan & Bany Bahlool Governorate: Sana'a

Target water source: New projected deep well Well depth: 470 m

Contractor: Abdukhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Mohammed Azeen

Date of start of the test: 21/8/2006 Date of end of the test: 23/8/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 290 m Datum level: 0.65 m S.W.L.: G.L.-192.45 m

Step drawdown test

Date/hour started: 21-8-2006-7:30pm Date/hour finished: 22-8-2006-3:00pm Total hours: 17:30

Yield (l/sec): 1st step 1.00 2nd step 2.00 3rd step 3.00 4th step 4.00 5th step 5.00

Water level before start the test (G.L.-m): 192.45

Water level after end of 5th step (G.L.-m): 253.58

Water level after recovery (G.L.-m): 192.45 Recovery hours: 7:30

Constant discharge test

Date/hour started: 22-8-2006-3:05pm Date/hour finished: 23-8-2006-10:05pm Total hours: 31:00

Yield (l/sec): 3.00

Water level before start of the test (G.L.-m): 192.45

Water level after end of test (G.L.-m): 227.90

Water level after recovery (G.L.-m): 192.45 Recovery hours: 7:00

Drawdown (m): 35.45

Revised by:

Name :

Date:

Provisional Step Drawdown Test

Well Code: S-09 Site code: S-09 Pump on date/hour: 21-8-2006-9:00am
 Site name: Ruhm Pump off date/hour: 21-8-2006-11:30am
 District: Sanhan & Bany Bahlool End of recovery hour: 21-8-2006-7:20pm
 Governorate: Sana'a S.W.L (m): 192.50

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	192.50	1.00	199.68	2.00	202.83	3.00	209.23	4.00	218.34	5.00	233.56
0.5	194.27		199.71		203.09		209.92		218.60		227.09
1.0	195.36		199.79		204.04		210.47		219.06		222.10
1.5	196.27		200.03		204.60		210.66		219.48		217.77
2.0	196.93		200.47		205.08		211.67		220.01		216.13
2.5	197.28		200.68		205.49		211.99		220.63		213.66
3.0	197.94		200.77		205.58		212.12		221.13		212.57
3.5	198.09		200.84		205.81		212.47		221.43		211.01
4.0	198.23		200.86		205.94		212.88		221.74		210.33
4.5	198.36		200.91		206.00		213.17		222.72		209.87
5.0	198.49		200.92		206.18		213.86		223.83		209.42
6.0	198.62		200.93		206.27		214.17		224.23		208.00
7.0	198.73		201.04		206.51		214.23		225.99		207.12
8.0	198.86		201.27		206.77		214.29		226.30		206.11
9.0	198.94		201.45		206.89		214.87		226.81		205.13
10.0	199.16		201.84		207.18		215.07		227.64		203.87
12.0	199.37		202.09		207.29		215.82		228.77		201.37
14.0	199.37		202.38		207.31		216.48		229.69		200.23
16.0	199.37		202.41		207.41		216.97		230.53		199.37
18.0	199.37		202.43		207.52		217.32		231.23		199.02
20.0	199.41		202.44		207.68		217.88		231.79		198.83
22.0	199.52		202.46		208.01		218.09		232.28		198.65
24.0	199.63		202.48		208.61		218.11		232.69		198.27
26.0	199.68		202.51		208.98		218.19		232.98		197.83
28.0	199.68		202.67		209.13		218.27		233.27		197.63
30.0	199.68		202.83		209.23		218.34		233.56		197.42
50.0											197.01
55.0											196.74
60.0											196.13
70.0											195.37
80.0											194.77
90.0											197.22
100.0											194.07
110.0											193.41
120.0											193.27
140.0											193.23
160.0											193.20
180.0											193.17
200.0											193.10
220.0											193.13

Step Drawdown Test (1/2)

Well Code: S-09 Site code: S-09 Pump on date/hour: 21-8-2006-7:30pm
 Site name: Ruhm Pump off date/hour: 22-8-2006-5:30am
 District: Sanhan & Bany Bahlool End of recovery hour: 22-8-2006-3:00pm
 Governorate: Sana'a S.W.L (m): 193.10

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	193.10	1.00	199.69	2.00	204.11	3.00	215.48	4.00	226.70	5.00	254.23
0.5	194.38		200.43		204.63		216.10		227.56		247.00
1.0	195.41		200.64		204.92		216.57		228.47		246.10
1.5	195.63		200.92		205.25		217.00		229.08		241.57
2.0	195.87		201.04		205.79		217.42		229.42		237.11
2.5	196.02		201.16		206.11		217.93		229.49		234.22
3.0	196.15		201.24		206.36		218.32		230.53		231.73
3.5	196.23		201.39		206.84		218.57		230.97		229.03
4.0	196.38		201.48		207.09		219.20		231.48		228.90
4.5	196.49		201.61		207.44		219.68		232.07		228.01
5.0	196.62		201.85		207.62		219.92		232.44		227.29
6.0	196.85		202.27		207.97		220.56		233.48		224.79
7.0	195.99		202.31		208.36		221.00		234.07		223.16
8.0	197.17		202.44		208.57		221.64		234.44		221.36
9.0	197.38		202.57		208.72		221.89		234.69		219.47
10.0	197.58		202.63		208.98		222.23		234.70		217.39
12.0	197.69		202.70		209.36		222.77		234.89		214.94
14.0	197.79		202.82		209.97		223.34		235.00		212.41
16.0	197.87		202.84		210.43		223.63		237.03		210.21
18.0	197.92		202.93		210.82		223.87		238.16		207.83
20.0	197.98		202.97		211.02		224.02		239.10		206.17
25.0	198.01		203.00		211.29		224.41		241.33		202.21
30.0	198.04		203.12		211.62		224.52		243.12		199.47
35.0	198.06		203.15		211.76		224.60		244.88		198.13
40.0	198.07		203.17		211.97		224.63		244.97		197.27
45.0	198.07		203.18		212.32		224.67		245.09		196.53
50.0	198.07		203.20		212.44		224.71		246.64		196.33
55.0	198.07		203.23		212.63		224.73		247.61		196.05
60.0	198.11		203.27		212.94		224.75		248.69		195.89
70.0	198.37		203.31		213.11		224.78		249.69		195.51
80.0	198.47		203.47		213.23		224.81		250.53		195.13
90.0	198.73		203.74		213.49		224.84		251.37		194.93
100.0	199.47		204.03		213.82		225.38		252.41		194.72
110.0	199.49		204.08		214.74		225.87		253.39		194.55
120.0	199.96		204.11		215.48		226.70		254.23		194.47
130.0											194.17
140.0											193.76
150.0											193.45
160.0											193.31
170.0											193.27

Constant Discharge & Recovery Test (1/2)

Well Code: S-09 Site code: S-09

Site name: Ruhm

Pump on date/hour: 22-8-2006-3:05pm

District: Sanhan & Bany Bahlool

Pump off date/hour: 23-8-2006-3:05pm

Governorate: Sana'a

End of recovery hour: 23-8-2006-10:05pm

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 193.10

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 228.55

Operator: Mohrmed Azeen

Yield (l/sec): 3.0

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	193.10	0.00		228.55	35.45		
0.5	198.00	4.90		223.61	30.51		
1.0	198.92	5.82		220.56	27.46		
1.5	199.51	6.41		218.77	25.67		
2.0	200.27	7.17		217.00	23.90		
2.5	201.36	8.26		215.04	21.94		
3.0	202.29	9.19		214.18	21.08		
3.5	203.04	9.94		213.33	20.23		
4.0	203.62	10.52		212.22	19.12		
4.5	204.19	11.09		211.99	18.89		
5.0	204.73	11.63		211.31	18.21		
6.0	205.51	12.41		211.79	18.69		
7.0	206.41	13.31		210.23	17.13		
8.0	207.38	14.28		210.18	17.08		
9.0	207.99	14.89		209.98	16.88		
10.0	208.67	15.57		209.66	16.56		
12.0	209.88	16.78		209.17	16.07		
14.0	210.67	17.57		208.63	15.53		
16.0	211.92	18.82		207.91	14.81		
18.0	212.09	18.99		206.06	12.96		
20.0	212.70	19.60		205.69	12.59		
25.0	213.59	20.49		204.53	11.43		
30.0	214.01	20.91		203.65	10.55		
35.0	214.55	21.45		203.03	9.93		
40.0	215.06	21.96		202.88	9.78		
45.0	215.54	22.44		201.28	8.18		
50.0	216.07	22.97		200.99	7.89		
55.0	217.03	23.93		199.59	6.49		
60.0	217.43	24.33		198.17	5.07		

Constant Discharge & Recovery Test (2/2)

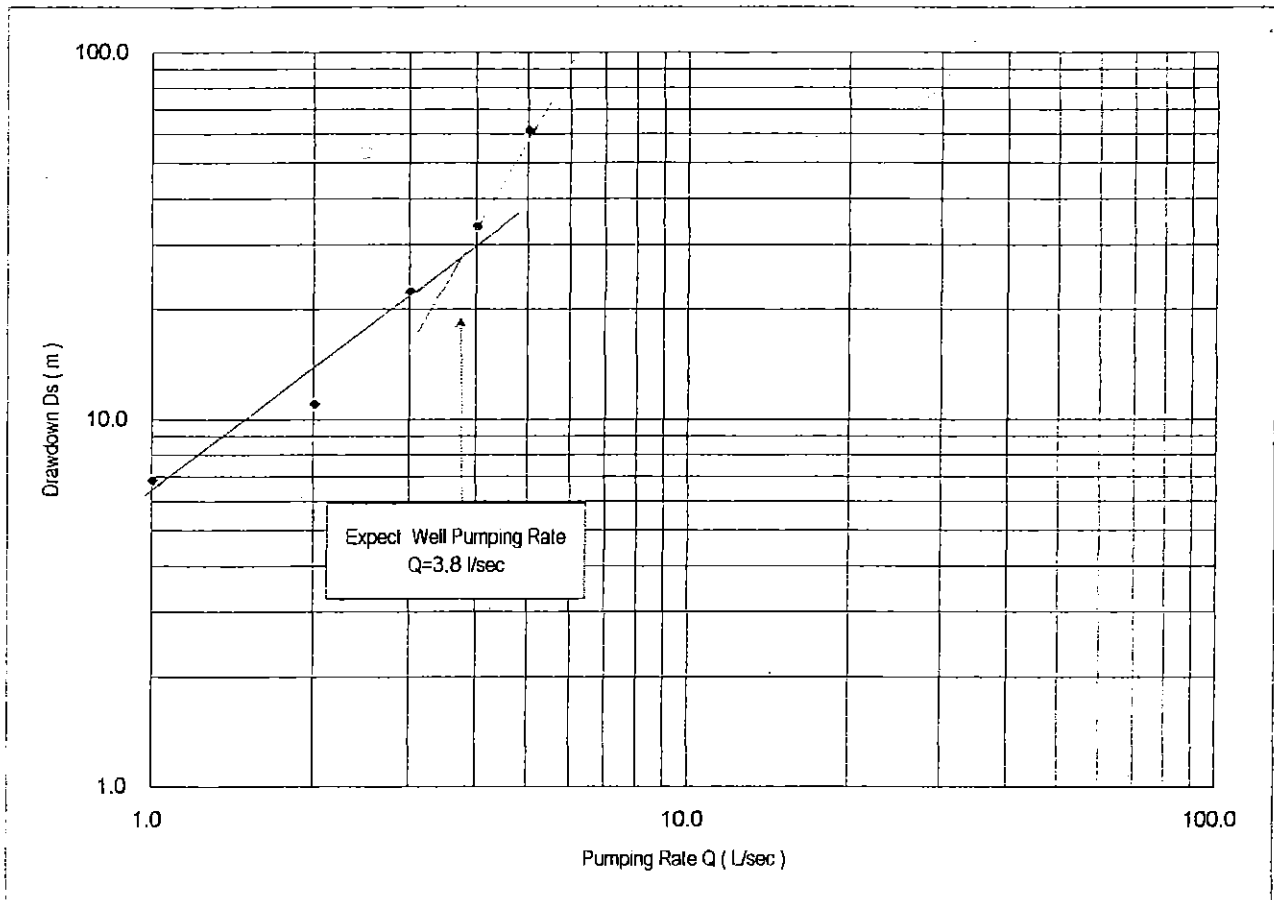
Well Code: S-09 Site code: S-09 Site name: Ruhm
 District: Sanhan & Bany Bahlool Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	217.93	24.83		197.47	4.37		
80.0	218.67	25.57		197.38	4.28		
90.0	219.39	26.29		197.01	3.91		
100.0	219.92	26.82		196.98	3.88		
110.0	220.31	27.21		196.40	3.30		
120.0	220.79	27.69		196.03	2.93		
140.0	221.19	28.09		195.99	2.89		
160.0	221.56	28.46		195.41	2.31		
180.0	221.91	28.81		195.05	1.95		
200.0	222.24	29.14		194.98	1.88		
220.0	222.55	29.45		194.45	1.35		
240.0	223.17	30.07		194.08	0.98		
280.0	223.48	30.38		193.88	0.78		
320.0	223.73	30.63		193.46	0.36		
360.0	224.09	30.99		193.37	0.27		
420.0	224.43	31.33		193.10	0.00		
480.0	224.73	31.63					
540.0	225.12	32.02					
600.0	225.30	32.20					
660.0	225.58	32.48					
720.0	225.84	32.74					
840.0	226.46	33.36					
960.0	226.98	33.88					
1080.0	227.45	34.35					
1200.0	227.88	34.78					
1320.0	228.23	35.13					
1440.0	228.55	35.45					

