CHAPTER 3 CONSIDERATIONS

3-1 Hydrological Condition

3-1-1 Water Balance

(1) Wadi al Hawasinah River

The conceptional map of water balance in the Ghuzayn District is shown in Figure II-3-1. Input data for the water balance is used hydrological and meteorological data obtained by the hydrological investigation.

Formula of water balance based on the conception is shown in Formula - 4.

R = E + S + U + G		Formula - 4
E = Ev1 + Ev2		
S = Sol - Si + Sgw		
y = So2 - Ds		
G = Go - Gi		
	4.0	
R: Precipitation	(m³/year)	
E: Volume of evapotranspiration	(m³/year)	
S: Outflow of surface water	(m³/year)	
U: Volume of water use	(m³/year)	
G: Volume of infiltration	(m³/year)	
Ev1: Evapotranspiration from ea	rth surface	(m³/year)
Ev2: Evaporation from river, ch	annel, etc.	(m³/year)
Sol: Outflow by rivers		(m³/year)
Si : Inflow of surface water		(m³/year)
Sgw: Inflow to rivers by ground	lwater	(m³/year)
So2: Outflow by irrigation char	nel	(m³/year)
Ds :Drainage (waste water)		(m³/year)
Go : Outflow of groundwater		(m³/year)
Gi : Inflow by groundwater		(m³/year)

Concerning the hydrological parameters as mentioned above, precipitation in the district is mean value of precipitation between Sohar and Seeb Airport, and the evapotranspiration is assumed 80 % based on the result of the Follow-up Survey in the Rakah Area (MMAJ, 1997). But the volume of evaporation from rivers, inflow to rivers by groundwater and outflow of groundwater in the district are

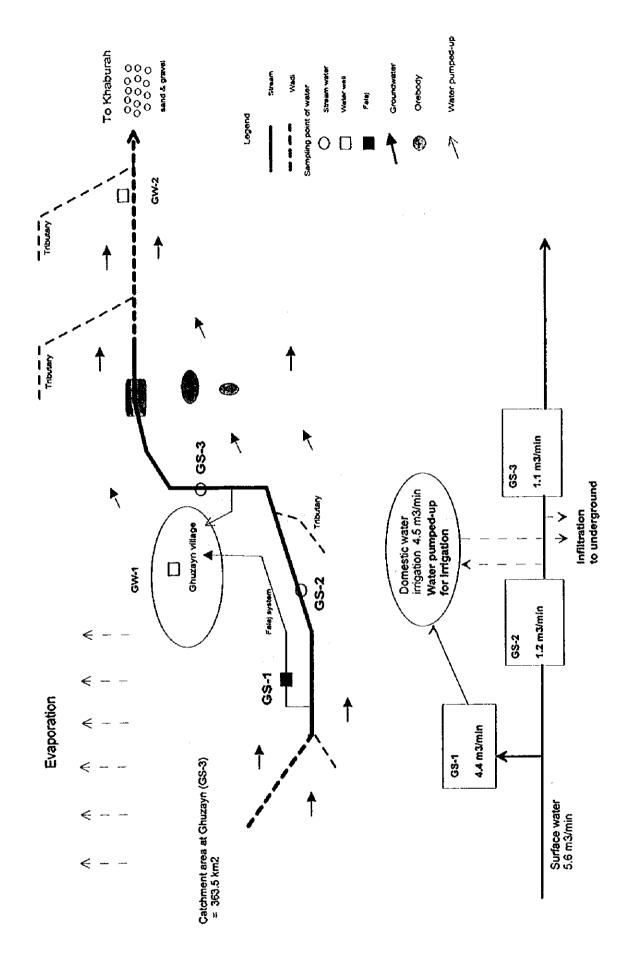


Figure II-3-1 Schematic Water Balance in the Ghuzayn District

excepted from the examination, because these data could not obtained.

Each value of hydrological parameters at Ghuzayn Village (GS-3) is shown as below.

The volume of groundwater at Ghuzayn Village (GS-3) is calculated to be 4,706,350 m³/year which corresponds to about two times of discharge of irrigation channel (Falaj system). The outflow of rivers at GS-3 is 578,160 m³/year and all of surface water of Wadi al Hawasinah River becomes to the river-bed water, so that the volume of groundwater around the No.3 Orebody is calculated to be 5,284,510 m³/year in total.

Based on the calculation of water balance in the district, it seems that the volume of groundwater around Ghuzayn Village, which is about two times of the volume of surface water, is relatively small quantity. And the potential of groundwater around Ghuzayn Village also supports to be relatively small quantity, because water level of Wadi al Hawasinah River is quite unstable and wadi sediments around Ghuzayn Village is relatively small volume of wadi sediments along the river.

(2) Ghuzayn Village

The water balance around Ghuzayn Village is shown in Figure II-3-2. Outflow of river as surface water at the upper stream of GS-1 is $5.6 \text{ m}^3/\text{min}$.

4.4 m³/min of river water is taken by irrigation channel (Falaj system), and the water is used for living and agriculture.

The volume of surface water at GS-2 decreases to 1.2 m³/min by the intake of irrigation channel, and then the surface water at GS-2 decreases again to 1.1 m³/min at GS-3.

The living and agricultural water for Ghuzayn Village is mostly supplied by Falaj system, and there is only one water well in the village.

All of drainage in Ghuzayn Village is seeped to the ground.

3-1-2 Groundwater

(1) Topography

The topographic map around the investigation area of bore holes in the district is shown in Figure II-3-2.

The river condition of Wadi al Hawasinah River from about 3.5 km upper stream from Ghuzayn Village to the village forms narrow and deep U-shaped valley, and is thought to be relatively thin river sediments. Therefore, river-bed water flows out and several points of small scale of surface water reveals in the river (Figure II-1-1).

Especially, the width of river around Ghuzayn Village becomes narrow (about 100 m) and the water level of the river in 1998 largely changes from the condition in 1997, so that the baseflow showing recharging volume from groundwater is assumed to be relatively small quantity.

Wadi al Hawasinah River, which bents flow to the west at Ghuzayn Village, is bifurcated to the northwest (main stream) and to the north-northeast (tributary). It seems that the division of two flowing courses at Ghuzayn Village is affected by hilly topography including gossan zone.

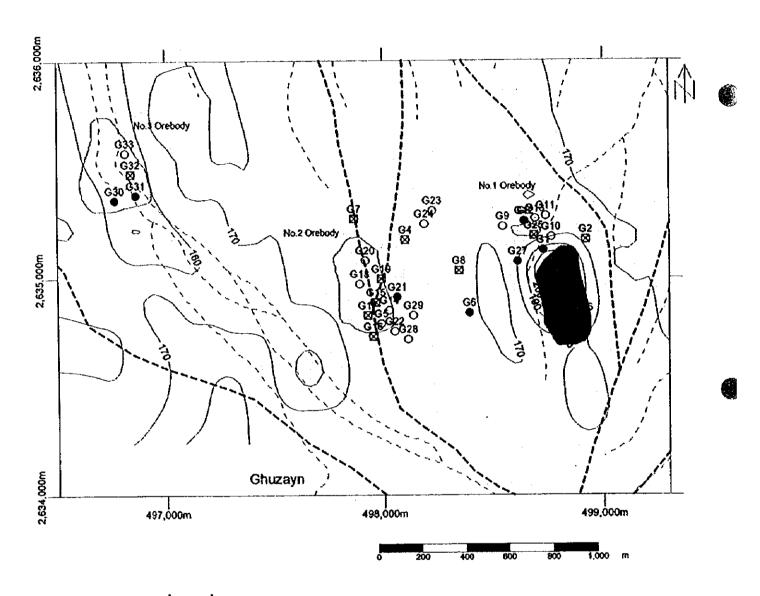
The lower terrace is widespread in the central and northern parts of the district and the main stream and tributaries of Wadi al Hawasinah River erode its surface. Wadi al Hawasinah River flows to the northeast and the drainage system shows parallel drainage pattern.

(2) Geological feature and aquifers

(1) Geological feature

The geologic section and geological feature of each bore holes are shown in Figure II-3-4 and Table II-3-1, respectively.

The River Sediments (Qtgz), ranging in thickness from 6.90 to 15.10 m,



Legend

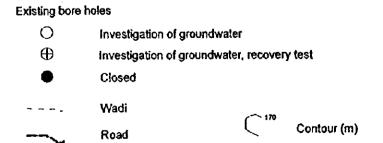
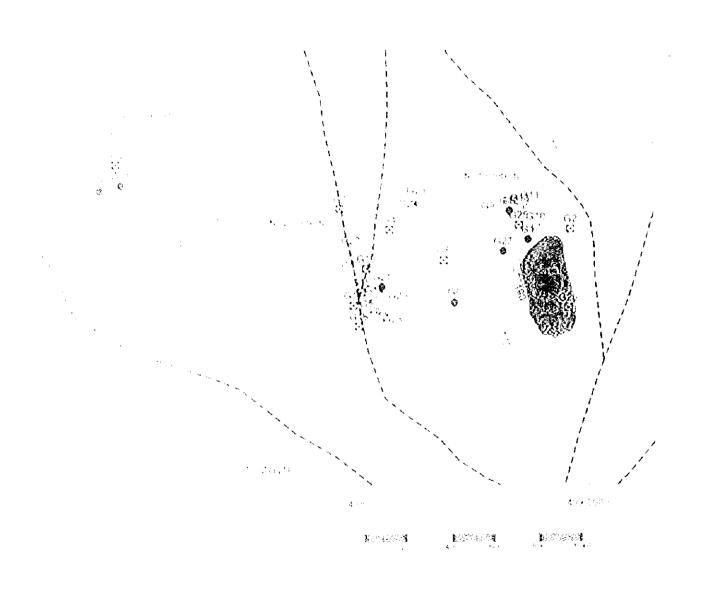


Figure II-3-2 Topographic Map in the Ghuzayn District



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Table II-3-1 Geological Feature of the Existing Bore Holes

Bore holes	Depth of lithofacies boundary *1 (m)												
	Qt	gz			gx		sv	1-2	Ore	zone	sv	1-1	of
			uncons	olidated	conso	lidated				r			
(No.)	from	to	from	to	from	to	from	to	from	to	from	to	orebody
MJOB-G1	-		0.00	3,40	-	-	34.00	42.60	-		42,60	186.50	No. 1
MJOB-G2		-	0.00	3.60	*	-	3.60	42.80	-	-	42.60	305.40	1
MJOB-G3	-	-	0,00	6,10	-	-	6.10	115.15	115,15	288.20	288.20	300,40	No.1
MJOB-G4	-		0,00	5,30	5.30	10.90	10.90	290.30	-	-	290.30	300.50	No.1
MJOB-G5		-	0,00	10.10	10.10	23.10	23,10	134.00	134.00	170,60	170.60	300.20	No.1
MJOB-G6	-	-	0.00	11.80	-	- :	11.80	73.10	-		73.10	300.30	
MJOB-G7	_	**	0.00	11.00	11.00	28.95	28.95	300,15	***	_	-	-	_
MJOB-G8	-		0,00	4.90	4.90	19.80	19.80	191.55	-	_	191.55	200.25	-
MJOB-G9	-		0.00	7.35	7.35	17.60	17.60	200.20	-	-	,	-	-
MJOB-G10	*	-	0.00	5,80	-	-	5.80	84.70	-		84,70	200,10	_
MJOB-G11		-	0.00	4.60	-	-	4.60	162.85	162.85	165.25	165.25	200.20	No.1
MJOB-G12	-	-	0.00	4.80	4.80	8.50	6,50	156.50	-	-	156.50	200.30	_
MJOB-G13			0.00	4.70	-	_	4.70	152.80	152.80	154.40	154.40	200.10	No.1
MJOB-G14	-	-	0.00	2.80	2.80	18.60	18.60	119.00	119,80	230.50	230.50	250.10	No.2
MJOB-G15	-	-	0.00	3.50	3.50	18.60	18.60	178.85	178.85	212.30	212.30	250.15	No.2
MJOB-G16	-	-	0.00	4.80	4.80	20.25	20.25	186.30	186.30	189.90	189.90	201.85	No.2
MJOB-G17	-	-	0.00	6.70	6.70	18.25	18.25	215.90	215.90	222.80	222.80	250.25	No.2
MJOB-G18	-	-	0.00	10,00	10.00	19,35	19.35	251,80	251,80	267.00	267,00	300.25	No.2
MJOB-G19	-		0.00	3.60	3.60	24.80	24.80	194.10	194.10	227.50	227.50	300.40	No.2
MJOB-G20	-	-	0.00	7.75	7.75	16.00	16,00	273,90	273.90	279.30	279.30	300.45	No.2
MJOB-G21	_	-	0.00	8.90	_	_	8,90	126.10	126.10	138,75	138.74	250.25	No.2
MJOB-G22	-	~	0.00	8.70	+	-	8.70	90.50	90.50	127.85	127.85	200,60	No.2
MJOB-G23	-	-	0.00	3,15	3.15	12.10	12.10	350.20	-	-	-	-	
MJOB-G24	-	_	0,00	7.80	7.80	12.10	12.10	331.60	-		331.60	350.25	-
MJOB-G25	-	~	0.00	4.05	4,05	13.00	13.00	115.60	115,60	123.05	123.05	200.10	No.2
MJOB-G26	-	-	-	-	-	-	0.00	37.55	80.05	86,80	37.55	200.15	No.2
MJOB-G27		-	0.00	4.55	4.55	13.60	13,60	101.25		-	101.25	201.05	
MJOB-G28		-	0.00	7.50	-		7.50	80.75	-	-	80,75	150.20	_
MJOB-G29	~	_	0.00	3.30	3.30	15.15	15.15	116.05	132.75	142.85		200.15	No.2
MJOB-G30	0.00	14.95		-	-	_				201.80		├	No.3
MJOB-G31	0.00	15,10		_	 -	_	15,10	109.30	 	181.30		235.45	No.3
MJOB-G32	_		_		0.00	18.60	18,60	169.35	169.35	209.00	209.00	250.50	No.3
MJOB-G33	-		<u> </u>	-	0.00	7.30	7.30	223.20	 	247.40	}	300.00	No.3
MJOB-G34		-	0.00	4.30	~	-	4.30		210.65	250.40		_	No.3
MJOB-G35	0.00	6.90				-	6.90			133.35		200.10	No.3
MJOB-G36	0.00	13.15		_	_	_	13.15		l	231.25		251.00	No.3
							<u> </u>		 		<u> </u>		
MJOB-G37	0.00	12.50	_		_	_	12 50	255.05	255.05	259 15	259 15	270.15	No.3

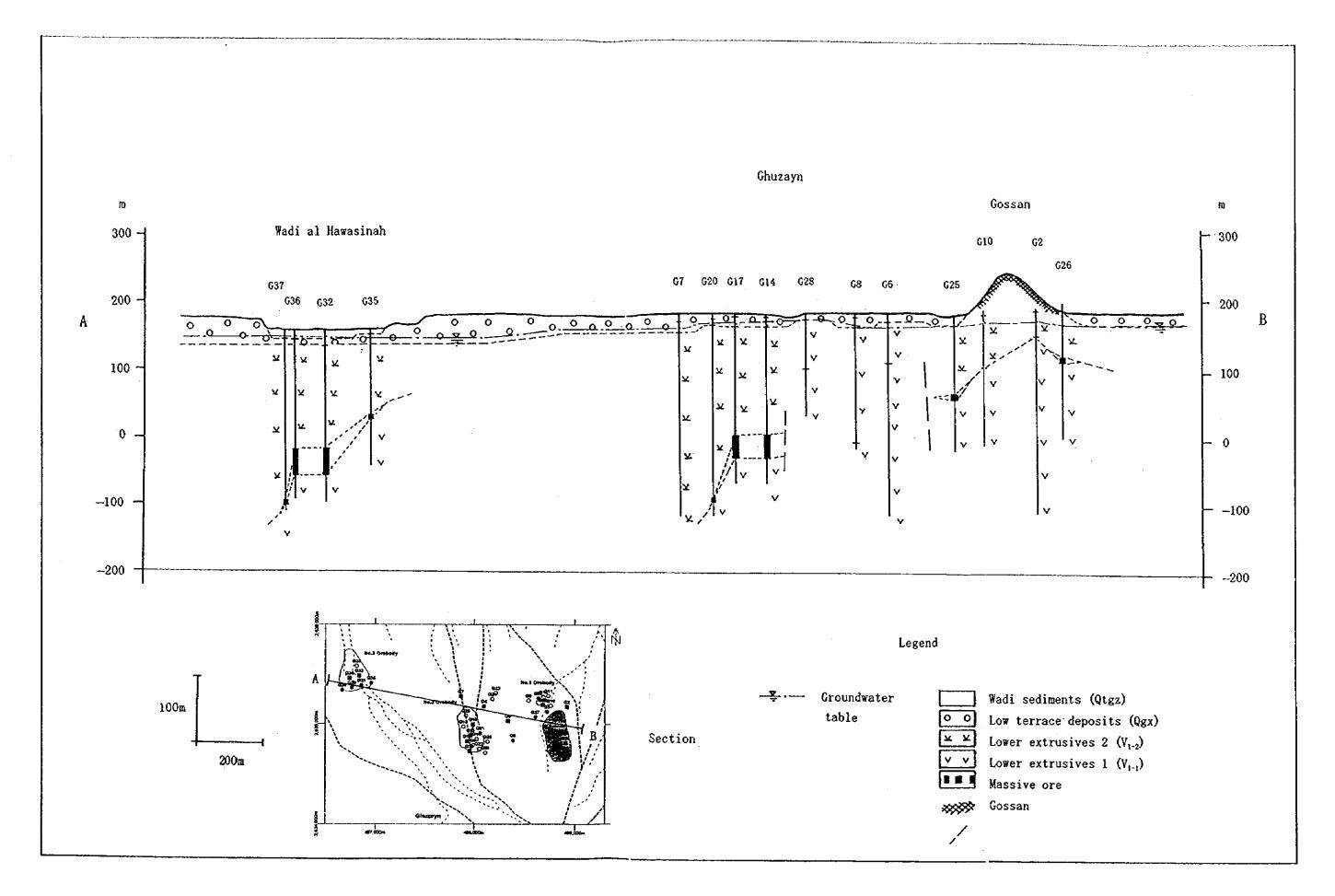


Figure II-3-3 Geologic Section in the Survey Area



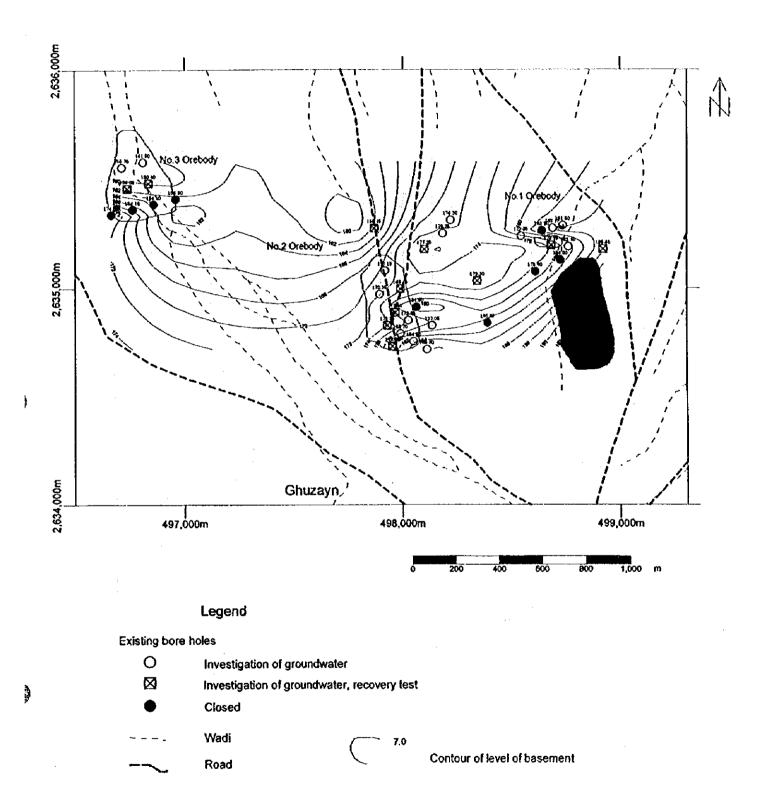


Figure II-3-4 Contour map of the basement



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Table II-3-2 Hydrological Condition of Existing Bore Holes in the Ghuzyn District