Step Drawdown Test

Well Code: S-09
 Site Code: S-09
 S.W.L.: 193.10 m

Site Name: Ruhm

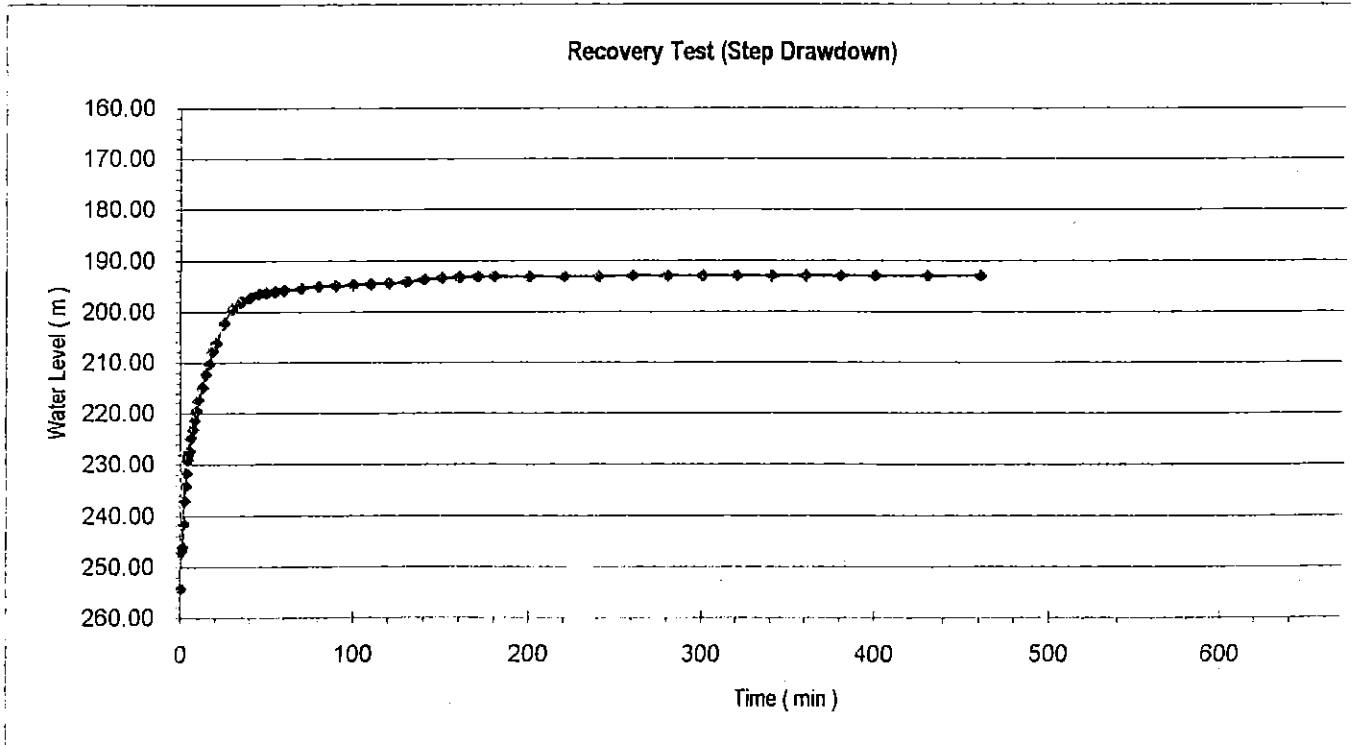
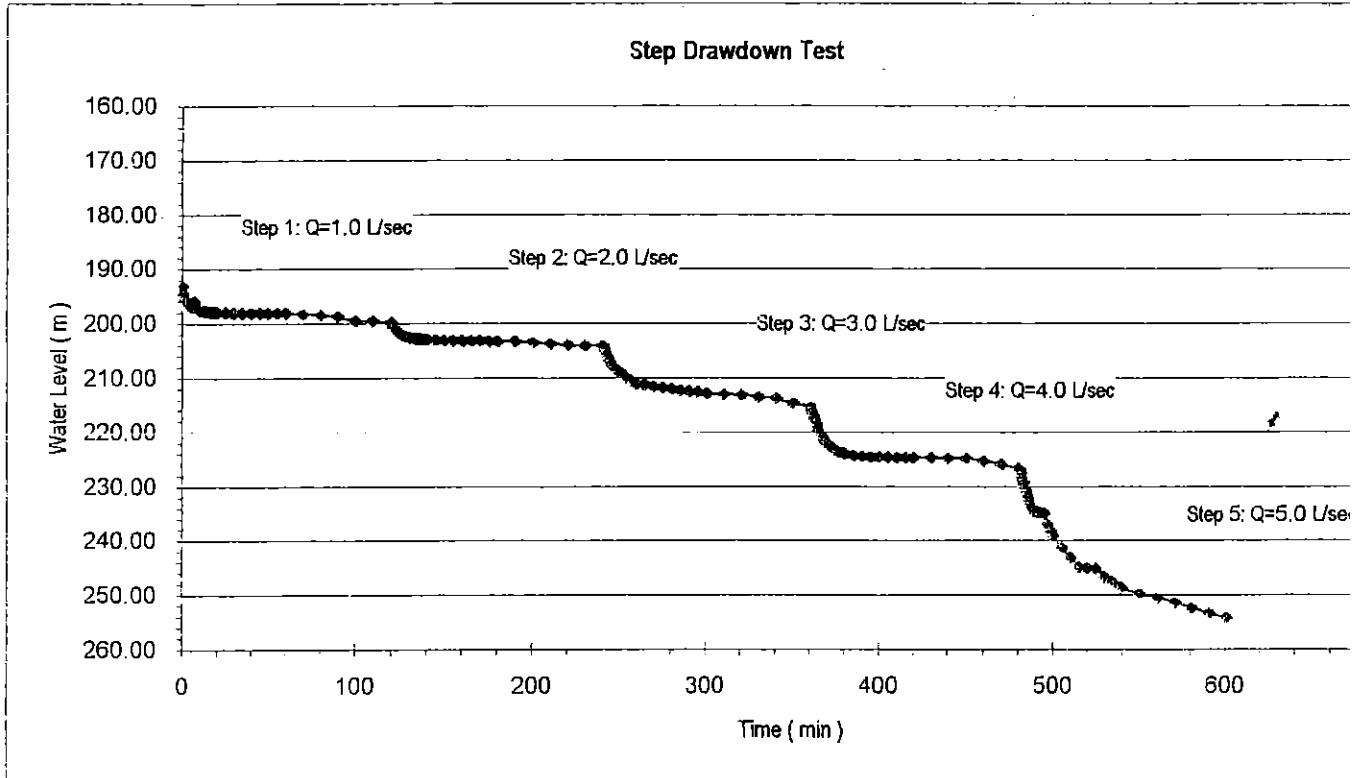


Step	Q (l/sec)	D.W.L.(m)	Ds (m)
1	1.0	199.96	6.86
2	2.0	204.11	11.01
3	3.0	215.48	22.38
4	4.0	226.70	33.60
5	5.0	254.23	61.13

Step Drawdown Test

Well Code: S-09
Site Code: S-09
S.W.L. : 193.10 m

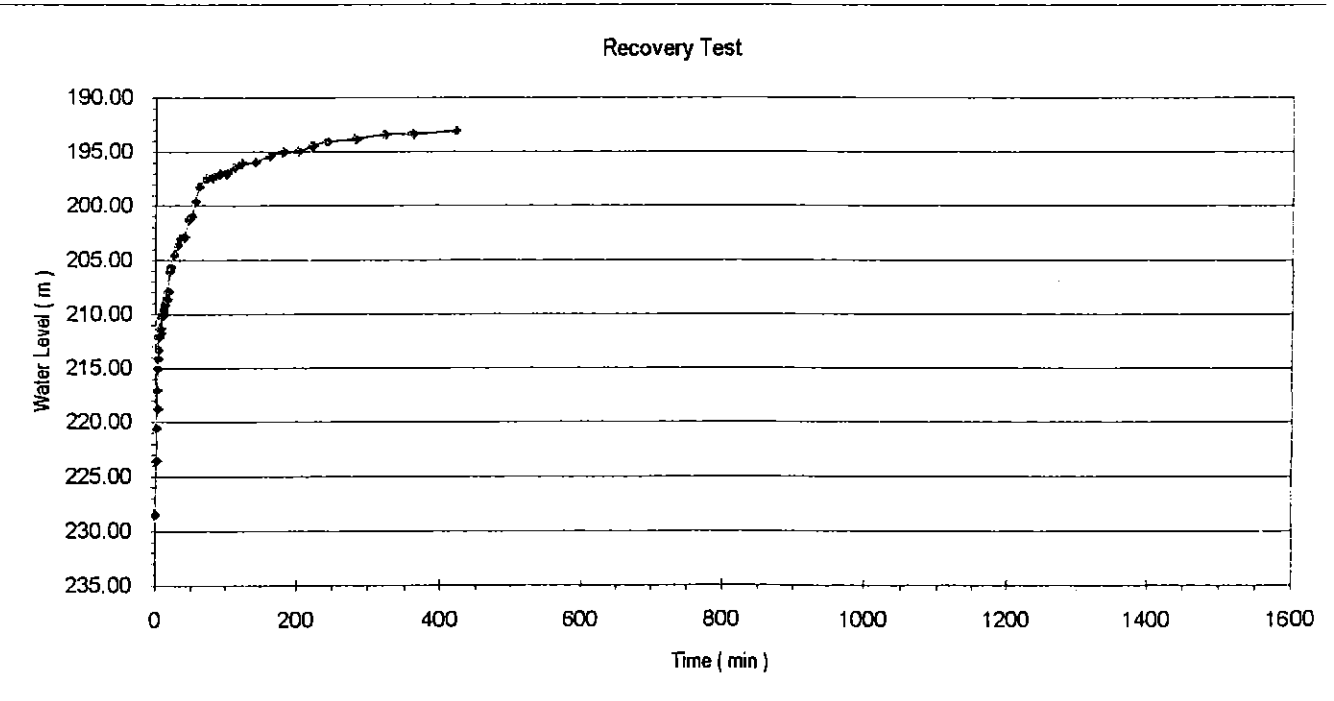
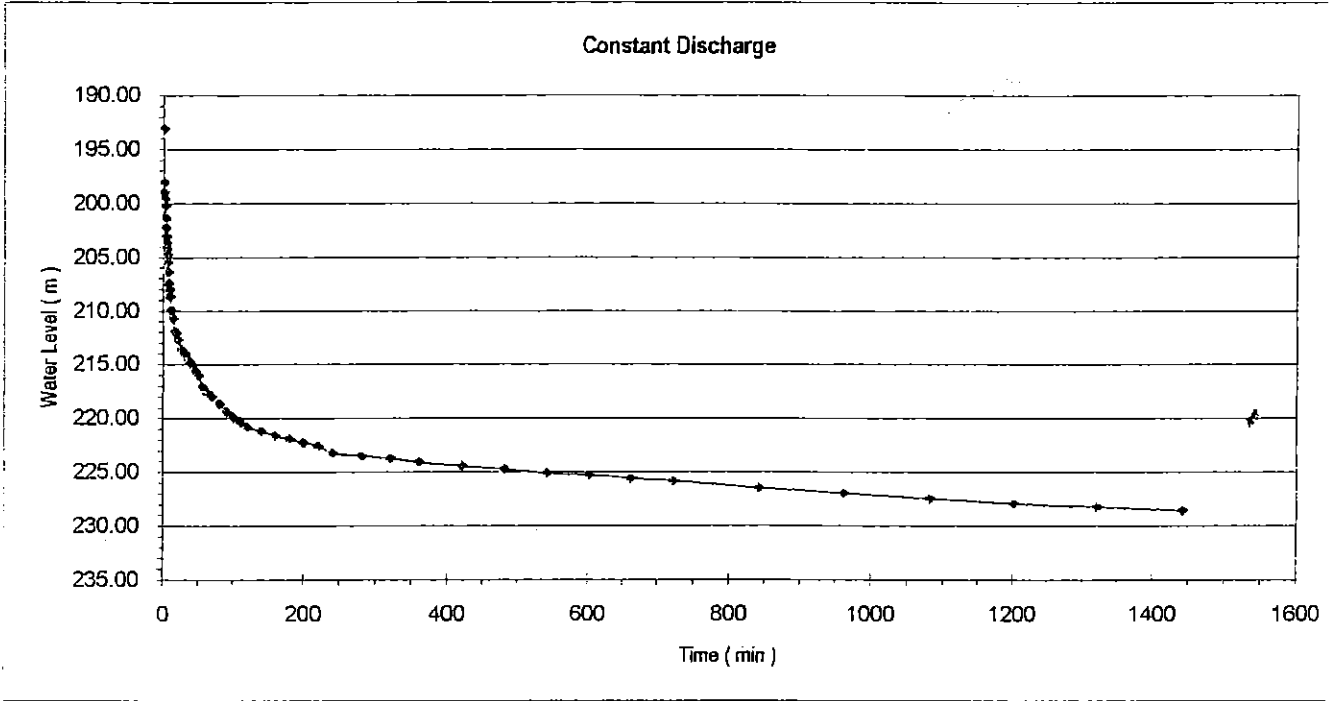
Site Name: Ruhm



Constant Discharge Test

Well Code: S-09
Site Code: S-09
S.W.L (m): 193.10
Yield (L/sec): 3.0

Site Name: Ruhm
D.W.L (m): 228.55 Drawdown (m): 35.45



Pumping Test Report Sheet

Well code: S-10/1 Site code: S-10 Site name: Tawa'ar

District: Al Hesn Governorate: Sana'a

Target water source: Existing projected deep well Well depth: 280 m

Contractor: Abdulkhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Mohammed Azeen

Date of start of the test: 15/8/2006 Date of end of the test: 18/8/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 220 m Datum level: 0.62 m S.W.L.: G.L.-134.78 m

Step drawdown test

Date/hour started: 16-8-2006-2:00am Date/hour finished: 17-8-2006-12:35am Total hours: 22:35

Yield (l/sec): 1st step 0.90 2nd step 1.80 3rd step 2.70 4th step 3.60 5th step 4.50

Water level before start the test (G.L.-m): 134.78

Water level after end of 5th step (G.L.-m): 201.32

Water level after recovery (G.L.-m): 134.78 Recovery hours: 12:35

Constant discharge test

Date/hour started: 17-8-2006-12:40am Date/hour finished: 18-8-2006-4:40pm Total hours: 28:00

Yield (l/sec): 3.80

Water level before start of the test (G.L.-m): 134.78

Water level after end of test (G.L.-m): 180.62

Water level after recovery (G.L.-m): 134.78 Recovery hours: 4:00

Drawdown (m): 45.84

Revised by:

Name :

Date:

Provisional Step Drawdown Test (1/2)

Well Code: S-10/1 Site code: S-10 Pump on date/hour: 15-8-2006-3:30pm
 Site name: Tawa'ar Pump off date/hour: 15-8-2006-6:00pm
 District: Al Hesn End of recovery hour: 16-8-2006-1:40am
 Governorate: Sana'a S.W.L (m): 135.40

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	135.40	0.90	141.10	1.80	149.25	2.70	161.91	3.60	175.24	4.50	187.25
0.5	137.41		141.90		150.12		162.53		176.82		182.03
1.0	137.45		142.47		151.14		163.42		176.98		178.52
1.5	137.47		142.92		151.67		163.51		177.07		176.78
2.0	137.49		143.14		151.97		163.73		177.05		175.47
2.5	137.52		143.45		152.15		164.21		177.37		174.56
3.0	137.60		143.80		152.44		164.82		177.69		174.27
3.5	137.63		144.07		152.91		165.19		178.07		174.09
4.0	137.71		144.29		153.34		165.52		178.24		173.87
4.5	137.75		144.41		153.66		165.70		178.55		173.62
5.0	137.80		144.63		153.98		166.17		179.04		173.31
6.0	138.02		144.92		154.55		166.72		179.45		172.73
7.0	138.14		145.21		154.93		167.40		179.79		172.02
8.0	138.35		145.35		155.41		167.96		180.17		171.42
9.0	138.52		145.51		155.99		168.33		180.52		170.81
10.0	138.60		145.73		156.62		168.92		180.93		170.24
12.0	138.87		146.05		157.23		169.55		181.67		169.03
14.0	139.07		146.78		158.05		170.60		182.32		167.94
16.0	139.14		147.35		158.51		171.85		183.05		166.92
18.0	139.23		147.80		159.09		172.34		183.64		165.85
20.0	139.29		148.33		159.59		172.88		185.02		164.96
22.0	139.50		148.55		159.87		173.39		185.57		163.22
24.0	139.57		148.64		160.23		173.82		186.14		163.01
26.0	140.69		148.87		160.92		174.35		186.55		162.50
28.0	140.90		149.02		161.43		174.97		186.97		161.79
30.0	141.10		149.25		161.91		175.24		187.25		161.00
35.0											159.21
40.0											158.07
45.0											156.72
50.0											155.50
60.0											153.23
70.0											151.19
80.0											149.78
90.0											148.39
100.0											147.61
120.0											146.27
130.0											145.25
140.0											144.30
150.0											143.36
170.0											142.44

Step Drawdown Test (1/2)

Well Code: S-10/1 Site code: S-10 Pump on date/hour: 16-8-2006-2:00am
 Site name: Tawa'ar Pump off date/hour: 16-8-2006-12:00pm
 District: Al Hesn End of recovery hour: 17-8-2006-12:35am
 Governorate: Sana'a S.W.L (m): 135.40

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	135.40	0.90	146.95	1.80	160.45	2.70	179.40	3.60	190.94	4.50	201.94
0.5	136.03		148.19		161.77		180.04		191.04		196.01
1.0	136.73		148.65		162.80		180.08		191.45		193.98
1.5	136.98		148.95		163.11		180.13		191.85		191.72
2.0	137.38		149.10		163.52		180.18		191.97		191.09
2.5	137.51		149.27		163.79		180.22		192.11		190.18
3.0	137.65		149.49		163.95		180.31		192.45		189.77
3.5	137.74		149.57		164.27		180.37		192.45		189.65
4.0	137.82		149.66		164.60		181.14		192.80		189.60
4.5	137.93		149.75		164.94		181.40		193.14		189.38
5.0	137.97		149.84		165.22		181.68		193.37		189.26
6.0	138.03		149.93		165.55		182.03		193.94		189.11
7.0	138.08		150.17		165.91		182.43		194.12		188.55
8.0	138.09		150.42		166.14		182.75		194.35		188.08
9.0	138.18		150.52		166.45		182.93		194.81		187.32
10.0	138.33		150.63		166.76		183.52		194.99		186.93
12.0	138.67		150.95		167.23		183.94		195.44		186.03
14.0	139.13		151.12		167.55		184.32		195.76		185.12
16.0	139.35		151.14		167.96		184.80		195.89		184.32
18.0	139.57		151.37		168.31		185.10		196.34		183.52
20.0	139.73		151.74		168.56		185.27		196.65		182.77
25.0	140.03		152.85		169.07		185.73		197.69		180.97
30.0	140.42		153.12		169.79		186.26		197.98		179.22
35.0	140.67		154.24		171.10		186.95		198.14		177.80
40.0	141.17		155.12		171.63		187.14		198.44		176.39
45.0	141.55		156.54		172.37		187.23		199.80		175.23
50.0	141.93		157.04		173.35		187.85		200.24		174.20
55.0	142.13		157.35		173.94		188.02		200.57		173.17
60.0	143.07		157.53		174.62		188.43		200.88		172.28
70.0	145.30		157.92		175.26		188.95		201.12		170.72
80.0	146.30		158.64		176.04		189.03		201.34		169.42
90.0	146.42		159.43		177.02		189.85		201.40		168.03
100.0	146.56		159.97		177.75		189.92		201.60		166.04
110.0	146.77		160.42		178.48		190.45		201.85		164.80
120.0	146.95		160.45		179.40		190.94		201.94		163.39
140.0											162.24
160.0											161.41
180.0											160.57
200.0											159.74
220.0											158.92

Constant Discharge & Recovery Test (1/2)

Well Code: S-10/1 Site code: S-10

Site name: Tawa'ar

Pump on date/hour: 17-8-2006-12:40am

District: Al Hesn

Pump off date/hour: 18-8-2006-12:40am

Governorate: Sana'a

End of recovery hour: 18-8-2006-4:40pm

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 135.40

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 181.24

Operator: Mohammed Azeen

Yield (l/sec): 2.2

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	135.40	0.00		181.24	45.84		
0.5	137.47	2.07		175.33	39.93		
1.0	138.12	2.72		172.93	37.53		
1.5	138.65	3.25		170.53	35.13		
2.0	138.94	3.54		168.03	32.63		
2.5	139.44	4.04		166.92	31.52		
3.0	139.64	4.24		164.89	29.49		
3.5	140.17	4.77		163.71	28.31		
4.0	140.23	4.83		162.68	27.28		
4.5	140.53	5.13		161.71	26.31		
5.0	140.70	5.30		160.67	25.27		
6.0	141.02	5.62		159.83	24.43		
7.0	141.37	5.97		158.71	23.31		
8.0	141.78	6.38		157.69	22.29		
9.0	141.92	6.52		156.72	21.32		
10.0	142.32	6.92		155.81	20.41		
12.0	143.61	8.21		154.63	19.23		
14.0	144.53	9.13		153.59	18.19		
16.0	145.02	9.62		152.61	17.21		
18.0	145.62	10.22		151.57	16.17		
20.0	145.92	10.52		150.60	15.20		
25.0	148.23	12.83		149.73	14.33		
30.0	151.12	15.72		148.72	13.32		
35.0	151.61	16.21		147.71	12.31		
40.0	151.97	16.57		145.69	10.29		
45.0	152.83	17.43		143.68	8.28		
50.0	153.52	18.12		141.78	6.38		
55.0	154.35	18.95		139.67	4.27		
60.0	154.64	19.24		138.66	3.26		

Constant Discharge & Recovery Test (2/2)

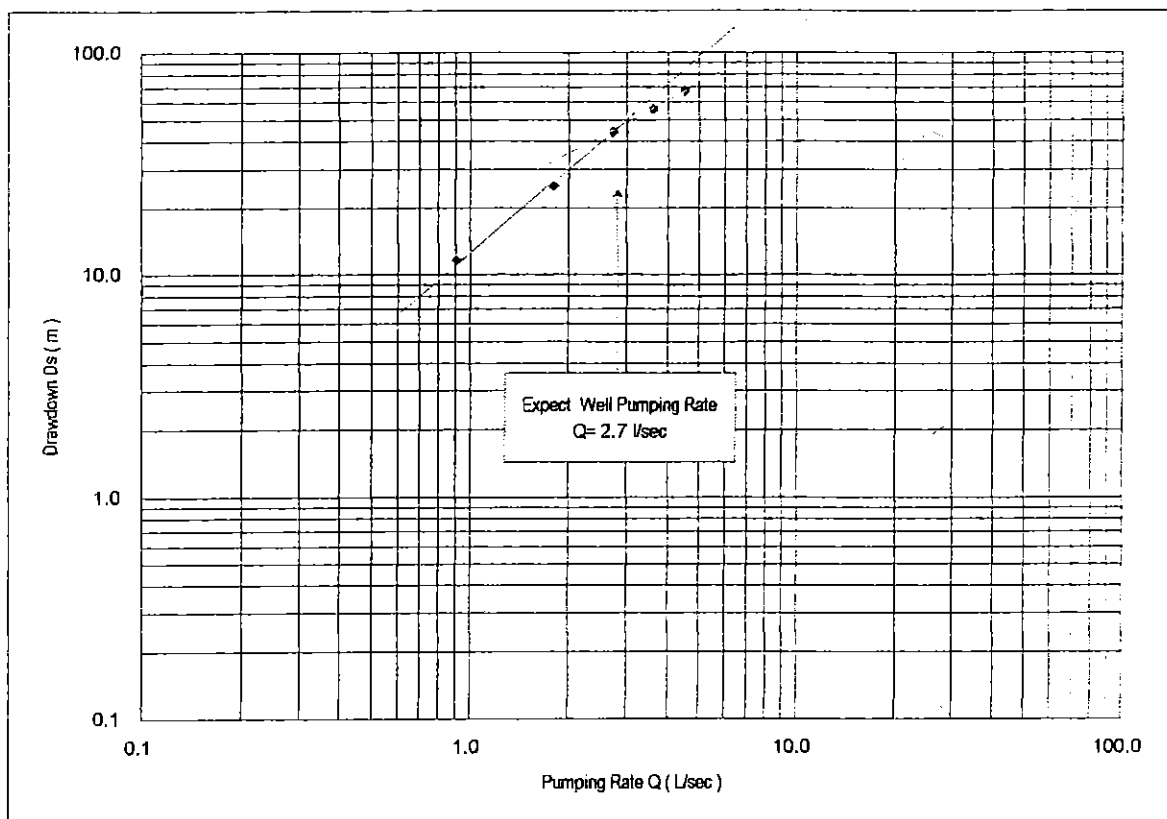
Well Code: S-10/1 Site code: S-10 Site name: Tawa'ar
 District: Al Hesn Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	155.46	20.06		137.92	2.52		
80.0	155.95	20.55		136.89	1.49		
90.0	156.77	21.37		135.95	0.55		
100.0	157.78	22.38		135.71	0.31		
110.0	158.43	23.03		135.66	0.26		
120.0	159.36	23.96		135.52	0.12		
140.0	160.64	25.24		135.45	0.05		
160.0	161.67	26.27		135.40	0.00		
180.0	162.53	27.13		135.40	0.00		
200.0	163.41	28.01		135.40	0.00		
220.0	163.97	28.57		135.40	0.00		
240.0	164.12	28.72		135.40	0.00		
280.0	164.55	29.15					
320.0	165.74	30.34					
360.0	166.73	31.33					
420.0	166.93	31.53					
480.0	167.24	31.84					
540.0	167.53	32.13					
600.0	167.82	32.42					
660.0	168.84	33.44					
720.0	169.54	34.14					
840.0	169.80	34.40					
960.0	170.04	34.64					
1080.0	173.68	38.28					
1200.0	177.40	42.00					
1320.0	179.38	43.98					
1440.0	181.24	45.84					

Step Drawdown Test

Well Code: S-10/1
 Site Code: S-10
 S.W.L. : 135.40 m

Site Name: Tawa'ar

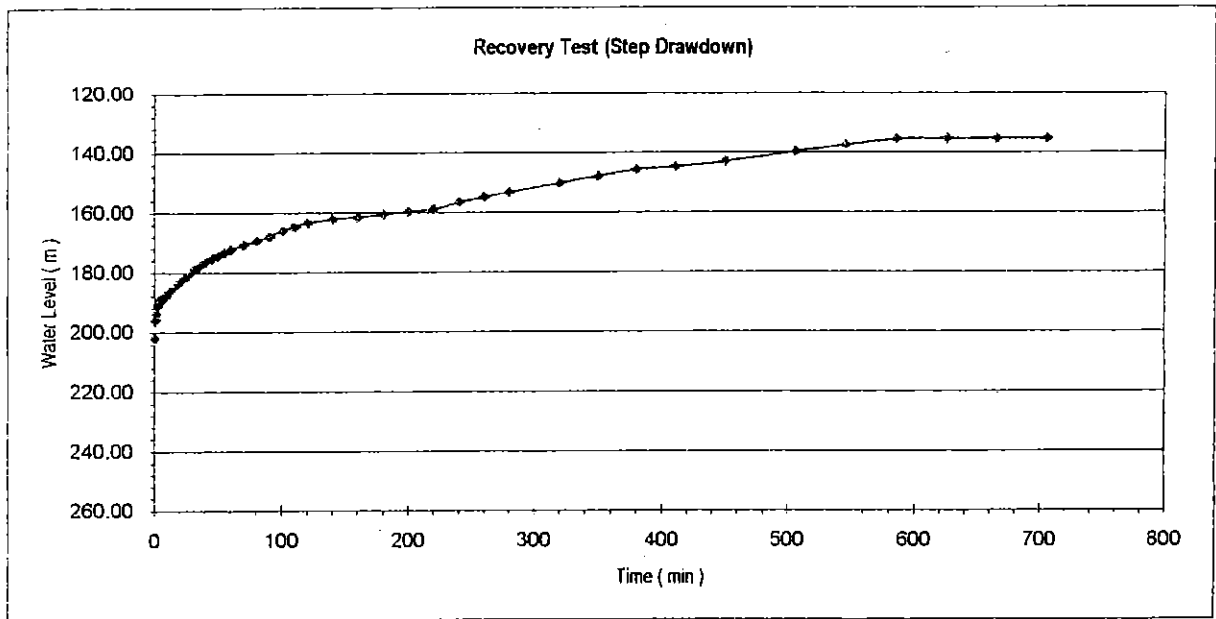
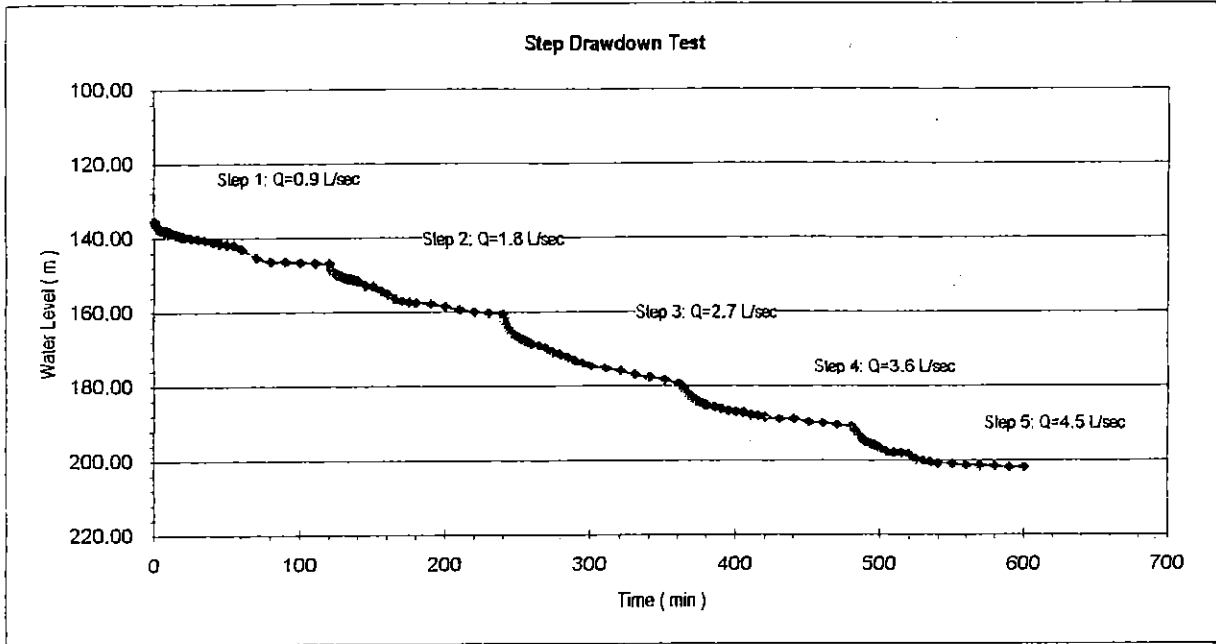


Step	Q (l/sec)	O.W.L.(m)	Ds (m)
1	0.9	146.95	11.55
2	1.8	160.45	25.05
3	2.7	179.40	44.00
4	3.6	190.94	55.54
5	4.5	201.94	66.54