Bore holes	Ground level	Depth of	Groundwater	Thickness of	Bottom level	Thickness #2 of
		groundwater	level	Qtgz & Qgx *1	of Qtgz & Qgx	groundwater in
(No.)	(m)	(m)	(m)	(m)	(m)	Qtgz & Qgx (m)
MJOB-G1	187.40	-	**	3,40	184,00	-
MJOB-G2	189.25	-20.24	169.01	3.60	185.65	16.64
MJOB-G3	190,00	-		6.10	183,90	-
MJOB-G4	188.15	-17.88	170.27	10.90	177.25	6.98
MJOB-G5	191.80	-15.11	176.69	23.10	168.70	(7.99)
MJOB-G8	192.40	+	-	11.80	180.60	- .
MJOB-G7	187.40	-21.63	165.77	28.95	158,45	(7.32)
MJOB-G8	192.10	-20.94	171.16	19,80	172,30	1,14
MJOB-G9	191.20	-22.86	168.34	17,60	173.60	5.28
MJOB-G10	187.90	-18.04	169,86	5.80	182,10	12.24
MJOB-G11	186.10	-19.97	166,13	4.60	181.50	15.37
MJOB-G12	190,00	-23.96	186.04	6.50	183.50	17.46
MJOB-G13	186.80	-20.03	168.77	4,70	182.10	15.33
MJOB-G14	191.45	-18.00	175.45	18.60	172.85	(2.60)
MJOB-G15	191,10	-14.39	178.71	18.60	172.50	(4.21)
MJOB-G16	192.90	-16,00	176.90	20.25	172.65	(4.25)
MJOB-G17	191.20	-14.62	176.58	18.25	172.95	(3.63)
MJOB-G18	189,70	-14.83	174.87	19,35	170.35	(4.52)
MJOB-G19	190.25	-15.41	174,84	24.80	165.45	(9.39)
MJOB-G20	189.15	-15.26	173,89	16.00	173.15	(0.74)
MJOB-G21	190.80	-	-	8.90	181.90	_
MJOB-G22	193.20	-15.75	177.45	8.70	184.50	7.05
MJOB-G23	188,40	-18.30	170.10	12.10	176.30	6.20
MJOB-G24	187.85	-19.10	168.75	12.10	175,75	7.00
MJ08-G25	188.10	-20.51	165.59	13.00	173.10	7.51
MJOB-G26	198.70	-32.87	166.03	0.00	198.70	32.87
MJOB-G27	189.20	02.07	100.00	13.60	175,60	- 02.01
	ļ	-18	176.40	7.50	 	10,50
MJOB-G28	194.40	-16	176,40		186.90	10.30
MJOB-G29	192.20 169.10	-	 	15.15 14.95	177,05 154,15	
MJOB-G30		<u>-</u>	 			
MJOB-G31	169.20	1265	155.25	15.10	154,10 150,40	(4,95)
MJ08-G32	169.00	-13.65	155,35	18.60 7.30	161.50	5.09
MJOB-G33 MJOB-G34	168.80	-12.39	156.41	4.30	174.80	7.03
	179,10		 	6.90	 	<u> </u>
MJOB-G35	170,50	-0.40	150.00	· · · · · · · · · · · · · · · · · · ·	163.60	(2.75)
MJOB-G36	169.20	-9.40	159.80	13.15	158.05	(3.75)
MJOB-G37	168.20	<u> </u>	<u> </u>	12.50	155,70	

*1 Qtgz: Wadi sediments

#2 (): Groundwater table in the SV1

Qgx: Lower terrace deposits

are found along Wadi al Hawasinah River in the western part of the district. In the section among bore holes MJOB-G30, G31 and G32, its thickness is almost stable between 12.50 and 14.95 m. It becomes thinner in the lower stream of the river.

The Lower Terrace Deposits (Qgx) are widespread in the district and range in thickness from 7.30 to 28.97 m. Qgx around the gossan zone and No. 1 Orebody is thin layer ranging from 3.40 to 6.50 m. Qgx at MJOB-G9 hole is 17.60 m thick and forms steep slope. And Qgx around No. 2 Orebody ranges in thickness from 7.50 to 28.95 m, and their thickness remarkably varies and wholly increases. The base of Qgx shows unevenness and forms small valley extending from the north of gossan zone to the west (Figure II-3-4).

② Aquifers

The main aquifers of groundwater in the district are thought to be composed of unconsolidated sand and gravel of the River Sediments (Qtgz) and the Lower Terrace Deposits (Qgx).

Although the lower part of Qgx becomes calcurete layer filled by carbonate minerals, a part of calcurete layer seems to be remained permeability due to loose texture, fractures, etc. And top of the groundwater in the bore holes is mostly changed to fresh water which is not contaminated by the drill mud, so that the groundwater seems to seep from Qgx.

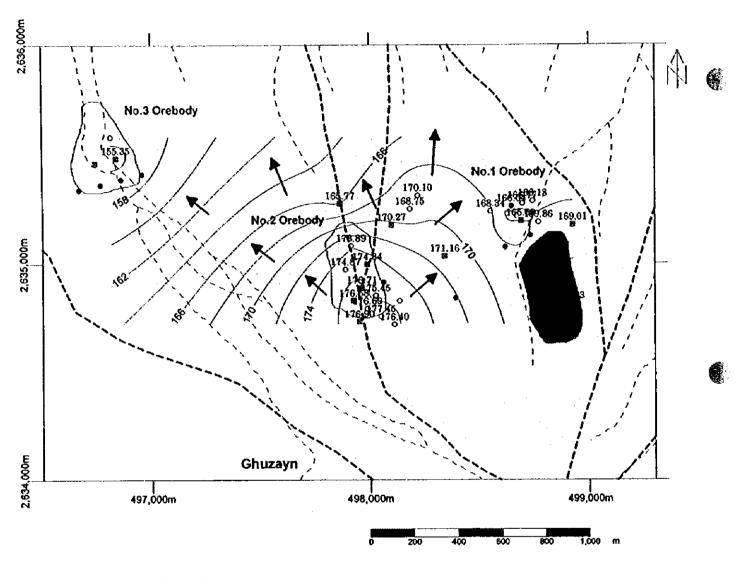
The basement consisting mainly of pillow lava is thought to be relatively good permeability due to the fractures developed by weathering and alteration, but its sphere is limited only upper part of the basement.

Incidentally, the water spring in the bore hole during drilled work at the No. 2 Orebody was recorded, therefore it assumes there are limited aquifers in the basement and the confined groundwater is flowing.

(3) Water table

The profile and plan of water table in the district are shown in Figure II-3-3 and Figure II-3-5, respectively.

Groundwater table in the district forms almost flat, but about 2 km distance from southeast (175 m in elevation) to northwest (155 m in elevation) of the district shows very gentle slope (0.6°) . The feature of water table in the district is mostly concordant with topography of the district. And the groundwater table at the water wells (GW-1 and GW-2) in the district also exists



Legend

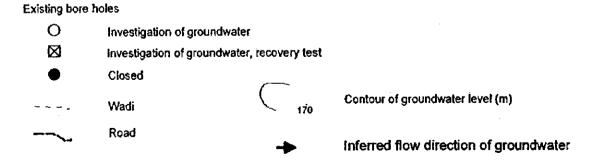
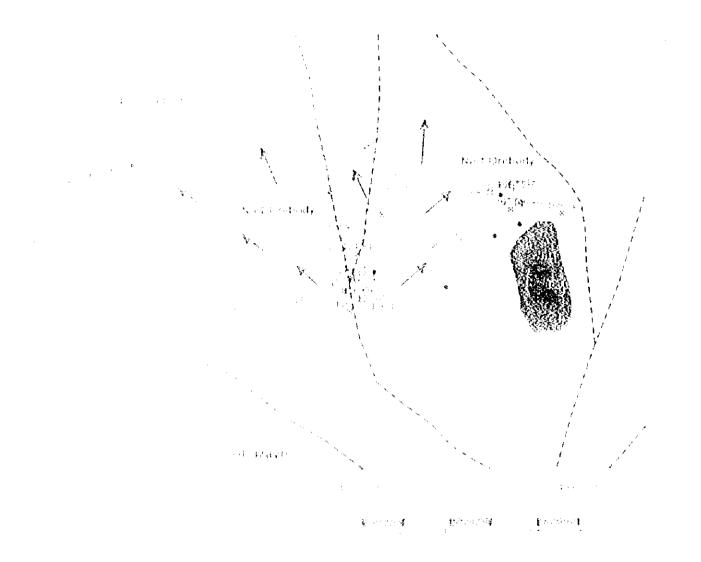


Figure II-3-5 Water Table in the Survey Area



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The groundwater table around bore holes of MJOB-G5, G16, G22 and G28 is 176 m and shows a convex shape, which is about 5 to 10 m higher than that of other bore holes. The convex shape of groundwater around the No. 2 Orebody corresponds to the confined groundwater in the basement mentioned as before.

The drilling mud (EG-mud) is thought to be still remained in the bore holes, so that the drilling mud gives critical influence to the recovery test.

(4) Flow direction of groundwater

(1) Flow direction

The flow direction of groundwater in the district shows radial shape at the center of No. 2 Orebody (Figure II-3-5).

② Permeability coefficient

The permeability coefficient in the district ranges from 10^{-4} to 10^{-7} cm/s. That of MJOB-G36 is 10^{-4} cm/s and shows to be relatively good aquifer, because of the sand and gravel of the River Sediments (Qtgz).

The permeability coefficient of other bore holes ranges from 10⁻⁵ to 10⁻⁷ cm/s, and it is thought that the drilling mud gives critical influence to the recovery test.

3-2 Water Quality

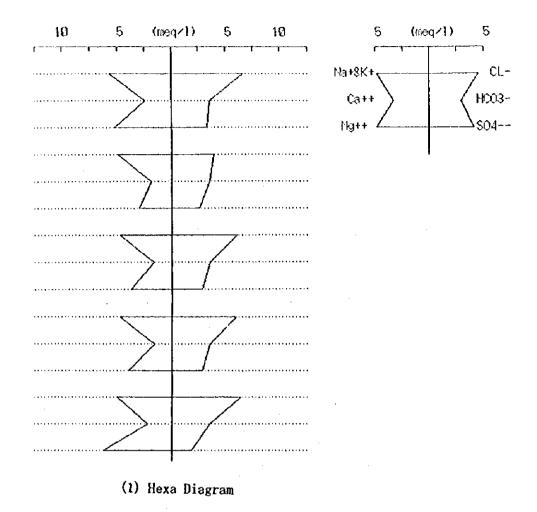
3-2-1 Hexadiagram and Key Diagram

The water quality diagram of river and well water is shown in Figure II-3-6. But the concentration of HCO_3 was not available, so that the water quality data $(HCO_3: 219 \text{ mg/l})$ of well water (Hayl as Safil) in the Rakah area is used as reference.

Surface water (GS-2) shows very similar to the irrigated water (GS-1). Surface water in Ghuzayn Village (GS-3) slightly increases dissolved substance more than GS-2, especially Mg ion remarkably increased.

Well water (GW-2) is the lowest water of dissolved substance in the district.

River water and well water show almost same feature of water quality, especially the well water of Ghuzayn Village (GW-1) and river water of Wadi al Hawasinah River at Ghuzayn Village (GS-3) show same group.



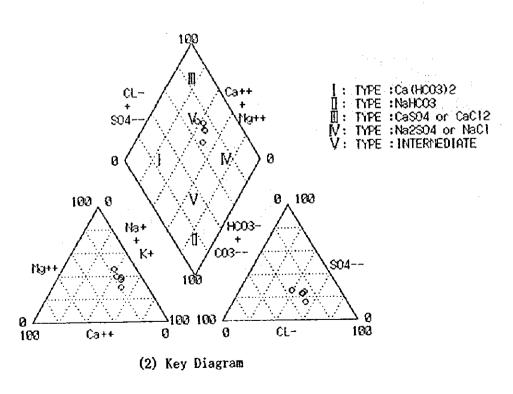


Figure II-3-6 Hexadiagram and Key Diagram of Water Quality in the Ghuzayn District

3-2-2 Water Quality of Groundwater in the Bore Holes

The water quality of the bore holes shows that pH ranges from 7.08 to 11.28. Groundwater of G16, G17 and G25 shows alkali ranging from pH 9 to 11, because of the influence of cementing during drilling work.

The electric conductivity ranges from 20.5 to >1999 μ S/cm. Especially, the electric conductivity of MJOB-G8, G12, G32 and G36 shows more than 1000 μ S/cm. Although the major reason of high electric conductivity is not clear because of any data of main components of water, it is assumed to affect by drilling mud.

Water temperature ranges from 28.7 to 35.3 °C, and the water temperature is higher than that of surface water (27.1 \sim 29.0°C).

The concentration of As and Hg is less than minimum limit of determination. The concentration of Cr ranges from <0.02 to 0.13 mg/l. The groundwater of MJOB-G15, G16, G17 and G22 shows relatively high concentration of Cr.

The concentration of Cu ranges from 0.02 to 0.46 mg/l. The groundwater of MJOB-G22 shows relatively high concentration of Cu (0.45 \sim 0.46 mg/l). The concentration of Cu can not recognize clear difference between surface and deep groundwater. It is thought that the drilling mud gives critical influence to the water quality.

The concentration of Fe ranges from 0.93 to 32.90 mg/l. The surface and deep groundwater of MJOB-G8, G13, G18, G22 and G36 shows relatively high concentration of Fe (13.60 \sim 32.90 mg/l). And it is not recognized to be clear difference between surface and deep groundwater.

The concentration of Mn ranges from 0.05 to 0.84 mg/l. The deep groundwater of MJOB-G8, G18, G22, G26, G32 and G36 shows high concentration of Mn (0.32~0.84 mg/l). The concentration of Mn of deep groundwater indicates higher than that of surface groundwater.

The concentration of Zn ranges from 0.02 to 7.00 mg/l. The groundwater of MJOB-G8, G13 and G17 shows high concentration of Zn $(3.65\sim7.00 \text{ mg/l})$.

The concentration of SO_4 ranges from 110 to 1230 mg/l. The deep groundwater of MJOB-G8, G12 and G26 shows high concentration of SO_4 .

Relatively high concentration of heavy metals concerning the groundwater in the bore holes is recognized in the holes of MJOB-G8, G13, G18, G22 and G26. Well water (GW-2) in the lower stream of the river is the lowest water of dissolved substance in the district. These holes are located around orebodies.

As a whole, the drilling mud is thought to give strict influence to the water quality and flow of the groundwater in the bore holes.

3-3 Water Quality around Orebodies

Although the relationship between ore deposit and water quality could not be sufficiently clarified, the remarkable influence of ore deposit to the surrounding, especially heavy metals and SO₄ is not recognized.

PART III CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 1 CONCLUSIONS

The conclusions of the study are as follows:

(Hydrological Investigation)

- River in the Ghuzayn District belongs to the drainage system of Wadi al Hawasinah River.
- Sampling points of water for the hydrological investigation consist of 5 points, 3 points of river survey (GS-1, GS-2 and GS-3) and 2 points of well survey (GW-1 and GW-2).
- Discharge of GS-1 (Falaj) is 4.432 m³/min, GS-2 (upper stream) is 1.119 m³/min, and GS-3 (lower stream) is 1.213 m³/min.
- Water wells (GW-1 and GW-2) in the district are shallow well for living and irrigation. Depth of groundwater table is about -7 m and water quality shows almost similar.
- Approximately two times of volume of surface water is assumed to supply to the groundwater by rain-fall in the Ghuzayn District. River water of 4.4 m³/min is taken for the irrigation to Ghuzayn Village by Falaj system and water is used for living and agriculture.
- The water quality of river water and well water show almost similar, especially the well water of Ghuzayn Village (GW-1) is similar to that of Wadi al Hawasinah River at Ghuzayn Village (GS-3).
- River water and well water show that pH ranges from 7.63 to 8.46, electric conductivity ranges from 104.9 to 139.0 μ S/cm.
- The concentration of heavy metals of river water and well water shows to be almost same group that Cu ranges in concentration from 0.03 to 0.04 mg/l, Fe ranges in concentration from 0.14 to 0.32 mg/l, and Mn ranges in concentration from <0.01 to 0.01 mg/l.
- The concentration of light metals of river water and well water shows to be almost same group that Ca ranges in concentration from 31.5 to 48.0 mg/l, K ranges in concentration from 3.34 to 4.65 mg/l, Mg ranges in concentration from 36.3 to 76.1 mg/l, and Na ranges in concentration from 107 to 129 mg/l.
- The concentration of anion of river water and well water shows to be almost same group that Cl ranges in concentration from 140 to 236 mg/l, NO₃ ranges in concentration from 0.83 to 4.69 mg/l, and SO₄ ranges in concentration from 31.5 to 48.0 mg/l.

 The technical transfers for the establishment of organization for the periodical hydrological investigation was carried out.

(Water Investigation of Bore Holes)

- 13 bore holes, including MJOB-G2, G4, G7, G8, G15, G16, G17, G19, G25, G26, G28, G32 and G36 were selected for the recovery test.
- The permeability coefficient in the district ranges from 10⁻⁴ to 10⁻⁷ cm/s, and that of MJOB-G36 is 10⁻⁴ cm/s and shows to be relatively good aquifer.
- River Sediments, which are found along the Wadi al Hawasinah River in the western part of the district, range in thickness from 6.90 to 15.10 m.
- The Lower Terrace Deposits, which widespread in the district, range in thickness from 7.30 to 28.97 m.
- Major aquifer in the district is assumed to be unconsolidated River Sediments,
 Lower Terrace Deposits, and cracky zone of basement (basalts).
- · Groundwater table in the district forms very gentle slope (0.6°) from southeast (175 m in elevation) to northwest (155 m in elevation).
- The groundwater level around bore holes of MJOB-G5, G16, G22 and G28 is 176 m, which is about 5 to 10 m higher than that of other bore holes.
- The flow direction of groundwater in the district shows radial shape at the center of No. 2 Orebody.
- The drilling mud (EG-mud) is thought to be still remained in the bore holes, so that the drilling mud gives critical influence to the recovery test.
- The water quality of the bore hoes shows that pH ranges from 7.08 to 11.28. Groundwater of MJOB-G16, G17 and G25 shows alkali ranging from pH 9 to 11, because of the influence of cementing during drilling work.
- The Electric Conductivity ranges from 20.5 to >1999 μ S/cm. Water temperature ranges from 28.7 to 35.3 °C.
- The concentration of heavy metals shows that Cu ranges in concentration from 0.02 to 0.46 mg/l, Fe ranges in concentration from 0.93 to 32.90 mg/l, Mn ranges in concentration from 0.05 to 0.84 mg/l, Zn ranges in concentration from 0.02 to 7.00 mg/l.
- The difference between shallow groundwater and deep groundwater in the bore holes can not be recognized except Mn. Mn concentration of deep groundwater of MJOB-G8, G18, G22, G26, G32 and G36 is higher than that of surface groundwater.
- The drilling mud is thought to gives serious influence to the water quality of the groundwater of the bore holes.

CHAPTER 2 RECOMMENDATIONS

The recommendations of the study are as follows:

- It is necessary to settle bore holes in the upper and lower parts of the orebodies for monitoring of groundwater, because the existing bore holes are influenced by drilling mud.
- It is necessary to carry out the more detailed environmental study in the Ghuzayn District for the conceptional design of the mine development.
- The items of environmental investigation consist of air quality, water quality, groundwater, soil, noise and vibration, and social environment.
- · It is desirable to continue the monitoring work of water after the project.

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- 9. Ministry of Petroleum and Minerals (1987): Geological Map of Wadi Bani Umar, Sheet NG40-14E-II, Scale 1:50,000, Bishimetal Exploration Co., Ltd.
- 9. Ministry of Regional Municipalities and Environment (1993): Interim Guideline on Environmental Impact Assessment (Draft Version No. 2), Sultanate of Oman
- 10. Overseas Mineral Resources Development Co., Ltd. (1998): Report on the Mineral Exploration Follow-up Survey · Aftercare in the Rakah Area, Sultanate of Oman, Bishimetal Exploration Co., Ltd.

APPENDICES

- 1. Measurement Card for Discharge
- 2. Investigation Card of Bore Holes
- 3. Meteorological Data

1. Measurement Card for Discharge

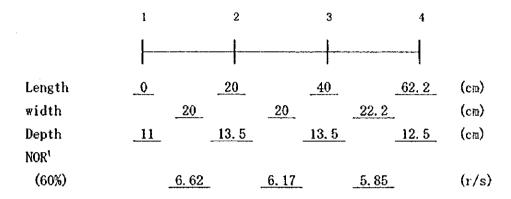
Measurement of Discharge (GS-1)

(December 7, 1998)

1. Location : Falaj system, Ghuzayn

2. Number of measurement point : GS-1

3. Measurement of stream bed



4. Calculation

$$V = 0.132 \times N + 0.004$$
 (m/s)

V: Flow speed (m/s)
N: Number of rotation

$$V_0 = (0.0245 \times 0.88) + (0.0363 \times 0.82) + (0.0289 \times 0.78)$$

$$= 0.074 \quad (m^3/s)$$

$$= 4.432 \quad (m^3/min)$$

1 NOR: Number of rotation

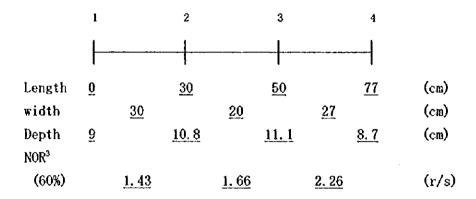
² FS : Flow speed (m/s)

Measurement of Discharge (GS-2)

(December 7, 1998)

1. Location : Upper stream of Wadi Hawasina, Ghuzayn

- 2. Number of measurement point : GS-2
- 4. Measurement of stream bed



4. Calculation

$$V = 0.132 \times N + 0.004$$
 (m/s)

V: Flow speed (m/s)
N: Number of rotation

> Vo = (0.0297x0.19) + (0.0219x0.30) + (0.0267x0.30)= 0.020 (m³/s) = 1.213 (m³/min)

³ NOR : Number of rotation

^{*} FS : Flow speed (m/s)

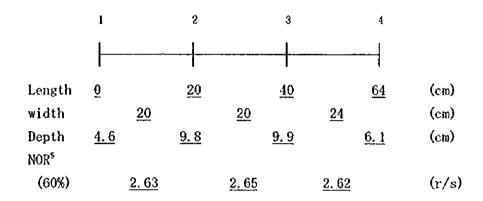
Measurement of Discharge (GS-3)

(December 7, 1998)

1. Location : Lower stream of Wadi Hawasina, Ghuzayn

(In front of Ghuzayn Elementary School.)

- 2. Number of measurement point : <u>GS-3</u>
- 5. Measurement of stream bed



4. Calculation

$$V = 0.132 \times N + 0.004$$
 (m/s)

V: Flow speed (m/s)

N: Number of rotation

FS⁶
$$0.35$$
 0.35 0.35 0.0192 0.0192 0.0192 0.0192 0.0192

Vo = (0.0144x0.35) + (0.0197x0.35) + (0.0192x0.35)

$$= 0.019 \quad (m^3/s)$$

 $= 1.119 (m^3/min)$

⁵ NOR: Number of rotation

⁶ FS : Flow speed (m/s)

2. Investigation Card of Bore Holes

			Card					(vate	. 0/12	/1998)	·
l,	Purpose	of inve	stigati								
					(2)						
	V				(3) Grou		r in b	ore ho	le		
z.	Name of				Ghuzayn Won ox						
	Location Number o			•}	MJOB-G1		•	_			
	Maidoet o	i water	sampte	•							
3.	Content		-	on							
	3-1. Sur		ter (S)								
		рH		:_							
		EC		;_	 ;	μS/cm					
		Tempera		:_							
		Dischar	ge	:_	n	o³/min					
	3-2. Wat	er well	(W)								
		pН		:_							
		EC		;		μS/cm					
		Tempera	ture	:_		•					
		Groundw	ater le	vel:_	n	ı (Dept	h from	GL:	- m)	
		Ground	level	:_	p	n					
	3-3. Dri	lling h	ater le		n		h from	GL : ·	– m)	
	3-3. Dri	lling h Groundw Ground	ater le level	vel:_ :_		n				•	
	3-3. Dri	lling h	ater le level	vel:_ :	n Impossit	n ole to	measur	e becai	use of	incli	
	3-3. Dri	lling h Groundw Ground	ater le level	vel:_ :		n ole to	measur	e becai	use of	incli	
	3-3. Dri	lling h Groundw Ground	ater le level	vel:_ :	n Impossit	n ole to	measur	e becai	use of	incli	
ጥ ሩ	3-3. Dri	lling h Groundw Ground Remarks	ater le level	vel:_ :_ ::	Impossit hole. Gi	n ole to roundwa	measur iter wa	e becai	use of	incli	
Ti.	3-3. Dri	lling h Groundw Ground Remarks and dep	ater le level	vel:_ :_ ::	Impossit hole. Gi	n ole to roundwa	measur iter wa	e becar s conf	use of	incli	
	3-3. Dri	lling h Groundw Ground Remarks	ater le level	vel:	Impossit hole. Gi	n ole to coundwa	measur iter wa	e becai	use of	incli o exi	
1	me (min)	lling h Groundw Ground Remarks	ater le level	vel:	Impossit hole. Gi	ole to roundwa	measur iter wa	e becars conf	use of	incli o exi	
7	3-3. Dri	lling h Groundw Ground Remarks	ater le level	round	Impossit hole. Gi	ole to roundwa	measur iter wa	e becars conf	use of	incli o exi	
1 7 30	3-3. Dri	lling h Groundw Ground Remarks and dep	ater le level	round 3 9 50	Impossit hole. Gi	ole to roundwa	measur iter wa	e becars conf	use of	incli o exi	
1 7 30 105	3-3. Dri	lling h Groundw Ground Remarks and dep	ater le level	round: 3 9 50 150	Impossit hole. Gi	ole to coundware GL 4 10 60 180	measur iter wa	5 15 75 210	use of	incli o exi 6 20 90 240	
1 7 30 105 270	3-3. Dri	lling h Groundw Ground Remarks and dep 2 8 40 120 300	ater le level	round 3 9 50 150 360	Impossit hole. Gi	ole to coundware om GL 4 10 60 180 420	measur iter wa	5 15 75 210 480	use of	incli o exi 6 20 90 240 540	

.

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	Investig	ation	Card	(No. G	(2)	(Date : 6/12/1998)					
1. Purpose of investigation: (1)											
				-	2)						
				(3) Grou	ndwate	r in bo	re hol	е		
2.	Name of I			-	huzayn			_			
	Location	number	•	,	JOB-G2						
	Number of	f water	sample	:GD	-21 : s	urface	of gr	roundwa	ıter)		
<u> </u>											
3.	Content			n							
	3-1. Sur		iter (S)								
Ì		р Н		:		-					
		EC		:	¥	ıS/cm					
		Tempera		:		•					
	1	Dischar	rge	:	n	³ /min					
	3-2. Wat	er well	(W)								
		o1 #01. pH	,	;							
		EC		:		u S/cm					
		 Tempera	ature	:							
		-	vater lev	/el:	II	(Dept	h from	GL: -	- m))	
		Ground		;	Tr.				- 		
					:						
	3-3. Bor	e hole	(D)		rface o	of grou	ındwateı	r)			
		pН			. 28						
		EC			74. 2	u S/cm					
		Tempera		_	3. 2 °	,			•		
			vater le	vel:	n	ı (Dept	h from	GL: -	-20. 24m)	
			level	;	R		_				
		Recover	ry test		nitial						
					ifted w				3.20 (
				F	allen w	vater 1	evel	:-22	2.74m f	rom G	
1		Remarks	S	:							
Ti	me (min)	and der	pth of g	round	ater fi	om GL	(- m)	*			
1	22.52	2	22.24	3	22.03	4	21.82	5	21.72	6	21.64
7	21.52	8	21.41	9	21.28	10	21.22	15	20.88	20	20.61
30	20.38	40	20.32	50	20. 28	60	20.27	75	20, 27	90	20.27
105	20. 27	120	20. 27	150	20. 27	180	20. 26	210	20. 26	240	20. 26
270	-	300	- "	360	 	420	-	480	-	540	-
600	, -	660	-	720	-	780	 -	840	-	900	-
960	, -	1020		1080		1140	-	1200	-	1260	-
132	20 -	1380	-	1440		 -	 	ł		 	
		 		2850	20. 27	 					

	Investigat	tion Card	(No.	G3)			(Date	: 4/12	/1998)	i
1, 1	urpose of	investigati	on:	(1)	· · · · · · · · · · · · · · · · · · ·					·····
				(2)						
				(3) Grot	ındwate	er in be	ore hol	e		
2. 1	lame of Loc	ation		Ghuzayn						
I	ocation nu	ımber		MJOB-G3						
1	lumber of w	vater sample								
	_									
3. (Content of	investigati	on			·····		- · · · ·		
:	3-1. Surfac	e water (S)								
	Hq		:_							
	EC		;_		u S/cm					
	Tem	perature	;_		•					
	Dis	charge	:	1	³ /min					
3	1-2. Water	well (W)								
	pН		:_							
	EC		:		u S/cm					
	Tem	perature	:		ı					
	Gro	oundwater le	vel: _	n	ı (Dept	h from	GL : ~	m)	
	Gro	ound level	;_	n	l					
3	1-3. Bore h	<u>ole (D)</u>								
	pH		:							
	EC		:_		u S/cm					
		perature	:							
		undwater le	vel:	n	(Dept	h from	GL: -		m)	
		und level	:_		_					
	Rem	arks		Impossib						
			ł	nole. Gr	oundwa	iter was	confi	rmed to	o exia	st.
T .			_			, ,				
111116	(min) and	depth of g	roundy 3	vater fr	om GL	(- <u>m</u>)	T			
7	8						5		8	<u></u>
			9	ļ	10		15		20	
30 105	12		50 150	ļ	60		75		90	
270	30				180		210	····	240	
600	66		360		420		480		540	
960	·Ł		720	 	780		840		900	
	<u> </u>	20	1080		1140		1200		1260	
1320	13	80	1440	ļ						
l	1 1	i i		t	!					

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	In	vestiga	ation	Card	(No. G	4)			(Date	: 4/12/	(1998)		
1.	Pui	pose o	finve	stigatio	n : (1)							
						2)							
		···			(;	3) Groui	ndwate	r in bo	re hol	e			
2.	Nar	ne of L	ocatio	n	:_G	: Ghuzayn							
1	Loc	cation	number			JOB-G4							
	Nur	mber of	water	sample	:GD	-41 : s	urface						
3.	Cor	ntent o	f inve	stigatio	n								
	3-3	l, Surf	ace wa	ter (S)									
		p	H		:								
ĺ		E	С		:	μ	s/cm						
		T	empera	ture	:	·							
		Đ	ischar	ge	:	m	3/min						
	3-	2. Wate	r well	(₩)									
İ		p	Н		:								
		E	C		:	P	l S/cm						
l		T	empera	ture	;								
1				ater lev	el:	m	(Dept	h from	GL: -	-	m)		
		G	round	level	:	m							
	3-	3. Bore	hole	(D)	(Su	rface o	f grou	ndwater	·)				
	_	þ	H		: 8	. 08							
		E	C		:_7	6. 1 p	s/cm						
		T	empera	ture	: <u>3</u>	3, 4 °							
		G	roundw	rater lev	/el: <u>1</u>	70. 26 m	(Dept	h from	GT: -	- 17. 88m))		
		G	round	level	: 1	88. 15 m							
		F	lecover	y test	: I	nitial	water	level	:-17	7.89m f	rom Gl	Ĺ	
					L	ifted w	ater v	olume	: 24	1.9 0 (20 mi1	n)	
1						allen w							
		F	Remarks	3	: B	ore hol	e is s	till af	fected	l by dr	illin	g mud.	
Ti	me	(min) a	nd dep	th of g	roundw	ater fr	om GL	(- m)					
1		23. 35	2	23. 15	3	22.85	4	22.80	5	22. 73	6 .	22.69	
7		22.64	8	22.60	9	22.57	10	22, 53	15	22. 42	20	22. 33	
30		21.90	40	21.60	50	21.33	60	21.07	75	20.76	90	20.54	
105		20.32	120	20.15	150	19.85	180	19.75	210	19.65	240	19.56	
270	,	19.50	300	19. 47	360	19. 385	420	19. 30	480	19. 21	540	-	
600	,	-	660	-	720	-	780	-	840		900	-	
960	,	-	1020	-	1080	-	1140	-	1200	-	1260	-	
132	20	_	1380	-	1440	-			<u> </u>		<u> </u>	<u> </u>	
					1500	18.66							

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	Investi	gation	Card	(No.	G5)			(Date	: 5/12	/1998)		
1,	Purpose	of inve	stigati	on:	(1)							
				((2)							
				((3) Grou	ındwate	r in bo	re hol	le			
2.	Name of	Locatio	n	:_(huzayn							
	Location	number	•	: 1	LJOB-G5			_				
	Number o	of water	sample	: [D-51:	surfac	e, GD-	52 : -	144. 20m	deep		
3.		Nestigation Card (No. 65) (Date : 5/12/1998)										
	3-1. Sui	rface wa	ater (S)									
		-		:								
		EC		:		μS/cm						
		Tempera	ature	•	·········	•						
		Dischar	rge	:_	n	a³/min						
	3-2. Wat	ter well	(W)									
		pН		:								
		EC		:		μS/cm						
		Tempera	ature	:_)						
		Ground	vater le	vel:_	n	a (Dept	h from	GL : -	-	m)		
		Ground	level	:_	b	B						
	3-3. Box	re hole	(D)	(Sı	urface o	of GW)		(-144.	20m de	ep)		
		pН		:_:	: 7, 59				7.80			
		EC		;_!	47.2			155.3 μ S/cm				
		Tempera	ature	: <u>:</u>	33. 3			3	34.9°			
		Ground	vater le	vel:_		a (Dept	h from	GL: -	-15, 11m)		
		${\tt Ground}$	level	:_		מ						
		Remarks	\$:								
Ti	ne (min)	and dep	oth of g	round	water fi	rom GL	(- m)					
1		2		3		4		5		6		
7		8		9		10		15		20		
30		40		50		60		75	ļ	90	-	
105		120		150		180		210		240		
270		300		360		420		480		540		
600	-	660	<u> </u>	720	 	780		840		900		
960		1020		1080	<u> </u>	1140		1200		1260		
132	0	1380	<u> </u>	1440	-							
		+		 	 	 	 		 	\vdash	-	

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	Investig	ation	Card	(No. 0	66)			(Date	: 4/12/	(1998)	
1.	Purpose o	f inve	stigatio		1)						
					2)						
					3) Grou	ndwate	r in bo	re hol	e		
2.	Name of L				huzayn						
	Location			: <u>M</u>	JOB-G6		· · · · · · · · · · · · · · · · · · ·	-			
	Number of	water	sample	;							
3.	Content of	of inve	stigatio	n							
	3-1. Surf	ace wa	ter (S)								
	-	H		;							
	F	EC .		:		s/cm					
		[empera		: _	··············						
)ischar	ge	:		³/min					
	3-2. Wate	er well	(W)								
	I	Ж		;	~~~~~ ~~						
		EC .		:	<u>!</u>	eS/cm					
		îempera		:	·						
			ater lev	re1:	n	(Dept	h from	GL:-		m)	
	(Ground	level	:_	m						
	3-3. Bore	e hole	(1)								
		эН		:							
	l	EC		:		ıS/cm					
	1	l empera	ture	:							
	(Groundw	ater lev	/el:		(Dept	h from	GL : -		m)	
	(Ground	level	:	r	1					
	j	Remarks	3	: F	Bore hol	e is c	losed b	y sand	l and gr	ravel	at
				1	the dept	h of -	1.56m.				
Ti	me (min) a	and dep	oth of gr	round	vater fr	on GL	(- m)			٠	
1		2		3		4		5		6	
7		8		9		10		15		20	
30		40		50		60		75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720		780		840		900	
960		1020		1080		1140		1200		1260	
132	0	1389		1440							
l -	T	I				1			I		

	Investi	gation	Card	(No.	G7)			(Date	e : 4/12	/1998)	+
1.	Purpose •	of inve	estigatio	on : ((1)	- 		~			
					(2)						
<u> </u>				((3) Grov	indwate	r in b	ore ho	le		
2.	Name of	Locatio	on	:_0	huzayn						
	Location	number	:	:]	LTOB-G7						
	Number of	f water	sample	:61)-71 : s	surface	•				
3.	Content (of inve	estigatio	on							
	3-1. Sur	face wa	ater (S)								
	1	р Н		:							
]	EC		:_	1	u S/cm					
	•	Cempera	ature	:_	·						
	1	Dischar	rge	:	n	³/min					
	3-2. Wate	or wo11	ו (שי)								
	-	р Н Б1 ж етт	L (11)								
		EC		:-		u S/cm					
		rempera	atura	:	:	u oy ciu					
		-	vater le	 ve1:	Pr	(Dent	h from	ci : -	-	m)	
		Ground		:	": IE	_	AT TIOM	OD .		шу	
		01 00,14	10,01		·						
	3-3. Bor	e hole	(D)	(Su	rface c	f grou	indwate	r)			
]	На		:_7	. 81						
]	EC		:_1	40.1	u S/cm					
	•	Tempera	ature	:_3	2.5 °						
	•	Ground	vater le	vel:	II	(Dept	h from	GL:	-21. 63m)	
	•	Ground	level	:_	T.	}					
	1	Recover	ry test	: 1	nitial	water	level	:-2	1.68m f	rom G	L
				1	ifted w	ater v	olume	: 6.	640 (1	0 min)
				F	allen w	ater 1	evel	:-2	1.75m f	rom G	L
ŀ	!	Remarks	3	: 0	Collapse	of gr	avel o	ccurs	in the	bore :	hole.
١							, ,		•		
Tie	oe (min) :	and der	oth of gr	round 3	ater fr	on GL		1 e	Louco	La	1 01 50
7	21.69	8	21. 69	9	21.69	10	21.69	5	21.69	6	21. 69
						ļ	21.69	15	21.69	20	21.69
30 105	21.69 21.68	40 120	21.69 21.68	50 150	21.68	180	21.68	75	21.68	90	21.68
270		300	21.00	360				210		240	
<u> </u>						420	ļ <u>.</u>	480		540	<u> </u>
600		660		720		780	<u> </u>	840		900	<u> </u>
960		1020	<u> </u>	1080		1140		1200	ļ	1260	
132	<i>)</i>	1380		1440				ļ <u>.</u>	ļ	<u> </u>	<u> </u>

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	Invest:	igation	Card	(No. ((8)			(Date	: 4/12,	/1998)	
1.	Purpose	of inve	stigatio	on : (1)						
				(2)						
				(3) Grou	ndwate	r in bo	re hol	e		
2.	Name of	Locatio	n	: <u>G</u>	huzayn					-	
	Locatio	n number	:	:_ <u>M</u>	J0B-G8						
	Number	of water	sample	: <u>G</u>	D-81 :	surfac	e, <u>GD-</u> 8	32 : -	100. 00m	deep	
3.	Content	of inve	estigation	on							
	3-1. Su	rface wa	ater (S)								
		рH		·							
		EC		:		ιS/cm					
		Tempera		;	-	•					
		Dischar	rge	:		3/min					
	3-2. Wa	ter well	(W)								
		рН		:							
		EC		•		ıS/cm					
		Tempera		;	<u> </u>						
	-		water le	vel:_	m	(Dept	h from	GL:	-	m)	
	-	Ground	level			l					
	3-3. Bo	re hole	(D)	(Su	rface o	f GW)		(-100.	00m de	ep)	
		рН		: <u> 8</u>	. 14			{	3. 65		
		EC		:_1	049			<u></u>	1122μ	S/cm	
		Tempera	ature	:_3	3.3				33. 4°		
		Ground	water le	vel:_	n	(Dept	h from	GL:	-20. 94m)	
		Ground	level	:	JI						
		Recover	ry test		nitial				0.96m f		
					ifted w				9.90 (-
					allen w				1.51m f		
		Remark	S	: B	ore hole	is sl	ightly a	affect	ed by di	rillin	ig mud.
Ti	me (min)	and de	pth of g	round	ater fr	on GL	(- m)			÷	
1	21.46	2	21.41	3	21.39	4	21.37	5	21.35	6	21.34
7	21.34	8	21.33	9	21.33	10	21, 325	15	21, 325	20	21.325
30	21. 325		21.32	50	21.32	60	21.32	75	21.32	90	21.32
105		120	21.32	150	21.32	180	21.32	210	21.31	240	21.31
270		300	21.31	360	21.31	420		480		540	
600		660	ļ	720	<u> </u>	780	<u> </u>	840		900	ļ
960		1020		1080	ļ <u>.</u>	1140	<u> </u>	1200		1260	ļ
132	20	1380		1440				<u> </u>	 		
										İ	
					•					<u> </u>	