Step Drawdown Test

Well Code: S-10/1
Site Code: S-10
S.W.L.: 135.40 m

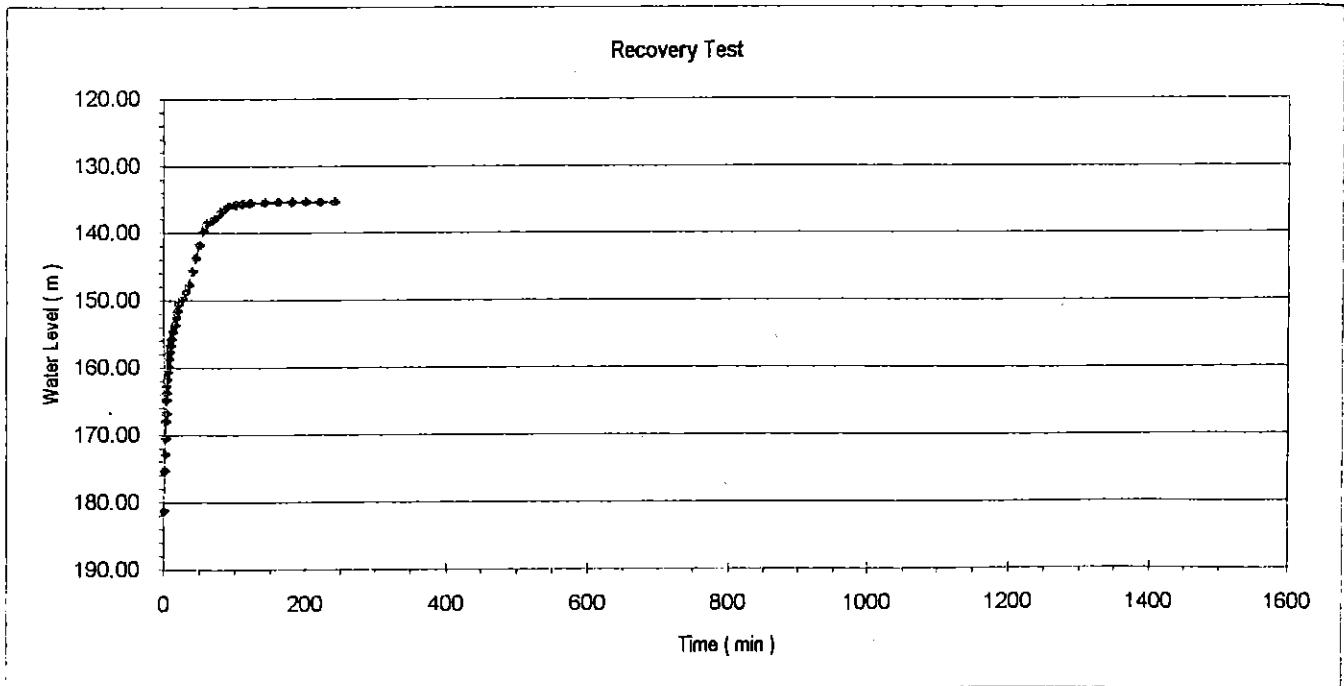
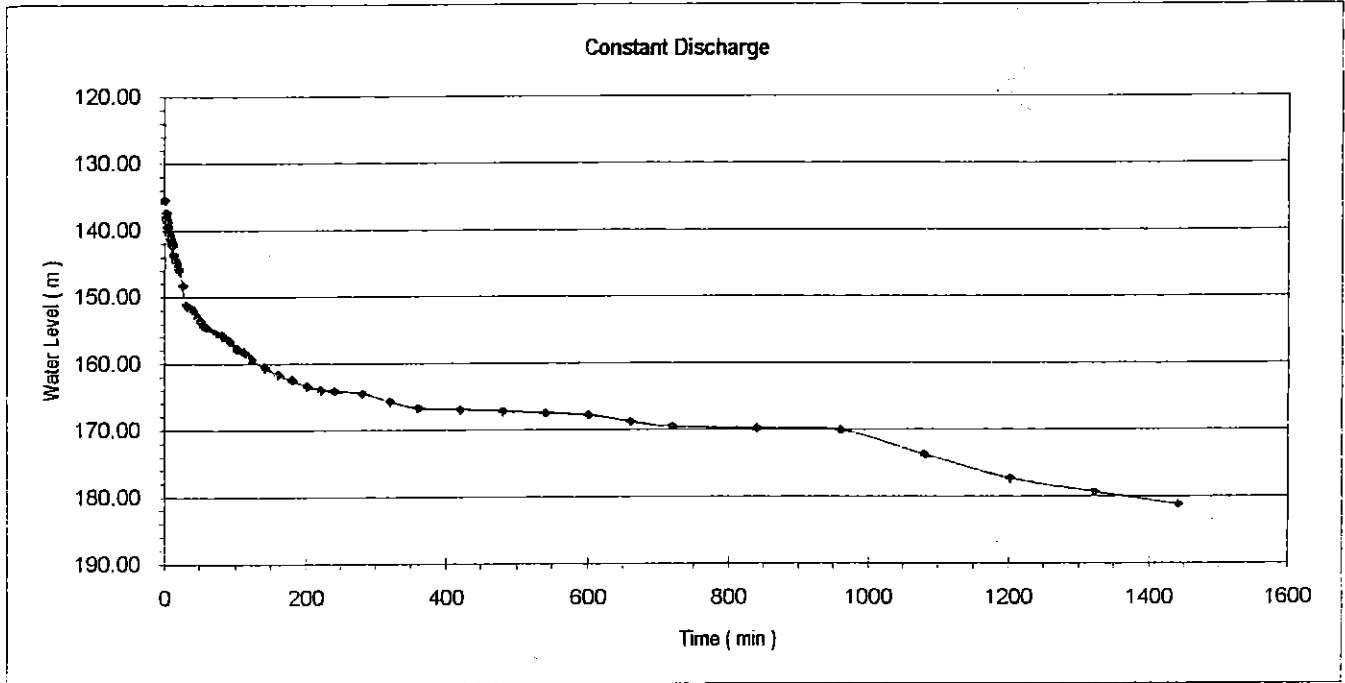
Site Name: Tawa'ar



Constant Discharge Test

Well Code: S-10/1
Site Code: S-10
S.W.L. (m): 135.40
Yield (L/sec): 2.2

Site Name: Tawa'ar
D.W.L. (m): 181.24 Drawdown (m): 45.84



Pumping Test Report Sheet

Well code: S-10/2 Site code: S-10 Site name: Tawa'ar

District: Al Hesn Governorate: Sana'a

Target water source: Existing projected deep well Well depth: 310 m

Contractor: Abdulhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Bulul

Date of start of the test: 13/8/2006 Date of end of the test: 16/8/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 220 m Datum level: 0.53 m S.W.L.: G.L.-144.74 m

Step drawdown test

Date/hour started: 14-8-2006-6:00am Date/hour finished: 14-8-2006-10:20pm Total hours: 16:20

Yield (l/sec): 1st step 1.70 2nd step 3.40 3rd step 5.10 4th step 6.70 5th step 8.50

Water level before start the test (G.L.-m): 144.74

Water level after end of 5th step (G.L.-m): 169.37

Water level after recovery (G.L.-m): 144.83 Recovery hours: 6:20

Constant discharge test

Date/hour started: 14-8-2006-10:30pm Date/hour finished: 16-8-2006-6:30pm Total hours: 44:00

Yield (l/sec): 3.80

Water level before start of the test (G.L.-m): 144.74

Water level after end of test (G.L.-m): 155.96

Water level after recovery (G.L.-m): 144.74 Recovery hours: 20:00

Drawdown (m): 11.22

Revised by:

Name :

Date:

Provisional Step Drawdown Test (1/2)

Well Code: S-10/2 Site code: S-10 Pump on date/hour: 13-8-2006-4:10pm
 Site name: Tawa'ar Pump off date/hour: 13-8-2006-6:40pm
 District: Al Hesn End of recovery hour: 14-8-2006-1:00am
 Governorate: Sana'a S.W.L (m): 145.27

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Bulul

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	145.27	1.70	148.85	3.40	152.10	5.10	156.88	6.80	161.96	8.50	168.18
0.5	146.20		150.60		153.52		158.15		162.48		162.30
1.0	146.60		152.00		154.80		158.86		162.95		158.23
1.5	147.00		152.02		155.45		159.30		163.80		148.50
2.0	147.30		152.02		155.81		159.92		164.60		148.16
2.5	147.80		152.02		155.96		160.48		165.20		147.98
3.0	148.10		152.04		156.12		161.10		166.32		147.64
3.5	148.24		52.05		156.21		161.36		167.20		147.28
4.0	148.35		152.07		156.36		161.60		167.55		146.90
4.5	148.52		152.07		156.38		161.70		167.65		146.62
5.0	148.58		152.07		156.40		161.78		167.73		146.18
6.0	148.60		152.07		156.50		161.85		167.93		145.33
7.0	148.64		152.07		156.58		161.87		168.05		145.27
8.0	148.65		152.07		156.60		161.87		168.08		145.33
9.0	148.67		152.08		156.63		161.87		168.10		145.35
10.0	148.70		152.09		156.68		161.89		168.12		145.38
12.0	148.75		152.10		156.71		161.89		168.13		145.39
14.0	148.82		152.10		156.75		161.91		168.15		145.39
16.0	148.82		152.10		156.80		161.92		168.15		145.39
18.0	148.82		152.10		156.82		161.92		168.16		145.40
20.0	148.82		152.10		156.83		161.94		168.16		145.40
22.0	148.82		152.10		156.85		190.95		168.17		145.40
24.0	148.82		152.10		156.87		191.95		168.17		145.40
26.0	148.85		152.10		156.88		161.95		168.18		145.40
28.0	148.85		152.10		156.88		161.96		168.18		145.40
30.0	148.85		152.10		156.88		161.96		168.18		145.39
50.0											145.39
55.0											145.38
60.0											145.38
70.0											145.37
80.0											145.36
90.0											145.36
100.0											145.36
110.0											145.36
120.0											145.36
140.0											145.36
160.0											145.36
180.0											145.36
200.0											145.36
220.0											145.36

Step Drawdown Test

Well Code: S-10/2 Site code: S-10 Pump on date/hour: 14-8-2006-6:00am
 Site name: Tawa'ar Pump off date/hour: 14-8-2006-4:00pm
 District: Al Hesn End of recovery hour: 14-8-2006-10:20pm
 Governorate: Sana'a S.W.L (m): 145.36

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Bulul

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	145.36	1.70	149.11	3.40	151.97	5.10	157.59	6.80	163.98	8.50	169.90
0.5	146.56		150.20		153.08		158.60		167.20		163.95
1.0	146.70		150.75		154.75		160.30		167.72		156.55
1.5	147.15		151.10		155.69		160.90		167.83		147.63
2.0	147.82		151.36		156.27		161.52		168.21		147.38
2.5	148.10		151.52		156.52		161.87		168.50		147.18
3.0	148.20		151.65		156.70		162.12		168.68		147.06
3.5	148.42		151.72		156.83		162.38		168.79		146.95
4.0	148.38		151.76		156.92		162.73		168.94		146.63
4.5	148.38		151.78		157.02		163.00		169.02		146.46
5.0	148.38		151.79		157.08		163.06		169.30		146.34
6.0	148.40		151.80		157.15		163.15		169.38		146.21
7.0	148.49		151.81		157.18		163.18		169.42		146.12
8.0	148.49		151.82		157.20		163.26		169.50		146.03
9.0	148.50		151.82		157.21		163.32		169.58		145.97
10.0	148.52		151.83		157.22		163.35		169.63		145.93
12.0	148.56		151.83		157.22		163.36		169.65		145.86
14.0	148.74		151.83		157.23		163.36		169.66		145.70
16.0	148.82		151.84		157.26		163.37		169.67		145.66
18.0	148.82		151.84		157.31		163.37		169.68		145.61
20.0	148.82		151.84		157.38		163.38		169.69		145.57
25.0	148.82		151.85		157.45		163.38		169.70		145.52
30.0	148.82		151.85		157.46		163.38		169.71		145.48
35.0	148.82		151.86		157.47		163.39		169.71		145.45
40.0	148.82		151.87		157.48		163.39		169.71		145.42
45.0	148.82		151.88		157.49		163.39		169.72		145.39
50.0	148.82		151.89		157.50		163.40		169.72		145.37
55.0	148.82		151.90		157.50		163.40		169.74		145.36
60.0	148.82		151.91		157.52		163.45		169.74		145.36
70.0	148.92		151.92		157.55		163.58		169.80		145.36
80.0	149.05		151.94		157.58		163.71		169.82		145.37
90.0	149.05		151.95		157.58		163.90		169.82		145.37
100.0	149.06		151.96		157.58		163.92		169.84		145.37
110.0	149.08		151.96		157.59		163.95		169.86		145.38
120.0	149.11		151.97		157.59		163.98		169.90		145.38
140.0											145.38
160.0											145.37
180.0											145.37
200.0											145.37
220.0											145.37

Constant Discharge & Recovery Test (1/2)

Well Code: S-10/2 Site code: S-10

Site name: Tawa'ar

Pump on date/hour: 14-8-2006-10:30pm

District: Al Hesn

Pump off date/hour: 15-8-2006-10:30pm

Governorate: Sana'a

End of recovery hour: 16-8-2006-6:30pm

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 145.36

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 156.49

Operator: Bulul

Yield (l/sec): 4.1

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	145.36	0.00		156.49	11.13		
0.5	149.42	4.06		153.33	7.97		
1.0	151.08	5.72		149.62	4.26		
1.5	152.80	7.44		148.23	2.87		
2.0	154.80	9.44		147.95	2.59		
2.5	155.12	9.76		147.53	2.17		
3.0	155.60	10.24		147.18	1.82		
3.5	155.83	10.47		147.05	1.69		
4.0	155.85	10.49		146.93	1.57		
4.5	155.86	10.50		146.84	1.48		
5.0	155.90	10.54		146.75	1.39		
6.0	155.90	10.54		146.53	1.17		
7.0	155.90	10.54		146.36	1.00		
8.0	155.95	10.59		146.23	0.87		
9.0	156.00	10.64		146.13	0.77		
10.0	156.00	10.64		146.04	0.68		
12.0	156.04	10.68		145.92	0.56		
14.0	156.05	10.69		145.83	0.47		
16.0	156.05	10.69		145.76	0.40		
18.0	156.07	10.71		145.66	0.30		
20.0	156.09	10.73		145.60	0.24		
25.0	156.23	10.87		145.56	0.20		
30.0	156.26	10.90		145.52	0.16		
35.0	156.32	10.96		145.48	0.12		
40.0	156.34	10.98		145.47	0.11		
45.0	156.37	11.01		145.47	0.11		
50.0	156.38	11.02		145.47	0.11		
55.0	156.38	11.02		145.46	0.10		
60.0	156.38	11.02		145.46	0.10		

Constant Discharge & Recovery Test (2/2)

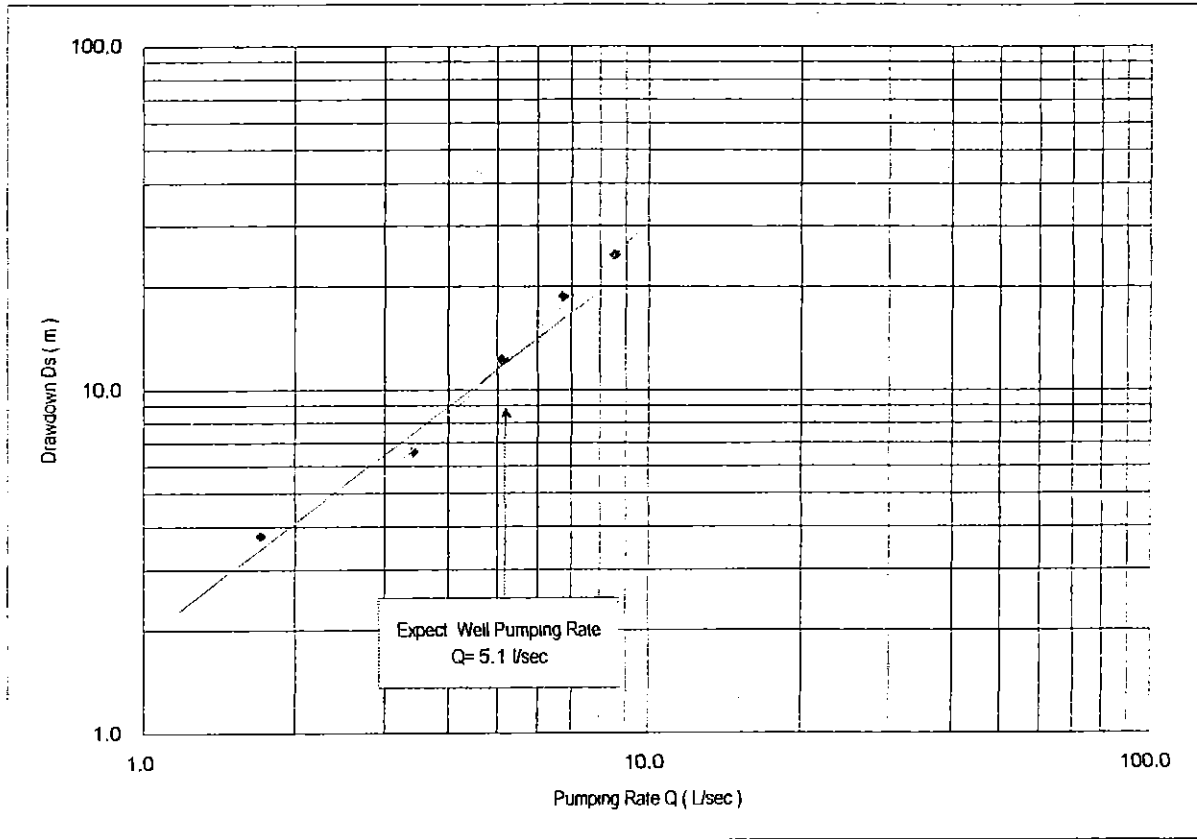
Well Code: S-10/2 Site code: S-10 Site name: Tawa'ar
 District: Al Hesn Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	156.40	11.04		145.45	0.09		
80.0	156.40	11.04		145.45	0.09		
90.0	156.40	11.04		145.44	0.08		
100.0	156.41	11.05		145.44	0.08		
110.0	156.41	11.05		145.44	0.08		
120.0	156.41	11.05		145.43	0.07		
140.0	156.42	11.06		145.42	0.06		
160.0	156.42	11.06		145.42	0.06		
180.0	156.43	11.07		145.41	0.05		
200.0	156.43	11.07		145.41	0.05		
220.0	156.45	11.09		145.41	0.05		
240.0	156.46	11.10		145.41	0.05		
280.0	156.46	11.10		145.40	0.04		
320.0	156.46	11.10		145.39	0.03		
360.0	156.46	11.10		145.38	0.02		
420.0	156.46	11.10		145.37	0.01		
480.0	156.47	11.11		145.36	0.00		
540.0	156.47	11.11		145.35	-0.01		
600.0	156.48	11.12		145.33	-0.03		
660.0	156.48	11.12		145.33	-0.03		
720.0	156.48	11.12		145.32	-0.04		
840.0	156.48	11.12		145.32	-0.04		
960.0	156.49	11.13		145.31	-0.05		
1080.0	156.49	11.13		145.28	-0.08		
1200.0	156.49	11.13		145.27	-0.09		
1320.0	156.49	11.13		145.27	-0.09		
1440.0	156.49	11.13		145.27	-0.09		