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			Card					(Date	: 4/12/	/199
1.	Purpos	e of inve	stigati				100			
					(2)					
				((3) Grou	ndwate	r in bo	ore ho	le	
2.	Name o	f Locatio	n	:_0	huzayn					
	Locati	on number	•	: <u>N</u>	(J0B-69					
	Number	of water	sample	: :[61)-91 : s	urface	•			
3.	Conten	t of inve	stigati	on	· · · · · · · · · · · · · · · · · · ·		"""			
	3-1. S	urface wa	ter (S)							
		рH		:						
		EC		;		uS/cm				
		Tempera	ture	:	•					
		Dischar	ge	:_	tn	³/min				
	3-2. W	ater well	(W)							
		рH		:						
		EC		:		ı S/cm				
		Tempera		;_	°					
		Crounda	ater le	* 101	he	(D	L C	A1 .		•
		Of Oulian	acc1 10	A61.	IE	(beb	n rrom	UL:	-	н
		Ground	level	:	In .	1			-	н
	3-3. B	Ground ore hole pH EC Tempera	level (D) ture vater le	:		of grou uS/cm	undwate	r)		no)
	3-3. B	Ground ore hole pH EC Tempers Groundw Ground Remarks	(D) ture vater le level	(Su :_7 :_1 :_3 evel: :_ :_	morface of 1.88 15.4 1633.6 m	f grou uS/cm (Dept	undwaten	r) GL : -)
ı		Ground ore hole pH EC Tempera Groundw Ground Remarks) and dep	(D) ture vater le level	(Subvet):	marface of 1.88 15.4 16.3.6 m	f grou S/cm (Dept om GL	undwaten	f) GL:-		6
7		Ground ore hole pH EC Tempera Groundw Ground Remarks) and dep	(D) ture vater le level	(Standard Standard St	marface of 1.88 15.4 16.3.6 m	f grou S/cm (Dept om GL	undwaten	GL: -		6 20
7 30	me (min	Ground ore hole pH EC Tempera Ground Ground Remarks) and dep	(D) ture vater le level	(Substitute of the state of the	marface of 1.88 15.4 16.3.6 m	f grou S/cm (Dept om GL 4	undwaten	GL: - 5 15 75		6 20 90
7 30 105	me (min	Ground ore hole pH EC Tempera Groundw Ground Remarks) and dep 2 8 40 120	(D) ture vater le level	(Standard Standard St	marface of 1.88 15.4 16.3.6 m	f grou S/cm (Dept om GL 10 60 180	undwaten	5 15 75 210		6 20 90 240
7 30 105 270	me (min	Ground ore hole pH EC Tempera Groundw Ground Remarks) and dep 2 8 40 120 300	(D) ture vater le level	(Standard Standard St	marface of 1.88 15.4 16.3.6 m	om GL 180 420	undwaten	5 15 75 210 480		6 20 90
7 30 105	me (min	Ground ore hole pH EC Tempera Groundw Ground Remarks) and dep 2 8 40 120	(D) ture vater le level	(Standard Standard St	marface of 1.88 15.4 16.3.6 m	f grou S/cm (Dept om GL 10 60 180	undwaten	5 15 75 210		6 20 90 240
7 30 105 270	me (min	Ground ore hole pH EC Tempera Groundw Ground Remarks) and dep 2 8 40 120 300	(D) ture vater le level	(Standard Standard St	marface of 1.88 15.4 16.3.6 m	om GL 180 420	undwaten	5 15 75 210 480		6 20 90 240 540

	Investi	gation C	ard	(No. G10)		(Da	ate : 6/12	2/1998)	
1.	Purpose	of invest	tigatio	n : (1)					
				(2)					
				(3) Gr	oundwater	r in bore l	hole		
2.	Name of	Location		: Ghuzay	n				
	Location	number		: MJOB-G					
	Number o	f water :	sample		: surfac	e			
3.	Content	of inves	tigatio	n	<u>. </u>		- 		
	3-1. Sur	face wat	er (S)						
		рH		:	_				
		EC		: <u> </u>	_μS/cm				
		Temperat	ure						
		Discharg	е		m³/min				
	3-2. Wat	er well	(₩)						
		рН		;	_				
		EC			_ μ S/cm				
		Temperat		:					
		Groundwa	ter lev	el:	_m (Dept	h from GL	: -	m)	
		Ground 1	evel	÷	m				
		_		_					
	3-3. Bot	e hole (<u>D)</u>		of grou	ndwater)			
		Нq		7.47	- .				
		EC		: <u>165. 5</u>	_ μ S/cm			•	
		Temperat		: 33, 3				_	
				rel:	_m (Dept	h from GL	: -18.04	n)	
		Ground 1	evel	:	n				
		Remarks		:					
						,			
	me (min)		h of gi	roundwater		· · · · · · · · · · · · · · · · · · ·		- 	
1		2		3	4	5		6	
7		8		9	10	15		20	
30		40		50	60	75		90	
10		120		150	180	210		240	
270		300		360	420	480		540	
600		660		720	780	840		900	
)	1020	1	1080	1140	120	0	1260	
966									

	Investig	gation	Card	(No.	G11)			(Date	6/12	/1998)	
1.	Purpose (of inve	stigati	on : ((1)						
				((2)						
				((3) Grou	ndwate	r in bo	ore hol	e		
2.	Name of 1	Locatio	n	:_0	huzayn						
	Location	number	•	: <u>}</u>	<u> JOB-G11</u>						
	Number of	f water	sample	:[GE	-111:	surfac	e				
3.	Content	of inve	stigati	on							
	3-1. Sur	face wa	ter (S)								
	3	рH		:							
	}	EC		:		ıS/cm					
		Tempera		:	·						
	1	Dischar	rge	: <u> </u>	m	3/min					
			(-v)								
]	3-2. Wat		(W)								
	_	pH SO		: <u> </u>		0.7					
		EC		:	!	ı S/cm					
		Cempera		i		(D.,4		cı .		\	
		orounav Ground	ater le				n irom	ՄL · ՟	_	m)	
	•	JIOUNG	ievei	•							
	3-3. Bor	e hale	(D)	(Sr	rface o	f gros	ındwater	-)			
		<u>е поде</u> рН	(6)		. 67	r groo	inuwater	.)			
	_	EC			2.6	.S/cm					
		rempera	iture	-	3.5	,					
		_	ater le			(Dept	h from	GL : -	-19. 97m)	
		Ground		:		-				-	
]	Remarks	3	:							
Ti	ne (min) :	and dep	th of g	round	ater fr	om GL	(- m)				
1		2		3		4		5		6	
7		8		9		10		15		20	
30		40		50		60		75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720		780		840		900	
960		1020		1080		1140		1200		1260	
132	<u> </u>	1380		1440			ļ	ļ			
		!					1				

]	Investiga	ation	Card	(No. 0	312)			(Date	: 5/12/	/1998)	
1. I	urpose o	f inve	stigatio	on : (1)	-					
				(2)						
				(3) Grou	ndwate	r in bo	re hol	6		
2. 1	lame of L	ocatio	n.	: <u>G</u>	huzayn			_			
1	ocation	number		-	JOB-G12			-			
1	Number of	water	sample	:GD	-121:	surfac	e	_			
3. (Content o	f inve	stigatio								
:	3-1. Surf	ace wa	ter (S)								
	p	H		:_							
	E	С		:	<i> </i>	ıS/cm					
	T	empera	ture	:	<u> </u>						
	D	ischar	ge	:	m	3/min					
;	3-2. Wate	r well	(W)								
	р	Н		:							
	Ė	С		:_	!	S/cm					
	T	empera	ture	:	·						
	G	roundw	ater le	ve1:	70	(Dept	h from	GL : -		m)	
	G	round	level	:	םו	l					
,	3-3. Bore	holo	(D)	(9)	rface o	f grou	ındırat or	-)			
		H H	<u>(D)</u>		. 03	ı gion	ninacet	,			
	-	C			:15 /	. S/cm					
		~ `empera	tura		2.6	1 0/ СШ					
		-	ater le			(Dant	h from	cı · .	-23 Q6m	١	
		round					II IIOW	OL .	20. 30:0	,	
		lemarks		`-							
	14	CHOIL VO	•	•							
Tim	e (min) a	ind dep	th of g	round	ater fr	om GL	(- m)		•		
1		2		3		4		5		6	-
7		8		9		10		15		20	
30		40	_	50		60		75		90	
105		120		150		180		210		240	
270		300		360	l	420		480		540	
600		660		720		780		840		900	
960		1020		1080		1140	<u> </u>	1200	l	1260	
1320		1380		1440			 		 		
				<u> </u>						-	

	Investi	gation	Card	(No.	6 13)			(Date	5/12	/1998))
1.	Purpose	of inv	estigati	on:	(1)	•	· 				
					(2)						
					(3) Grou	indwate	er in b	ore ho	le		
2.	Name of	Locatio	on	:_(Ghuzayn						
	Location	number	r	:_}	<u> 1JOB-G13</u>	}		-			
	Number o	f water	r sample	:[6!	D-131 :	surfa	СӨ				
3.	Content	of inve	estigati	on							
	3-1. Sur	face wa	ater (S)								
		Hq		:							
		EC		:_		u S/cm					
		Tempera		:	·	•					
		Dischar	rge	:		³ /min					
			• (-1)								
	3-2. Wat		{ W}								
		pH FO		:							
		EC		:	<u>,</u>	u S/cm					
		Tempera		- :-		,_					
			vater le	vel:	n	ı (Dept	th from	GL: -	~	m)	
		Ground	level	:	л	1					
	3-3. Bor	a hala	(n)	(c.	imfana a	f and		_1			
		e note pH	(0)		urface o 7.92	or grou	ınawate	E)			
		EC EC			172.6	. S /am					
		co Tempera	atura		33. 5	4 5/ CIE					
		_	vater le	_		Doni	h from	CI · -	-90 A2m	`	
		Ground		; 	n		и пош	UL .	20. Voii	,	
		Remarks		:-							
			•								
Tim	e (min)	and der	oth of g	roundv	vater fr	on GL	(- m)				
t		2		3		4		5		6	
7		8		9		10		15		20	
30		40		50		60	<u> </u>	75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720		780		840		900	
960	1	1020		1080		1140		1200		1260	
1320		1380		1440			 -				
ŧ	_L	<u></u>		L	L	L	!	l)	

	Invest	igation	Card	(No. G	14)			(Date	: 5/12/	(1998)	
1.	Purpose	of inve	stigatio	n : (1)						
				(:	2)						
				(:	3) Groun	idwate:	r in bo	re hol	e		
2.	Name of	Locatio	n	:_G	huzayn			_			
	Locatio	n number		: <u>M</u>	JOB-G14						
	Number	of water	sample	: 6	D-141 :	surfa	сө, GD-	142:	-125.0	Om de	∍ p
3,	Content	of inve	stigatio	n							
	3-1. Su	rface wa	ter (S)								,
		pН		:							
		EC		:	μ	S/cm					
		Tempera	ture	:							
		Dischar	ge	:	m	/min					
		e -	(m)								
	3-2. Wa	ter well	. (¥)								
		рН		:							
		EC		:	<i>µ</i>	S/cm					
		Tempera		_;_		/n .		C1 .		`	
			ater lev	ve1;	no		n iron	GL : ~		m)	
		Ground	level	·	n						
ļ	2_2 D.	hala	(n)	(c.,	rface o	ቲ ርመ ን		(_195	00m de	<i>(a)</i>	
	3-3. D	ore hole pH	<u>(D)</u>	•	.88	1 (11)			08	6ħ)	
		EC			98.7				<u>00</u> β μ S,	/cm	
			ature		3. 7				5.3	, CIU	
		-	vater le			(Dent	h from)	
		Ground		· · · · · · · · · · · · · · · · · · ·					10,000	•	
		Remarks		:							
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									
Ti	me (min)	and de	oth of g	roundw	ater fr	om GL	(- m)				
1		2		3		4		5		6	
7		8		9		10		15		20	
30		40	<u> </u>	50		60		75		90	
105	;	120		150		180]	210		240	
270	,	300		360		420	<u> </u>	480		540	
600	, 	660		720		780		840		900	
960	, 	1020		1080		1140		1200		1260	
132	20	1380		1440			-	<u> </u>	····	 	<u> </u>
]				 				

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	Investigation Card (No. G15) (Date: 5/12/1998) I. Purpose of investigation: (1)												
1,	Purpose (of inve	estigati	on:	(1)								
				l	(2)								
				((3) Gro	undwate	er in b	ore ho	le				
2.	Name of 1	Locatio	on .	: (huzayn								
	Location	number	3	:	!JOB-G1!	5							
	Number of	f water	sample	: [GD-151	surfa	ace, GD	-152	-200.0	Om de	ep		
				Ψ.	•								
3,	Content o	of inve	stigati	on									
	3-1. Sur	face wa	ater (S)										
	1	р Н		;_									
	l	EC		:		μS/cm							
		Tempera	ature	:_	·	•							
	1	Dischar	rge	:_	1	o³/min							
	3-2. Water well (W)												
	• •												
	pH :												
	EC : µ S/cm												
		Tempera				(n				,			
			rater le	vei:		-	h from	GL:	_	m)			
	,	Ground	Tever	•		0							
	3-3. Bor	e hole	(D)	(St	rface	of GW)		(-200.	.00m de	en)			
		pН		-	3. 33				74	-1-7			
	_	EC			38.9				16. 5 μ	S/cm			
ļ		Tempera	ature		3.6				4.4	•			
	(Ground	vater le	vel:	1	n (Dept	h from	GL:	-14. 39m)			
			level	_	J	=							
	1	Recover	y test	:]	nitial	water	level	:-14	4.35m f	rom G	L		
				I	ifted v	vater v	olume/	: 3:	3.20 (10 mi	n)		
				F	allen v	vater 1	level	:-1	7.06m f	ron G	L		
]	Remarks	3	: E	Bore ho.	le is s	still a	ffecte	d by dr	illin,	g mud.		
		-											
Tin			oth of g	round		rom GL							
1	16.96	2	16.93	3	16.84	4	16.78	5	16.67	6	16.59		
7	16. 49	8	16.39	9	16, 33	10	16. 24	15	15.91	20	15, 58		
30	30 15. 20 40 t4. 90 50 14. 69 60 14. 56 75 14. 47 90 14. 37												
105	14. 34	120	14. 32	150	14.30	180	14. 29	210	14. 285	240	14.27		
270	14. 27	300	14. 27	360	14. 27	420	-	480	-	540	[-		
600	-	660	-	720	-	780	-	840	-	900	-		
TACA.	-	1020		1080	-	1140	-	1200	-	1260	-		
300													
1320		1380	<u> </u>	1440		 	 						

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	Inv	vestiga	ation (Card	(No. G	16)			(Date	: 4/12/	1998)	
1.	Pur	pose of	finves	stigatio	n : (1	1)						
	(2) (3) Groundwater in bore hole											
					(;	3) Groui	ndwater	r in bo	re hol	е		
2.	Nan	ne of L	ocation	1	: <u>G</u> J	nuzayn			_			
	Loc	eation	number		: <u>M</u>	JOB-G16						
	Nun	mber of	water	sample	: [G	D-161	surfa	се, <u>GD</u> -	162	-40.60	n deep)
<u> </u>								· · · · · · · · · · · · · · · · · · ·	. <u></u>			
3.				stigatio	n							
	3-1	l, Surf	ace wa	ter (S)								
		\mathbf{p}			:							
		E	-		;	μ	S/cm					;
			empera		;		.					
Discharge :m³/min												
	3-2. Water well (W)											
ĺ	3-2			(W)								
		p E			<u>'</u>		S/cm					
		_	-	tura.	·	^μ	3/ CIII					•
			empera	ture ater lev	,	n	(Bont)	h from	CI · -		m)	
			round round		er:	«ا «ا	_	11 1100	OL .		IUJ	
		U	LOUNG	16461	•							
l	3-3	3. Bore	hole	(D)	(Su	rface o	f GW)		(−40. €	iOm deei	n)	
l	<u>~</u>		H	757		. 62				1. 28	-	
		-	c			2, 4				80. 5 μ		
		Т	empera	ture		3, 6				3.7	-	
				ater lev	_		(Dept	h from	GL : -	-16. 00m))	
İ				level	:_	m_						
		R	ecover	y test	: I	nitial	water	level	:-15	5.99m f	rom Gi	
					L	ifted w	ater y	olume	: 13	3.3 Q (10 mi	n)
					F	allen w	ater l	evel	:-18	3.30m f	rom Gl	L.
		75	lemarks	;	: B	ore hol	e is s	till a	ffected	d by dr	illin	g muđ.
	me			th of gr					T 2	1 -0 -0		
1		18. 27	2	18. 24	3	18.22	4	18. 20	5	18.18	6	18, 175
	7 18.15 8 18.12 9 18.08 10 18.06 15 17.95 20 17.87											
30		17.70	40	17.58	50	17.46	60	17.38	75	17. 26	90	17. 16
103	-	17.07	120	17.02	150	16.92	180	16, 83	210	16.77	240	16.72
270		16.69	300	16.66	360	16.65	420	-	480	-	540	<u>-</u>
600		-	660	-	720	-	780	<u> </u>	840	-	900	-
960)		1020	_	1080	-	1140	<u> </u>	1200		1260	
133												
263		- 16. 23	1380	-	1440	-						

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	Investi	gation	Card	(No.	G17)			(Dat	e : 5/12	2/1998)
1.	Purpose	of inv	estigati	on:	(1)						***************************************
					(2)						
<u> </u>					(3) Gro	undwate	er in b	ore ho	le		
2.	Name of	Locati	on		Chuzayn						~
	Location	numbe:	r	:_1	<u>UOB-G1</u>	7					
	Number o	f wate:	r sample	:GI	D-17 :	surfac	е				
3.	Content	of inv	estigati	on		·					
	3-1. Sur	face wa	ater (S)								
		pН		:							
		EC		:		μS/cm					
		Tempera	ature	:_	·	•					
	ļ	Discha	rge	:_	1	n³/min					
	3-2. Wat	er well	1 (W)								
		На	,	:							
		EC		:		μS/cm					
		Tempera	ature	;		, -,					
	(Ground	water le	vel:		a (Dept	th from	GL:	_	m)	
	(Ground	level	:		•				,	
	3-3. Bor	<u>e hole</u>	(D)	(Sı	rface o	of grou	undwate	r)			
		р Н		_). <u>85</u>						
		EC			20.6	u S/cm					
		Tempera			3.0	,					
			vater le	vel:_		ı (Dept	th from	GL :	-14. 62m)	
		Ground		:_	f1	_					
]	Recover	ry test		nitial					-	Ĺ
					ifted w				0 0 (5	•	
	•				allen w			-	4.94m f		
	}	Remarks	\$: 8	Bore hol	e is s	still a	ffecte	d by dr	illin	g mud.
Tim	e (min) :	and der	oth of g	roundw	ater fr	rom GL	(- m)				
1	14.92	2	14.90	3	14.88	4	14.875	5	14.87	6	14.855
7	14.85	8	14.85	9	14. 84	10	14.83	15	14.81	20	14.80
30	14.75	40	14.74	50	14. 72	60	14.70	75	14.69	90	14.69
105	14.68	120	14.68	150	14.67	180	14.66	210	14.65	240	14.65
270	14.65	300	14.65	360	14.65	420	-	480	-	540	-
600	-	660		720	-	780	-	840	-	900	-
960	-	1020	-	1080	-	1140	-	1200	-	1260	-
1320	 	1380	14.80	1440			 	 	· · · · · · · · · · · · · · · · · · ·]
	1	 									