Step Drawdown Test

Well Code: S-10/2
 Site Code: S-10
 S.W.L.: 145.36 m

Site Name: Tawa'ar

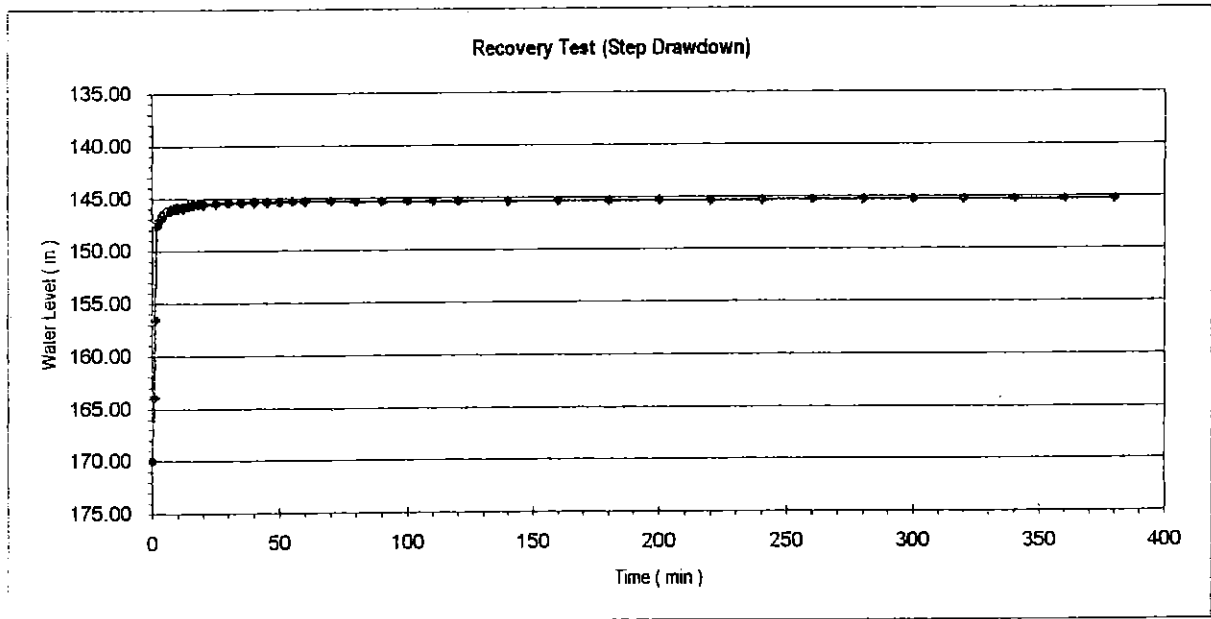
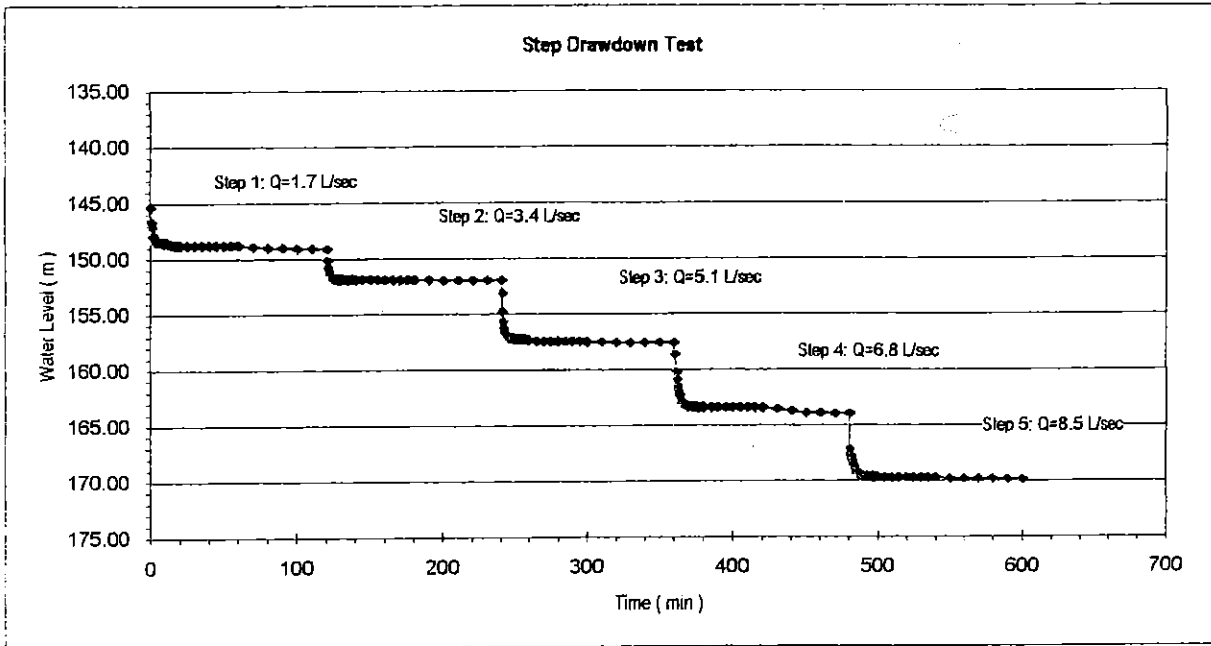


Step	Q (l/sec)	D.W.L (m)	Ds (m)
1	1.7	149.11	3.75
2	3.4	151.97	6.61
3	5.1	157.59	12.23
4	6.7	163.98	18.62
5	8.5	169.90	24.54

Step Drawdown Test

Well Code: S-10/2
Site Code: S-10
S.W.L.: 145.36 m

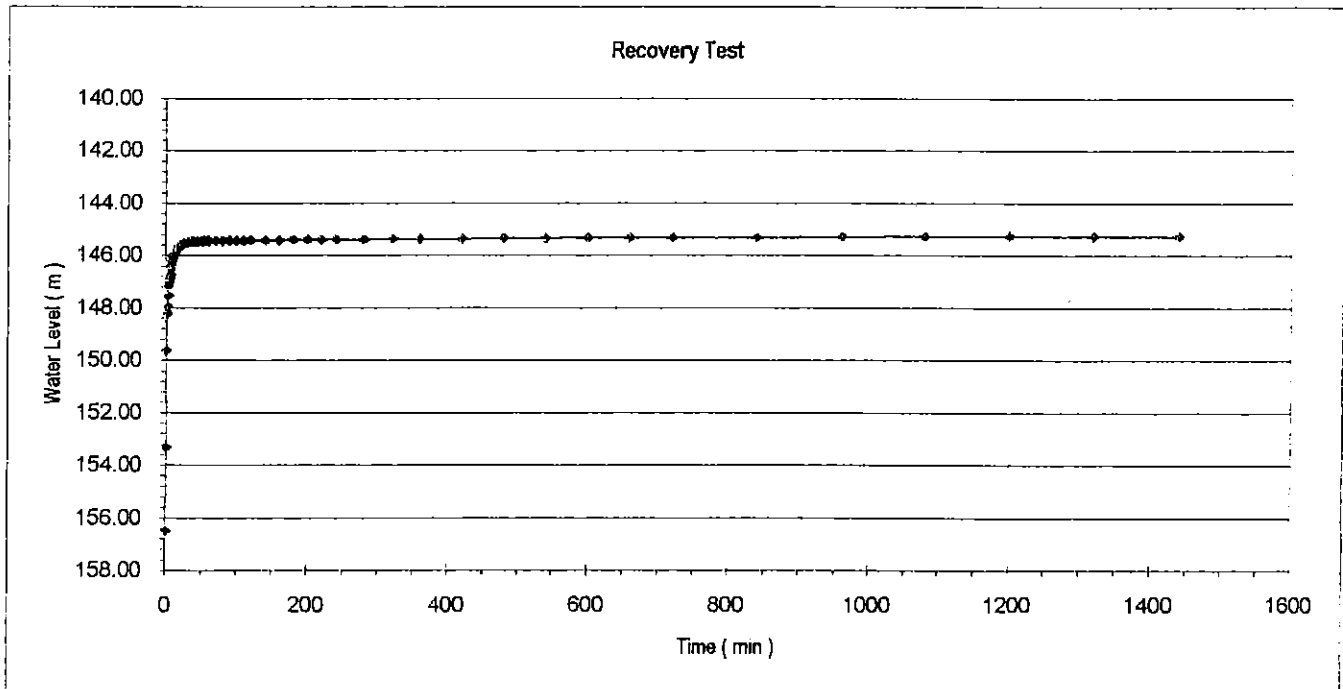
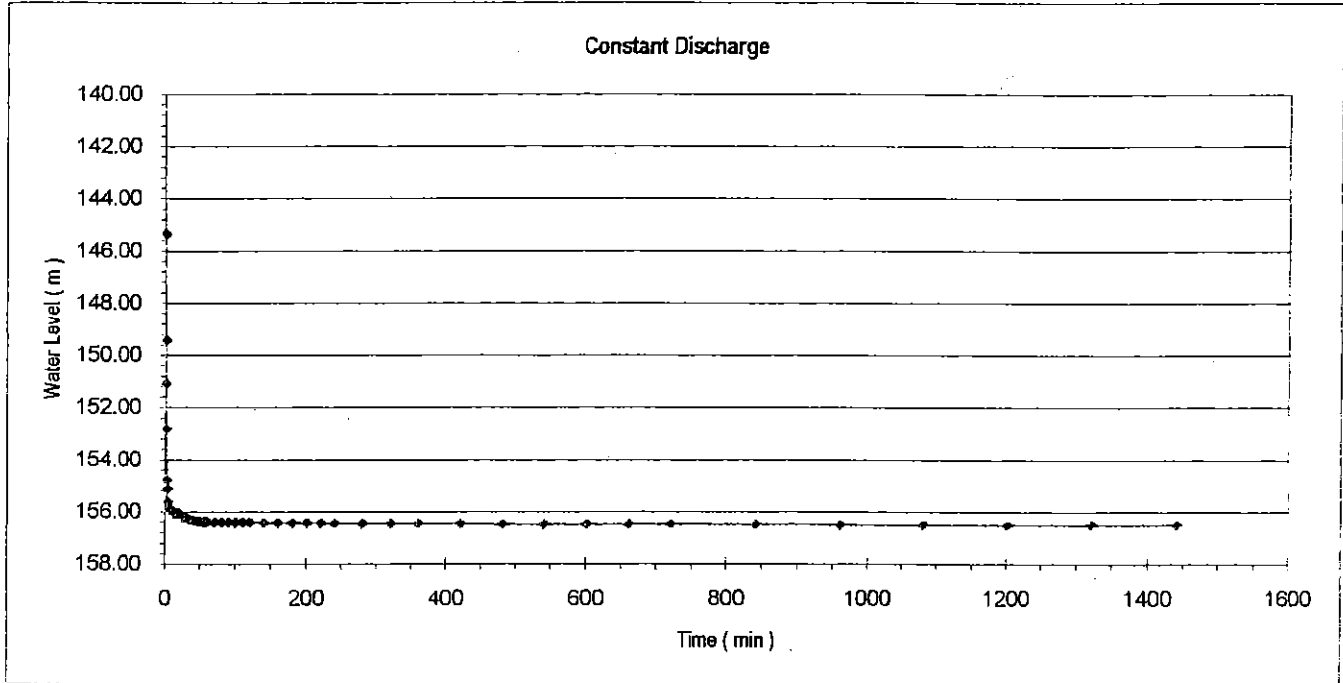
Site Name: Tawa'ar



Constant Discharge Test

Well Code: S-10/2
Site Code: S-10
S.W.L. (m): 145.36
Yield (L/sec): 4.1

Site Name: Tawa'ar
D.W.L. (m): 156.49 Drawdown (m): 11.13



Pumping Test Report Sheet

Well code: S-11/1 Site code: S-11 Site name: Al Hesn-Al Abyad

District: Jehana Governorate: Sana'a

Target water source: New projected deep well Well depth: 350 m

Contractor: Abdulkhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Mohammed Azeen

Date of start of the test: 08/08/2006 Date of end of the test: 13/08/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 248 m Datum level: 0.67 m S.W.L.: G.L.-152.82 m

Step drawdown test

Date/hour started: 9-8-2006-4:15pm Date/hour finished: 11-8-2006-6:00am Total hours: 37:45

Yield (l/sec): 1st step 1.20 2nd step 2.40 3rd step 3.60 4th step 4.80 5th step 6.00

Water level before start the test (G.L.-m): 154.11

Water level after end of 5th step (G.L.-m): 243.12

Water level after recovery (G.L.-m): 154.11 Recovery hours: 27:45

Constant discharge test

Date/hour started: 11-8-2006-8:00am Date/hour finished: 13-8-2006-12:00am Total hours: 50:00

Yield (l/sec): 3.80

Water level before start of the test (G.L.-m): 154.11

Water level after end of test (G.L.-m): 219.12

Water level after recovery (G.L.-m): 154.11 Recovery hours: 26:00

Drawdown (m): 65.01

Revised by:

Name :

Date:

Provisional Step Drawdown Test

Well Code: S-11/1 Site code: S-11 Pump on date/hour: 8-8-2006-8:30am
 Site name: Al Hesn-Al Abyad Pump off date/hour: 8-8-2006-11:00am
 District: Jehana End of recovery hour: 9-8-2006-4:10am
 Governorate: Sana'a S.W.L (m): 153.49

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	153.49	1.20	160.14	2.40	168.19	3.60	178.98	4.80	194.60	6.00	213.58
0.5	155.14		190.92		168.93		179.31		194.21		207.95
1.0	156.60		161.34		168.89		179.87		195.04		204.12
1.5	157.08		161.45		169.28		180.54		195.52		201.99
2.0	157.61		161.81		169.59		181.19		196.01		200.22
2.5	158.12		162.01		169.86		181.72		196.54		198.88
3.0	158.62		162.38		170.01		182.11		197.68		197.83
3.5	158.64		162.82		170.22		182.62		198.45		197.27
4.0	158.70		163.09		170.31		182.81		199.03		196.98
4.5	158.75		163.59		170.44		183.27		199.50		196.66
5.0	158.77		163.72		170.58		183.76		199.98		196.10
6.0	158.79		164.06		171.09		184.30		200.66		195.01
7.0	158.81		164.19		171.73		184.85		201.70		193.98
8.0	158.85		164.31		172.42		185.52		202.73		193.11
9.0	158.89		164.47		172.96		186.03		203.21		192.21
10.0	159.08		164.52		173.37		186.59		203.94		191.42
12.0	159.34		165.64		174.15		187.45		205.22		198.88
14.0	159.41		165.48		174.87		188.38		206.43		188.21
16.0	159.48		165.73		175.44		189.26		207.52		186.94
18.0	159.59		165.98		175.87		189.95		208.46		185.69
20.0	159.98		166.33		176.49		190.78		209.47		184.45
22.0	160.00		166.68		176.71		191.35		210.35		183.57
24.0	160.04		166.71		177.02		192.04		211.18		182.56
26.0	160.07		166.95		177.64		193.02		212.02		181.81
28.0	160.11		167.88		178.53		193.83		212.95		180.96
30.0	160.14		168.19		178.98		194.60		213.58		180.33
50.0											178.49
60.0											176.08
70.0											174.89
80.0											172.76
90.0											170.41
100.0											168.35
110.0											166.33
120.0											164.34
140.0											161.73
160.0											159.17
180.0											158.18
200.0											157.07
220.0											156.90
340.0											156.06

Step Drawdown Test (1/2)

Well Code: S-11/1 Site code: S-11 Pump on date/hour: 9-8-2006-4:15pm
 Site name: Al Hesn-Al Abyad Pump off date/hour: 10-8-2006-2:15am
 District: Jehana End of recovery hour: 11-8-2006-6:00am
 Governorate: Sana'a S.W.L (m): 154.78

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	154.78	1.20	168.71	2.40	180.04	3.60	199.49	4.80	223.78	6.00	243.79
0.5	161.08		169.16		181.69		200.01		224.22		238.02
1.0	161.10		169.51		182.05		201.18		224.54		236.13
1.5	161.14		169.89		182.20		202.25		224.87		230.00
2.0	161.16		170.08		182.26		202.85		225.08		229.82
2.5	161.19		170.21		182.30		203.15		225.63		229.41
3.0	161.22		170.31		182.35		203.63		225.95		228.06
3.5	161.26		170.42		182.58		203.97		226.28		227.08
4.0	161.28		170.59		182.76		204.21		226.57		226.65
4.5	161.30		170.68		183.09		204.88		226.80		226.37
5.0	161.34		170.76		183.52		205.33		227.11		226.03
6.0	161.41		171.08		183.64		205.95		227.69		224.95
7.0	161.46		171.21		183.90		206.22		228.14		223.98
8.0	161.54		171.32		184.21		206.77		228.52		223.12
9.0	162.01		171.48		184.52		206.11		228.82		222.09
10.0	162.39		171.69		184.77		207.70		229.00		221.20
12.0	162.50		171.90		185.30		208.56		230.01		219.43
14.0	162.78		172.06		185.71		209.37		230.38		217.49
16.0	163.00		172.21		186.00		210.22		230.82		216.27
18.0	163.54		172.37		186.66		210.74		231.32		214.48
20.0	163.99		172.61		186.78		211.35		231.74		213.18
25.0	164.73		172.13		187.86		212.69		232.50		209.95
30.0	165.42		173.13		188.72		213.78		233.41		207.23
35.0	165.97		173.30		189.34		214.73		234.10		204.71
40.0	166.35		173.37		189.96		215.48		235.03		202.71
45.0	166.58		173.44		190.86		216.11		235.92		200.45
50.0	166.73		174.08		192.04		216.83		236.54		198.73
55.0	167.35		174.85		193.67		217.31		237.16		197.16
60.0	167.52		175.10		195.05		217.98		237.61		195.68
70.0	168.03		175.26		196.28		219.49		238.64		192.95
80.0	168.24		176.90		196.99		220.94		239.47		191.19
90.0	168.36		177.54		197.95		221.98		240.26		189.47
100.0	168.69		178.88		198.63		222.77		241.38		188.27
110.0	168.70		179.54		199.07		223.29		242.52		187.37
120.0	168.71		180.04		199.49		223.78		243.79		186.10
140.0											185.12
160.0											184.61
180.0											183.60
200.0											182.59
230.0											179.14

Constant Discharge & Recovery Test (1/2)

Well Code: S-11/1 Site code: S-11

Site name: Al Hesn-Al Abyad

Pump on date/hour: 11-8-2006-8:00am

District: Jehana

Pump off date/hour: 12-8-2006-8:00am

Governorate: Sana'a

End of recovery hour: 13-8-2006-12:00am

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 154.78

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 219.79

Operator: Mohammed Azeen

Yield (l/sec): 3.8

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	154.78	0.00		219.79	65.01		
0.5	160.16	5.38		213.97	59.19		
1.0	163.52	8.74		210.09	55.31		
1.5	166.34	11.56		209.99	55.21		
2.0	167.29	12.51		208.13	53.35		
2.5	168.14	13.36		207.06	52.28		
3.0	169.70	14.92		206.76	51.98		
3.5	169.95	15.17		205.75	50.97		
4.0	170.30	15.52		205.75	50.97		
4.5	170.48	15.70		205.74	50.96		
5.0	170.60	15.82		204.98	50.20		
6.0	171.11	16.33		204.13	49.35		
7.0	171.62	16.84		203.88	49.10		
8.0	172.01	17.23		202.93	48.15		
9.0	172.55	17.77		202.76	47.98		
10.0	172.89	18.11		202.42	47.64		
12.0	173.60	18.82		201.02	46.24		
14.0	174.20	19.42		200.56	45.78		
16.0	174.65	19.87		199.93	45.15		
18.0	175.23	20.45		198.28	43.50		
20.0	175.61	20.83		197.12	42.34		
25.0	177.14	22.36		196.93	42.15		
30.0	178.63	23.85		195.87	41.09		
35.0	179.69	24.91		194.21	39.43		
40.0	180.50	25.72		193.41	38.63		
45.0	181.03	26.25		192.72	37.94		
50.0	181.52	26.74		191.93	37.15		
55.0	182.70	27.92		190.41	35.63		
60.0	183.95	29.17		189.82	35.04		

Constant Discharge & Recovery Test (2/2)

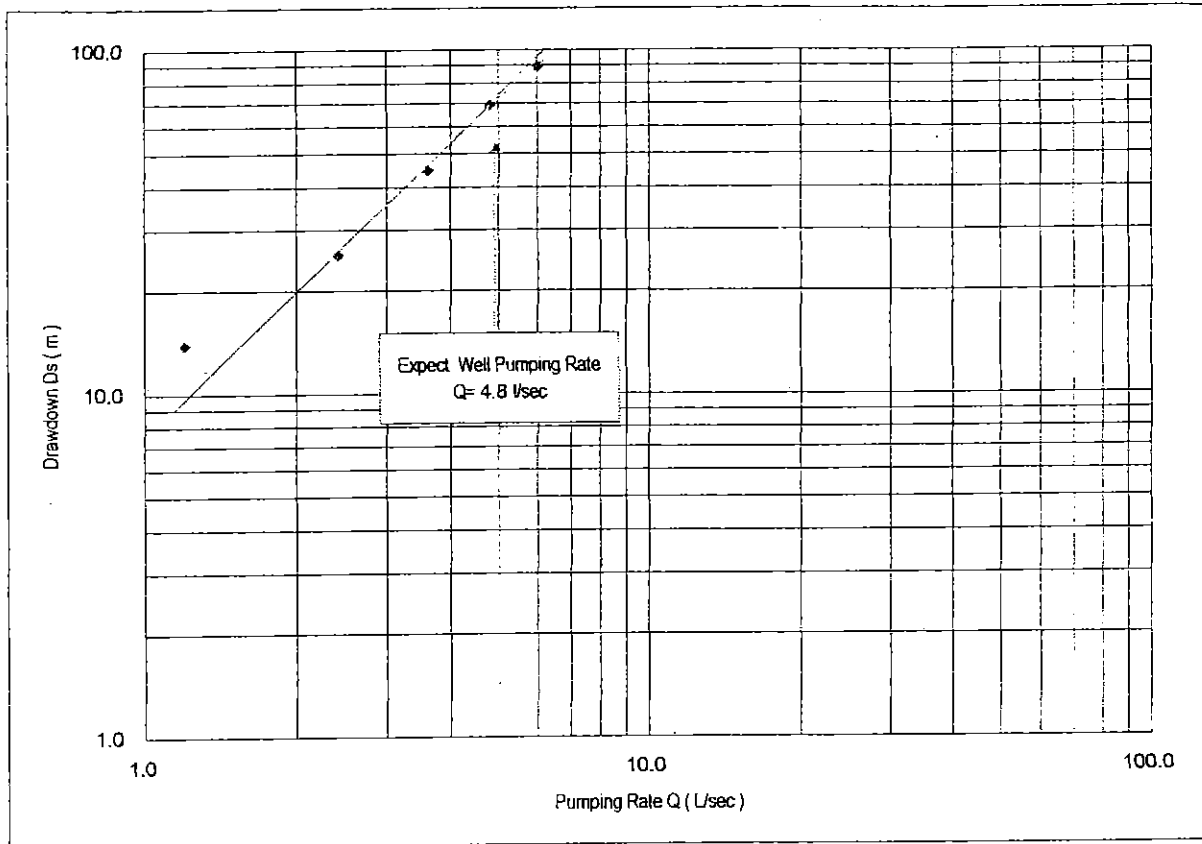
Well Code: S-11/1 Site code: S-11 Site name: Al Hesn-Al Abyad
 District: Jehana Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	185.37	30.59		188.68	33.90		
80.0	185.93	31.15		187.84	33.06		
90.0	186.18	31.40		187.03	32.25		
100.0	187.14	32.36		185.18	30.40		
110.0	189.53	34.75		184.45	29.67		
120.0	190.44	35.66		183.68	28.90		
140.0	191.37	36.59		182.48	27.70		
160.0	191.56	36.78		180.64	25.86		
180.0	193.04	38.26		180.68	25.90		
200.0	194.97	40.19		179.90	25.12		
220.0	195.93	41.15		178.13	23.35		
240.0	196.42	41.64		177.73	22.95		
280.0	197.76	42.98		176.10	21.32		
320.0	199.17	44.39		174.37	19.59		
360.0	201.24	46.46		172.20	17.42		
420.0	202.49	47.71		170.78	16.00		
480.0	203.91	49.13		168.63	13.85		
540.0	204.39	49.61		166.22	11.44		
600.0	205.85	51.07		164.96	10.18		
660.0	206.25	51.47		162.28	7.50		
720.0	207.98	53.20		160.38	5.60		
840.0	209.35	54.57		158.31	3.53		
960.0	211.49	56.71		156.96	2.18		
1080.0	213.33	58.55		156.06	1.28		
1200.0	215.97	61.19		155.58	0.80		
1320.0	217.12	62.34		155.07	0.29		
1440.0	219.79	65.01		154.95	0.17		
1560.0				154.78	0.00		

Step Drawdown Test

Well Code: S-11/1
 Site Code: S-11
 S.W.L. : 154.78 m

Site Name: Al Hesn-Al Abyad

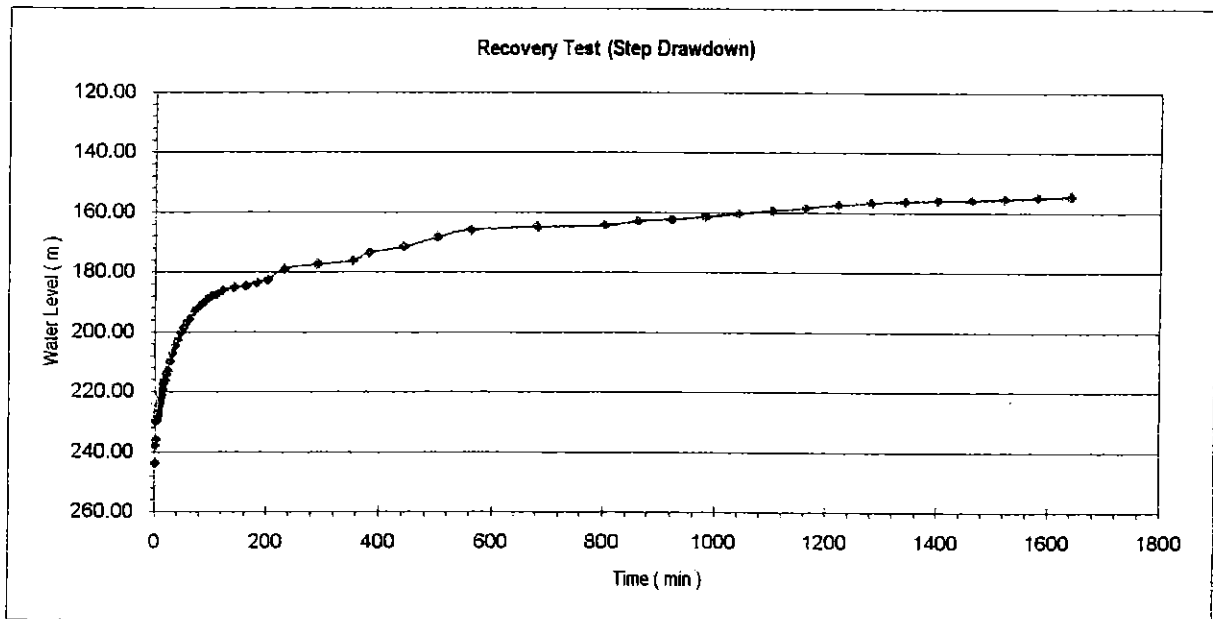
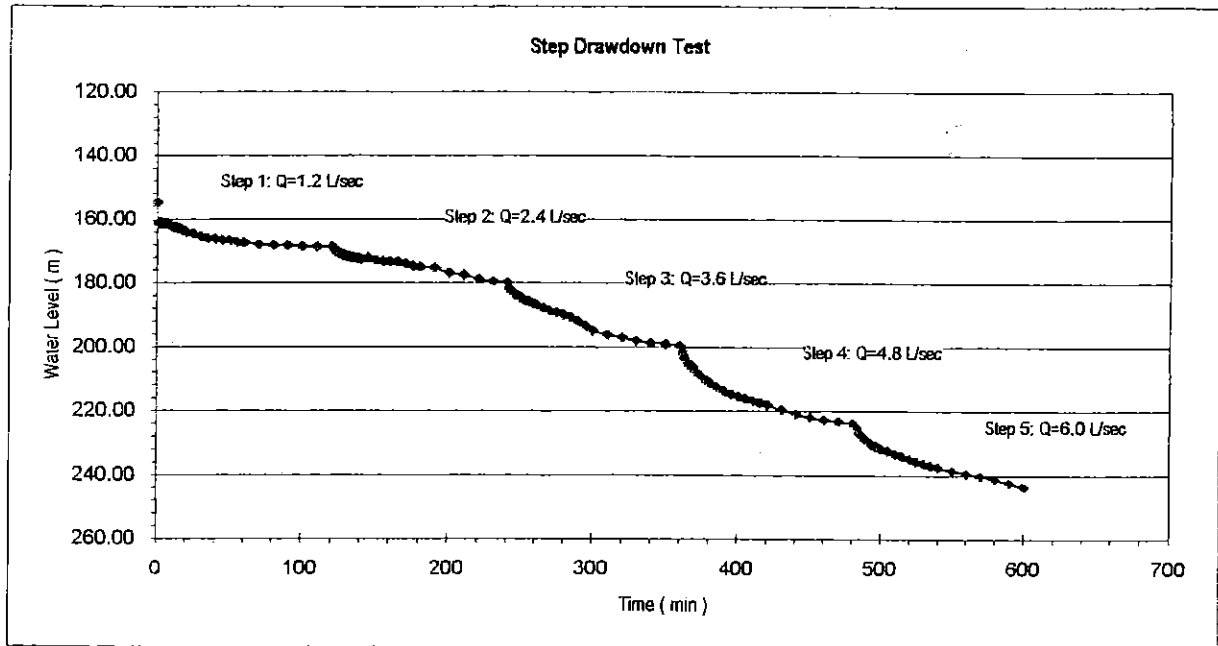


Step	Q (l/sec)	D.W.L. (m)	Ds (m)
1	1.2	168.71	13.93
2	2.4	180.04	25.26
3	3.6	199.49	44.71
4	4.8	223.78	69.00
5	6.0	243.79	89.01