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	Investig	gation	Card	(No. 0	318)			(Date	: 6/12	/1998)	
1.	Purpose o	of inve	stigatio	on : (1)					-	
				(2)						
				(3) Grou	ndwate	r in bo	re hol	е		
2.	Name of I	ocatio	n	:_G	huzayn						
l	Location	number	•	: <u>M</u>	JOB-G18			_			
	Number of	f water	sample	:GD	-181	surfac	ee				
	Content «		_	on		······					
	3-1. Suri	face wa	ter (S)								
	-	Hq		:							
		EC		:	<i>µ</i>	i S/cm					
		Tempera		:	·						
	1	Dischar	ge	:	n	³/min					
	3-2. Wate	er well	(W)								
		pI I		:							
		EC		:		ı S/cm					
		Tempera		:_							
			ater le	vel:_	-		h from	GL:-	=	m)	
	•	Ground	level	:	m	ı					
	3-3. Bor	e hole	(D)	(St	rface o	f grou	ındwateı	-)			
	!	р Н			. 99						
]	EC			56.2	ıS/cm					
		Tempera			2.9 °						
			ater le			-	h from	GL: -	·14.83m)	
			level		18.90 m						
1	İ	Remarks	3	: F	ecovery	test	was not	done.			
İ											
 Tim	e (min)	and dar	oth of a	rounda	atar fr	om GI	(m)				
1		2	on or g	3	acci ii	4	""	5		6	
7	<u> </u>	8		9		10		15		20	
30		40		50		60		75		90	
105		120		150	<u> </u>	180		210		240	
270		300		360		420		480		540	
600		660		720		780	<u> </u>	840		900	
960		1020		1080		1140		1200		1260	
1320)	1380		1440			1				
<u> </u>											
L		<u> </u>	<u> </u>	<u> </u>	L	<u>L</u>	L	L	l	1	L

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	Investi	gation	Card	(No.	G19)			(Date	: 5/12	/1998)	
1.	Purpose	of inve	estigati	on:	(1)					·· ~- · · · · · ·	·· ··-
				1	(2)						
	· · · · · · · · · · · · · · · · · · ·				(3) Gro	undwate	er in bo	ore ho	<u>le</u>		
	Name of			:_(Ghuzayn						
	Location	number	ŗ		(JOB-G1						
	Number o	f water	r sample	: <u>[G</u> [)-191	surfa	ce				
3.	Content	of inve	estigatio	on						· · · ·	
	3-1. Sur	face wa	ater (S)								
		Нq		:							
		EC		:		μS/cm					
		Tempera	ature	:_		•					
		Dischar	rge	:		m³/min					
	3-2. Wat	er well	l (W)								
		рĦ		:							
		EC		:_		μS/cm					
		Tempera	ature	:_	-	0					
		Ground	vater le	ve1:_	1	na (Dept	th from	GL:	-	m)	
		Ground	level	:_		מל					
	3-3. Bot	e hole	(D)	(c.	mfo.co.	of ano		.s			
		e noze pH	<u>(D)</u>		7.88	or grou	undwater	(;)			
ļ		EC			29.6	u S/om					
		Tempera	ature		33. 1	troy cm					
		-	vater le	_		n (Dent	th from	GL : -	-15 41m)	
		Ground		:		n 10	11011	OD.	10. 1111	,	
			ry test	:]	Initial	water	level	:-1	5.47m f	rom G	L
			•		ifted a				3.3 0 (10 mi	n)
				F	allen i	water]	level	:-18	8.39m f	rom G	Ĺ
		Remarks	5	: B	Bore hol	le is w	eekly a	ffecte	d by dr	illin	g mud.
 					_						
Tin		and dep	th of g	roundy 3				ı .	1		1.0.0
7	18. 37 18. 13	8	18.08	9	18.30 18.04	4	18.28	5	18. 24	6	18. 19
<u></u>	17.21	40			16.64	10	18. 01	15	17. 76	20	17.53
30 105	15.95	120	16.91 15.81	50 150	15.68	180	16. 46 15. 53	75 210	16. 19 15. 50	90 240	16. 07 15. 47
270	15. 46	300	15. 45	360	15.45	420	15. 45	480	15. 45	540	-
600	-	660	-	720	-	780	-	840	-	900	
960	- - :	1020		1080	-	1140	-	1200	ļ <u>-</u>	1260	_
1320		1380	_	1440	15.45	 	 		 		
<u> </u>		1			1.5	+ -			-	 	
L		1		<u> </u>		<u></u>	<u> </u>	<u></u>	<u> </u>		

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	Investigation	Card	(No. G2	:0)	((Date : 6/12	/1998)	
1.	Purpose of inve	stigatio	on: (1))				-
			(2)					
			(3)) Groundwate	er in bore	hole		<u></u>
	Name of Locatio		: Gh	uzayn				
	Location number		: <u>MJ</u>	0B-G20				
	Number of water	sample	:[GD-	201 : surfa	ce			
	Content of inve		on				-	
	3-1. Surface wa	ter (S)						
	Нq		;					
	EC		:	μ S/cm				
	Tempera		:					
	Dischar	ge	:	m³/min				
	3-2. Water well	(W)						
	Hq		:	 -				
	EC		:	μ S/cm				
	Tempera	ture	; <u> </u>	9				
	Groundw	ater le	vel:	n (Dept	th from Gl	. : -	m)	
	Ground	level	:	m				
		(~)		_				
1	3-3. Bore hole	(D)		face of grou	ındwater)			
İ	pН		: <u>8.</u>					
	EC		-	$\frac{6.0}{2}$ μ S/cm				
	Tempera		: 32				,	
			vel:	m (Dept	th from Gi	L: ~15.26s	1)	
	Ground		:	m				
	Remarks	}	÷					
Tit	ae (min) and dep	th of g	roundwa	ter from GL	(- m)			
1	2		3	4	5		6	
7	8		9	10	1	5	20	
30	40		50	60	7	6	90	
105			150	180	2	10	240	
270			360	420	4	80	540	
600	660		720	780	8	40	900	
960	1020		1080	1140	1:	200	1260	
132	0 1380		1440					
							1	
L		L			<u></u> ,			<u> </u>

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	Investig	gation	Card	(No.	G21)			(Date	: 4/12	/1998)	
1,	Purpose o	of inve	stigati	on :	(1)						
					(2)						
					(3) Grot	undwate	er in be	ore hol	le		
2.	Name of 1	Locatio	n		Ghuzayn						
	Location	number	•		MJOB-G2	 [
	Number of	f water	sample	:			_	-			
3.	Content	of inve	stigati	on	· · · · · · · · · · · · · · · · · · ·						
	3-1. Suri	face wa	iter (S)								
	I	р Н		:_							
	I	EC		:_		μS/cm					
	1	fempera	ture	:	·	•					
	i	Dischar	ge	:_		n³∕min					
	3-2. Wate	er well	(W)								
	1	ρ H		:_							
	I	EC		:_	 .	μS/cm					
		fempera		:		•					
İ	(Ground	ater le	vel:_		a (Dept	h from	GL: -	-	m)	
	(Ground	level	:	i	Ď					
l											
	3-3. Bore		(D)								
	_	р Н		:_							
		EC		:		μS/cm					
		lempera		:_		,					
			ater le	vel:_	f	n (Dept	h from	GL: -	-	m)	
		Ground		;	T	_					
i	I	Remarks	;		The bore				sand a	nd gra	avel
				;	at the o	lepth c	of -11.	90m.			
.			.1 0			0.1	, ,				
110	e (min) a	ana aer	otn of g	rouna 3	vater fi	Com GL	(- m)	5	I	6	
7		8		9	ļ	<u></u>		L			
L					ļ	10		15		20	
30 105	<u> </u>	40 120		50 150	-	60		75		90	
270		300		360	-	180		210		240	
600						Į		480		540	
L	_}	660		720	ļ	780		840		900	
960		1020		1080		1140		1200		1260	
1320		1380		1440		<u> </u>				L	ļ
					ļ						

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(No. G22) Investigation Card (Date: 6/12/1998) 1. Purpose of investigation: (1) (2) (3) Groundwater in bore hole 2. Name of Location : Ghuzayn : MJOB-G22 Location number : GD-221 : surface, GD-222 : -100.00m deep Number of water sample 3. Content of investigation 3-1. Surface water (S) На EC Temperature m³/min Discharge 3-2. Water well (W) рH _____μ S/cm EC Temperature Groundwater level: _____ m (Depth from GL: m) Ground level (Surface of GW) (-100.00m deep) 3-3. Bore hole (D) рH 8. 12 8. 13 EC : 144.4 142.8 μ S/cm Temperature : 30.3 34.4 Groundwater level: _____m (Depth from GL: -15.75m) Ground level :_____ __m Remarks : Casing is too small for the recovery test. Time (min) and depth of groundwater from GL (- m) 2 5 1 6 8 7 9 10 15 20 75 30 40 50 60 90 120 150 180 210 105 240 270 300 360 420 480 540 660 720 600 780 840 900 1020 1080 1140 1200 1260 960 1320

1380

Investigation Card (No. G23) (Date: 4/12/1998)

											
1.	Purpose of	of inve	stigatio								
					(2)	_					
				~~~~	3) Grou		r in bo	re hol	e		
2.	Name of I				huzayn			_			
	Location			: <u>N</u>	J0B-G23			_			
	Number of	f water	sample	;							
3.	Content	of inve	stigatio	n				······································			
	3-1. Surf	face wa	iter (S)								
	Ī	Ж		:							
	I	EC		:_		ıS/cm					
	7	lempera	ture	:	<del></del>						
	I	Dischar	ge	:	m	³/min					
	3-2. Wate	er well	(W)								
	3	эΗ		:							
	I	EC		:		uS/cm					
	7	Геmpera	ture	:	· ·						
	(	Groundw	ater lev	el:	m	(Dept	h from	GL : -	-	m)	
	(	Ground	level	:	m	ı					
	3-3. Bore	hole	(D)								
		ж		:							
	1	EC		:		ı S/cm					
	•	Tempera	ture	:	•						
	(	Ground	ater lev	el:	tm	(Dept	h from	GL:-	-18. 30m	)	
	(	Ground	level	:_	m	ŀ					
	1	Remarks	;	: G	roundwa	ter of	the ho	ole is	strong	ly sui	ffered
				đ	y the d	rillin	g mud.				
l Ti:	ne (min) :	and den	th of gr	ound	ater fr	om GL	( m)				
1		2		3		4		5		6	
7		8		9		10		15	<u> </u>	20	
30		40		50		60		75	<del></del>	90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720		780		840		900	
960		1020		1080		1140		1200		1260	
132	0	1380		1440							
Ц		<u>.                                    </u>	L			L	L.,,				

	Investig	ation	Card	(No. G	24)			(Date	:5/12/1	1998)	
1.	Purpose o	of inve	stigatio	n : (	i)						
				(:	2)						
				(;	3) Grou	ndwater	r in bo	re hol	e		
2.	Name of L	ocatio	n	: <u>G</u>	huzayn			_			
	Location	number		:_ <u>M</u>	JOB-G24			_			
	Number of	f water	sample	:							
3.	Content of	of inve	stigatio	ก							
	3-1. Suri	face wa	ter (S)								
	I	He		;							
	I	EC		;	<i>µ</i>	S/cm					
	1	Tempera	ture	:	•						
	I	Dischar	ge	:	n	³/min					
	3-2. Wate		(W)								
	· -	pH		:							
		EC		:		S/cm					
		Tempera		:	<del></del>			_			
			ater lev	/el:	m	(Dept	h from	GL:-	•	m)	
	(	Ground	level	:_	n						
	0 0 D	, ,	(n)								
	3-3. Bor		<u>(D)</u>								
		р <b>Н</b> 60		-		0.4					
		EC T	<b>4</b>	:	;	ıS/cm					
		Tempera C				(n +	L 6	ci ,	10 10-		
			ater lev level	,ei			n trom	GL · -	-19. IOM	,	
			ievei	·	roundwa		the he	la ia	otrona	1	fored
	!	nemai vs	•		y the d			16 15	Strong	ty sui	Teren
				U	y the u	7 1 1 1 1 1 1 1	ig mud.				
Ti	me (min)	and der	th of g	roundw	ater fr	on Gl	(- m)				
i	(,	2	01. 01. 8.	3		4		5		6	
1		8	<u> </u>	9		10		15		20	
30		40		50		60		75		90	
10		120		150		180		210		240	
27	0	300		360		420		480	<del></del>	540	<del></del>
60	0	660		720	· · · · · · · · · · · · · · · · · · ·	780	<u> </u>	840		900	
96	0	1020		1080		1140	<del></del>	1200		1260	<del></del>
L	20	1380	<u> </u>	1440		<del> </del>					
-	<del></del>	<del>1                                    </del>			<u> </u>		<del> </del>				
1	i	1	1	I	ł	1	1	ı	l		

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	Invest	igation	Card	(No. (	G25)			(Date	e : 5/12	/1998)	
1.	Purpose	of inve	estigati	on : (	(1)		<del></del>				
				(	(2)						
				(	(3) Grou	ndwate	r in b	ore ho	le		
2.	Name of	Locatio	on	: G	huzayn						
	Locatio	n number	r	: <u>M</u>	J0B-G25						
	Number	of water	r sample	: [a]	D-251	surfa	ace, GD	-252	-55.30	m dee	р
				_							
3.	Conten	of inve	estigati	on.							
	3-1. St	urface wa	ater (S)								
		рН		:							
		EC		:	1	ı S/cm					
		Tempera	ature	:	·						
		Dischar	rge	:		³/min					
			• (=1)								
	3-2. W	ater well	1 (W)								
		рН		:		0/					
		EC	.4	:-		u S/cm					
1		Tempera		·		(Dant	h fuar	CI ·		m)	
		Ground	water le	.ve.i ·			il Trois	GL	_	rs/	
		Ground	level	•		1					
ľ	3-3. B	ore hole	(D)	(St	rface o	of GW)		(-55, 3	Om deep	)	
	<u> </u>	рН		•	0. 49				. 99	,	
		EC		-	00. 1				46 μS	/cm	
		Tempera	ature		3. 5_				2.0		
		-	water le			(Dept	h from			1)	
			level	_	n	_					
		Recove	ry test	: ]	nitial	water	level	:-2	0.70m f	rom G	L
				1	ifted w	ater v	volume	: 8	. 426. 6	€ (15	min)
ĺ				F	allen w	ater 1	level	:-2	6.59m f	rom G	L
		Remark	s	: B	ore hole	e is sl	ightly	affect	ed by d	rillir	ig mud.
Tir		and de						T =	1	T.	1
L	26. 55		26, 53	3	26.51	4	26.49	5	26. 47	6	26.45
7	26. 44		26. 43	9	26. 42	10	26.40	15	26. 37	20	26.34
30	26, 32		26. 29	50	26. 25	60	26, 21	75	26. 15	90	26.09
105	26, 05		26.00	150	25.89	180	25. 79	210	ļ <del>-</del>	240	-
270		300	<del>  -</del>	360	<del>-</del>	420		480	<del>  -</del>	540	<del>-</del>
600		660		720	<u>-</u>	780	-	840	-	900	L
960	-	1020	<b>}</b> -	1080	-	1140	] -	1200	<u>  -                                   </u>	1260	
		1.222	1							1	
132	0 -	1380	<u>-</u>	1440 2730	20.82			ļ		ļ	<u> </u>

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	Invest	igation	Card	(No. G	26)			(Date	: 6/12/	(1998)	
1.	Purpose	of inve	stigatio	on : (	1)						
				(:	2)						
				(;	3) Grou	ndwate:	r in bo	re hol	e		
2.	Name of	Locatio	n	:_ <u>G</u>	huzayn			-			
	Locatio	n number			J0B-G26			<del></del>			
	Number	of water	sample	: <u>G</u>	D-261	surfa	ce, GD	-262	-41.60	m deep	p
3.		of inve		on							
1	3-1. Su	rface wa	ter (S)								
İ		pH		:	<del></del>	_					
		EC		:	i	¿S/cm					
		Tempera		:		• •					
		Dischar	ge	:	R	3/min					
	3-2. Wa	ter well	(W)								
		pН		;							
		EC		:	i	ıS/cm					
		Tempera	ature	:	·						
		Ground	vater le	ve1:	m	(Dept	h from	GL: -	•	m)	
		Ground	level	:	m	l					
	3-3. Bo	re hole	(D)	(Sบ	rface o	f GW)		(-41.8	30m. dee	p)	
		ьH		: <u>   7</u>	. 51			7.	51		
		EC		:_3	89			43	<u>32</u> μ S	/cm	
		Tempera	ature	:_3	3.4			32	2. 7_°		
		Ground	water le	vel:	n	(Dept	h from	GL: -	-32. 67m	)	
1		Ground	level	<u>:</u>	n	1					
		Recover	ry test	: 1	nitial	water	level	:-32	2.69m f	rom Gl	L
				L	ifted w	ater v	olume	: 19	9.9 Q (	25 mi1	n)
				F	allen w	ater l	.eve1	:-34	4.97m f	rom Gl	L
		Remark	S	:							
l Ti	me (min)	and de	nth of a	rounds	ator fr	om GI	(- m)				
1	34.67	2	34.45	3	34. 18	4	34.01	5	33.97	6	33.66
7	33. 56	8	33.46	9 :	33. 37	10	33. 29	15	33.17	20	33.03
30	32.92	40	32.87	50	32.85	60	32.83	75	32.82	90	32.81
105	32.80	120	32. 795	150	32.78	180	32.77	210	32.76	240	32.76
270	32.76	300	32.76	360	<u> </u>	420	-	480	-	540	-
600	) -	660	-	720	-	780	-	840	-	900	-
960	) -	1020	-	1080	_	1140	-	1200	-	1260	-
132	20 -	1200	<del>                                     </del>	1140	<del></del>	<del></del>	<del> </del>	<del>1</del>	<del></del>		<b></b>
	20   -	1380	-	1440	-		i	1	İ	i	l

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]	Investigation Card	(No.	G27)			(Date	5/12	:/1998)	)
1. F	Purpose of investigati	on:	(1)						
			(2)						
			(3) Gro	undwate	r in bo	ore hol	le		
2. 1	Name of Location		Ghuzayn	~~~		·			
Ī	ocation number	:_!	MJOB-G2	7		_			
1	Number of water sample	;							
	Content of investigati	on		<del></del>					
3	3-1. Surface water (S)								
	рН	:							
	EC	:_		μS/cm					
	Temperature	:		•					
	Discharge	:	ا	m³/min					
۱,	0 0 Water wall (W)								
١	3-2. Water well (W)								
	pH FC	:-	<del></del>	<b>~</b> /					
	EC	-		μS/cm					
	Temperature	'		<b>(</b> D., 41		O1 .		,	
	Groundwater le Ground level	vei	- "-	m (Depti	h from	GL: -	-	m)	
	ALOSHO 16A61	•	1	n					
3	3-3. Bore hole (D)								
_	<del>, о. <u>2010 пото</u> (д)</del> рН	:							
	EC	:-		μS/cm					
	Temperature	:		0					
	Groundwater le	vel:	······································	n (Depti	h from	GI. : -	_	(a)	
	Ground level	:		n (Dopt)		GD .		,u/	
	Remarks	: 7	The bore	_	is clos	sed by	sand a	nd gra	avel
			at the				<b></b>	// o	****
				-	_				
Time		round	water f	rom GL	(- m)				
ı	2	3		4		5		6	
7	8	9		10		15		20	
30	40	50		60		75		90	
105	120	150	<u> </u>	180		210		240	
270	300	360		420		480		540	
600	660	720		780		840		900	
960	1020	1080		1140		1200		1260	
1320	1380	1440							
					-				

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	In	vestiga	ation	Card	(No. 6	28)			(Date	: 6/12/	(1998)	
1.	Pui	pose o	f inve	stigatio	n : (	1)						
					•	2)						
					(	3) Groui	ndwate	r in bo	re hol	е		
2.	Nar	ue of L	ocatio	n	: <u>G</u>	huzayn			_			
	Loc	cation	number		: <u>M</u>	J0B-G28						
	Nur	mber of	water	sample	։ ը	D-281  :	surfa	ce				
3.	Cor	ntent o	f inve	stigatio						<u>-</u> ,		<del> </del>
		l. Surf										
			H		:							
		-	c		:	μ	S/cm					
		Т	empera	ture	:							
			ischar		:	m	³/min					
	3	2. Wate	n mo11	(W)								
	J		Н и метт	(11)								
		-	C		:-		ıS/cm					
			empera	ture	:		. U) VIII					
			•	ater lev	el:	m	(Dept	h from	GL : -	-	m)	
			round		:	m	-				•	
					+							
	3-	3. Bore	hole	(D)		rface o	f grou	ndwater	:)			
}			H			. 05						
			C			$\frac{205}{\mu}$	ıS/cm					
			`empera		-	3. 1 °						
ļ				ater lev	/el:		((Dep	th from	GL:	-18. 00i	n)	
			round		:_	n						
		F	lecover	y test		nitial						
						ifted w				-		
						allen w						
1		ì	Remarks	i	• E	Bore hol	e is s	tili ai	Tecte	i by ar	311311	g mua.
Ti	me	(min) a	and dep	th of gr	round		om GL	(- m)				
1		19. 37	2	19.345	3	19.30	4	19.28	5	19. 26	6	19. 24
7		19, 22	8	19. 20	9	19, 185	10	19.17	15	19.09	20	19, 025
30		18.92	40	18. 83	50	18.75	60	18.70	75	18.62	90	18.57
10	5 ·	18.51	120	18. 48	150	18. 41	180	18.37	210	18. 34	240	18, 305
270	0	18. 27	300	18. 25	360	18. 23	420	18. 21	480	18. 20	540	-
60	0	-	660	•	720	-	780	-	840	-	900	-
96	0	-	1020	-	1080		1140	-	1200	_	1260	
13	20	-	1380	18, 11								
							]					

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Investigation Card (No. G29) (Date: 5/12/1998)

1. Pt	rpose of investiga					
		(2)				
		(3)	Groundwater	in bore hole		
2. Na	ame of Location	: Ghuz	ayn	<del></del>		
Lo	ocation number	: MJOE	3-629			
N	umber of water sam	ole :				
3. C	ontent of investiga	ation				
3.	-1. Surface water	(S)				
	pН	•				
	EC	;	μ S/cm			
	Temperature		<del></del>			
	Discharge	;	m³/min			
3.	-2. Water well (W)					
	рH	:				
	EC	:	μ S/cm			
	Temperature	•	• 		•	
	Groundwater	level:	m (Depth	from GL: -	m)	
	Ground leve	ı :	m			
3.	-3. Bore hole (D)					
	рН	:				
	EC	:	μ S/cm			
	Temperature	:	•			
	Groundwater	level:	m (Depth	from GL: -	m)	
	Ground leve	ı :	m			
	Remarks	: The	bore hole is	closed by sa	nd and gra	avel
		at 1	he depth of	13. 40m.		
-						
Time	(min) and depth of	f groundwate	er from GL (-	- m)   5	6	<u> </u>
7	8	9	10	15	20	
30	40	50	60	75	90	
105	120	150	180	210	240	
270	300	360	420	480	540	
600	660	720	780		900	
	<del></del>			840		
960	1020	1080	1140	1200	1260	
1320	1380	1440				
	<del> </del>	<del></del>	<del></del>			

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	Investigation	on Card	(No. G	30)			(Date	: 5/12/	1998)	
1,	Purpose of in	nvestigation	•	1)						
			_	2)						
			(;	3) Grou	ndwate	r in bo	re hol	е		****
2.	Name of Locat	tion	:_ <u>G</u>	huzayn			_			
	Location numb	ber	:_ <u>M</u>	JOB-G30			_			
	Number of wat	ter sample	:							
3.	Content of in	nvestigatio	n							
	3-1. Surface	water (S)								
	pН		:							
	EC		:		s/cm					
	Tempe	erature	;	•						
	Di sel	harge	:	n	³ /min					
	3-2. Water we	ell (W)								
	Нq	• •	:							
	EC		:		ı S/cm					
	Тетр	erature	:-	9						
	Grou	ndwater lev	'e1:		(Dept	h from	GL : -		m)	
		nd level		n	-					
	3-3. Bore ho	le (D)								
	рН	<del></del>	:							
	EC		:		u S/cm					
	Temp	erature	;	-						
		ndwater lev	/el:	n	ı (Dept	h from	GL : -		m)	
	Grou	nd level	:	t t	1		-			
	Rema	rks	: 1	he bore	hole	is clos	ed by	sand a	nd gra	vel
						f -4.30				
Ti	me (min) and	depth of gr	roundw	ater fi	om GL	(- m)				
1	2		3		4		5		6	
7	8		9		10		15		20	
30	40		50		60		75	_	90	
10	5 120		150		180	<u> </u>	210		240	
27	300		360		420		480		540	
604	660		720		780	l	840		900	
96	0 1020	0	1080		1140	1	1200		1260	
13	20 1380	0	1440			ļ — —	<u> </u>	· · · · · ·		
			<del></del> -	<b> </b>		<u> </u>				
_			<u></u>	L		<u> </u>				L

2: •

	Investigation Card (No. G31) (Date: 6/12/1998)										
1.	Purpos	of inve	stigatio	on : (	1)						
				(	2)						
				(	3) Grou	ndwate	r in bo	re hol	e		
2.	Name o	f Locatio	on	:_6	huzayn						
	Location	on number	:	; <u>M</u>	J0B-G31			_			
	Number	of water	sample	:							
3.	Conten	t of inve	estigatio	on							
	3-1. S	urface wa	ater (S)								
		рH		:							
		EC		:		ıS/cm					
		Tempera	ature	:	<del></del>						
		Dischar	rge	:	m	3/min					
	3-2. W	ater well	(W)								
		рН		:		- 1					
		EC		:		uS/cm					
		Tempera		-	<del></del>	100				,	
			vater le	vel:_	m	_	h from	GL:-	-	m)	
		Ground	level	:_		1					
	2_2 P	ore hole	(n)								
	<u>ა−ა, b</u>	рН Те поте	<u>(D)</u>								
		EC		-		ıS/cm					
		Tempera	ature	:	<i>,</i>	ı o, cu					
		_	vater le	·— vel:		(Dent	h from	GL : -	_	m)	
		Ground		· · · · · · · · · · · · · · · · · · ·			11 110111	OB ·		107	
		Remarks		: 1	he bore		is clos	sed by	sand a	nd gra	avel
			_		t the d					0	
						•					
									•		
Ti	ne (min	and de	oth of g	round	ater fr	om GL	(- m)				
ī		2		3		4		5		6	
7		8	-	9		10		15		20	
30		40		50		60		75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720	<u> </u>	780		840	<u> </u>	900	
960		1020		1080		1140		1200		1260	
132	0	1380		1440							
]											

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	Investigation Card (No. G32) (Date: 6/12/1998)												
1.	Purpose	of inve	stigatio	on : (	1)								
				(	2)								
				(	3) Grou	ndwate	r in bo	re hol	e				
2.	Name of	Locatio	n	:_G	huzayn				· <del>·</del>				
	Location	number		: <u>M</u>	J0B-G32								
	Number o	of water	sample	: [G	D-321	surfa	ce, GD	-322 :	-190.0	Om de	ер		
				-			<u> </u>						
3.	Content	of inve	stigation	 on			1.						
	3-1. Sur	rface wa	ter (S)										
		рH		;									
		EC		:	<i>µ</i>	ıS/cm							
		Tempera	ture	:									
		Dischar	ge	:	n	³/min							
	3-2. Wa	ter well	(W)										
		Нq		:									
		EC		:	<i>!</i>	2S/cm							
		Tempera		: <u></u>									
			vater le	vel:_	m	(Dept	h from	GL: -	•	m)			
		Ground	level	:	m								
	0 D D		(n)	10.		c owl		( 100	00 1	,			
	3-3. Bo		עט		rface o	I GW)				ep)			
		pH EC		_	. 08				7.66	0./			
		=		_	455				$\frac{2000}{\mu}$	S/cm			
		Tempera			8. 7	(D 4			32.4°				
			water le	ver :			n irom	GL : -	-13. com	<b>)</b>			
			level	·	m		1 1	. 10	76- 6		,		
		recove	ry test		nitial						:		
					ifted w allen w								
		Domonk	^		ore hol								
1		Remark	<b>S</b>	- E	ore nor	6 12 2	(111 S	rected	ı by ar	111111	g mud.		
Ti.	me (min)	and der	nth of a	rounds	estar fr	om GI	(- m)	÷					
i	-	2	-	3	14.48	4	14.41	5	14.34	6	14. 27		
1	14.22	8	14. 16	9	14. 12	10	14. 07	15	13.97	20	13.90		
30	13.84	40	13.82	50	13.81	60	13. 81	75	13.805	90	13, 80		
105		120	13.79	150	13.78	180	13. 78	210	13.78	240	13. 78		
270		300	-	360	-	420		480		540			
600		660	<del> </del>	720	<del> </del>	780		840	<del>                                     </del>	900			
960		1020	<del> </del>	1080	<del> </del>	1140		1200	<del> </del>	1260	<del> </del>		
132		1380	<del>                                     </del>	1440	-	<del>                                     </del>	<b> </b>				<b> </b>		
152		1000	<del> </del>	V4154	<del> </del>	<del> </del>	ļ	<del> </del>	<b></b>	<del> </del>	ļ		
	Į.				ĺ			1		I			

	Investigation Card (No. G33) (Date:6/12/1998)										
1.	Purpose of	investiga	ation:	(1)							
			(	(2)							
				(3) Grou	ndwate	er in be	ore hol	le			
2.	Name of Lo	cation	:_(	huzayn							
	Location no	umber	: <u>}</u>	<u> </u>		·					
	Number of	water samp	ole : {	D-331	surfa	ace					
3.	Content of	investiga	ation								
	3-1. Surfac	ce water	(S)								
	Hq		;								
	EC		; <u> </u>		ıS/cm						
		mperature	:	°							
	Dis	scharge	:_	m	³/min						
		()									
	3-2. Water	well (W)									
	pН		:	·	- 1						
	EC		<u>:</u> _	!	ıS/cm						
		nperature	<u> </u>	<del></del>	/n .						
		oundwater		m	_	h from	GL: -	-	m)		
	Gre	ound level	٠	m							
	3-3. Bore 1	hala (0)	/c.	mfaaa a	f ana		Λ				
	<u>э э. воге і</u> рН	note (b)		rface o . 10	ı grou	mowate					
	EC				ıS/cm						
		nperature		3.0	( D) (H						
		oundwater	-		(Dent	h from	GI : -	-12 30m	1		
		ound level				II TIOM	UL .	18. 0510	,		
		narks	_	ore hol		lefini te	elv aff	ected i	by dri	illing	
				ud.					., u		
Tip	ie (min) and	d depth of	ground	ater fr	om GL	(- m)					
1	2		3		4		5		6		
7	. 8		9		10		15		20	'	
30	4(	0	50		60		75		90		
105	12	20	150	·	180		210		240		
270	30	00	360		420		480		540		
600	66	60	720		780		840		900	<u> </u>	
960	10	020	1080		1140		1200		1260		
1320	) 15	380	1440								

	Investi	gation	Card	(No. 0	G34)			(Date	: 6/12/	/1998)	
1.	Purpose	of inve	stigatio								
					2)						
	V	T 42			3) Grou	ndwate:	r in bo	re hol	.e		
2.	Name of				huzayn						
	Location			- <u>M</u>	J0B-G34	<del></del>		***			
	Number o	or water	sample	•	•						
3.	Content	of inve	stigatio	on .		<del>-</del>	<del></del>	·· <del>·</del>	<del></del>		
	3-1. Sur	face wa	ter (S)								
		Hq		:							
		EC		:_	<i>_</i>	s/cm					
		Tempera	iture	:_	··						
		Dischar	ge	:	m	3/min					
	3-2. Wat	tan wall	(w)								
	5-2. Mai	pH	(117	•							
		EC		;—		ı S/cm					
		Tempera	ture	:		2 O/ CIU		•			
		-	rater lev	 .e1:		(Dent	h from	GI : -	_	n)	
		Ground		:		_	1. 11010	OD ·		iuy	
		<b>4</b>		-	<del></del>						
	3-3. Box	re hole	<u>(D)</u>								
		рН		:							
		EC		:_	!	ı S/cm					
		Tempera		:							
			ater lev	vel:_		(Dept	h from	GL: -	-	m)	
		Ground		:_	m	•					
		Remarks	3		he bore				sand a	nd gra	avel
				8	at the d	eptn o	1 -5.40	om.			
ļ											
Ti	me (min)	and dep	th of g	round	vater fr	om GL	(- m)				
1		2		3		4		5		6	
7		8		9		10		15		20	
30		40		50		60		75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720		780		840		900	
960		1020		1080	<u></u>	1140		1200		1260	
132	20	1380		1440							
		Į									
•				•	·		<u> </u>	<u> </u>			

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	Investig	ation	Card	(No. 0	G35)			(Date	: 6/12	/1998)	
1.	Purpose o	f inve	stigatio	on : (	(1)						
				(	(2)						
				(	3) Grou	ndwate	r in bo	re hol	e		
2.	Name of 1	ocatio	n	: <u>G</u>	huzayn						
	Location	number	ı	: M	U0B-G35						
	Number of	water	sample	:							
3.	Content of		_	n							
	3-1. Surf		ter (S)								
		o <b>H</b>		:							
		EC		:	!	ı S/cm					
		[empera		:_							
	I	Dischar	ge	:	m	³/min					
	3-2. Wate	er well	(W)								
	1	Ж		:							
	-	EC		: -		ı S/cm					
	1	empera	ture	:	•						
	(	Groundw	ater lev	/el:	m	(Dept	h from	GL : -	- <b>n</b> )	)	
		Ground		:	Transition of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the				·		
l											
	3-3. Bore	hole	(D)								
	Ţ	эΗ		:							
	1	EC		•	i	u S/cm					
	1	<b>Tempera</b>	ture	:_	•						
	(	Groundw	rater lev	rel∶_	m	(Dept	h from	GL: -	-	m)	
	(	Ground	level	:		1					
	3	Remarks	:	: 1	he bore	hole	is clos	sed by	sand a	nd gra	avel
				а	t the d	epth o	f -4.3	om.			
Ti	me (min) a	and dep	th of gi	round	ater fr	on_GL	(- m)				
ì		2		3		4		5		6	
7		8		9		10		15		20	
30		40	,,	50		60		75		90	
105		120		150	<u></u>	180		210		240	
270		300		360		420		480		540	
600		660		720		780		840	<b></b>	900	
960		1020		1080		1149		1200		1260	
132	0	1380		1440	ļ	<b> </b>		<u> </u>		<b>_</b> ]	
								i	1		

	Investigation Card (No. G36) (Date: 6/12/1998)											
1.	Purpose	of inve	stigatio	n : (	1)				<del></del>			
				(	2)							
				(	3) Grou	ndwate	r in bo	re hol	е			
2.	Name of	Locatio	n	:_ <u>G</u>	huzayn							
	Location	number		: <u>M</u>	J0B-G36							
	Number o	f water	sample	: 6	D-361	surfa	ice, <u>GD</u>	-362	-190.	00m de	ер	
										<del></del>		
	Content			n								
	3-1. Sur	face wa	ter (S)									
		pН		:_	<del></del>							
		EC		<b>:</b>		uS/cm						
		Tempera	ture	:								
		Dischar	ge	:	n	3/min						
	3-2. Wat	ar wall	<b>(₩)</b>									
		pH	(")	:								
		EC		:	<del></del>	ı S/cm						
		Tempera	iture	:		. 0, 014						
		-	ater lev	/el:	m	(Dept	h from	GL : -		m)		
Ì		Ground		:		_				,		
				-								
	3-3. Box	e hole	(D)	(Su	rface o	f GW)		(-190.	00m de	ep)		
		pН		:_8	. 02			7	, 34			
		EC		: 1	28.4			1	593 μ S	S/cm		
		Tempera	ature	:_3	1.3			3	1.0°			
		Ground	rater lev	/e1:	1	(Dept	h from	GL : -	9.40m)			
		Ground	level	:		ì						
		Recover	ry test	: 1	nitial	water	level	:-9.	57m fr	om GL		
				L	ifted w	ater v	olume	: 33	3.20 (	10 mir	1)	
				F	allen w	ater 1	level	:-9.	97m fr	om GL		
		Remarks	S	: E	Bore hol	e is i	inside (	of the	wadi c	ourse.		
Tir	ne (min)							y		·	- <del> </del>	
l	9.77	2	9. 57	3	9. 57	4	9.57	5		6		
7		8		9		10		15		20		
30		40		50		60		75		90		
105		120		150		180		210		240		
270		300	<u> </u>	360		420		480		540		
600		660		720		780		840		900		
960	960 1020 1080 1140 1200 1260											
132	0	1380		1440								

]	Investigation Card	(No. (	G37)			(Date	6/12	/1998)	,
1.	Purpose of investigation	on:	(1)		*********				
			(2)						
			(3) Grou	ındwateı	r in <u>b</u> e	ore <u>ho</u> l	le		
2.	Name of Location		Ghuzayn						*********
	Location number		MJOB-G37	1					
	${\tt Number\ of\ water\ sample}$	:							
<u> </u>			· • · · · · · · · · · · · · · · · · · ·						
3.	Content of investigation	on	-	_					
	3-1. Surface water (S)								
	pН	:_							
	EC	:_		μS/cm					
	Temperature	:_		•					
	Discharge	:_	m	n³/min					
	2.2 W								
	3-2. Water well (W)								
	pH FC		<del></del>	<b>~</b> /					
	EC	-		μS/cm					
	Temperature			/o					
	Groundwater lev	vel:_		n (Depth	i from	GL:-	-	m)	
	Ground level	;_		3					
	3-3. Bore hole (D)								
	pH	:							
1	EC	:		μS/cm					
	Temperature	:	•	1 0) Ou					
	Groundwater lev	vel:		a (Depth	a from	Cl : -	_	ro)	
	Ground level	:			1 110	GL -		luş	
	Remarks	:	The bore	_	ie alas	ood hy	cand a	nd or	aval
	11040150		at the d				Sonu u	Na Rre	1461
		-	ar viiv -	epen	-0.00	710.			
Tie	me (min) and depth of gr	round	water fr	com GL (	(- m)				
1	2	3		4		5		6	<u> </u>
7	8	9		10		15		20	
30	40	50	<u> </u>	60		75		90	
105		150		180		210		240	
270	300	360		420		480		540	
600	660	720		780		840		900	
960	1020	1080	1	1140		1200		1260	
1320	0 1380	1440							<b></b>
		i	<b></b>				i		
L		<u> </u>			/	<i>l</i> ]		1 1	l

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	Investig	ation	Card	(No. 0	S-1)			(Date	: 6/12	/1998)	
1.	Purpose o	of inves	stigatio	n : (	1) Surf	ace wa	ter				·
				(	2)						
				(	3)						
2.	Name of I	Location	n	:_G	huzayn,	Wadi	Hawasin	a_			
	Location	number		:_ <u>G</u>	S-1						
	Number of	f water	sample	: [g	S-1						
3.	Content of	of inve	stigatio	n	<u> , -,</u>						
	3-1. Sur	face wa	ter (S)								
	!	рΗ		:_8	. 36						
	1	EC		:_1	09.5 <i>t</i>	ıS/cm					
		<b>Tempera</b>			7.1 °						
		Dischar,	ge	: <u>4</u>	. 432 m	³/min					
	1	Remarks			he wate	r is t	aken fr	om the	Falaj	(cana	1)
				S	ystem.						
	3-2. Wat		(W)								
		p <b>H</b>		:							
		EC		:		ı S/cm					
		Tempera		·:-	<del></del>	·e_					
			ater lev	el:_	ir	(Dept	h from	GL:-	-	m)	
	•	Ground	level	;	tr	l					
	3-3. Bor	e hole	(D)								
		р <b>Н</b>		:_							
		EC		:	/	iS/cm					
		Tempera	ture	:	·						
	+	Groundw	ater lev	el:_	0	(Dept	h from	GL:-	-	m)	
	I	Ground	level	:	n	1					
   Tia	me (min)	and dep	th of gr	shauo:	ater fr	om GL	(- m)				
1	,	2	1	3	[	4		5		6	
7		8		9	-	10		15		20	
30		40		50		60		75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	[
600		660		720		780		840		900	
960		1020		1080		1140		1200		1260	
132	0	1380		1440							_
						<u> </u>				l	
<u> </u>		لـــــــــــــــــــــــــــــــــــــ			<u> </u>	L	L	L	<u></u>	J	L

	Investig	gation	Cara	(NO.	65-2)			(Date	: 6/12	/1998)	
1.	Purpose (	of inve	stigatio	(	(2)	ace wa	ter				<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>
<u> </u>		····			(3)					<del></del>	
2.	Name of I			-	huzayn,	Wadi	Hawasir	<u>a</u>			
	Location				S-2						
	Number of	f water	· sample	: [	SS-2						
3.	Content o	of inve	stigatio	n		<del></del>	<u>.</u>	<del></del>	<del></del>		
	3-1. Sur	face wa	ter (S)								
Ì		<b>H</b> q			<u>3. 46</u>						
		EC			15, 7	1S/cm					
		Pempera			29.0 °						
		Dischar	=		. 213 m						
	I	Remarks	;		he stre				//////	/	
				¥	ater of	Wadi	Hawasir	ıa.			
	3-2. Wate	er well	(W)								
	]	р <b>Н</b>		:							
	Į	EC		;		ı S/cm					
	•	Tempera	ture	:_							
	(	Groundy	ater lev	el:_	m	(Dept	h from	GL : -	-	m)	
	(	Ground	level	:	in	1					
	3-3. Bore	e hole	(D)								
		р <b>Н</b>		:_							
	1	EC		:_		ı S/cm					
		Tempera	ture	:_	°						
	(	Ground	ater lev	el:_	m	(Dept	h from	GL: -	-	m)	
	(	Ground	level	:_	n	ì					
Tin	ne (min) a		th of gr		ater fr		(- m)		г		
1		2		3		4		5		6	
7		8		9		10		15		20	
30		40		50		60		75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720		780		840		900	
960		1020		1080		1140		1200		1260	
1320	)	1380		1440							
								-			

Iı	nvestig	ation	Card	(No. (	;S~3)			(Date	: 6/12	/1998)	
1. Pt	irpose o	f inve	stigatio	(	2)	ace wa	ter				
0 1					3)	W. 12	12				
	ame of L				<u>huzayn,</u>	Wadi	Hawasir	<u>a</u>			
	cation				<u>S-3</u>						
N	umber of	water	sample	. ը	S-3						
			stigatio	n			·	·	<del></del>		
3-	-1. Surf	ace wa	ter (S)								
		Н			. 87						
	E	ec .			33.3	u S/cm					
		empera			8.6 °						
		Dischar	-		. 119 n						
	R	Remarks			he stre				////	////	
				W	ater of	Wadi	Hawasir	ıa.			
3-	-2. Wate	er well	(W)								
	p	Н	• •	:							
		C		:		u S/cm					
	T	empera	ture	:							
		-	ater lev	el:	I	(Dept	h from	GL:-	-	m)	
	G	Fround	level	:_	n	-				•	
3.	-3. Bore	hole	(D)								
ľ		) 11010 H	(0)	•							
	-	ec		:		u S/cm					
		conpera	turo	:	;						
		_	ater lev			(Dent	h from	cı · -	_	m)	
		round		: -			л 110ш	OL.		111/	
		Jound	10101	•	"	•					
Time	(min) a		th of gr	ound	ater fi	om GL	(- m)				
1		2		3		4		5		6	
7		8		9		10		15		20	
30		40		50		60		75		90	
105		120		150		180		210		240	
270		300		360		420		480		540	
600		660		720		780		840		900	<u> </u>
960		1020		1080		1140		1200		1260	·
1320		1380		1440		<u> </u>					<del> </del>
	1								l	<del>                                     </del>	
L			<u></u>		<u>L</u>	<u></u>		<u> </u>	<u> </u>		<u> </u>

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	Investigation Card	(No. GW	-1)	(Date	: 6/12/1998)	
i.	Purpose of investigat	ion : (1)				<del></del>
			Water wells			
		(3)				
2.	Name of Location	: <u>Ghu</u>		<u>-</u>		
	Location number	:_ <u>GW-</u>		- to 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		
	Number of water sampl	.e :GW→	1			
3.	Content of investigat	ion				
	3-1. Surface water (S	3)				
	pH	:				
	EC	·	μ S/cm			
	Temperature		········			
	Discharge	<u>:</u>	m³/min			
	3-2. Water well (W)					
	pH	: 7.6	7			
	EC	: 148	. 8 μ S/cm			
	Temperature	: 28.	6°			
	Groundwater 1	evel:	m (Depth	from GL: -	7.16m)	
	Ground level	•	m			
	Remarks	: Wat	er well is lo	ocated on the	e low terrae	ce in
		Ghu	zayn village.			
	3-3. Drilling holes (	(D)				
	рН	;				
	EC	:	μ S/cm			
	Temperature	:	•			
	Groundwater 1	level:	m (Depth	from GL: -	m)	
	Ground level	:		<del></del>	/	
		<del></del> -				
Tir	e (min) and depth of	groundwat	er from GL (	- m)		
1	2	3	4	5	6	
7	8	9	10	15	20	
30	40	50	60	75	90	
105	120	150	180	210	240	
270	300	360	420	480	540	
600	660	720	780	840	900	L
960	1020	1080	1140	1200	1260	
132	1389	1440				
		十一十		<u> </u>		
	1					L

	Investiga	ation	Card	(No. G	W-2)			(Date	: 6/12/	(1998)	
ì.	Purpose o	finves	stigatio	n : (1	i)			<del></del>			
				(2	2) Water	r well					
				(;	3)						
2,	Name of L	ocatio	n .	: <u>G</u> l	nuzayn						
	Location	number		: <u>G</u>	¥-2						
	Number of	water	sample	: G	W-2						
3.	Content o	f inve	stigatio	n							
	3-1. Surf	ace wa	ter (S)						•		
	-	H		:							
	E	C		;	<i>p</i>	S/cm					
		empera		:	°						
İ	D	ischar	ge	;	m	³/min					
	3-2. Wate	wall	(w)								
	•	H H	(#/	٠ 7	. 63						
	-	CC			. 05 08. 1 μ	S/cm					
}		`empera	turo		2.1	, o, ou					
		-	ater lev		n	(Pent	h from	GI.: -	7.44m)		
		round		:	n				••• 2 230,		
		emarks		: W	ater we		located	in th	e wadi	alluv	/ium
	·				f small						
							•				
	3-3. Dril	ling h	oles (D)		•						
	F	H		:							
	F	EC .		:		ıS/cm					
	1	îempera	ture	:	·						
			ater lev	/el:_	m	(Dept	h from	GL:-	•	m)	
	(	Fround	level	:	m						
σ,				1		01	/ 1				
1 1	me (min) a	and dep	in of gi	oundw 3	ater Ir	om GL	(~ m)	5		6	I
7		8		9		10		15		20	<u> </u>
30		40		50		60		75		90	<u> </u>
105		120		150	-	180		210		240	
270		300		360	<del></del> _	420		480		540	ļ
600		660		720		780		840		900	
960	1	1020		1080		1140	<del></del>	1200		1260	
		<u> </u>				1170		1600		1200	<b> </b>
132		1380		1440				<b></b>			<b></b>
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3. Meteorological Data

Station

:Seeb Air port

Parameter

:Surface Wind (speed in knots)

# Prevailing direction with mean speed

						1	Monti	<u> </u>					annual
Yeor	Jan	Feb	Mar	Apr	Моу	Jun	Jul	Airg	Sep	Oct	Nov	Dec	
1980	22505	04510	04510	22507	36010	04509	<b>0</b> 4510	04511	04509	04509	04512	22505	
81	22505	04510	36009	04510	04509	36009	04509	04511	04509	04511	36010	04511	
82	22508	27009	36009	36009	36009	04510	04511	04510	04508	04509	04510	22505	
83	22506	27008	04510	36009	22512	04508	04508	04510	04507	36008	94507	36007	
84	24005	06005	06005	24005	06006	03004	06005	06005	06006	03004	06004	06005	
85	06004	24005	24005	27006	06005	06005	06006	06005	06005	06005	24005	24005	
86	21005	06006	06006	06005	06007	060005	06006	06005	06005	24005	06005	06006	
87	21004	06005	06005	33004	06006	06005	06006	06005	06005	03004	03004	03004	
88	21005	24006	06006	06005	06005	06006	06006	06005	06005	36004	06004	21004	
89	24005	03005	06005	06005	06005	03004	05006	03004	09004	27005	06004	30005	
1990	24004	24005	09005	09905	09004	09006	09006	09006	09004	06004	03004	06004	
91	06005	06005	C6005	27005	06004	06005	06005	06005	06004	06004	06004	24004	
92	27005	27006	30004	03004	03005	03005	06005	06003	06005	06005	03005	03005	
93	24005	27005	06006	06005	21006	06006	05005	06005	06005	21004	06004	21004	
94	1	12004	:				:						
95	1	27005											
96 97	ſ											21003	
	21004	33004			21000		2000	00000	V0005	U60Q5	06005	21004	

# SULTANATE OF OMAN MINISTRY OF COMMUNICATIONS DIRECTORATE GENERAL OF CIVIL, AVIATION & METEOROLOGY DEPARTMENT OF METEOROLOGY

Station

:MAJIS(Sohar)

Parameter

:Air temperature [oC]

*Monthly mean

Yeor						Month					· · · · · ·	· · · · · · · · · · · · · · · · · · ·	Annual
	Jan	без	Mor	Apr	May	Jun	Jul	Aug	\$ep	Oct	Nov	Dec	
1980	17:5	19.0	22.4	28.5	32.7	32.5	33.7	31.5	30.1	28.1	23.3	19.9	26.6
81	19.7	19.6	22.5	28.1	29.8	32.3	33.5	32.9	29.9	26.1	22.0	20.1	26.4
82	19.1	18.4	21.2	25.7	30.4	32.4	32.3	31.8	30.2	27.7	22.7	19.1	25.9
83	18.4	18.5	20.6	24.5	31.9	33.9	33.2	31.8	30.7	26.9	22.9	19.9	26.1
84	18.9	18.7	23.3	28.3	31.9	32.4	32.7	31.7	30.7	25.7	22.6	20.4	26.4
85	19.7	19.9	23.0	26.9	30.4	32.4	32.2	31.3	29.7	27.4	24.0	20.8	26.5
86	18.8	19.7	22.2	26.7	31.4	32.3	33.1	30.7	30.5	28.7	24.7	20.0	26.6
87	19.2	20.4	23.1	26.0	31.1	32.7	33.7	32.4	30.8	27.6	23.6	19.9	26.7
88	18.9	19.9	23.0	27.3	31.1	33.3	32.5	31.6	30.2	27.6	24.7	21.6	26.8
89	18,5.	19.6	22.2	25.5	29.9	32.2	32.5	30.6	29.7	27.7	25.3	21.3	26.3
1990	19.6	20.4	22.4	27.7	30.8	33.1	34.0	31.1	30.3	28.1	24.5	21.8	27.0
91	20.6	20.2	22.1	27.1	29.1	31.3	32.1	30.0	29.4	26.5	23.6	21.4	26.1
92	18.6	19.0	20.4	24.4	31.1	33.0	32.7	31.7	29.7	27.6	23.7	21.9	26.2
93	19.8	21.2	22.8	26.5	31.1	32.9	33.4	32.3	30.5	26.9	24.4	21.8	26.9
94	20.2	20.1	23.3	27.3	31.4	33.3	33.0	31.8	30.1	27.7	25.4	21.1	27.0
95	20.3	20.9	22.1	25.7	30.2	32.4	32.7	32.6	30.7	28.7	24.0	21.6	26.8
96	19.5	20.9	23.1	27.2	31.1	33.3	34.0	32.3	30.0	26.7	22.8	19.7	26.7
97	18.5	20.7	21.9	25.2	30.4	32.4	33.4	35.0	31.2	28.4	145	21.6	26.8
										<del></del>	<del></del>		

# SULTANATE OF OMAN MINISTRY OF COMMUNICATIONS DIRECTORATE GENERAL OF CIVIL AVIATION & METEOROLOGY DEPARTMENT OF METEOROLOGY

STATION PARAMETER :MAJIS(Sohar)

:Air temperature [oC]

*Monthly Absolute maximum

year						Month							Annual
	Jon	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	···
1980	27.9	30.0	34.8	44.5	44.2	47.2	46.9	43.8	40.0	41.8	33.7	30.6	47.2
81	32.5	30.0	36.5	44.0	43.0	48.5	44.4	43.8	43.0	39.2	33.8	30.6	48.5
82	27.9	29.7	29.7	38.6	43.7	45.3	43.9	42.6	42.4	42.4	34.3	33.9	45.3
83	31.0	29.4	30.7	41.6	46.8	42.8	43.1	42.5	43.2	39.7	32.8	29.2	46.8
84	29.7	32.1	37.4	43.3	45.0	43.4	44.6	45.0	42.7	37.7	35.6	30.0	45.0
85	30.7	31.5	35.6	40.9	42.3	44.0	43.5	41.0	35.3	36.2	31.4	31.8	44.0
86	25.7	29.2	32.4	36.8	46.9	36.3	40.7	39.4	41.1	38.0	36.6	29.0	46.9
87	27.3	28.4	32.1	41.0	45.8	47.5	50.0	41.6	39.3	42.1	31.8	28.0	50.0
88	27.5	28.8	34.4	39.4	44.2	47.7	37.6	38.4	39.1	37.6	34.1	31.4	47.7
89	28.7	32.0	32.0	40.5	45.2	46.1	40.4	34.7	39.0	35.4	37.7	28.4	46.1
1990	28.0	29.8	33.5	42,4	40.4	45.8	48.2	35.7	35.0	36.0	32.4	29.6	48.2
91	28.8	32.0	31.4	40.4	46.7	37.4	38.0	33.9	35.4	35.0	32.0	28.6	46.7
92	26.8	26.3	32.4	36.1	46.0	45.5	40.6	40.2	37.0	35.0	31.7	29.8	46.0
93	26.8	34.0	33.0	36.9	47.0	40.0	41.2	41.2	35.6	36.2	32.6	28.9	47.0
94	28.6	31.6	33.3	39.0	44.4	44.9	39.2	38.4	36.7	34.3	32.6	31.0	44.9
95	29.0	27.6	35.0	39.0	43.4	41.6	40.7	42.4	37.3	37.1	32.8	28.0	43.4
96	27.2	26.8	33.2	41.6	45.6	47.5	44.3	41.6	34.8	34.5	33.5	27.0	47.5
97	26.3	30.2	32.3	39.9	46.0	42.4	43.0	43.2	37.6	37.7	31.5	29.9	46.0
L	<u> </u>								<del></del> ,	<u></u> .			

meximum 32.5 34.0 37.4 44.5 47.0 48.5 50.0 45.0 43.2 42.4 37.7 33.9 50.0

#### SULTANATE OF OMAN MINISTRY OF COMMUNICATIONS DIRECTORATE GENERAL OF CIVIL AVIATION & METEOROLOGY DEPARTMENT OF METEOROLOGY

STATION

:MAJIS(Sohar)

PARAMETER

:Air temperature [oC] *Monthly Absolute minimum

year						Month	· · · · · · · · · · · · · · · · · · ·						Annual
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1980	6.5	7.0	8.4	15.0	17.8	21.0	23.6	21.7	21,5	17.6	12.3	8.7	6.5
81	9.0	8.5	10.2	12.2	17.7	19.7	23,3	23.7	17.4	12.0	8.0	9.8	8.0
82	8.4	7.0	10.8	13.0	19.8	21.8	23.4	23.7	18.7	17.2	9.0	8.6	7.0
83	5.7	5.8	6.8	11.2	17.8	22.0	26.0	25.1	19.8	16.3	13.3	7.8	5.7
84	6.9	7.7	9.9	17.0	19.2	20.4	23.7	22.9	20.3	13.0	10.3	10.7	6.9
85	10.5	7.7	11.0	12.0	16.0	21.0	22.4	21.4	20.8	15.6	13.8	7.4	7.4
86	7.8	10.2	10.4	14.9	16.6	25.5	27.1	25.4	21.9	19.2	14.3	12.1	7.8
87	8.9	11.0	12.7	14.3	20.5	21.2	25.4	26.0	21.4	14.8	13.7	11.2	8.9
88	7.5	9.4	12.0	18.5	21.9	23.7	28.0	23.6	18.5	15.1	14.7	10.0	7.5
89	7.9	10.0	11.2	13.5	16.0	25.4	26.3	24.9	19.6	17.5	17.0	13.0	7.9
1990	10.8	11.3	11.1	16.2	19.0	23.3	24.7	25.6	24.5	18,1	14.5	10.6	10.6
91	10.9	7.4	10.8	17.5	18.7	22.5	25.2	25.8	21.5	14.6	13.8	11.0	7.4
92	7.8	8.3	8.8	14,3	21.4	23.6	25.8	23.2	19.9	17.1	14.0	12.4	7.8
93	5.8	12.1	11.0	14.4	17.4	24.0	26.2	24.8	20.0	14.5	12.6	11.0	5.8
94	11.6	9.3	12.9	17.6	20.6	24.0	27.5	27.3	18.5	17.7	16.6	11.5	9.3
95	10.6	10.2	12.8	13.0	20.0	23.4	26.4	28.0	22.1	15.4	14.8	15.6	10.2
96	12.0	11.3	13.3	16.0	21.0	25.5	23.8	26.4	20.7	11.5	12.2	10.0	10.0
97	6.8	8.5	8.6	13.8	18.2	25.3	25.8	26.2	23.0	20.4	16.0	11.0	6.8
L	<u></u>				<u>-</u>			<u> </u>	<u> </u>		· · · · · · · · · · · · · · · · · · ·		

## SULTANATE OF OMAN MINISTRY OF COMMUNICATIONS DIRECTORATE GENERAL OF CIVIL AVIATION & METEOROLOGY DEPARTMENT OF METEOROLOGY

Station

:MAJIS(Sohar)

Parameter

:Rainfall[mm]

*Monthly total

Year						М	onth		·		<del></del>		Annual
	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1980	1.5	2.5	3.9	0.0	Tr	0.0	0.0	Tr	0.0	0.0	0.0	0.0	7.9
81	4.7	0.0	1.3	17.1	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.1
82	0.0	135.3	57.3	2.1	0.0	0.0	0.0	0.0	0.0	0.0	13.8	9.1	217.6
83	0.4	59.9	37.7	24.4	0.0	Tr	0.0	0.0	Tr	0.0	0.0	Tr	122.4
84	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	9.7	14.7
85	0,0	0.0	Tr	0.0	0.0	0.0	0.0	Tr	0.0	0.0	0.0	0.0	Tr
86	21.9	11.8	7.3	3.1	0.0	0.0	0.0	0.0	0.0	0.0	24.7	26.4	95.2
87	0.0	64.6	45.5	13.9	14.9	0.0	0.0	0.0	0.0	0.0	0.0	3.6	142.5
88	0.0	235.3	0.0	22.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	2.7	260.5
89	0.0	13.6	17.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	2.9	107.5	143.0
1990	23.3	95.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.6
91	0.0	15.7	49.4	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.2	10.2	76.5
92	45.7	24.9	3.2	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	102.9
93	2.2	19.2	11.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.5	53.3
94	40.0	0.0	30.6	0.0	0.0	0.0	0.0	4.5	0.0	Tr	1.2	0.0	76.3
95	0.0	5.3	46.2	Tr	0.0	0.0	45.3	0.9	0.0	12.2	8.8	187.4	306.1
96	82.3	25.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Tr	0.0	131,1
97	24.7	0.0	74.8	13.5	0.0	0.0	0.0	0.0	0.0	127.2	12.2	8.6	261.0
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### SULTANATE OF OMAN MINISTRY OF COMMUNICATIONS DIRECTORATE GENERAL OF CIVIL AVIATION &METEOROLOGY DEPARTMENT OF METEOROLOGY

STATION

:MAJIS (Solear)

PARAMETER:

:Surface wind

'Monthly prevailing direction with mean speed (knots)

Year						Month	)						·Annual
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	\$ep	Oct	Nov	Dec	·=
:													
1984	03003	06002	03002	03003	03003	03002	03003	03003	06003	06002	03002	03002	03003
85	06002	06007	03006	09007	12005	06005	12006	12005	09004	09005	24005	24006	09005
86	24006	24006	06006	09005	06005	09006	09005	12005	09005	09004	24006	24006	09005
87	24005	24005	09006	36005	09005	09005	09005	09005	09005	24005	24005	24005	09005
88	24006	24005	09005	36005	06004	09005	12006	12006	09004	09004	24005	24006	09005
89	24006	30006	06006	06006	09005	09006	12006	12006	09005	24004	24005	24006	09006
1990	24004	30005	09005	09005	09004	09005	09005	12006	09005	09004	24004	21004	09005
91	21006	24005	03004	27005	09004	06004	09004	09005	09005	21004	21004	21005	06005
92	21006	27006	06005	06004	06004	03004	09005	09005	06004	06004	24005	09006	09005
93	30007	33008	27006	06006	06007	09005	09005	J9005	09006	09004	24005	05000	09000
94	24006	30007	06006	09006	09006	09006	09006	12006	09005	06005	24005	24005	09000
95	24006	27,006	27006	06005	09007	12004	12005	12005	09004	09004	27005	27005	12005
96	24005	27005	03005	09005	09004	12005	12005	12005	12005	24005	24005	27005	12005
97	24005	30005	30005	09005	09005	12004	12005	12005	12004	12004	27004	24005	
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### SULTANATE OF OMAN MINISTRY OF COMMUNICATIONS DIRECTORATE GENERAL OF CIVIL AVIATION &METEOROLOGY DEPARTMENT OF METEOROLOGY

STATION

:MAJIS (Sohar)

PARAMETER:

:Surface wind (speed in knots)

# Monthly maximum gust with direction

уезг		_				MOI	NTH		,			·	Annual
	Jan	Feb	Мәг	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Doc	
1980	20014	25020	33030	31018	31021	08014	09012	04012	02012	09015	36014	33018	33030
81	01015	28022	36022	36025	33040	15015	08012	15012	24015	06013	06012	36010	33040
82	32011	31014	34015	28015	36011	04013	01012	30013	04011	23011	33020	33015	33020
83	11013	11016	11022	35025	31018	09010	06013	06015	11011	36011	04010	24015	35025
84	28019	29011	20018	28016	•		-	•	•	•	-	-	-
85	11014	35033	34028	34044	03021	02026	30024	09019	09016	03017	33021	24031	34044
86	33034	28027	35027	02039	34030	36030	11023	13030	36027	08022	31034	36034	02039
87	34026	34029	33065	33033	33045	01040	09023	08019	10018	10021	06021	10021	33065
88	35027	23061	29033	02033	30042	31033	11041	04018	12018	11017	10017	34029	23061
89	29037	33031	33029	22036	01028	35027	10019	10019	10021	32019	35024	02032	29037
1990	35024	36060	30029	33033	35034	13020	29017	09015	08021	10018	09019	34029	36060
91	33032	30025	27032	33030	05021	33017	06019	08016	07019	09023	04026	36037	36037
92	30045	33033	33029	34034	12030	34026	27020	08019	04018	12018	33021	01026	30045
93	32031	20034	27033	29037	33038	33025	06022	11020	06023	03022	09018	34026	33038
94	06033	29034	33033	34029	33033	35028	12024	14026	09017	10020	35020	30027	29034
95	23028	33035	35031	31030	32029	-	-	-	11017	06022	32027	06041	06041
96	14027	02028	03030	01029	09025	12028	12026	•		14022	13022	05027	03030
97	33026	01029	36038	36035	03031	17022	01018	16018	12015	03044	05029	34021	03044
	1												

Station

:Seeb Airport

Parameter

:Air temperature Data [C]

. *Monthly mean

							Monti			y mean	<del></del>		
· Year	Jon	Feb	Mat	Apr	Мау	Jun	Jul	guA	Sep	Oct	Nov	Dec	Annuat
1974	20.6	20.5	25.6	28.0	32.5	34.3	36.0	32.6	31.4	28.1	24.6	23.0	28.1
75	21.3	21.0	24.5	28.3	33.9	34.3	32.3	31.4	31.1	28.7	24.8	21.0	27.7
76	21.1	21.7	24.2	28.0	35.0	35.1	34.1	33.1	31.7	30.6	25.2	23.0	28.6
77	21.0	22.3	27.2	30.7	35.9	35.9	33.9	32.7	32.5	31.3	26.9	24.5	29.6
78	22.4	23.2	25.6	31.5	34.6	35.7	35.3	32.6	30.2	28.9	26.7	23.0	29.1
79	21.6	23.0	24.1	29.5	32.7	34.9	34.2	32.0	30.7	29.7	24.4	22.2	28.3
1980	20.8	22.6	25.5	32.7	35.4	34.8	34.0	31.2	30.9	30.2	25.6	22.4	28.8
81	22.0	22.5	25.7	31.3	33.1	35.9	35.0	33.9	31.4	28.9	24.9	22.8	28.9
82	21.6	21.3	24.2	28.9	33.6	35.5	33.8	32.3	31.8	31.0	24.9	21.3	28.3
83	21.0	21.0	22.7	27.3	35.3	36.3	33.1	32.0	31.7	29.7	25.1	22.3	28.1
84	21.3	20.9	26.8	31.9	34.1	34.6	33.2	31.7	32.6	28.4	25.6	22.9	28.7
85	22.3	22.3	26.1	29.6	33.8	35.5	33.6	31.8	30.6	29.3	25.9	22.7	28.6
86	20.7	21.3	24.6	30.1	36.3	33.8	34.4	31.4	32.8	31.4	26.4	22.0	28.8
87	21.4	22.5	25.8	29.1	34.5	35.2	36.3	32.5	32.1	29.5	25.5	21.5	28.8
88	20.8	22.0	26.2	30.9	34.6	36.1	33.0	31.9	31.7	29.8	26.4	23.6	28.9
89	20.7	21.5	24.3	28.3	33.3	34.3	33.7	29.9	30.9	29.9	27.1	22.9	28.1
1990	21.4	22.2	24.8	31.1	<b>33.3</b>	36.4	36.8	30.4	30.5	29.8	26.1	23.5	28.9
91	22.4	22.4	24.6	30.2	31.7	34.3	33.9	29.8	30.7	28.6	25.6	23.4	28.1
92	20.0	20.8	22.9	26.8	35.5	37.6	34.0	32.6	31.3	28.6	24.7	23.3	28.2
93	21.3	23.1	24.4	28.8	34.1	35.9	35.1	32.8	31.0	28.5	25.8	23.1	28.7
94	21.6	22.0	25.1	29.7	33.9	35.7	33.1	30.9	30.9	28.9	26.5	22.7	28.4
95	21.4	22.4	23.2	27.7	32.9	34.0	32.8	32.8	31.3	29.7	24.7	22.5	28.0
96	20.4	21.7	24.4	28.8	34.1	34.4	34.6	31.2	29.7	27.5	23.6	20.6	27.6
97	20.1	21.9	23.0	26.5	32.2	33.2	33.5	31.5	31.1	29.6	24.9	22.3	27.5

Station

:Seeb Air port

Parameter

:Air temperature (C)

*Monthly absolute maximum

							Mon		TOXIII				<u> </u>
Year	Jan	Feb	Mor	Αρι	Моу	Jun	Jul	Aug	Şəp	Oct	Nov	Dec	Annual
1974	30.0	30.0	37.0	41.0	43.0	45.0	46.0	41.0	39.0	37.0	35.0	30.5	46.0
75	30.4	31.8	34.0	39.5	47.0	47.8	40.0	40.3	39.8	39.8	33.5	30.2	47.8
76	29.3	31.2	35.7	38.0	45.5	45.2	45.0	44,4	41.2	38.8	33.0	31.3	45.5
77	34.2	33.0	41.2	42.3	45.0	47.0	44.0	46.8	43.5	40.8	37.0	33.0	47.0
78	-31.0	33.0	38.8	44.0	46.2	47.5	48.2	42.0	42.3	39.8	37.8	31.0	48.2
79	31.7	37.0	35.0	42.0	46.0	48.3	45.4	43.4	41.5	39.9	33.0	31.4	48.3
1980	28.3	35.8	36.0	43.6	44.8	45.4	45.5	43.4	40.6	40.9	33.7	28.3	45.5
81	32.5	34.8	37.2	42.2	45.7	46.6	44.8	44.6	42.4	38.7	34.0	30.7	46.6
82	30.5	30.0	38.2	40.4	43.0	45.2	43.0	42.6	42.0	41.5	34.5	32.5	45.2
83	29.5	34.1	32.0	41.5	44.8	47.1	44.6	44.1	42.3	40.0	33.3	28.8	47.1
84	29.0	31.0	38.2	42.8	43.0	45.1	45.5	42.2	40.5	38.4	36.0	32.5	45.5
85	31.2	30.2	41.4	40.5	44.5	47.2	45.2	43.0	40.3	39.2	32.8	30.1	47.2
86	29.0	28.5	39.2	40.0	46.6	41.7	45.9	41.2	42.5	42.0	36.0	31.0	46.6
87	29.9	30.4	38.9	42.2	44.4	46.7	47.0	46.5	43.2	40.7	33.2	29.8	47.0
88	29.5	30.2	40.0	40.7	45.6	47.2	43.2	44.0	42.2	39.6	35.0	30.6	47.2
89	30.0	35.6	35.4	39.2	45.3	47.0	45:2	39.7	43.6	41.0	37.0	32.2	47.0
1990	28.6	30.1	34.9	42.7	45.0	46.0	49.2	39.4	37.8	41.5	35.3	30.5	49.2
91	33.2	32.0	35.8	42.0	46.8	44.6	47.0	36.4	44.5	39.3	35.3	31.0	47.0
92	28.3	31.1	34.0	39.6	46.7	48.0	46.2	43.0	42.2	37.8	33.5	30.5	48.0
93	30.4	34.4	37.5	42.4	47.0	47.2	44.6	45.6	41.0	41.0	35.2	30.0	47.2
94	32.5	28.5	35.0	42.0	44.2	48.5	42.6	43.3	43.0	40.0	33.0	33.0	48.5
95	28.5	31.2	32.0	40.4	44.6	46.9	45.4	45.4	43.0	39.4	33.9	29.4	46.9
96	28.5	29.1	36.5	41.5	45.2	47.8	44.1	42.1	39.8	37.5	32.3	28.4	47.8
97	28.8	31.8	33.9	38.0	44.4	46.6	46.7	39.0	42.2	38.6	31.3	29.4	46.7
						<del></del>	·						

Station

:Seeb Air port

Parame	eter		wbela Wit bo		ata (C			*M	onthly	absolut	le mini	mum	
						N	Vont						
Year	Jan	Feb	Mor	nqA	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1974	13.0	13.0	17.6	20.0	24.0	27.0	27.0	25.0	25.0	18.3	15.9	14.9	13.0
75	13.5	13.0	16.0	19.0	26.0	26.0	26.4	27.0	25.0	17.5	18.0	16.2	13.0
76	14.5	0.61	18.0	20.0	24.0	28.5	26.6	25.0	25.0	23.0	15.8	21.1	14.5
77	13.0	14.2	15.7	19.4	26.8	26.0	28.0	26.0	24.8	23.2	17.3	17.3	13.0
78	15.0	16.0	16.7	19.8	25.0	28.7	27.5	24.5	23.8	20.4	14.6	15.4	14.6
79	11.5	13.2	15.6	19.2	21.4	27.0	25.0	25.0	23.0	22.8	14.3	15.6	11.5
1980	14.0	13.6	15.3	23.5	26.0	27.5	25.7	24.7	24.7	23.2	18.5	14.5	13.6
81	14.5	14.0	18.6	20.4	19.6	27.2	29.4	25.5	25.0	20.7	16.3	16.2	14.0
82	14.7	14.5	14.4	19.7	24.9	27.6	27.2	24.7	23.5	23.1	15.4	15.4	14.4
83	14.6	14.4	15.5	19.4	24.0	27.0	26.8	24.5	25.3	20.5	17.7	15.7	14.4
84	15.2	13.1	16.4	21.9	23.6	27.5	25.5	26.4	25.2	18.0	17.3	15.0	13.1
85	15.8	12.5	17.0	20.3	25.0	26.3	26.4	25.9	24.6	22.3	19.2	14.9	14.9
86	13.8	15.6	19.0	20.9	25.6	27.2	27.8.	23.3	24.5	23.3	19.4	15.7	13.8
87	12.5	15.0	16.4	17.5	25.2	24.5	29.5-	27.0	25.8	20.3	17.2	14.4	12.5
88	14.6	15.5	18.3	22.1	24.1	28.5	27.8	24.0	24.3	22.5	19.0	16.4	14.6
89	13.2	13.9	15.6	18.4	22.4	27.3	26.4	24.5	24.2	20.1	20.3	16.0	13.2
1990	15.7	16.4	16.0	22.4	25.8	28.2	29.0	25.5	26.0	21.0	17.5	14.5	14.5
91	12.4	10.0	16.6	21.2	23.1	27.4	27.5	25.5	24.6	21.6	18.2	16.4	10.0
92	13.4	14.5	15.6	18.5	27.5	29.7	27.8	27.2	22.2	20.5	15.0	15.4	13.4
93	12.6	16.0	15.6	18.8	24.3	27.0	28.0	25.3	24.2	19.2	16.5	13.9	12.6
94	14.0	14.0	17.0	20.0	23.7	25.2	26.0	26.0	22.5	20.3	18.5	13.8	13.8
95	12.0	16.0	15.3	17.5	23.5	26.1	25.8	26.7	24.3	18.5	15.6	15.6	12.0
96	12.8	14.1	15.4	19.2	22.4	27.1	27.3	25.3	22.2	16.6	12.8	10.9	10.9
97	12.6	14.9	15.4	17.7	21.0	26.1	28.0	27.1	23.8	22.6	17.8	15.2	12.6

Statio Parameter :Seeb Air port :Rainfall [mm]

'Monthly total rainfall

		· • • • • • • • • • • • • • • • • • • •					Month		nonuny	10,01,	annan		
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1974							·				·		
75	6,0	47.8	0.0	Tr	0.0	0.0	0.0	2.5	0.0	0.0	0.0	20.3	76.6
76	16.0	42.5	57.0	30.3	0.0	0.0	2.4	0.0	0.0	Τr	0.0	4.1	152.3
77	50.5	27.0	4.6	14.0	0.9	9.9	Tr	Tr	0.0	0.0	75.7	Τr	182.6
78	10.7	11.4	12.8	Tr	Tr	0.0	T٢	0.0	0.0	0.0	7.0	Τr	41.9
79	8.3	2.2	Tr	Tr	Tr	Tr	0.0	0.0	0.0	0.5	0.0	8.5	19.5
1980	1.5	2.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	Tr	Τr	Τr	3.7
81	17.0	Tr	23.5	Tr	69.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	109.7
82	2.9	59.6	35.1	0.9	0.0	0.0	0.0	Tr	0.0	0.0	4.5	29.5	132.5
83	Τr	25.6	4.5	46.7	Τr	0.0	Tr	0.9	Tr	0.0	0.0	2.6	80.3
84	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0,0	0.2	Tr	0.0	1.7	2.4
85	Τr	0.0	1.3	0.0	Tr	0.0	Tr	0.0	0.0	0.0	0.0	Tr	1.3
86	8.9	52.4	2.8	5.8	0.0	3,5	0.0	6.3	0.0	0.0	0.0	14.7	94.4
87	0.0	32.7	67.9	67.3	Tr	0.0	0.0	Tr	0.0	13.0	0.0	13.4	194.3
88	0.9	25.6	0.0	7.2	0.0	0.0	Tr	Ò.0	0.0	0.0	Tr	28.8	62.5
89	Tr	5.2	13.0	16.0	Tr	0.0	0.0	0.0	0.0	0.0	Tr	35.7	69.9
1990	43.4	33.5	Tr	TR	0.0	0.0	0.0	0.1	0.0	0.0	1.1	0.7	78.8
91	1.3	22.4	1.1	0.0	0.0	0.0	0.0	0,0	0.0	0.0	Tε	20.0	44.8
92	28.0	33.5	8.9	29.0	0.0	0.0	0.0	1.1	0.0	Tr	0.0	Tr	100.5
93	24.4	0.5	0.6	5.2	Tr	0.0	Tr	0.0	0.0	0.0	Tr	0.0	30.7
94	9,4	0.0	0.0	1.0	0.0	0.0	3.6	26,6	0.0	0.0	0.0	3.7	44.3
95	0.3	22.3	11.5	4.3	0.0	0.0	68.3	0,0	0.0	0.0	0.0	112.3	219.0
96	16.7	19.7	24.9	Tr	0.0	0.0	0.0	Ţŗ	0.0	0.0	0.0	0.2	61.5
97	19.5	0.0	145.4	35.4	0.0	0.0	0.0	0.0	0.0	7.0	24.4	5.4	237.1

Station

:Seeb Air port

Parameter

:Surface Wind (speed in knots)

# Prevailing direction with mean speed

	Month								annual				
Yeor	Jan	feb	Mar	Apr	Мау	Jun	Jul	Aug	\$ep	Oct	Nov	Dec	
1980	22505	04510	04510	22509	36010	04509	04510	04511	04509	04509	04512	22505	
81	22505	04510	36009	04510	04509	36009	04509	04511	04509	04511	36010	04511	
82	22508	27009	36009	36009	36009	04510	04511	04510	04508	04509	04510	22505	
83	22506	27008	04510	36009	22512	04508	04508	04510	04507	36008	94507	36007	
. 84	24005	06005	06005	24005	06006	03004	06005	06005	06006	93:004	06004	06005	
85	06004	24005	24005	27006	06005	06005	06008	06005	06005	06005	24005	24005	
86	21005	06006	06006	06005	06007	06005	06006	06005	06005	24005	06005	06006	
87	21004	06005	06005	33004	06006	06005	96006	06005	06005	03004	03004	03004	
88	21005	24006	06006	06005	06005	06006	06006	06005	06005	36004	06004	21004	
89	24005	03005	06005	06005	06005	03004	04006	03004	09004	27005	06004	30005	
1990	24004	24005	09005	09005	09004	09005	09006	09005	09004	06004	03004	06004	
91	06005	06005	06005	27005	06004	06005	06005	06005	06004	06004	06004	24004	
85	27005	27006	30004	03004	03005	03005	06005	06003	06005	06005	03005	03005	
93	24005	27005	06006	06005	21006	06006	05005	06005	06005	21004	06004	21004	
94	05005												
l i	03003												
i !	21005 21004											4	
,,	21004		·					00000	cours	Culucu	UOUU5 1	21004	

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Station

Seeb Air port

Parameter

Surface Wind (speed in knots)

# monthly maximum gust with direction

	Month												
Year	net	۶۰5	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annuat
r977	04030	26025	24020	33026	12030	09040	21020	20050	07030	06018	33020	34018	20050
78	34016	36022	27029	27032	30026	06030	23026	24025	05022	21022	20025	06023	27032
79	21028	23030	21033	18042	21030	03030	05025	06025	05023	05028	04024	20048	20048
1980	33025	20039	32053	22044	20037	20029	21036	05028	02027	17027	03025	06028	32053
81	25034	32040	19031	18055	28066	21040	19026	05036	05025	20025	04022	05025	28066
82	20035	23036	20043	05032	21030	20034	05027	04028	20028	<b>06025</b>	06027	06022	20043
83	28035	22030	31034	27037	20036	04030	09027	06038	04020	04018	05019	34020	06038
84	21022	06022	20030	21030	21027	29022	07029	06016	17025	06017	06020	06019	20030
85	07019	34019	21030	31031	21020	21020	21021	05018	34014	34017	05016	32019	31031
86	06020	21026	20029	26025	21030	06027	21025	07028	21024	06019	34016	06021	31031
87	34018	01030	20046	30034	06032	21036	21029	05021	02024	20029	04019	04021	20046
88	27025	32027	21035	22037	33037	28027	21029	06021	06023	19020	06019	25025	22037
89	31026	32024	20029	33038	07031	01023	23030	04022	23024	35023	09026	36031	33038
1990	30024	29035	01023	36029	33029	22029	27040	09025	10020	10026	09020	07026	27040
91	22043	25031	25031	24033	21028	21027	21030	07029	28024	06025	07019	31023	22043
92	33025	30027	23032	19027	17026	25026	20027		05022	08030	06019	20024	23032
93	09024	18034	21025	21029	-	05028	-			06024		-	
94	34031	04032	21032	09031	27024	06030	09025		07021	06022	07025	22029	04032
95	ľ		22025		•	•	07025	24034	07020	08024	08021	09026	24034
96	23030	07025	34026	35025	23028	22031	08024	10021	07024	08025	08025	07020	22031
97	22028	24026	-	25042	34031	33026	07024	07023	24025	06040	08022	09024	25042
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- data not available

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