Step Drawdown Test

Well Code: S-11/1
Site Code: S-11
S.W.L.: 154.78 m

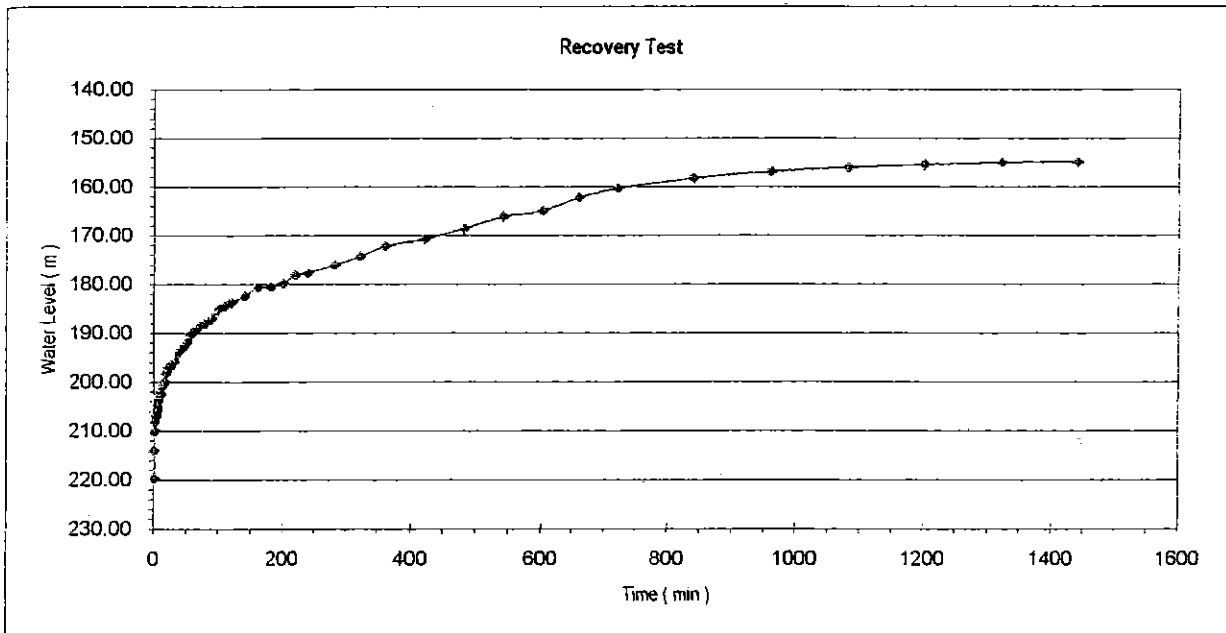
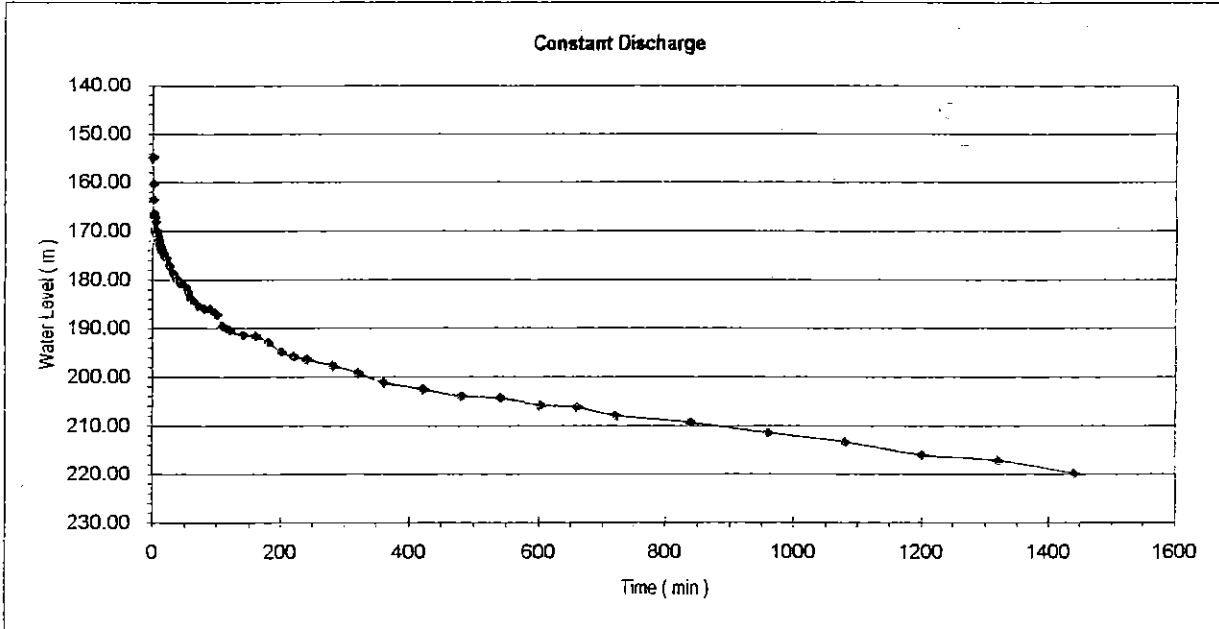
Site Name: Al Hesn-Al Abyad



Constant Discharge Test

Well Code: S-11/1
Site Code: S-11
S.W.L. (m): 154.78
Yield (L/sec): 3.8

Site Name: Al Hesn-Al Abyad
D.W.L. (m): 219.79 Drawdown (m): 65.01



Pumping Test Report Sheet

Well code: S-12 Site code: S-12 Site name: Mahdah

District: Jehana Governorate: Sana'a

Target water source: New projected deep well Well depth: 350 m

Contractor: Abdulkhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Mohammed Azeen

Date of start of the test: 12/8/2006 Date of end of the test: 15/8/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 248 m Datum level: 0.82 m S.W.L.: G.L.-57.78 m

Step drawdown test

Date/hour started: 13-8-2006-10:15am Date/hour finished: 14-8-2006-9:05am Total hours: 13:40

Yield (l/sec): 1st step 1.30 2nd step 2.60 3rd step 3.90 4th step 5.20 5th step 6.50

Water level before start the test (G.L.-m): 57.78

Water level after end of 5th step (G.L.-m): 106.71

Water level after recovery (G.L.-m): 63.01 Recovery hours: 3:40

Constant discharge test

Date/hour started: 13-8-2006-8:10pm Date/hour finished: 15-8-2006-5:10am Total hours: 31:00

Yield (l/sec): 2.20

Water level before start of the test (G.L.-m): 57.78

Water level after end of test (G.L.-m): 76.52

Water level after recovery (G.L.-m): 57.78 Recovery hours: 7:00

Drawdown (m): 18.74

Revised by:

Name :

Date:

Provisional Step Drawdown Test

Well Code: S-12 Site code: S-12 Pump on date/hour: 12-8-2006-11:30pm
 Site name: Mahdah Pump off date/hour: 13-8-2006-2:00am
 District: Jehana End of recovery hour: 13-8-2006-10:10am
 Governorate: Sana'a S.W.L (m): 58.60

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	58.60	1.30	61.64	2.60	64.39	3.90	71.04	5.20	77.08	6.50	79.41
0.5	60.35		62.32		65.40		71.87		77.23		77.00
1.0	60.79		62.44		65.56		72.19		77.28		76.07
1.5	61.12		62.50		65.62		72.88		77.31		75.36
2.0	61.17		62.55		65.68		73.14		77.35		74.28
2.5	61.22		62.57		65.75		73.68		77.37		73.16
3.0	61.26		62.67		65.81		73.92		77.39		72.09
3.5	61.27		62.75		65.86		74.18		77.41		71.30
4.0	61.30		62.83		65.92		74.64		77.43		70.68
4.5	61.32		62.87		66.02		74.85		77.46		69.54
5.0	61.34		62.92		66.17		75.09		77.50		68.76
6.0	61.35		62.99		66.28		75.93		77.53		67.81
7.0	61.36		63.18		66.37		76.54		77.57		66.17
8.0	61.37		63.37		66.49		76.73		77.61		65.64
9.0	61.38		63.56		66.57		76.77		77.66		65.38
10.0	61.39		63.81		66.66		76.81		77.71		65.19
12.0	61.45		64.16		67.01		76.83		77.95		65.03
14.0	61.48		64.20		67.74		76.88		78.24		64.87
16.0	61.51		64.23		68.19		76.91		78.37		64.71
18.0	61.54		64.26		68.81		76.94		78.59		64.53
20.0	64.57		64.29		69.31		76.95		78.71		64.33
22.0	61.59		64.33		69.71		76.97		78.87		64.12
24.0	61.61		64.36		70.32		76.99		78.99		63.96
26.0	61.62		64.37		70.54		77.02		79.15		63.82
28.0	61.63		64.38		70.87		77.05		79.29		63.68
30.0	61.64		64.39		71.04		77.08		79.41		63.55
50.0											62.82
70.0											62.15
90.0											61.59
110.0											61.19
130.0											60.44
150.0											60.11
170.0											59.87
190.0											59.68
210.0											59.50
230.0											59.32
250.0											59.15
270.0											59.00
290.0											58.88
490.0											58.60

Step Drawdown Test

Well Code: S-12 Site code: S-12 Pump on date/hour: 13-8-2006-10:15am
 Site name: Mahdah Pump off date/hour: 12/8/2006 3:45am
 District: Jehana End of recovery hour: 14-8-2006-9:05am
 Governorate: Sana'a S.W.L (m): 58.60

Contractor: Abdulkhaleg M. AL- Goli
 Hydrogeologist: Ali Abdullah Nagi AL- Gounaid
 Operator: Mohammed Azeen

Duration (min)	1st Step		2nd Step		3rd Step		4th Step		5th Step		Recovery (m)
	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	W.L. (m)	Yield (l/sec)	
0.0	58.60	1.30	63.20	2.60	67.85	4.20	76.97	5.20	92.47	6.50	107.53
0.5	59.42		63.31		68.40		76.93		93.74		103.52
1.0	60.38		63.48		69.38		76.98		94.21		99.12
1.5	61.41		63.59		69.80		77.03		94.79		95.64
2.0	61.45		63.68		70.20		77.05		95.11		93.49
2.5	61.47		63.84		70.32		77.05		95.63		91.52
3.0	61.48		63.79		70.48		77.06		95.73		89.88
3.5	61.49		64.08		71.00		77.06		96.04		89.54
4.0	61.50		64.19		71.32		77.08		96.66		89.44
4.5	61.60		64.21		71.52		77.08		96.96		89.35
5.0	61.61		64.24		71.73		77.09		97.27		88.39
6.0	61.63		64.27		72.13		77.09		97.79		85.98
7.0	61.64		64.32		72.30		77.10		98.44		83.87
8.0	61.66		64.43		72.93		77.11		99.36		81.27
9.0	61.67		64.44		73.32		77.13		99.68		79.25
10.0	61.69		64.47		73.57		77.17		100.32		77.79
12.0	61.70		64.47		73.84		77.19		100.93		77.34
14.0	61.71		64.59		74.16		77.24		101.59		77.13
16.0	61.74		64.59		74.43		77.43		102.17		77.03
18.0	61.80		64.67		74.72		77.53		102.62		76.97
20.0	61.96		64.74		74.76		78.28		102.84		76.85
25.0	62.13		64.92		75.12		81.97		103.14		75.47
30.0	62.57		65.04		76.39		84.34		103.43		70.66
35.0	62.86		65.05		76.64		85.65		104.03		67.64
40.0	62.93		65.11		76.82		87.99		104.59		66.99
45.0	62.95		65.18		76.88		89.14		104.68		65.69
50.0	62.95		65.23		76.89		89.63		104.76		65.61
55.0	62.95		65.37		76.91		89.74		105.06		65.60
60.0	62.97		65.48		76.92		89.85		105.16		65.59
70.0	62.99		65.78		76.93		90.03		105.40		65.57
80.0	63.01		66.34		76.93		91.05		105.64		65.50
90.0	63.01		67.57		76.94		91.06		105.98		65.44
100.0	63.13		67.57		76.95		91.74		106.14		65.32
110.0	63.18		67.58		76.96		92.13		106.87		65.30
120.0	63.20		67.85		76.97		92.47		107.53		65.27
140.0											64.93
160.0											64.64
180.0											64.37
200.0											64.10
220.0											63.83

Constant Discharge & Recovery Test (1/2)

Well Code: S-12 Site code: S-12

Site name: Mahdah

Pump on date/hour: 13-8-2006-8:10pm

District: Jehana

Pump off date/hour: 14-8-2006-8:10pm

Governorate: Sana'a

End of recovery hour: 15-8-2006-5:10am

Contractor: Abdulkhaleg M. AL- Goli

S.W.L (m): 58.60

Hydrogeologist: Ali Abdullah Nagi AL- Gounaid

D.W.L (m): 77.34

Operator: Mohammed Azeen

Yield (l/sec): 2.2

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
0.0	58.60	0.00		77.34	18.74		
0.5	62.72	4.12		72.73	14.13		
1.0	63.33	4.73		71.81	13.21		
1.5	63.82	5.22		71.52	12.92		
2.0	64.01	5.41		71.02	12.42		
2.5	64.22	5.62		70.98	12.38		
3.0	64.43	5.83		70.79	12.19		
3.5	64.54	5.94		70.66	12.06		
4.0	64.65	6.05		70.52	11.92		
4.5	64.78	6.18		70.40	11.80		
5.0	64.93	6.33		70.21	11.61		
6.0	65.06	6.46		70.01	11.41		
7.0	65.13	6.53		69.23	10.63		
8.0	65.23	6.63		68.33	9.73		
9.0	65.27	6.67		68.00	9.40		
10.0	65.32	6.72		67.88	9.28		
12.0	65.43	6.83		67.45	8.85		
14.0	65.80	7.20		67.08	8.48		
16.0	65.87	7.27		66.99	8.39		
18.0	65.99	7.39		66.56	7.96		
20.0	66.17	7.57		66.17	7.57		
25.0	66.97	8.37		65.92	7.32		
30.0	67.50	8.90		65.66	7.06		
35.0	67.62	9.02		65.39	6.79		
40.0	67.82	9.22		65.13	6.53		
45.0	68.32	9.72		64.97	6.37		
50.0	68.58	9.98		64.68	6.08		
55.0	68.67	10.07		64.41	5.81		
60.0	68.72	10.12		64.13	5.53		

Constant Discharge & Recovery Test (2/2)

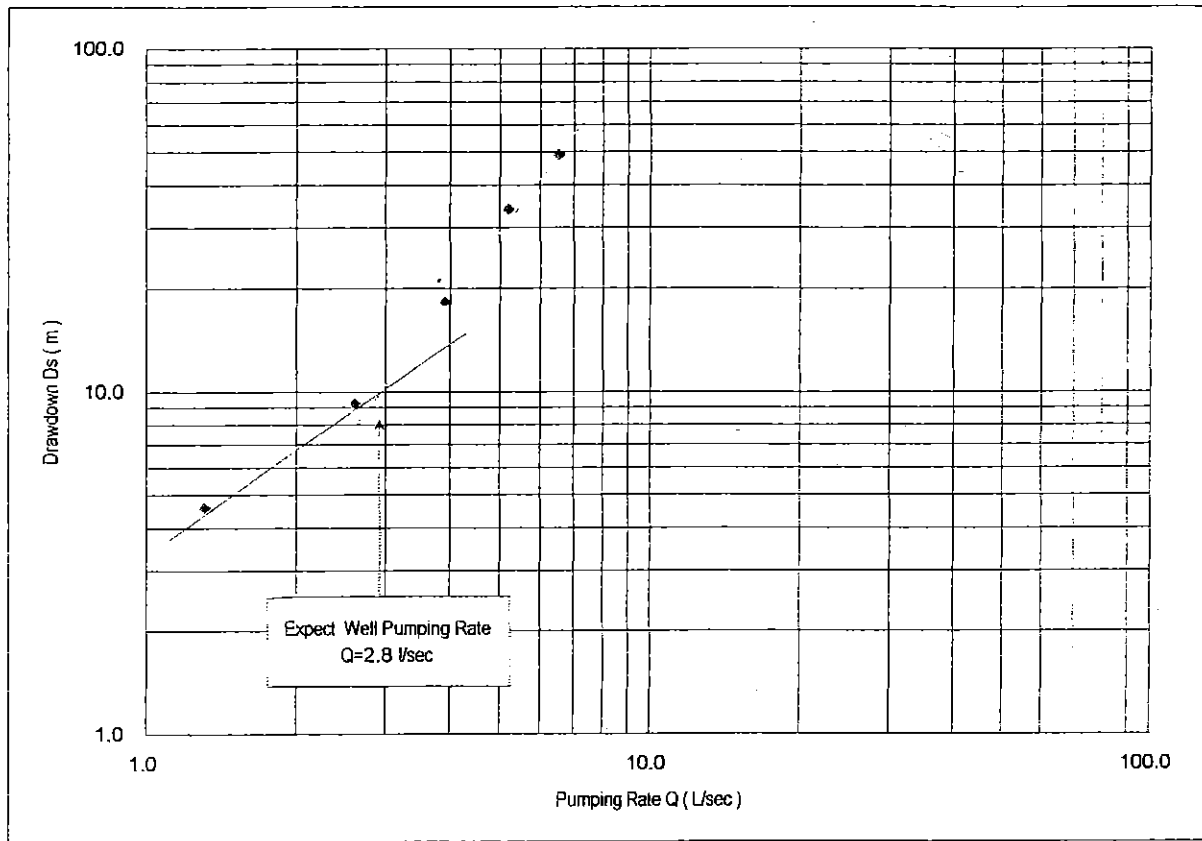
Well Code: S-12 Site code: S-12 Site name: Mahdah
 District: Jehana Governorate: Sana'a

Duration (min)	Constant Discharge Test			Recovery Test		Water Analysis	Remarks
	Water level (m)	Drawdown (m)	Pumping rate (l/sec)	Water level (m)	Residual (m)	Conductivity ()	
70.0	69.40	10.80		63.98	5.38		
80.0	69.64	11.04		63.71	5.11		
90.0	69.69	11.09		63.43	4.83		
100.0	69.76	11.16		63.19	4.59		
110.0	69.79	11.19		62.95	4.35		
120.0	69.79	11.19		62.65	4.05		
140.0	69.87	11.27		62.02	3.42		
160.0	70.30	11.70		61.88	3.28		
180.0	70.99	12.39		61.38	2.78		
200.0	71.32	12.72		61.06	2.46		
220.0	71.47	12.87		60.79	2.19		
240.0	71.53	12.93		60.37	1.77		
280.0	71.95	13.35		60.12	1.52		
320.0	72.53	13.93		59.81	1.21		
360.0	72.56	13.96		59.21	0.61		
420.0	72.58	13.98		58.60	0.00		
480.0	73.03	14.43					
540.0	73.84	15.24					
600.0	73.86	15.26					
660.0	73.88	15.28					
720.0	74.16	15.56					
840.0	75.23	16.63					
960.0	75.90	17.30					
1080.0	76.10	17.50					
1200.0	76.89	18.29					
1320.0	77.27	18.67					
1440.0	77.34	18.74					

Step Drawdown Test

Well Code: S-12
 Site Code: S-12
 S.W.L.: 58.60 m

Site Name: Mahdah

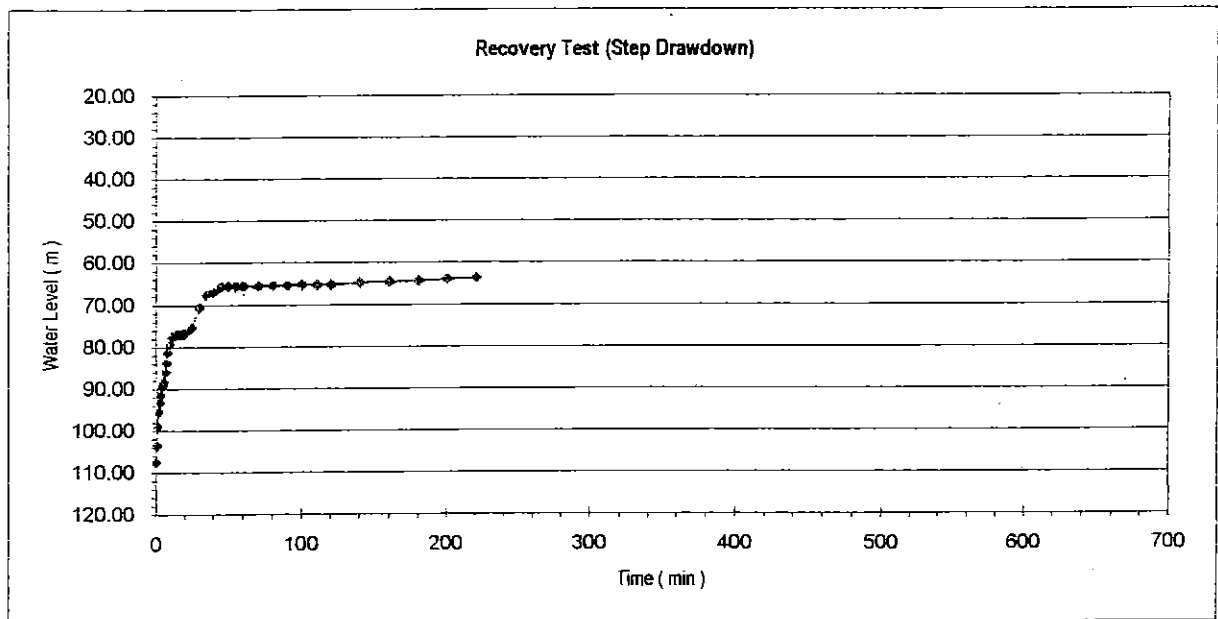
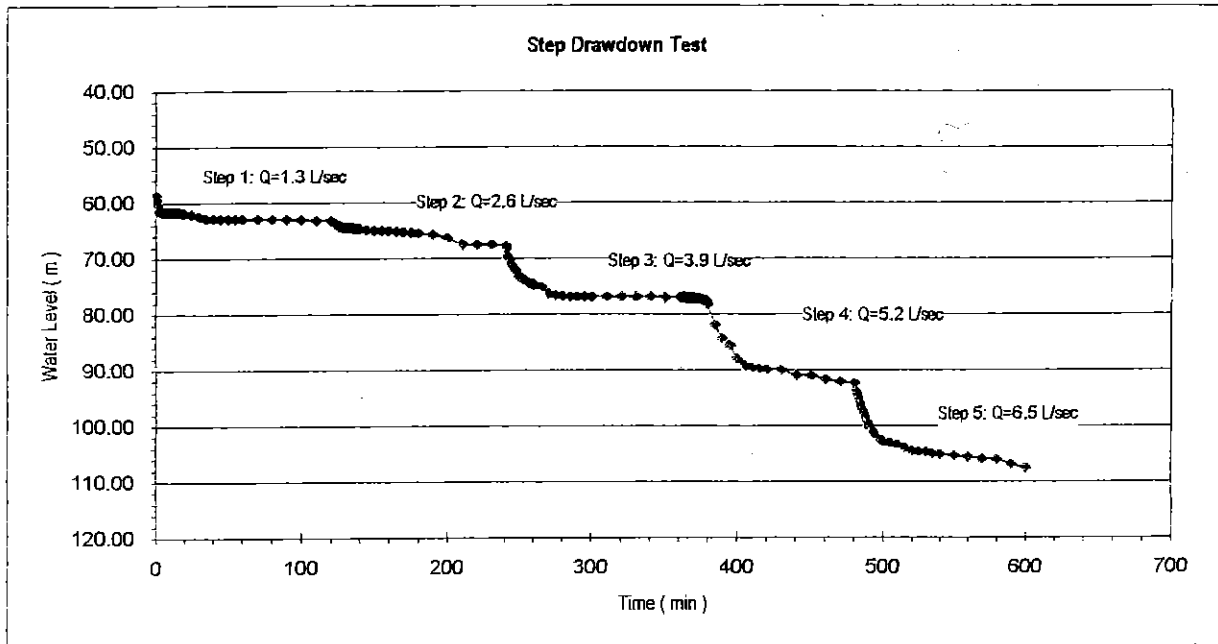


Step	Q (l/sec)	D.W.L.(m)	D_s (m)
1	1.3	63.20	4.60
2	2.6	67.85	9.25
3	3.9	76.87	18.27
4	5.2	92.47	33.87
5	6.5	107.53	48.93

Step Drawdown Test

Well Code: S-12
Site Code: S-12
S.W.L. : 58.60 m

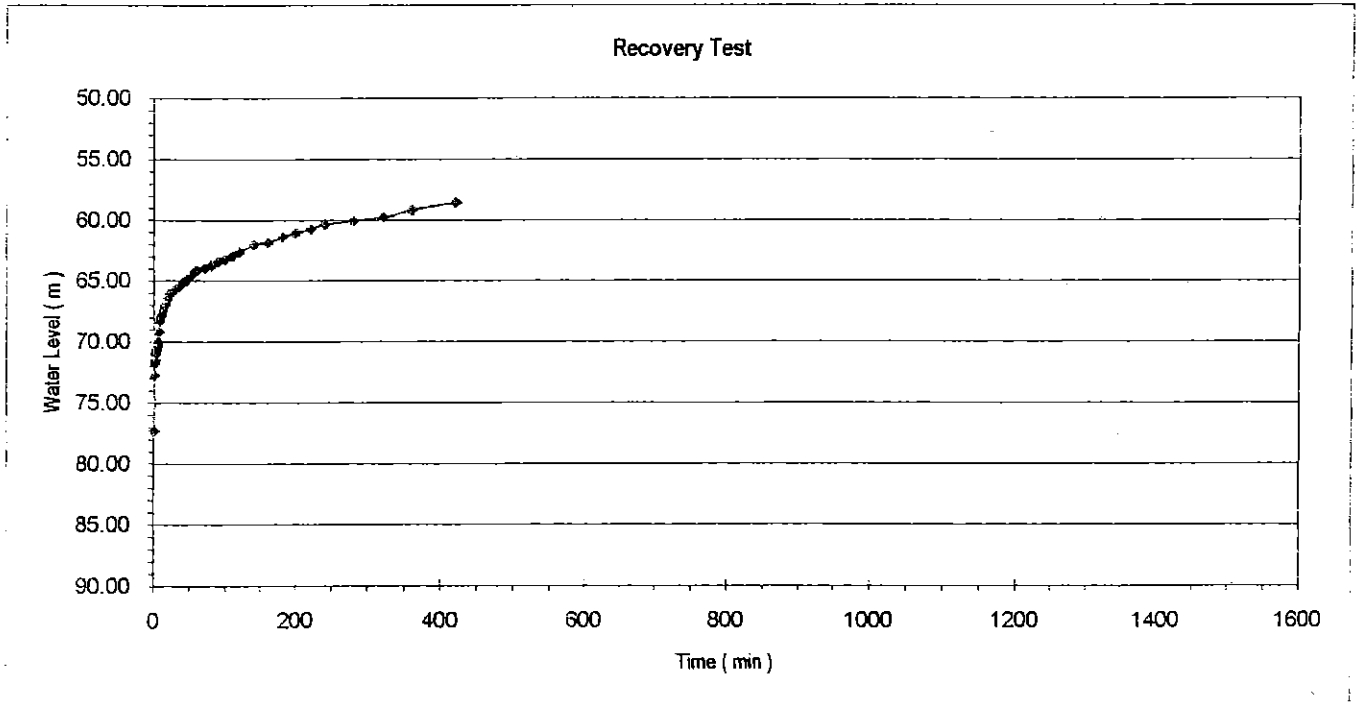
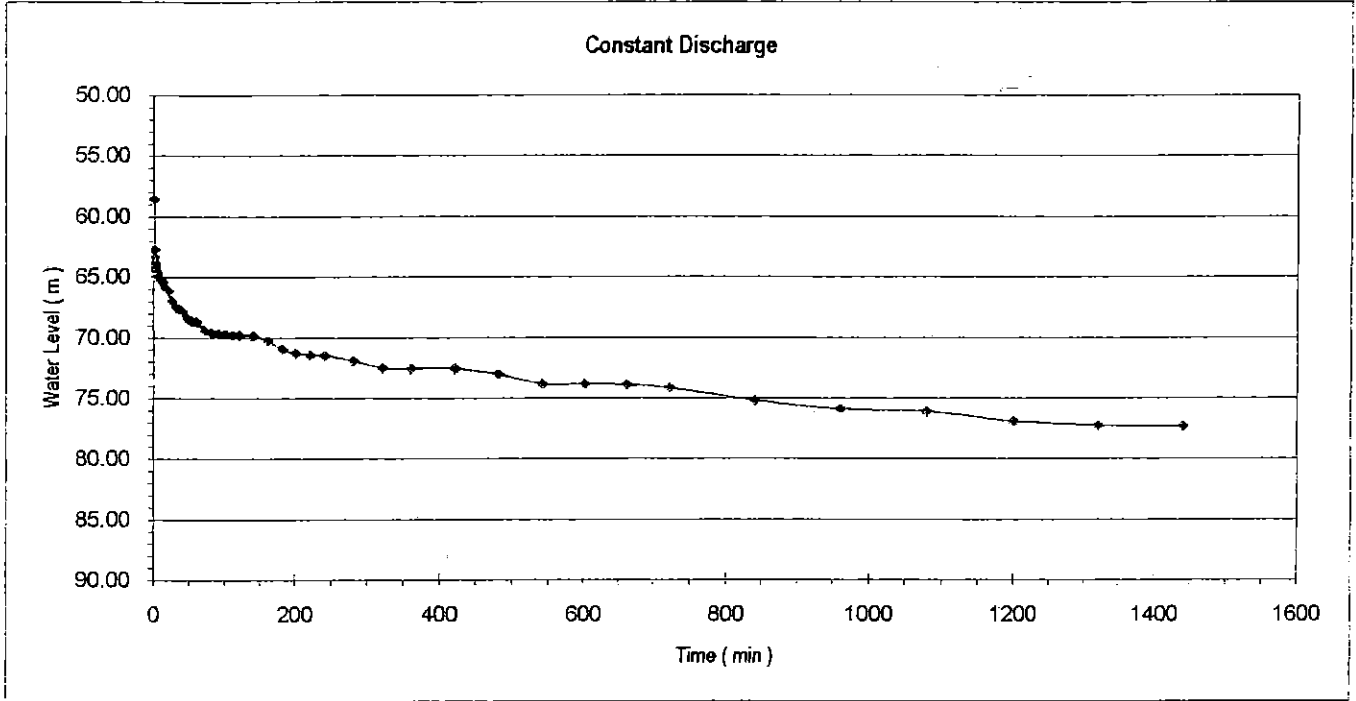
Site Name: Mahdah



Constant Discharge Test

Well Code: S-12
Site Code: S-12
S.W.L. (m): 58.60
Yield (L/sec): 2.2

Site Name: Mahdah
D.W.L. (m): 77.34 Drawdown (m): 18.74



Pumping Test Report Sheet

Well code: S-14 Site code: S-14 Site name: Al Ghail

District: Nehm Governorate: Sana'a

Target water source: Existing projected deep well Well depth: 185 m

Contractor: Abdulkhaleg M. AL- Goli

Hydrogeologist in charge: Ali Abdullah Nagi AL- Gounaid

Operator: Bulul

Date of start of the test: 6/8/2006 Date of end of the test: 6/8/2006

Pump type: Vertical pump Engine: Iveco aifo

Pump installation depth: 131 m Datum level: 0.62 m S.W.L.: G.L.-73.28 m

Step drawdown test

Date/hour started: --- Date/hour finished: --- Total hours: ---

Yield (l/sec): 1st step 0.60 2nd step 1.20 3rd step 1.80 4th step 2.40 5th step 3.00

Water level before start the test (G.L.-m): ---

Water level after end of 5th step (G.L.-m): ---

Water level after recovery (G.L.-m): --- Recovery hours: ---

Constant discharge test

Date/hour started: --- Date/hour finished: --- Total hours: ---

Yield (l/sec): ---

Water level before start of the test (G.L.-m): ---

Water level after end of test (G.L.-m): ---

Water level after recovery (G.L.-m): --- Recovery hours: ---

Drawdown (m): ---

Revised by: _____

Name :

Date:

