

**DATA BANK FOR WATER RESOURCES
IN ARAB COUNTRIES**

**Project realized in cooperation
between ACSAD and BRGM**

SIMPLIFIED TEXT

Orléans - Damascus 1982

BRGM

BUREAU DE RECHERCHES
GEOLOGIQUES ET MINIERES
B.P. 6009 - 45 060 ORLEANS Cedex

ACSAD

THE ARAB CENTRE FOR THE STUDIES
OF ARID ZONES AND DRY LANDS
P.O. Box 2440 - DAMASCUS - SYRIA

ANNEX OF INDEX "HYDROGEOLOGICAL MAP"
MULTILANGAGE CONNEXION

N°	Name Lexicon	Other Name or orthograph	Arabic
01/ D	DHAHRAN	Az Zahran	
02/ A	BAGDAD	Baghdad	
02/ B	DAMAS	Damascus, Dismashq	
02/ C	BASSØRA	Basra, Al Basrah	
02/ D	AMMAN		
03/ A	JAFFA	Yafo	
03/ B	TØBROUK	Tubruq, Tobruk	
03/ C	LE-CAIRE	Cairo, El Qahira	
03/ D	SIØUA	Siwa	
04/ A	BENHAZI	Banghazi	
04/ B	TUNIS		
04/ C	SEBHA	Sabha	
04/ D	GHADAMES	Ghadamis	
05/ A	ALGER		
05/ B	TANGER	Tangier	
05/ C	TADEMAIT	Plateau du Tademaït	
05/ D	BENI-ABBES		
06/ A	RABAT		
06/ C	MARRAKECH		
07/ A	MASCATE	Muscat	
07/ B	DØHA	Ad Dawhah, Duha	
07/ C	KØURIA-MØURIA	Kuria Muria Islands	
07/ D	MUKALLA	Al-Mukalla	
08/ A	RIYAD	Riyadh, Ar Riyad	
08/ B	DJEDDA	Jidda, Juddah, Djeddah	
08/ C	SANA	Sanaa	
08/ D	PØRT-SØUDAN	Port-Sudan	
09/ A	ASSØUAN	Aswan	
09/ B	KØUFRA	Kufrah Oasis, Al-Kufrah	
09/ C	KHARTØUM		
09/ D	EL-ATRØUN	El'Atrun, Oasis El-Atroun	
10/ A	BEN-GUININA		
10/ B	DJANET	Fort-Chalet	
11/ A	TAMANRASSET	Fort-Laperrine	
11/ B	Ø-CHENACHANE	O-Chinachine	
11/ C	IN-GUEZAM	In-Guezzam	

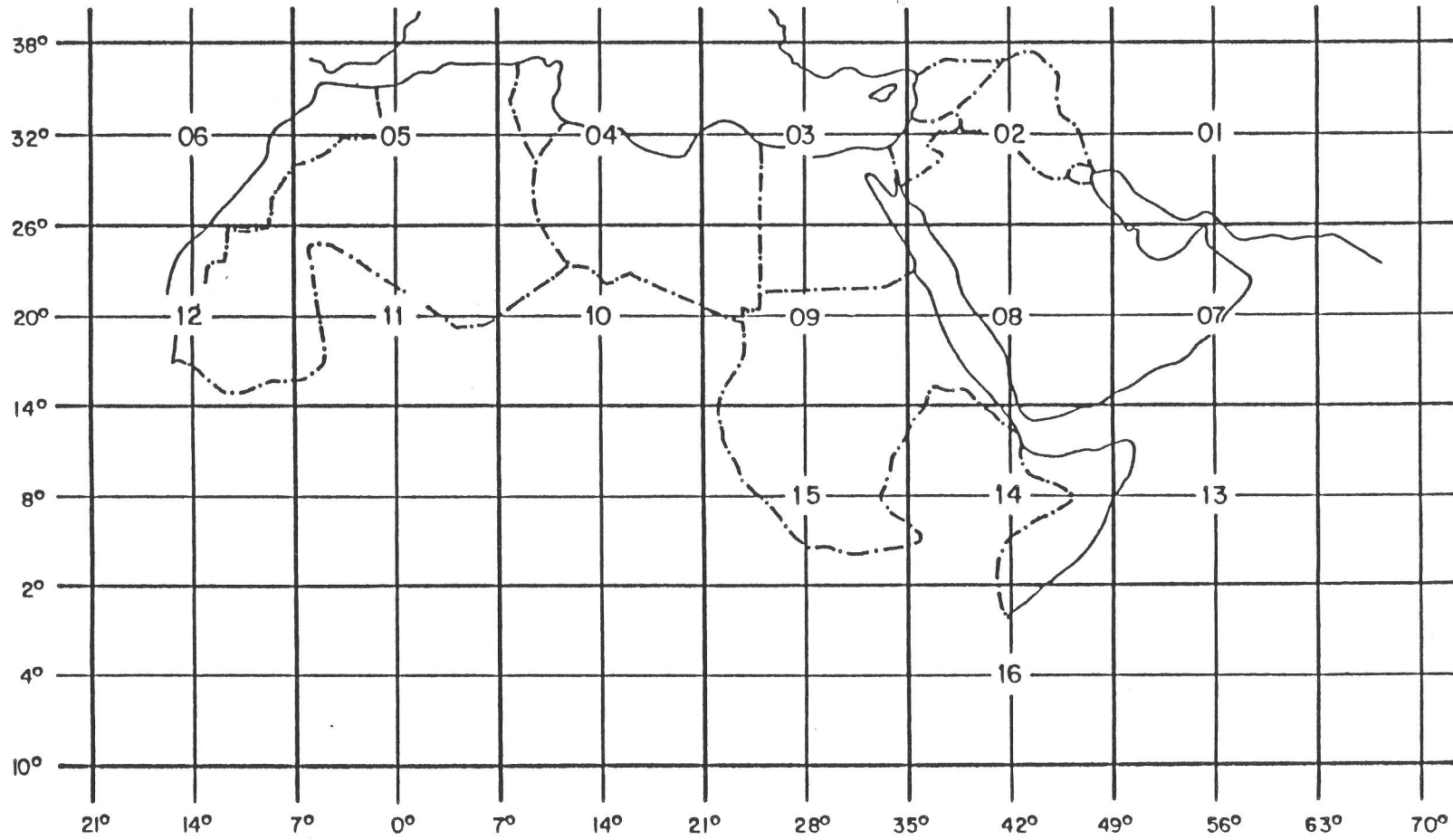
12/A	ZØUERATE	Zoucirat
12/B	NØUADHIBØU	Port-Etienne, Nuadibu
12/C	TICHITT	Tichit
12/D	NØUAKCHØTT	
13/B	RAS-ASIR	Ras-Asir, Cap Guardafui
14/A	ADEN	
14/B	DØKA	
14/C	MØGADISCHIØ	Mogadishu, Mogadiscio
14/D	KARØTHØ	
15/A	EL-ØBEID	
15/B	EL-FACHER	El-Fasher
15/C	JUBA	Djouba
15/D	TAMBURA	
16/A	BRAVA	
16/B	CHIAMBØNE	Chiamboni

LEXICON "AQUIFERS"- SYRIA (continued)

MESØZØIQUE-AAFRINE	SY/A16			
MESØZØIQUE-ALAØUIT	SY/A17			
			MESØZØIQUE-SAHEL	SY/A17-01
			CENØMANIEN-HAMA	SY/A17-02
MESØZØIQUE-TENNÉ	SY/A18			
NEØGENE-AAZAZ	SY/A19			
NEØGENE-HØMS	SY/A20			
PALEØGENE-ALEP	SY/A21			
			MENNBIDJ	SY/A21-01
			EL-BAB	SY/A21-02
PALEØGENE -HAMAD	SY/A22			
PALEØGENE-DERAA	SY/A23			
PALEØGENE-QALAMØUN	SY/A24			
PALMERIDES	SY/A25			
			CAMPANIEN-PALMERIDES-NØRD	SY/A25-01
			CAMPANIEN-PALMERIDES-SUD	SY/A25-02
			ANTI-LIBAN	SY/A25-03
			CENØMANIEN-FIGEH	SY/A25-04
			CENØMANIEN-PALMERIDES-NØRD	SY/A25-05
		CENØMANIEN-PALMERIDES-SUD	SY/A25-06	
PALMYRE	SY/A26			
RADD	SY/A27			
SELEMIYE	SY/A28			

TØUS-AQUIFERES-SY

HYDROGEOLOGICAL MAP OF ARAB COUNTRIES (sheet index)



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B	A						
01							
D	C						

INDEX "HYDROGEOLOGICAL MAP"

Sheet 1/2 000 000

Sheet 1/1 000 000

Number	Name	Name	Number
01	DHAHRAN	DHAHRAN	01/ D
		BAGDAD	02/ A
		DAMAS	02/ B
02	JERUSALEM	BASSØRA	02/ C
		AMMAN	02/ D
		JAFFA	03/ A
		TØBRØUK	03/ B
03	LE-CAIRE	LE-CAIRE	03/ C
		SIØUA	03/ D
		BENGHAZI	04/ A
		TUNIS	04/ B
04	TRIPØLI	SEBHA	04/ C
		GHADAMES	04/ D
		ALGER	05/ A
		TANGER	05/ B
05	ALGER	TADEMAIT	05/ C
		BENI-ABBES	05/ D
		RABAT	06/ A
06	RABAT	MARRAKECH	06/ C
		MASCATE	07/ A
		DØHA	07/ B
07	DUBAY	KØURIA-MØURIA	07/ C
		MUKALLA	07/ D

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		DJEDDA	08/ B
08	RIYAD	SANA	08/ C
		PORT-SØUDAN	08/ D
		ASSØUAN	09/ A
		KØUFRA	09/ B
09	KHARTØUM	KHARTØUM	09/ C
		EL-ATRØUN	09/ D
		BEN-GUININA	10/ A
10		DJANET	10/ B
		TAMANRASSET	11/ A
		Ø-CHENACHANE	11/ B
11	HØGGAR	IN-GUEZAM	11/ C
		MEDALA	11/ D
		ZØUERATE	12/ A
		NØUADHIBØU	12/ B
12	NØUAKCHØTT	TICHITT	12/ C
		NØUAKCHØTT	12/ D
13	RAS-ASIR	RAS-ASIR	13/ B
		ADEN	14/ A
		DØKA	14/ B
14	ADEN	MØGADISCHIØ	14/ C
		KARØTHØ	14/ D
		EL-ØBEID	15/ A
		EL-FACHER	15/ B
15	EL-ØBEID	JUBA	15/ C
		TAMBURA	15/ D

LEXICON "COUNTRY"

<u>Name</u>	<u>Code</u>
ALGERIE	AL
SAØUDITE	SA
BAHREIN	BA
EGYPTE	EG
EMIRATS	EA
IRAQ	IQ
JØRDANIE	JØ
KØWEIT	KØ
LIBAN	LB
LIBYE	LY
MARØC	MA
MAURITANIE	MU
ØMAN	ØM
PALESTINE	PA
QATAR	QA
SØMALIE	SØ
SØUDAN	SU
SYRIE	SY
TUNISIE	TU
YEMEN-NØRD	YN
YEMEN-SUD	YS

LEXICON "COUNTRY" (continued)

Non arabic countries (Names and codes just to be used in data elements "other countries" in data sheets "surface water" and "groundwater").

AFARS-ISSAS	AI
CENTRE-AFRIQUE	CA
ETHIØPIE	ET
IRAN	IN
KENYA	KE
MALI	ML
NIGER	NI
ØUGANDA	ØU
SENEGAL	SE
TCHAD	TC
TURQUIE	TK
ZAIRE	ZA

ANNEX OF LEXICON "COUNTRY"
MULTILANGAGE CONNEXION

<u>Name LEXICON</u>	<u>French</u>	<u>English</u>	<u>Arabic</u>
ALGERIE	Algérie	Algeria	
SAØUDITE	Arabie Saoudite	Saoudi Arabia	
BAHREIN	Bahrein	Bahrain	
EGYPTE	Egypte	Egypt	
EMIRATS	Emirats arabes unis	United arab emirates	
IRAQ	Iraq	Iraq	
JØRDANIE	Jordanie	Jordan	
KØWEIT	Koweït	Kuwait	
LIBAN	Liban	Lebanon	
LIBYE	Libye	Libya	
MARØC	Maroc	Morocco	
MAURITANIE	Mauritanie	Mauritania	
ØMAN	Oman	Oman	
PALESTINE	Palestine	Palestine	
QATAR	Qatar	Qatar	
SØMALIE	Somalie	Somalia	
SØUDAN	Soudan	Sudan	
SYRIE	Syrie	Syria	
TUNISIE	Tunisie	Tunisia	
YEMEN-NØRD	Yemen-Nord	North Yemen	
YEMEN-SUD	Yemen-Sud	South Yemen	

ANNEX OF LEXICON "COUNTRY" - MULTILANGAGE CONNEXION (continued)

AFARS-ISSAS	Territoire français des Afars et des Issas	French territory of Afars & Issas
CENTRE-AFRIQUE	République Centre Africaine	Central African Republic
ETHIØPIE	Ethiopie	Ethiopia
IRAN	Iran	Iran
KENYA	Kenya	Kenya
MALI	Mali	Mali
NIGER	Niger	Niger
ØUGANDA	Ouganda	Uganda
SENEGAL	Sénégal	Senegal
TCHAD	Tchad	Chad
TURQUIE	Turquie	Turckey
ZAIRE	Zaïre	Republic of Zaïre

LEXICON "NATURE"Word of LexiconSignification

AIRE-IRRIGUEE	Périmètre irrigué
BARRAGE	Barrage
CLIMATØLØGIE	Station climatologique
DESSALEMENT	Usine de dessalement
FØGGARA	Foggara
FØRAGE	Forage
JAUGEAGE	Station de jaugeage
MARE	Mare
PERTE-RIVIERE	Perte de rivière
PIEZØMETRE	Piézomètre
PRISE-RIVIERE	Prise en rivière
PUITS	Puits
RESTITUTIØN	Point de restitution d'eau usée
SØURCE-CAPTEE	Source captée
SØURCE-JAUGEE	Station de jaugeage de source.

LEXICON "ELEMENT OF REFERENCE"

BASSIN
 SECTEUR
 SOUS-BASSIN
 BASSIN-PARTIEL
 BASSIN-DIFFERENTIEL

V bis

LEXICON "BASINS" IRAQ

LEXICON "BASINS" JORDAN

	Basins		sub-basins		
	Name	Number	Name	Number	Nature
TØUS-BASSINS-JØ	JØURDAIN	JØ/B01	YARMØUK	JØ/B01-01	sb
	MER-MØRTE	JØ/B02			
	SECTEUR-AZRAK	JØ/B03			
	SECTEUR-DESERT	JØ/B04			
	SECTEUR-JAFR	JØ/B05			
	SECTEUR-RUWEISHID	JØ/B06			
	SECTEUR-SARHAN	JØ/B07			

LEXICON "BASINS" LEBANON

	Basins		sub-basins	
	Name	Number	Name	Number
TØUS-BASSINS-LB	CØTIER	LB/B01		
	HASBANI	LB/B02		
	KEBIR-GENUBI	LB/B03		
	LITANI	LB/B04		
	ØRØNTE	LB/B05		

LEXICON "BASINS" SYRIA

Basins		sub-basins		
Name	Number	Name	Number	Nature
ALEXANDRETTE	SY/B01			
AØUEDJ	SY/B02			
BARADA	SY/B03			
EUPHRATE	SY/B04	BALIKH	SY/B04-01	sb
		KHABØUR	SY/B04-02	sb
		RAQQA	SY/B04-03	bp
		SØUAB	SY/B04-04	sb
TIGRE	SY/B05			
ØROØTE	SY/B06	AAFRINE	SY/B06-01	bp
		HAMA	SY/B06-02	bp
		JISR-ECH-CHØGØUR	SY/B06-03	bp
		LAC-AMØUK	SY/B06-04	sb
		LAC-HØMS	SY/B06-05	bp
SAHEL	SY/B07	KEBIR-SHEMALI	SY/B07-01	sb
		KEBIR-GENUBI	SY/B07-02	sb
YARMØUK	SY/B08			
SECTEUR-ALEP	SY/B09			
SECTEUR-BADIAH	SY/B10			
SECTEUR-DAMAS	SY/B11			

TØUS-BASSINS-SY

VIII

LEXICON "AQUIFERS" JORDAN

← Aquifers →

← sub-aquifers →

Name	N° aquifer	Name	N° sub-aquifer
ALLUVIØNS-JØURDAIN	JØ/A01		
AMMAN-WADI-SIR	JØ/A02	AMMAN-SIR-LIBRE	JØ/A02-01
		AMMAN-SIR-CAPTIF	JØ/A02-02
		AMMAN-ZERQA-A1A4	JØ/A02-03
		SALT	JØ/A02-04
CRETACE-PETRA-ØUEST	JØ/A03		
CRETACE-PETRA-SUD-ØUEST	JØ/A04		
DISI-KURNUB	JØ/A05	DISI-LIBRE	JØ/A05-01
		DISI-CAPTIF	JØ/A05-02
		KHREIM	JØ/A05-03
		KURNUB-ZERQA-NØRD	JØ/A05-04
		KURNUB-ZERQA-SUD	JØ/A05-05
TERTIAIRE-DESERT	JØ/A06	BASALTE	JØ/A06-01
		PALEØGENE-HAMAD	JØ/A06-02
TERTIAIRE-JAFR	JØ/A07		
PALEØGENE-RAMTHA	JØ/A08		
WADI-ARABA	JØ/A09		

TØUS-AQUIFERES-JØ

LEXICON "AQUIFERS" LEBANON

← Aquifers → ← sub-aquifers →

Name	N° aquifer	Name	N° sub-aquifer
ANTI-LIBAN	LB/A01		
BASALTE-HOMS	LB/A02		
BEYRØUTH	LB/A03		
EØCENE	LB/A04	ØUED-DØUBBE TYR	LB/A04-01 LB/A04-02
EØCENE-BAALBEK	LB/A05		
HERMØN	LB/A06		
JABBAL-AL-AARBI	LB/A07		
JURASSIQUE	LB/A08		
LIBAN-NØRD	LB/A09	MØNT-LIBAN-EST MØNT-LIBAN-ØUEST	LB/A09-01 LB/A09-02
LIBAN-SUD	LB/A10		
PLAINE-BEKKA	LB/A11	BEKKA-NØRD BEKKA-SUD	LB/A11-01 LB/A11-02
QUATERNAIRE-TRIPØLI	LB/A12		

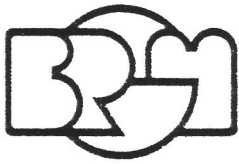
TØUS-AQUIFERS-LB

LEXICON "AQUIFERS" SYRIA

Aquifers

sub-aquifers

Name	N° aquifer	Name	N° sub-aquifer
ALLUVIØNS-EUPHRATE	SY/A01		
BADIAH-NØRD-EST	SY/A02	BAS-JEZIREH SHAMIYAH	SY/A02-01 SY/A02-02
BALIKH	SY/A03		
BASALTE-HØMS	SY/A04		
BASALTE-MALIKIYEH	SY/A05		
BASALTE -SUD	SY/A06	ARABE GØLAN YARMØUK ZELAF	SY/A06-01 SY/A06-02 SY/A06-03 SY/A06-04
DAMAS	SY/A07	ALLUVIØNS -DAMAS CALCAIRE-LACUSTRE-DAMAS	SY/A07-01 SY/A07-02
ED-DAØU	SY/A08		
EØCENE-RAS-EL-AIN	SY/A09		
EOCENE-TELL-ABIAD	SY/A10		
HELVETIEN-ALEP	SY/A11		
HERMØN	SY/A12	AZEBEDANI HERMØN-SUD	SY/A12-01 SY/A12-02
KHANASSER	SY/A13		
OUATERNAIRE-LATTAQUIE	SY/A14		
LØWER-FARS	SY/A15	BADIAH JEZIREH	SY/A15-01 SY/A15-02



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BUREAU DE RECHERCHES
GEOLOGIQUES ET MINIERES
B.P. 6009 - 45 060 ORLEANS Cedex

n° rapport BRGM 82 AGE 023

BANQUE DES DONNEES DU SOUS-SOL

ACSAD

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ACSAD/HS/R-23

DIVISION DES RESSOURCES EN EAUX

The project " Data Bank for Water Resources in Arab Countries" was started by A.C.S.A.D. in 1981 .

This conception report was elaborated in 1982 it was coordinated by

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- Miss L.LHEUREUX for B.R.G.M.

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- Geophysic : W. RASOUL AGHA and S. KOTOUB
- Informatic : N. ROFAIL and F. DEHNE

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This work was financed by ACSAD and the French cooperation with BRGM contribution .

SUMMARY

At the request of the ACSAD (Arab Center for the Studies of Arid Zones and Dry Lands), the BRGM has extended its collaboration towards the conception and completion of the first stage of works involved in creating a 'Data bank for information on water resources in Arab Countries'. This involved drawing up data sheets for the future computerisation of the data to be introduced into the bank; at the present stage, they are eight in number :

- Data sheet 'COUNTRY'
- Data sheet 'SURFACE WATER'
- Data sheet 'PLANNING'
- Data sheet 'STUDIES'
- Data sheet 'GROUNDWATER'
- Data sheet 'HYDROMETRIC STATION'
- Data sheet 'PIEZOMETRY'
- Data sheet 'WATER QUALITY'

In the report (BRGM 82 AGE 022/ACSAD/HS/R-22), you will find, for each data element of each data sheet, whenever it was deemed necessary, a reminder of the definition of the parameter considered, sometimes specific details about its meaning, and also the rules to be followed when filling in the data sheets .

The present report constitutes a brief summary, not including the definitions and only grouping together the drafting instructions . It has been extracted from the above - mentioned report .

This project is triply financed , by the ACSAD, the French External Relations Mission and the BRGM.

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INTRODUCTION

With a view to supplying the Planning Authorities of the Arab World with the technical informations they need, the ACSAD has decided to create a Data bank for information on water resources . This bank will essentially bring together all associated data about resources , utilization and water needs in Arab Countries . This work of synthesis which could be expressed in cartographic form, will be carried out for reference units defined according to administrative (countries), hydrological (basins), and hydrogeological (aquifers) criteria .

The ACSAD and the BRGM have worked together in order to produce eight data sheets needed for computerising the informations about water resources in Arab Countries :

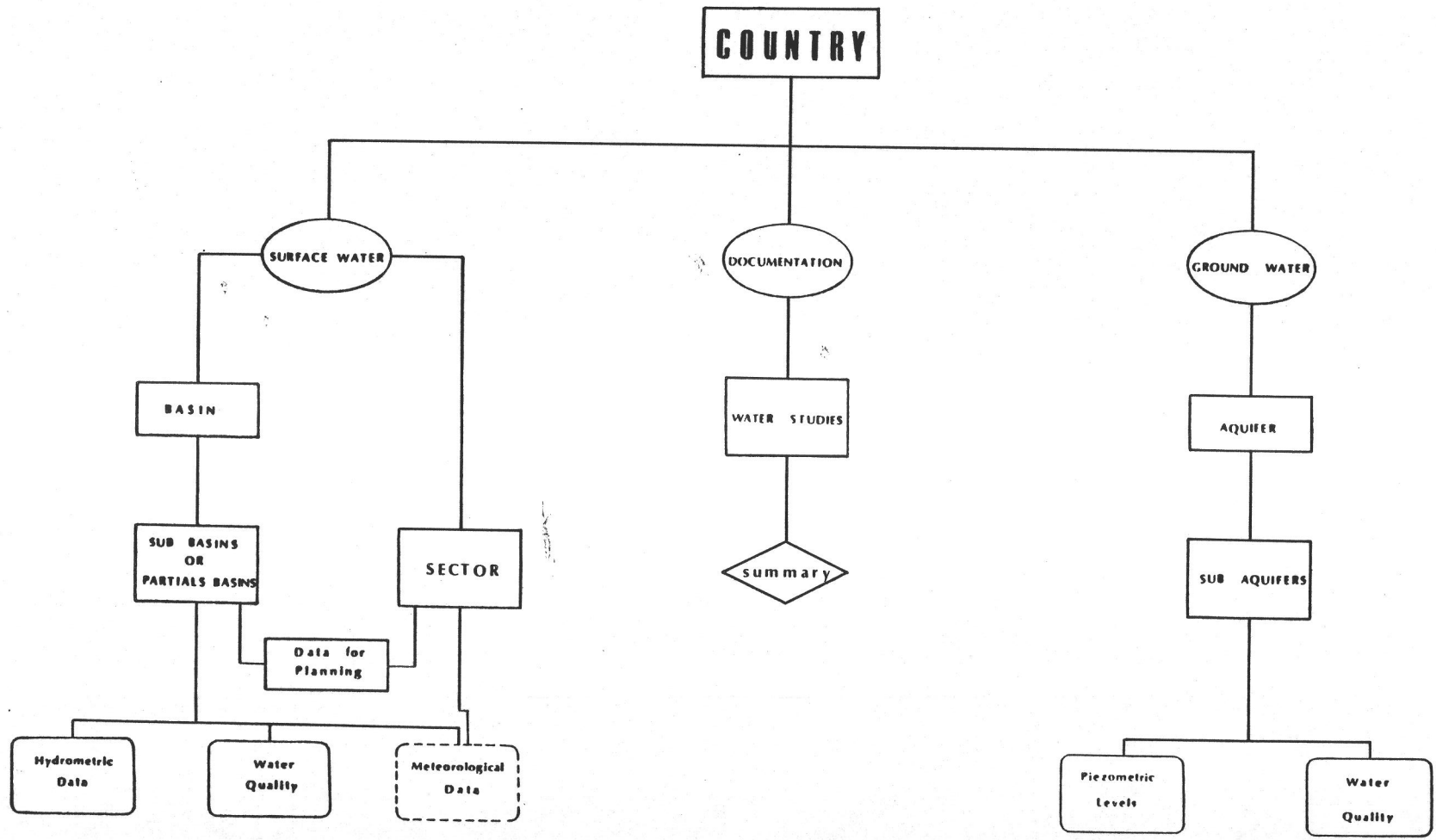
- Data sheet 'COUNTRY'
- Data sheet 'SURFACE WATER'
- Data sheet 'PLANNING'
- Data sheet 'STUDIES'
- Data sheet 'GROUNDWATER'
- Data sheet 'PIEZOMETRY'
- Data sheet 'HYDROMETRIC STATION'
- Data sheet 'WATER QUALITY'

The following scheme presents the general organization of the Data bank for the water resources of Arab Countries .

It is noticed that the branches surface water and underground water are separate .

Nevertheless, information common to the two branches , e.g. water quality, are collected from the same data sheet .

**ORGANIZATIONAL CHART FOR ACSAD
WATER RESOURCES DATA BANK**



The data sheet "ETUDES" concerns the whole water resources; surface waters and underground waters. It is of interest as a bibliography and constitutes a base for a documentation unit .

The data bank shall be completed by information on climatology .

The data bank on the water resources of Arab Countries is of a spacial type . Eventually, a liaison with national data banks should be feasible, with the coordinates of a presentation forming the "bridge" between the two types of banks .

The present report deals with the detailed description of these eight data sheets . Each chapter is made up of :

- A copy of the data sheet,
- A second copy of the sheet with figures indicating the paragraph number commenting on the data element concerned,

A text, often in the form of a table giving instructions proper for filling each item whenever necessary, or giving reference to a preceding paragraph or to another chapter , in case the instructions were common to several items.

The lexical data elements are indicated by an 'L' on the copy of the data sheet at the beginning of the chapter. The lexicons are grouped together at the end of the report.

GENERAL POINTS

1- Language and alphabet

Before describing the different data sheets and defining the rules for writing up the various data elements , it is important to note that :

- The data bank for information on water resources in Arab Countries covers 21 countries, therefore a single language must be used for the computerisation of data in the various countries involved .

- The choice of language and alphabet to be used must take into account the nature of the hardware (MITRA computer).

To fulfill these two important requirements - homogenise the manner of expressing the information and make input easier - it has hence been agreed that :

The data sheets will be filled out in French whatever be their mode of presentation (English, Arabic or French), with exception : the 'STUDIES' data sheet (see particular instructions).

The characters to be used will be exclusively latin letters and arabic figures :

Letters : A, B, C, D, E,..... Z

Figures : 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

2- Hints for filling out the data sheets

The following hints are given for filling out the data sheets;

- Always use a pencil in order to be able to correct mistakes without crossing-out .

- Use capitals throughout,

- Be very careful when writing a character which could be confused with another, for example;

Letter U - Letter V

Letter l - figure 1 (one) - figure 7 (seven) - symbol / (slash)

Letter Z - figure 2

Letter S - figure 5

- Bar the letter O to distinguish it from the figure 0
letter Ø - figure 0

- Distinguish between information with the value "null" and unknown data by writing a zero in the first case and leaving the data element blank in the second case .

- When a data element extends over several lines (text); write on every line (do not skip a line), use the whole length of the line before going on to the next.

3 - Types of data elements

When filling out the data sheets, you will notice three types of data elements :

- numerical

- alpha-numerical

- data elements with options

3.1 Numerical data element

These data elements must only include figures (0 to 9). The positions are marked by fine dots on which the figures are to be placed .

Example; Depth : 176
 ... m

. Data elements with whole numbers:

A whole number must always be situated towards the right, i. e. the figures must occupy the position furthest to the right. If the number does not fill all the positions, the spaces on the left should be filled in with zeros; all the spaces must be occupied .

Example: AREA 000750 km² (for 750 km²)

. Data elements with decimal numbers:

Example : total qty tapped: 10⁶ m³/yr

The comma of the decimal number is replaced by the 'decimal point', a large dot to be distinguished from the fine dots showing where the figures are to be placed . Its position is fixed and must be observed . If the number, with all its meaningful figures does not fill all the positions, complete with zeros before and after the number, so that all the fine dots have a figure over them .

Example: Information available

Total qty of water tapped: 150,0 millions m³/yr

Filling out the data sheet:

Total Draw-off: 00150.50 10⁶m³/yr

(decimal point) —↑

. Dates

There are generally several types:

- Either simply indicate the year in 4 figures

e.g. DATE: 1977

- Or give a more precise date, indicating from the left to the right the day, month and year in the following way:

day month year
.. / .. / /

or only month year
 .. /

e.g. 12th July 1975

12/ 07/ 1975
.. / .. /

If the day is not known, do not write anything over the positions corresponding to the day.

e.g. In September 1966

.. / 09 / 1966
.. / .. /

If the month is not known, do not write anything over the position 'month' and only fill in the year .

e.g. In 1980

 .. / .. / 1980
or .. / 1980
 .. /

according to the format indicated on the data sheet .

- Or indicate a period (from..... to).

In the data elements "from" "to" one might encounter days, months, or years. These data elements should obey the above-said rules. If the period of time covers one single unit of time, this should be indicated by giving the same values for the data elements "from" and "to".

e.g. monthly average natural flow

min: 10⁶ m³/mois de 04 à 04

This is translated that the minimum was observed for the 4th month of the year .

NOTE

For reasons of uniformity, only the dates of the Western Calendar will be used.

. Coordinates :

Observations points, location of works, etc. are marked out by their geographical coordinates - longitude, latitude- from left to right and, in order, in degrees, minutes and seconds. In addition, a box is provided to indicate the hemisphere .

N North S South for the latitudes
E East W West for the longitudes

e.g. Latitude 33° 27' 45" North

Latitude N 33° 27' 45"

Where the degrees, minutes and seconds are only given as one figure, this must be situated to the right, i.e. positioned over the dot of the data element furthestmost to the right and completed by a zero in the space to the left .

e.g. Longitude 2° 4' 0" West

Longitude W 02° 04' 00"

Do not write anything in the space for seconds, if the latter are not known.

e.g. Longitude 6° 25' East

Longitude E 06° 25' ..

Coordinates expressed in the Lambert or Palestinian systems are not accepted .

. Page :

This data element appears on data sheets where several copies might be used to describe a single unit (a specific point or a zone), the second, third, etc. data sheets being considered as 'data sheet continuations'.

Pages are numbered using two figures:

On the left, the number of the page being filled out,

On the right, the **total** number of data sheets used to describe the item .

e.g. If, for a description, one needs to use 3 data sheets of the same type (i.e. 2 'data sheet continuations'), the successive pages are numbered : 1/3; 2/3; 3/3.

NOTE: The total number of pages will be updated when new data sheets are filled out.

e.g. On date T_0 , a single page was sufficient to describe the item; it was numbered 1/1. At a later date T_1 , further data is available but there is no more space on page 1/1; a second data sheet is then used; the first page, formerly numbered 1/1, is renumbered 1/2, and the second page is numbered 2/2.

. Data elements that indicate an interval :

- A value might be demanded in the form of an interval.

e.g. Depth from m to ... m		
from 5 m to 10 m	005m	010m

constant 5 m	005m	005m

3.2 Alpha-numerical data elements

These data elements may contain letters, figures and sometimes special symbols. The authorized characters are the following: A,B,C,D,E,F,G,H,I,J,K,L,M,N,Ø,P,Q,R,S,T,U,V,W,X,Y,Z,0 (zero), 1,2,3,4,5,6,7,8,8,9, , (comma). (full-stop) () (brackets) / (slash) ' (apostrophe) ;

Do not use a hyphen (-) in a line at its end, where it is necessary to pass to the next line .

Start writing at the beginning (left) of every line.

There are two types of alpha-numerical data elements:

• Data elements with key-words:

These must be filled out with words taken from a reference list called the 'Lexicon', corresponding to the data element in question . There is a lexicon for each Data elements with key-words. It is essential, when filling out these data elements, to only use words contained in these lexicons and scrupulously follow their spelling (letters, figures and special symbols).

When several key-words can be used in the same data element, they must be separated by a comma.

The introduction of new key-words into the lexicons can only be done exceptionally, in agreement with and under the responsibility of the data bank manager.

• Free Language data elements:

Language need not be coded. All characters, letters, figures, punctuation marks are allowed . The space provided on the data sheets should suffice; you should not add further lines . If space is lacking, condense the information (use recognized abbreviations, and, if necessary, telegraphic language, doing away with, for example, articles or other words that are not indispensable for comprehension purposes, whilst preserving the meaning of the text).

DEFINITIONS

This chapter gives a reminder of some standard definitions and specifies the meaning of certain terms that are used here with a rather specialised meaning , due to the setting out of material according to country in the water resources data bank for Arab countries .

Aquifer

A continuous formation of permeable rocks which are defined according to hydrogeological criteria . It is a unit permitting the evaluation and management of groundwater reserves in which each draw-off of water is dependent on and can influence another. From this meaning, the idea of an aquifer is independent of the lithological nature of the reservoir and of the stratigraphy. Hence :

- an aquiferous form of a determined age, of the same lithological nature but which is non continuous makes up several aquifers for the purpose of this data bank;

- a groundwater reserve showing lithologically similar or dissimilar formations, of different ages, but which is hydraulically continuous may be considered as a single aquifer .

To this must be added an artificial division of aquifers due to the fact the bank takes the country as the basic unit and hence forces one to consider a single continuous aquifer (hydrogeologically speaking) to be many separate aquifers for the purpose of this data bank, because it extends over several countries .

Sub-aquifer

Part of an aquifer (for the purpose of this data bank) defined according to structural, lithological and hydrodynamic conditions .

Basin

The same rule of divisions according to countries controls the definition of basins; a basin (in the sens used in this data bank) is a catchment basin if it is entirely found in one country. If the catchment basin extends over several countries, each part found in one on these countries constitutes a basin (for the purpose of the bank).

Sub-Basin

Basin of a water course flowing towards a higher water course in the same country .

Partial basin

Minor basin above a point situated on the water course within a basin or a sub-basin in the same country .

Differential basin

Part of a basin remaining after taking away a partial basin.

Sector

"Aeric" domaine, i.e. it does not include a hydrographical network that is permanent and active and small streams are only

to be found occasionally and are localized; situated in the same country. This domaine is limited by the water divided lines of adjacent basins or by a frontier.

Surface water

Rivers and natural lakes or water-retaining lakes; exclusively soft waters (total mineralisation less than 2 g/l).

Salty waters

Continental brine (2 to 10 g/l) or salty (more than 10g/l) surface or ground waters , used either such as they are or after salt removal.

Ground water

Fresh groundwater.

Natural run-off, flow, etc.. i.e. not taking into account the effects of human activity : natural flow is equal to real measured flow when the quantity of water tapped is null or negligible : when much water is tapped :

Natural flow = real measured flow + volume of water tapped
(measured and/ or estimated).

Draw-off

This corresponds to the quantity of water taken from its natural environment and not the volume which is distributed and supplied to users, since major losses can sometimes occur in the course of transport or distribution : if the only information available is that concerning the quantity distributed , the losses should be estimated to find the quantity tapped :

Volume tapped = ~~distributed~~ distributed + estimated loss

In addition, since the information supplied must have a global meaning (on a nation-wide scale or as a hydrological and hydrogeological unit) it is usually necessary to evaluate total draw-off taking into account the quantities collected for industrial or agricultural uses, not mentioned in the statistical records .

Utilization of water

Two kinds of utilization can be distinguished :

- utilization that diverts water from its natural environment
 - . irrigation
 - . "urban" utilization : including all domestic and town use, the needs of public services, supplying industries attached to the distribution network : it does not include drinking water distributed in the rural agglomerations .
 - . "rural"utilization: including the water used for consumption by the population, individual users or those attached to a distribution network as also for cattle .
 - . "industrial" utilization: concerning water used for supplying industries not attached to urban or rural networks, mining, power industries (e. g. for cooling of thermal stations).
 - . Domestic utilization includes both "urban" and "rural" utilizations .
- use of water in situ, without being diverted from the natural environment, for example :

- . production of electricity dams : hydropower
- . navigation
- . fishery
- . recreation

DATA SHEET

" COUNTRY "

DATA SHEET "COUNTRY"

This data sheets brings together the statistical information available concerning all surface and ground water resources, fresh and salty, their utilization per sector of activity and their supervisory infra-structure on a nation wide scale .

1. "PAGE" data element

Number the data sheets by refering to para 3.1. - "Page" data element of the chapter "GENERAL POINTS" for numbering instructions .

2. "NAME" data element

Write in the name of the country, generally simplified as compared to the state's official name . Follow the spelling given in the column "Name" of the lexicon "Country" .

E.g. SAUDITE for Saudi Arabia (official name - Kingdom of Saudi Arabia) .

3. Data element "country code"

Indicate the two letter code given in the lexicon "Country", column "Code" :

E.g. SA for Saudi Arabia .

4. "AREA" data element

Give the total surface area of the country in square kilometers, without decimal fractions. Follow the rules for writing whole numbers (cf. Chapter "GENERAL POINTS", para 3.1.).

E.g. AREA : 0075400 km² for 75 400 km² .

5. Data element "CENSUS", "POPULATION", "CITIES"

Indicate the total population of a country in which an actual or estimated census was carried out on the date given (census in ...). Indicate whether the census was a real one by putting R in the appropriate case, or whether it was an estimation by putting E. This case is obligatory and should be filled in . Specify, if possible, the number of inhabitants questioned in cities of more than 10 000 inhabitants (urban population) and the number of these cities as well as the rural population living out of these cities including the nomadic population. Check whether, in this case, the total of the urban and rural population, censused the same year, is really equal to the total population .

Follow the rules for dates and full numbers described in para 3.1. of the chapter "GENERAL POINTS".

Eg. : Information available for country X :

In 1978 the total censused population was 1 100 000

The cities (agglomerations of more than 10 000 inhabitants), 25 in number, grouped together 325 000 inhabitants .

Filling in the data sheets :

Census	in 1978	total population	:	01100000	inh		
		urban population	:	00325000	inh	towns number :	025 (> 10 000 inh)
		rural population	:	00775000	inh		

Note:

In the absence of data, the rural population can be calculated by subtraction :

$$\text{Rural population} = \text{Total pop.} - \text{Urban pop.}$$

6. TABLE "WATER UTILIZATION "

Indicate in the table "Utilization" the quantities of water used in millions of m³/year on a nation-wide scale, according to where they come from and the sectors of economic activity using them . This table only concerns utilization giving rise to tapping of water in the natural environment , with the exclusion of all utilizations of water in situ (cf. chapter "DEFINITIONS", paragraph "Utilization of waters").

State, above each column, the date on which the informations given in the said column were valid. If the precise date is not known, indicate the date of the document giving the data and in front of the space provided, write the sign < meaning "prior to".

If, for a specific usage, only the quantity of water tapped is known, necessitating surface watercourses and catchment springs, put this figure down on the line " surface water", put an asterisk (*) in the space provided and write nothing on the line "spring water" .

Continue in the same manner for "ground water" if only the quantity of water tapped is known for both "ground water + spring water".

Use of the line "Undifferentiated source" :

Put down, in these columns, in millions of m³/yr :

- either the volume of water of non specified origin allotted for the purpose under consideration, to be added to the values in the lines above in order to calculate the total volume used in this sector.

- or the total volume of water tapped for the purpose under consideration when only this total is known without any specific indication of its origin .

Use of data element "Non specified".

Write down the volumes of water tapped, not allotted to the other columns : the volumes have the meaning of an undifferentiated total if no figure is referred to in the other columns.

Otherwise these volumes are to be added to the quantities indicated in the other columns to get the total quantity tapped for a determined origin, if the dates of all the columns are identical :

E.g. A report edited in 1979 gives the following informations for a country X :

Total volume of surface tapped for all uses =

$$500 \times 10^6 \text{ m}^3/\text{yr}$$

Total volume used for irrigation : $7\,500 \times 10^6 \text{ m}^3/\text{yr}$

of which vol. tapped from groundwater : $2\,000 \times 10^6 \text{ m}^3/\text{yr}$

and vol. tapped from surface water : $4\,000 \times 10^6 \text{ m}^3/\text{yr}$

Total volume used for industrial purposes : $250 \times 10^6 \text{ m}^3/\text{yr}$

Origin of waters for industry non specified .

Date when information was recorded non specified

Filling out the data sheet :

WATER UTILIZATION IN ($10^6 \text{ m}^3/\text{year}$)	☑ 1979	☐	☐	☑ 1979	☑ 1979
	irrigation	urban	rural	industrial	non specified
surface water *	☐ 04000	☐	☐	☐	☐ 01000
spring water	☐	☐	☐	☐	☐
groundwater •	☐ 02000	☐	☐	☐	☐
salty + seawater	☐ 01500	☐	☐	☐ 00250	☐
undifferentiated source	☐	☐	☐	☐	☐

In all cases the total volume allotted to a sector of utilization is the sum total of the values put down in the corresponding column.

Example:

E.G. In the above example the following results are obtained:

$$\begin{aligned} \text{Total vol. for irrigation} &: (4000+0+2000+0+1500) \times 10^6 \text{ m}^3/\text{yr} \\ &= 7500 \times 10^6 \text{ m}^3/\text{year} \end{aligned}$$

$$\begin{aligned} \text{Total volume for industry} &: (0+0+0+0+250) \times 10^6 \text{ m}^3/\text{year} \\ &= 250 \times 10^6 \text{ m}^3/\text{year}. \end{aligned}$$

In the same way the total volume of water of a specific origin is the total sum of the values put down on the corresponding line .

Example :

E.G. : In the above example :

$$\begin{aligned} \text{Total volume tapped from surface water} \\ &= (4000 + 1000 \times 10^6 \text{ m}^3/\text{yr}) \\ &= 5000 \text{ } 10^6 / \text{yr} \end{aligned}$$

7. Data element "PREVISIONAL REQUIREMENTS"

Indicate in millions of m^3/year , and for each economic sector, the total volume of water needed to satisfy their estimated requirements; of the date specified at the beginning of each line (year in 4 figures).

Use the column "Non specified" in the same manner as when filling out the table "Utilization".

Indicate, in free language, in the appropriate reference line the source of the information given in this data element.

8. Table "GLOBAL BALANCE"

Record in this table values that will help to establish an average global natural water balance, i. e. values :

- Concerning the whole of the country,
- Averages relating to a fairly long period of reference (10 yrs min.),
- Not taking into account the effects of human activity (tapping, artificial transfer by canals or pipes).

Indicate :

- Period of reference : first and last years in 4 figures,
- The different elements of the Balance, in millions of m³/yr without decimals, and put down, whenever possible, the values relating to surface water and groundwater in the corresponding columns .

Check whether the sum total of inflow is equal to that of the outflow . Correct to the within the independent evaluations .

9. Table "ANNUAL STATISTICS"

Put down in this table the known annual statistical data concerning draw-off (volumes in millions of m³/year without decimals) according to the origin of the water, and the supervision of water resources (the number of supervisory construction works).

Only fill in information for the years for which complete or just partial data is available. However, if the statistics concerning two years are identical, repeat the data .

Check whether there is, in this table, a line corresponding to the information supplied in the "Utilization" table and that the two agree; the figures recorded in the annual statistics table being the same as the totals in the corresponding lines in the UTILIZATION table if the dates on which the information was recorded are identical for all the columns.

Instructions and notes concerning spring water

"Flow from untapped springs" is the total annual flow from such springs and the untapped volume of the total flow from partially utilized springs .

As regards tapped springs, if the quantities of water collected are not accounted for separately but added to those either of surface water, or groundwater, put down in the column "Springs", on the left position, the letter R in the first case, the letter N in the second .

If, for the same year, they are accounted for, partly by surface water, and partly by groundwater, put down in the column "Springs" the letter P.

E.G. Information available for country X :

1975: Surface water draw-off : 1100×10^6 m³/yr

Draw-off from other sources : no data

1976: Surface water + spring water draw-off : 1300×10^6 m³/yr

Underground water draw-off : 4200×10^6 m³/yr

1977: No data

1978: Surface water draw-off : 1500×10^6 m³/yr

Spring water + groundwater draw-off : 5500×10^6 m³/yr

1979: Surface water draw-off : 1500×10^6 m³/yr

Spring water draw-off : 1000×10^6 m³/yr

Ground water draw-off : 5000×10^6 m³/yr

Salt water + seawater draw-off: 50×10^6 m³/yr

1980: Spring water + groundwater draw-off : 5800×10^6 m³/yr

Spring water + surface water draw-off: 1800×10^6 m³/yr

Filling out the data sheet

DATA SHEET

" SURFACE WATER "

DATA SHEET *SURFACE WATER*

This is to be used to describe (cf. chapter DEFINITIONS)

- Basins
- Sub-basins, partial or differential basins (they are both put under the heading "basin element")
- Sectors

Always fill out:

- 1°- One data sheet to describe the basin (or the sector) as a whole .
- 2°- As many data sheets as the number of individualized basin elements.

Identify the "Father" basin at the top of the data sheet.

Note: Only one data sheet is to be filled in, per sector, as a sector cannot be subdivided into sub-sectors.

The dams and springs described at the end of the data sheet must without fail appear earlier in the list of important "cartographic data" (name, number and situation).

All the data elements on the data sheet are described in the general table on the following pages. The data elements to be filled in the case of a sector are given at the end of the chapter.

1. Filling out the data sheet for a basin or basin element

Refer to the general table (page 37 to 44) and example .

Example 1 : Filling in of the data sheet for the description of Euphrate basin in Syria .

SURFACE WATER									
ELEMENT OF REFERENCE <i>BASSIN</i>		Name : <u>EUPHRATE</u>					N° <u>SY1B04</u>		
Total Area: km ²		Drainage: open 1	closed 2		<input type="checkbox"/>	National N° <input type="text"/>			
		Type : simple 1	composite 2		<input type="checkbox"/>				
ELEMENT OF REFERENCE		Name: _____					N° SY1B04...		
Total Area: km²		Type: simple 1	composite 2		<input type="checkbox"/>	National N° _____			
		State of flow: perenial 1	ephemiral 2		<input type="checkbox"/>				
Other countries									
Order	Name	N°	Name	Area km ²	Hydrogeological map	N°			
1	<u>EUPHRATE</u>	B 04	_____	_____	_____	1			
2	_____	B	_____	_____	_____	1			
3	_____	B	_____	_____	_____	1			
4	_____	B	_____	_____	_____	1			
Topography :	mountainous %	gently %	plain %	stretch of water %					
Soil :	rocky %	flimy %	sandy %	muddy %	clayey %				
Soil cover :	forest %	brushwood %	savanna %	bare soil %	cultures %				

In this case the crossed data elements must not be filled out so the informations will not be duplexed .

Example 2 : Filling in of the data sheet for the description of sub-basin Khabour in Euphrate basin in Syria.

SURFACE WATER									
ELEMENT OF REFERENCE <i>BASSIN</i>		Name : <u>BASSIN - EUPHRATE - MOYEN</u>					N° <u>SY1B04</u>		
Total Area: km ²		Drainage: open 1	closed 2		<input type="checkbox"/>	National N° <input type="text"/>			
		Type : simple 1	composite 2		<input type="checkbox"/>				
ELEMENT OF REFERENCE		Name: <u>KHABOUR</u>					N° SY1B04_02		
Total Area: km²		Type: simple 1	composite 2		<input type="checkbox"/>	National N° _____			
		State of flow: perenial 1	ephemiral 2		<input type="checkbox"/>				
Other countries									
Order	Name	N°	Name	Area km ²	Hydrogeological map	N°			
1	<u>EUPHRATE</u>	B 04	_____	_____	_____	1			
2	<u>KHABOUR</u>	B 04_02	_____	_____	_____	1			
3	_____	B	_____	_____	_____	1			
4	_____	B	_____	_____	_____	1			
Topography :	mountainous %	gently %	plain %	stretch of water %					
Soil :	rocky %	flimy %	sandy %	muddy %	clayey %				
Soil cover :	forest %	brushwood %	savanna %	bare soil %	cultures %				

In this case, all data elements must be filled in .

2. Filling out the data sheet for a sector

The description of a sector is done as for a basin :

- Use the same data sheet
- Write SECTOR in the data element "Element of reference"

E.G. filling out the data for the description of the sector ALEP .

SURFACE WATER						
ELEMENT OF REFERENCE <i>SECTEUR</i>	Name :	<u>SECTEUR - ALEP</u>			N° <u>SYIB 09</u>	
Total Area km ²	Drainage :	open 1	closed 2	<input type="checkbox"/>	National N° <input type="text"/>	
	Type :	simple 1	composite 2	<input type="checkbox"/>		
ELEMENT OF REFERENCE	Name:				N° <u>SYIB 09 . . .</u>	
Total Area km ²	Type:	simple 1	composite 2	<input type="checkbox"/>	National N° <input type="text"/>	
	State of flow:	perennial 1	ephemeral 2	<input type="checkbox"/>		
Other countries						
Order	Name	N°	Name	Area km ²	Hydrogeological map	N°
1	_____	B	_____	_____	_____	_____ / . . .
2	_____	B	_____	_____	_____	_____ / . . .
3	_____	B	_____	_____	_____	_____ / . . .
4	_____	B	_____	_____	_____	_____ / . . .
Topography :	mountainous . . . ?	gently ?	plain ?	stretch of water . . . ?		
Soil :	rocky ?	flinty ?	sandy ?	muddy ?	clayey ?	
Soil cover :	forest ?	brushwood . . . ?	savanna . . . ?	bare soil ?	cultures ?	

Only fill out the relevant data element in the case of a sector, i.e. those indicated in the following table and not crossed out on the data sheet copy. Refer back to the explanations given for these data elements in the general table (pages 37 to 44) .

SURFACE WATER

CASE SECTOR

ELEMENT OF REFERENCE 0 L	Name: _____ 1 L	N° ... / B. 2 L
Total Area km ² 4	Drainage: open 1 closed 2 <input type="checkbox"/> 5	National N° _____ 3
	Type: simple 1 composite 2 <input type="checkbox"/> 6	

ELEMENT OF REFERENCE 7	Name: _____ 8 L	9 L N° ... / B.
	Type: simple 1 composite 2 <input type="checkbox"/> 12	National N° _____ 10
	State of flow: perennial 1 ephemeral 2 <input type="checkbox"/> 13	

Order	Name	N°
1	_____ 14 L	B. _____ 14 L
2	_____	B. _____
3	_____	B. _____
4	_____	B. _____

Other countries

Name	Area km ²	Hydrogeological map N°
_____ 15 L	_____ 15	_____ 16 / 16
_____	_____	_____ /
_____	_____	_____ /

Topography 17	mountainous ... ?	gently ... ?	plain ... ?	stretch of water ... ?
Soil 18	rocky ... ?	flinty ... ?	sandy ... ?	muddy ... ? clayey ...
Soil cover 19	forest ... ?	brushwood ... ?	savanna ... ?	bare soil ... ? cultures ... ?

Natural annual flow average	_____ 20	_____ 20	_____ 21
median	_____ 20	_____ 20	_____ 21
Natural monthly flow min. average	_____ 22	_____ 22	_____ 22
Aquifer recharge	yes = 1	no = 0 <input type="checkbox"/> 23	
Inflow of surface water	_____ 24		
Total draw-off (10 ⁶ m ³ /yr) 26	date: _____ 25	artificial import _____ 25bis	(10 ⁶ m ³ /yr)
Residual resources (10 ⁶ m ³ /yr) 31		River _____ 27	Springs _____ 28 nhr _____ 28
utilization of water (10 ⁶ m ³ /yr) irrigation _____ 32		Lakes _____ 29	Dams _____ 30 nhr _____ 30
Other utilizations _____ 32	industrial _____	but down stream requirements _____ 31	yes = 1 no = 0 <input type="checkbox"/> 31
	hydropower <input type="checkbox"/>	domestic _____ (urban ... rural ...)	
		artificial export _____	
		navigation <input type="checkbox"/>	fishery <input type="checkbox"/> recreation <input type="checkbox"/>

CARTOGRAPHIC DATA

Nature	Name of site	ACSAD N°	Latitude	Longitude
_____ 33 L	_____ 34	_____ 35	_____ 36	_____ 37
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

UTILIZATIONS

Dams ACSAD N°	Type	earth = 1 rock fill = 2 concrete = 3	Irrigation	Domestic	Hydropower	Regulation	Spreading	Capacity 10 ⁶ m ³	Efficiency %
_____ 38	_____	_____ 39	_____	_____	_____	_____	_____	_____ 41	_____ 42

UTILIZATIONS

Springs ACSAD N°	Flow 10 ⁶ m ³ /yr	Flood m ³ /h	Low water m ³ /h	Period from _____ 44 to _____	Irrigation	Urban	Rural	Industrial	Thermal
_____ 38	_____ 43	_____ 43	_____ 43	_____ 44	_____	_____	_____	_____	_____

46 NOTES

* maximum during wet years - minimum during dry years

DATA ELEMENTS TO BE FILL OUT IN THE CASE OF A SECTOR

DATA ELEMENT	REFER TO DATA ELEMENT	NOTES
TOP OF DATA SHEET:		
element of reference	0	Write SECTOR
Name (of sector)	1	cf lexicon BASIN
No (of sector)	2	" " "
No (national)	3	
Area	4	
2ND PART OF DATA SHEET		
No	9	
Other countries	15	
Hydrogeological map	16	
Topography	17	
Soil	18	
Soil cover	19	
Aquifer recharge	23	
Date	25	
Artificial import	25 bis	
Total quantity tapped	26	
Springs and number	28	
Lakes	29	
Dams and number	30	
Utilization of water and other		
Utilizations	32	
Cartographic data	33 to 37	
Table of springs	38, 43 to 45	
Notes	46	

DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column	Refer to Chapter Para (Data element)	Observations, Examples, etc...
0-ELEMENT OF REFERENCE	ELEMENTS OF REFERENCE		WRITE BASIN
1-NAME	BASINS NAME OF BASIN		Name of basin
2- No	BASINS No of basin		No corresponding to the name in data element 1
3-NATIONAL No	- -	GENERAL POINTS 3.1(whole No)	No given to this basin in the case of a possible national inventory. Data element optional.
4-TOTAL AREA	- -	" 3.3(option)	Surface area in Km2 of the basin found in the country.
5-DRAINAGE	- -	" "	Single answer "open" = having an outlet: mouth at the sea, at a lake, at a closed depression without evacuation or crossed by a frontier "Closed" = without outlet: basin restricted by a closed continuous drainage divide in the same country .
6-TYPE	- -	" "	Single answer "Simple" = basin with unic outlet: (including delta) "Composite" = traditional assembly of simple basins one next to the other (coastal zones, inlands, upper part of fluvial basin in a country .

DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para (Data element)	Observations, Examples, etc...
-ELEMENT OF REFERENCE *	ELEMENT REFERENCE -	GENERAL POINTS 3.3option	Indicate the nature of the basin element (each part of the basin) to which the information that follows is related: SUB-BASIN or PARTIAL BASIN or DIFFERENTIAL BASIN
-NAME *	BASINS NAME OF SUB-BASIN	" "	Name of unit described
- No	BASINS No SUB-BASINS(1)	" "	No corresponding to the name of data element 8.
-NATIONAL No *	- -		No given to this basin element in the case of a possible inventory on a national scale.
1-TOTAL AREA *	- -	GENERAL POINTS 3.1wholeN	Surface area of the basin element in the country concerned.
2-TYPE *	- -	DATA ELEMENT 6 ABOVE	"Ephemeral" - is used when the principal water course of the described item, is not permanent even upstream.
3-STATE OF FLOW	- -	GENERAL POINTS 3.3option	Single answer - Indicate the state of surface flow in this basin element' : "Perennial" :is used when the principal watercourse of the item described flows throughout the year, at least upstream .

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* do not fill in case of one basin

(1) for one basin report the No indicated in item 2

DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para (Data element)	Observations, Examples, etc...
ORDER	BASINS NAME AND No OF SUB-BASIN		The notion of order only applies to basins or sub-basins, do not fill in the data element for a partial or differential basin. Indicate on the line "order" 1,2,3 or 4 corresponding to the order of the item in question, the name and the number of this item, note if necessary, on the precedent lines, the names and numbers corresponding to higher items, example in text(page).
OTHER COUNTRIES	COUNTRY NAME	GENERAL POINTS 3.1 whole	In case where the basin or element of basin described (for the purpose of this data bank) only forms a part of a basin or element of basin extending over several countries, indicate the name of the other countries involved, arab or not, and the surface area of the basin or element of basin in these countries .
HYDROGEOLOGICAL MAP	HYDROLOGICAL NUMBER MAP		(name and) number of sheets (4 maxim.) on the scale 1/1 000 000 of the "Hydrogeological map of Arab Countries" on which is to be found the basin element described (sheets at 1/2 000 000 if 1/1 000 000 are non existent).
TOPOGRAPHY	- -	" "	Indicate the percentage of the territory to which each qualifier applies. Check that the total sum of percentages in one line is not more than 100. Qualifiers concerning types of relief are meant to convey the idea of slope in so far as this is a factor influencing the speed of stream flow at the surface. Mountainous : abrupt slope, rapid stream flow Undulating : hilly, moderate slopes Plain or plateau : flat Stretch of water : natural or artificial

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DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para (Data element)	Observations, Examples, etc...
- SOIL	- -	GENERAL POINTS 3.1 whole N.	<p>Note down the percentage of the territory to which each qualifier applies. The sum total of percentage in one line should not be higher than 100.</p> <p>SOIL :Meanings superficial formation, without any pedological connotation .</p>
- SOIL COVER	- -	" "	<p>Record the percentage of territory concerned per qualifier. The sum total of the line should not be more than 100.</p> <p>Mantle :Mantle in the general meaning</p>
-NATURAL ANNUAL FLOW	- -	DEFINITIONS NATURAL 3.1 GENERAL POINTS (decimal number)	<p>"Average" arithmetical average of natural annuals flow, measured or calculated over a period of N years</p> <p>"Median":flow of 0,5 frequency (attained or exceeded 5 out of 10 years) over a period of N years</p> <p>"Minimal": which is said to describe the " dry year" = annual flow having been reached or exceeded 8 out of 10 years (freq. 0,2) over the same period of reference of N years</p> <p>"Maximal" :said of the "wet year" = annual flow having been reached or exceeded 2 years out of 10 (freq. 0,8) over a period of N years</p> <p>NOTE :with less than 10 years of observations, it is not advisable to fill in the data element "median", "min", and "max", which are without statistical meaning over a short period .</p>
1-PERIOD FROM..TO..	- -	" "	<p>First and last year (in 4 figures) of the period of N years used for the statistical calculation of flow in data element 20 and 21.</p>

DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column		REFER TO Chapter Para (Data element)	Observations, Examples, etc...
NATURAL MONTHLY FLOW	-	-	DEFINITIONS NATURAL GENERAL 3.1(decimal POINTS number)	In millions of m3 per month "Average" : arithmetical average of monthly flow for the same month over N years "Minimal":the lowest average monthlyflow "Maximal" :the highest For each value, put down 1 in the space provided if it is a recorded value, 0 if it is estimated. Indicate precisely the month or the period that corresponds with the given minimal and maximal flow
AQUIFER RECHARGE	-	-	DEFINITIONS 3.3option POINTS	A single answer, answer the question :is there a natural recharge of the aquifer from surface water (natural distribution of flood water, loss through infiltration) .
INFLOW	-	-	" 3.1(decimal number)	Average annual inflow to either a basin truncated by a frontier, or a differential basin = the total qty of outflow from one or several upstream basins.
DATE his - ARTIFICIAL IMPORT	-	-	" "	Date (year in 4 figures) for which the information that follows is relevant . Quantity of water artificially imported in the re - ference unit concerned .
TOTAL DRAW-OFF	-	-	" " DEFINITIONS TAPPINGS	Qty of water tapped from the surface in its natural environment determined at point of tapping
RIVER	-	-	GENERAL 3.1(decimal POINTS No)	Qty of water tapped from rivers by pumping or diver- sion
SPRINGS AND NUM-	-	-	" 3.1(dec. n. whole number)	Qty of water tapped from springs without changing their rate of flow. Tapping that lowers the level must be considered as groundwater tapping(cf.data sheet "Ground water"). "Number" = Number of springs taken into account for this evaluation.

DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para (Data element)	Observations, Examples, etc...
29- LAKES	- -	GENERAL 3.1 dec. POINTS Number	Qty tapped from natural (with the exception of water retaining lakes).
30- DAMS AND No	- -	" 3.1 dec.No whole Number	Qty tapped from reservoirs accumulating water . "Number" = Number of dams taken into account for the purposes of this evaluation .
31- RESIDUAL RE- SOURCES DOWN- STREAM REQUI- REMENTS	- -	" 3.1 dec.No 3.3option	"Residual Resources" = available flow,taking into consideration consumption (tappings - restitutions of the basin) and flow to be kept for utilisations in situ (cf. chap. DEFINITIONS) or downstream requirements . "Downstream requirements" = every real or potential requirement de facto et de jure. (e.g. treaty for division of waters).
32- UTILIZATION OF WATER AND OTHER UTILI- ZATIONS	- -	" 3.1 dec.No " 3.3 option DEFINITIONS UTILI- ZATIONS	For utilizations of water requiring tapping, indicate the quantity of water used per sector of activity. " artificial export" = quantity of water artificially exported to some other reference unit .
33 - NATURE	NATURE		Nature of construction described.
34 - NAME OF SITE		GENERAL 3.2 free POINTS language	24 characters maximum

DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para (Data element)	Observations, Examples, etc...
35 - ACSAD No	COUNTRIES CODE	GENERAL 3.1(whole No) POINTS	No given by ACSAD, made up of the initials of the country (2 letters) and the registration of the operation in the country (6 figures - No of operation in the bank's hydrogeological data - HAMAD project).
36 - LATITUDE LONGI - TUDE	- -	" 3.1(coordinates)	
37 - CARTOGRAPHIC REPRESENTATION	- -	GENERAL 3.3(option) POINTS	Is the operation represented on the hydrogeological map for Arab Countries Single answer
38 - ACSAD No	- -	DATA ELEMENT 35 above	The dam must have been described earlier in "cartographic data", hence check whether this exists and the identity of the ACSAD numbers.
39 - TYPE	- -	GENERAL 3.3(option) POINTS	Single answer
40 - UTILIZATIONS	- -	DEFINITIONS UTILIZATIONS GENERAL 3.3(option)	Several answers possible : "Domestic" is to be considered as having the meaning "urban + rural" "Regulation" can only be crossed off in the case of a barrage for water storage "Spreading" : mixed with the meaning of artificial recharge of the water sheet or leaching of soil.

DATA SHEET SURFACE WATER

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para (Data element)	Observations, Examples, etc...
1- CAPACITY	- -	GENERAL 3.1(dec. No) POINTS	Highest volume of water that can be contained in the reservoir (including stagnant reserve)
42 - EFFICIENCY	- -	" " whole No	Ratio between the actual average volume accumulated behind dam (including stagnant reserve) and its capacity (data element above) expressed in percentages.
43 - FLOW FLOOD LOW WATER	- -	DEFINITIONS NATURAL DATA ELEMENT 22 above GENERAL 3.1(dec. No) POINTS	"Flow" : average natural annual flow in thousands of m ³ /h "Flood" : highest average natural monthly flow in m ³ /h. "Low water" : lowest average natural monthly flow in m ³ /h.
44 - PERIOD FROM..TO	- -		First and last year in 4 figures of the period taken for calculating the parameters of data element 43.
45 - UTILIZATION	- -	DEFINITIONS UTILIZATIONS GENERAL 3.3 option POINTS	Several of the spaces provided can be ticked.
46- NOTES	- -	GENERAL 3.2(free POINTS language)	Whatever comments about the unit being described, or about its characteristic prints.

DATA SHEET

" PLANNING ELEMENTS "

PLANNING ELEMENTS : SPECIFIC CATCHWORKS FOR THE HYDROLOGICAL UNIT OF REFERENCE

Country : _____ Element of reference : _____ Date : _____ N° : _____ / B : _____

Name : _____ N° : ... / A ... * Name : _____ N° : ... / A ... *

Name : _____ N° : ... / A ... * Name : _____ N° : ... / A ... *

Aquifers Encountered

Name : _____ N° : ... / A ... * Name : _____ N° : ... / A ... *

Name : _____ N° : ... / A ... * Name : _____ N° : ... / A ... *

Name : _____ N° : ... / A ... * Name : _____ N° : ... / A ... *

Name : _____ N° : ... / A ... * Name : _____ N° : ... / A ... *

FOGGARA

yield : from ... m³/h to ... m³/h salinity : from ... g/l to ... g/l cost: from ... \$/m to ... \$/m

depth : from ... m to ... m length : from ... km to ... km existing number : ... ← 0 if estimate

WELLS IN SHALLOW AQUIFER AND PROLUVIUMS

yield : from ... m³/h to ... m³/h salinity : from ... g/l to ... g/l cost: from ... \$/m to ... \$/m

water depth : from ... m to ... m drawdown: from ... m to ... m

depth : from ... m to ... m diameter : from ... mm to ... mm

necessary casing yes = 1 no = 0 necessary screen yes = 1 no = 0 existing number : ... ← 0 if estimate

BOREHOLES IN SHALLOW AQUIFER AND PROLUVIUMS

yield : from ... m³/h to ... m³/h salinity : from ... g/l to ... g/l cost: from ... \$/m to ... \$/m

water depth : from ... m to ... m drawdown: from ... m to ... m

depth : from ... m to ... m diameter : from ... mm to ... mm

necessary casing yes = 1 no = 0 necessary screen yes = 1 no = 0 existing number : ... ← 0 if estimate

WELLS IN ALLUVIUMS

yield : from ... m³/h to ... m³/h salinity : from ... g/l to ... g/l cost: from ... \$/m to ... \$/m

water depth : from ... m to ... m drawdown: from ... m to ... m

depth : from ... m to ... m diameter : from ... mm to ... mm

necessary casing yes = 1 no = 0 necessary screen yes = 1 no = 0 existing number : ... ← 0 if estimate

BOREHOLES IN ALLUVIUMS

yield : from ... m³/h to ... m³/h salinity : from ... g/l to ... g/l cost: from ... \$/m to ... \$/m

water depth : from ... m to ... m drawdown: from ... m to ... m

depth : from ... m to ... m diameter : from ... mm to ... mm

necessary casing yes = 1 no = 0 necessary screen yes = 1 no = 0 existing number : ... ← 0 if estimate

BOREHOLES IN THE FIRST DEEP AQUIFER

yield : from ... m³/h to ... m³/h salinity : from ... g/l to ... g/l cost: from ... \$/m to ... \$/m

water depth : from ... m to ... m drawdown: from ... m to ... m

depth : from ... m to ... m diameter : from ... mm to ... mm

necessary casing yes = 1 no = 0 necessary screen yes = 1 no = 0 existing number : ... ← 0 if estimate

BOREHOLES IN OTHER DEEP AQUIFERS

yield : from ... m³/h to ... m³/h salinity : from ... g/l to ... g/l cost: from ... \$/m to ... \$/m

water depth : from ... m to ... m drawdown: from ... m to ... m

depth : from ... m to ... m diameter : from ... mm to ... mm

necessary casing yes = 1 no = 0 necessary screen yes = 1 no = 0 existing number : ... ← 0 if estimate

Irrigated areas : ... 10³ ha by surface water by ground water

Total population : ... inh urban population : ... inh towns number : ... (> 10 000 inh) rural population : ... inh

herds : ... yes = 1 no = 0

* use the following rules S = shallow aquifer A = alluviums P = deep aquifer ▲ put + in first position if spouting

PLANNING ELEMENTS : SPECIFIC CATCHWORKS FOR THE HYDROLOGICAL UNIT OF REFERENCE

Country : 2 L Element of reference : 3 L Date : 5 N° : / B : 1 L

Aquifers Encountered 6 L

Name : _____	N° : / A : _____	* <input type="checkbox"/>	Name : _____	N° : / A : _____	* <input type="checkbox"/>
Name : _____	N° : / A : _____	* <input type="checkbox"/>	Name : _____	N° : / A : _____	* <input type="checkbox"/>
Name : _____	N° : / A : _____	* <input type="checkbox"/>	Name : _____	N° : / A : _____	* <input type="checkbox"/>
Name : _____	N° : / A : _____	* <input type="checkbox"/>	Name : _____	N° : / A : _____	* <input type="checkbox"/>
Name : _____	N° : / A : _____	* <input type="checkbox"/>	Name : _____	N° : / A : _____	* <input type="checkbox"/>

FOGGARA

yield : from <u>7</u> m ³ /h to . . . m ³ /h	salinity : from <u>8</u> g/l to . . . g/l	cost : from <u>9</u> \$/m to . . . \$/m
depth : from <u>12</u> m to . . . m	length : from <u>13</u> km to . . . km	existing number : <u>15</u> <input type="checkbox"/> ← 0 if estimate

WELLS IN SHALLOW AQUIFER AND PROLUVIUMS

yield : from <u>7</u> m ³ /h to . . . m ³ /h	salinity : from <u>8</u> g/l to . . . g/l	cost : from <u>9</u> \$/m to . . . \$/m
water depth : from <u>10</u> m to . . . m	drawdown : from <u>11</u> m to . . . m	existing number : <u>15</u> <input type="checkbox"/> ← 0 if estimate
depth : from <u>12</u> m to . . . m	diameter : from <u>14</u> mm to . . . mm	
necessary casing : yes = 1 no = 0 <input type="checkbox"/>	necessary screen : yes = 1 no = 0 <input type="checkbox"/>	

BOREHOLES IN SHALLOW AQUIFER AND PROLUVIUMS

yield : from <u>7</u> m ³ /h to . . . m ³ /h	salinity : from <u>8</u> g/l to . . . g/l	cost : from <u>9</u> \$/m to . . . \$/m
water depth : from <u>10</u> m to . . . m	drawdown : from <u>11</u> m to . . . m	existing number : <u>15</u> <input type="checkbox"/> ← 0 if estimate
depth : from <u>12</u> m to . . . m	diameter : from <u>14</u> mm to . . . mm	
necessary casing : yes = 1 no = 0 <input type="checkbox"/>	necessary screen : yes = 1 no = 0 <input type="checkbox"/>	

WELLS IN ALLUVIUMS

yield : from <u>7</u> m ³ /h to . . . m ³ /h	salinity : from <u>8</u> g/l to . . . g/l	cost : from <u>9</u> \$/m to . . . \$/m
water depth : from <u>10</u> m to . . . m	drawdown : from <u>11</u> m to . . . m	existing number : <u>15</u> <input type="checkbox"/> ← 0 if estimate
depth : from <u>12</u> m to . . . m	diameter : from <u>14</u> mm to . . . mm	
necessary casing : yes = 1 no = 0 <input type="checkbox"/>	necessary screen : yes = 1 no = 0 <input type="checkbox"/>	

BOREHOLES IN ALLUVIUMS

yield : from <u>7</u> m ³ /h to . . . m ³ /h	salinity : from <u>8</u> g/l to . . . g/l	cost : from <u>9</u> \$/m to . . . \$/m
water depth : from <u>10</u> m to . . . m	drawdown : from <u>11</u> m to . . . m	existing number : <u>15</u> <input type="checkbox"/> ← 0 if estimate
depth : from <u>12</u> m to . . . m	diameter : from <u>14</u> mm to . . . mm	
necessary casing : yes = 1 no = 0 <input type="checkbox"/>	necessary screen : yes = 1 no = 0 <input type="checkbox"/>	

BOREHOLES IN THE FIRST DEEP AQUIFER

yield : from <u>7</u> m ³ /h to . . . m ³ /h	salinity : from <u>8</u> g/l to . . . g/l	cost : from <u>9</u> \$/m to . . . \$/m
water depth : from <u>10</u> m to . . . m	drawdown : from <u>11</u> m to . . . m	existing number : <u>15</u> <input type="checkbox"/> ← 0 if estimate
depth : from <u>12</u> m to . . . m	diameter : from <u>14</u> mm to / . . . mm	
necessary casing : yes = 1 no = 0 <input type="checkbox"/>	necessary screen : yes = 1 no = 0 <input type="checkbox"/>	

BOREHOLES IN OTHER DEEP AQUIFERS

yield : from <u>7</u> m ³ /h to . . . m ³ /h	salinity : from <u>8</u> g/l to . . . g/l	cost : from <u>9</u> \$/m to . . . \$/m
water depth : from <u>10</u> m to . . . m	drawdown : from <u>11</u> m to . . . m	existing number : <u>15</u> <input type="checkbox"/> ← 0 if estimate
depth : from <u>12</u> m to . . . m	diameter : from <u>14</u> mm to . . . mm	
necessary casing : yes = 1 no = 0 <input type="checkbox"/>	necessary screen : yes = 1 no = 0 <input type="checkbox"/>	

Irrigated areas : 16 10³ ha by surface water by ground water

Total population : 17 inh urban population : . . . inh towns number : . . . (> 10 000 inh) rural population : . . . inh

herds : 18 yes = 1 no = 0

* use the following rules S = shallow aquifer A = alluviums P = deep aquifer ▲ put + in first position if spouting

DATA SHEET "PLANNING"

The data "PLANNING" aims to bring together the most current characteristics concerning the various kinds of groundwater exploitation catchworks being undertaken in a pre-defined geographical area (sector or basin element) as well as information useful to project directors .

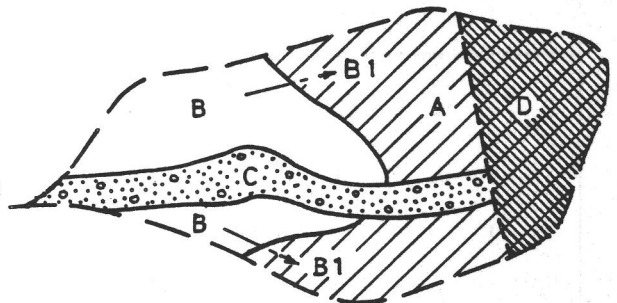
In each case, the range of values to be given (from...to..) should not consist of the extremes of values found for the constants under consideration, but should express the mean of the constant values most often observed for the type of work envisaged and for the harnessed aquifer being considered in the zone of reference (yet without strict definition of the frequency interval).

The procedures instructions for compiling the various data elements have been brought together in the following table.

To illustrate these procedures for data element 6, AQUIFERS ENCOUNTERED the following theoretical example is given :

Within the area of the basin we have identified :

- an aquifer A
- an aquifer B of which:
- a part B₁ confined under A
- an aquifer C within the alluvium of a river .
- a deep aquifer D .



AQUIFERS	CODE	THE DATA ELEMENT CAN BE COMPILED THUS:
A	S	Wells, drillings in shallow or deep aquifers, foggaras
B	S	Wells, drillings in shallow or deep aquifers, foggaras
B ₁	P	Drillings in the first deep aquifer
C	A	Wells, drillings in alluvium , foggaras
D	P	Drillings in other deep aquifers

DATA SHEET "PLANNING"

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para PARAGRAPH (category)	Observations, Examples, etc...
1 - No	BASIN No OF BASIN OR SUB-BASIN		No of the basin element with which the following information is concerned.
2 - COUNTRY	COUNTRY NAME		
3 - ELEMENT OF REFERENCE	ELEMENT OF REFERENCE		
4 - NAME	BASINS NAME OF BASIN OR SUB-BASIN		
5 - DATE			Date for which the information recorded on the data sheet are relevant - year in 4 figures .
6 - AQUIFERS ENCOUNTERED	AQUIFERS NAME AND No OF SUB-AQUIFERS		Give the names and numbers of the aquifers or sub-aquifers recognized in the defined area within the limits of the basin element under consideration . After each number, specify, if the aquifer mentioned is shallow (code A) or deep (P). Check the consistency of the codes of the aquifers mentioned with the categories compiled below and vice versa. Example in the text
7 - YIELD	- -	GENERAL 3.1(whole N) POINTS	Actual yields recorded for the foggaras. For wells, and drillings, the calculated potential yield at the time of pumping tests, without taking into account the power of the equipments.
8 - SALINITY	- -	" 3.1(dec. No.)	Total mineralisation in grammes/liters.
9 - COST	- -	" 3.1(whole N)	Cost of operation (drilling + possible well casing pumping machinery excluded).

1
16
1

DATA SHEET " PLANNING "

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para PARAGRAPH(category)	Observations, Examples, etc...
10 - WATER DEPTH	- -	AS ABOVE	Distance from ground level to static water level in the aquifer . Put the sign + before the figure in the case of artesian flowing well.
11 - DRAWDOWN	- -	AS ABOVE	Drawdown corresponding to yields in data element 7, in the case of an artesian flowing well, indicate the difference between the natural piezometric level above ground level and the level of catch work flow.
12 - DEPTH	- -	AS ABOVE	Total depth in relation to groundlevel for wells and drillings, depth to the top at the head of the gallery for the foggaras ,
13 - LENGHT	- -	GENERAL 3.1(dec. N.) POINTS	Lenght of the gallery of the foggara .
14 - DIAMETER	- -	" 3.1(whole N)	Diameter of the base of the catch work in millimeters (= diameter in inches x 2,56)
15 - EXISTING NUMBER	- -	" 3.1(whole N)	Total number of catch works actually exploiting the aquiferous levels under consideration . Specify whether this is an estimate (if so, make an "0" in the box) or not (leave the box empty) .
16 - IRRIGATED AREAS	- -	" 3.1 whole No 3.3 option	The area of irrigated land in 1000 m2 in the basin element under consideration. There are several possible responses as to the nature of the water used
17 - POPULATIONS TOWNS	- -	COUNTRY CENSUS POPU- LATION	
18 - HERDS	- -	GENERAL 3.3(option)	Answer the question "is rearing developed enough in the area under consideration to be taken into account when evaluating water needs".

DATA SHEET

" STUDIES "

DATA SHEET "STUDIES"

This data sheet serves to list, describe and analyse the documents dealing with water resources in arab countries .

It is necessary to fill out one data sheet for each study if the latter is only relating to one country. If the study concerns several countries, fill out as many data sheets as the number of countries involved, analysing the document separately for each country. If the plan and contents of the study are identical for all the countries studied, the data sheet filled out for country can be photocopied and the specific categories for each territory changed on the other copies : the number of the study, the surface area, basins, sectors or subbasins concerned; it can be of interest to specify the results for each country in the abstract .

1 - DATA ELEMENT "TITLE"

Write down the whole title of the document given on the cover or flyleaf of the report and possibly add to this by specifying the locality or subject of the study in brackets.

Example : The FAO report "study of groundwater resources in the Syrian Republic (title of document) , only in fact deals with water resources in the region of " Jezireh" a geographical area which extends into neighbouring countries . Therefore, in this example, the title should be completed by adding (Syrian Jezireh).

If the report is written in French or English, write the title of the report in this language (case 1).

If the report is written in any language apart from French or English (using the latin alphabet), write the title in the language of the report and give a brief translation in French or English in brackets (case 2).

Example : a document in German.

Automatische Gewinnung hydrologischer Daten und ihre Speiche in einer benutzerfreundlichen computer Datenbank (Automatic processing of hydrological data - data automation - storage - consultation).

If the report is written in a language that does not use the latin alphabet (arab, russian, etc) give as accurate as possible a translation of the title in French or English, putting it in brackets (case 3).

The table given below summarizes these procedures:

CASE	1	2	3
Language	French/English	Other languages	
Alphabet	Latin		Other alphabets
Title Rept in source language	YES	YES	NO
Title translated	NO	YES	YES

- Case 1 : Title in source language
- Case 2 : Title in source language (translated into French or English).
- Case 3 : (Title translated into French or English)

N.B. Do not miss out lines and do not exceed the set length for the data element (see also the chapter GENERAL POINTS, paragraph 3.2 free language).

1(bis) DATA ELEMENT "SOURCE LANGUAGE"

Indicate the language in which the report was written. If the space provided is insufficient, abbreviate the name of the language.

2. DATA ELEMENT "REPORT No"

This consists of two parts :

- the code of the country (see the lexicon "COUNTRY", column "code").
- reference number of the document according to the country, given by the ACSAD (4 figures; add noughts on the left to complete the 4 spaces if necessary) to be written after the letter E.

Example :

S Y / E 0 0 0 6

Country concerned= Syria - The 6th document concerning Syria registred by the data bank.

If the study involves several countries, fill out several data sheets, and give each the reference number of each country:

Example: if a study has as its subject "The Euphrate Basin" which spreads over four countries, four data sheet will be filled out and numbered as follows :

SY/E0004 = 4th document registred for Syria
IQ/E0010 = 10th document registred for Iraq
SA/E0001 = 1st document registred for Saudi Arabia
JØ/E0008 = 8th document registred for Jordan.

3. DATA ELEMENT " SOURCE NUMBER"

Write the identification number of the document given by the body producing it (publisher).

3.a DATA ELEMENT "LIBRARY CLASSIFICATION No"

Give the actual classification number of the document in the ACSAD library. The data element is composed of two parts:

- a two letter code used by the ACSAD to identify the different sections :

Example : HS for the section "water resources"

- a four digit number insert on the right and corresponding to a physical classification number of the document in the library for that section; each section having its own numbering system .

If the document is not available at the ACSAD Library, do not fill in this data element .

If the document is not available to the public, put NP in the space for the 2 letter library code; leave empty the space for the classification number .

4. DATA ELEMENT "CONTROL"

This is a verification of identity of the document by convention, the last page number in the list of contents is given, excluding roman numerals and pages of lists of figures, tables, annexes, etc..

If this information is not given, do not fill in this data element .

Example : end of a table of contents

Conclusions	page	360	} Control = 360
Annexe 1	page	1	
Annexe 2	page	VIII	

5. DATA ELEMENT "AUTHORS"

Write in this data element the name or names of the authors (as signed by them) of the study,

The experts or project directors mentioned in the introduction or foreward are not considered as authors .

- Syntax

SURNAME . INITIAL (S) OF PERSON (S) . ,
(point)

Possible titles coming before the author's name (professor, doctor, sir etc) cannot be included.

If the surname has a handle prefix, this should be noted before it, linked by a hyphen. The same should be done for a double-barralled surname :

Example : DE-BONNEVIE. A. ,
DELAROZIERE-BOUILLIN. O. ,

In the case of double-barrelled christian names, only the initial of the first name should be recorded:

Example : Jean-Yves → J.

If the author has several christian names, separate each initial with a full-stop:

Example : STONE. W. W. ,

- joint authors

If there are several authors, write each name in the order presented in the report, following the syntax defined earlier and separating each author from the next with a comma :

Example : SPIRIDAKIS. Y. , RASTAPOPOULOS. I. ,

If the list of authors extends beyond the length of the line, write in as many names as possible in the order in which they appear in the report and add COLLECTIF .

Example : YAMAMOTOKADERATE. H.N., MITSUBITCHI.T., COLLECTIF,

- name of author not given

write ANONYME,

6. DATA ELEMENT "SOCIETY"

Write the name of the directing body, sometimes given under the name of the "contracting party", director of the study. This could be a business, an office, a study group, an institute or a university etc. Initials or abbreviations are authorized; only use them if they are in current usage and do not cause any possible confusion or uncertainty . Give the society's nationality .

7. DATA ELEMENT "OWNERS"

Except where a publication is concerned, the organisation "Maître d'ouvrage", that requests and pays for the study has responsibility for authorizing consultation or distribution of the document . It is permitted to indicate several owners.

Initials or abbreviations are authorized (see paragraph 6).

If the name of the owner has changed since completion of the study (for example a certain body having changed its name), write the name given in the report .

Do not write beyond the length of the line .

8. DATA ELEMENT "DATES OF OPERATION"

Give the dates when the operation mentioned in the report was started and completed (see chapter on "GENERAL POINTS", paragraph 3.1 - DATA ELEMENT "DATE").

9. DATA ELEMENT "DATE OF PUBLISHING"

Give the year of publishing, as stated in the report, usually on the cover or flyleaf; less often at the end of the report.

10. DATA ELEMENT "AREA"

Record the surface area (in km²) of the zone on which the study was focused, in the country under consideration. If different parts of the study are centred on different areas, give the largest of these zones .

11. DATA ELEMENT "SUBJECT"

Tick the main topic (s) covered in the report

12. DATA ELEMENT "OTHER COUNTRIES"

If the study involves several countries, write down all the countries in the Arab League, apart from the one for which the data sheet is being filled out, which make up part of the studied area .

Use the lexicon "COUNTRY"

If there are several countries, separate them with a coma:

Example : SYRIE, IRAQ

13. DATA ELEMENT "HYDROLOGICAL UNIT (S) CONCERNED"

Write the name of the area in the country under consideration, involved in the study only use names from the lexicon "BASINS".

Case 1 : The study covers the whole of the country

Use the term from the lexicon "BASINS" describing the totality of the hydrological units in the country; i.e., the term.
TOUS-BASSINS- ..

and then write the code of the country, obtained from the lexicon "COUNTRY" in the two marked positions .

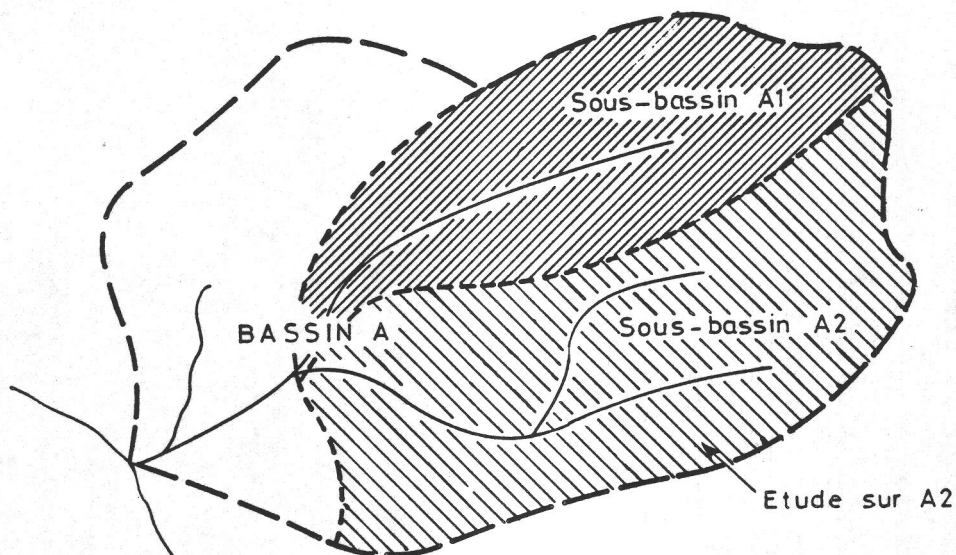
Example : TOUS-BASSINS-LB for a study focusing on the whole Lebanon .

Case 2 : The study deals with part of the country.

Write the name of the hydrological units which are partially or totally involved . If the study relates to just part of a basin, write the name of this basin or subbasin involved .

If there are several basin elements, separate the names with a coma :

Example:



If the study refers to the whole of A : simply put "A".
If the study only refers to A2 : put "A2".
If the study refers to A2 and B : put A, A2
(B having no name in the lexicon).

13.bis DATA ELEMENT "AQUIFER UNIT (S) CONCERNED"

Write the names of the aquifers or subaquifers in the country under consideration described in the analysed document. Only use the names from the lexicon "AQUIFERS".

Just as for the previous data element (data element 13), use:

- The general term "TOUS-AQUIFERES- .:" (with the code for the country in the two marked spaces), for a study dealing with all the aquifers in the country.

- for a study that does not cover all the aquifers of the country, indicate the name or names of the relevant aquifer units . Follow the rules indicated in case 2 of data element 13 .

DESCRIPTION OF CONTENTS OF THE REPORT

The whole of this section of the data sheet (from CONTENTS OF REPORT to PLANNING) should be filled out by putting a cross in the box or at the point marked corresponding to the response chosen .

The nature of information contained in the report is marked at the intersection of the rows and columns of the table : the rows signifying the subject being dealt with and the columns , the type of information supplied .

Example : place a cross at the intersection of the column "data chronicle" and the row "pluviometry", if the report contains a series of monthly rainfall measurements taken at a particular point .

14. TABLE "CONTENTS OF REPORT"

- Columns : type of information

"Isolated data" : results of observations or measurements (numerical values) not forming part of an inventory nor chronicle of data (defined later).

"Inventory" : data resulting from relatively synchronous plotting of measurements or from observations throughout the defined area .

"Data chronicle" : chronological list of results of observations or measurements, either periodically or not, at a fixed point .

"Processed data" : results of interpretation or calculation, various geological or hydrogeological syntheses and all statistical informations.

"Graphs and cross-sections" : all graphic representation of unprocessed or processed data, apart from cartography.

"Uninterpreted maps": cartographic representation of spatial distribution basic point data and /or results of interpolation (lines of equal value) .

"Interpreted maps" : cartographic representation of spatial distribution of processed information or of qualitative zones (types) or quantitative zones (classification of parameters values).

"Models" : synthetic representation of a system of flow (drainage basin and surface run-off, aquiferous system) can simulate its behavior, either natural or influenced by exploitation .

- The lines : subjects dealt with

No particular comments are necessary here. Only the following should be noted :

- . data concerning pumping from springs without draw-down should be put in the line "Draw-off water surface".

- . the row "surface geology" concerns all general descriptive geological data, based essentially on ground observations, interpretation of geological photographs or use of remote sensing results .

- . data relative to water-quality of springs are to be taken into account for the underground waters.
(water quality) .

15. DATA ELEMENT "WATER RESOURCES"

Refer to the chapter on GENERAL POINTS, paragraph 3.3 (option data element - question with possible multiple answers).

Tick those data element for which the document provides numerical data.

Reminder of definitions :

"Reserve" : volume of either surface (lake) or underground (aquifer) water, having the sens of stock.

"Recharge" : inflow corresponding to potential outflow of surface water or to recharge of aquifers; this is a renewable resource .

"Availability" : remaining renewable resources after subtraction of net outflow , which is not replaced, and possible constraints of reservation of outflow .

"Project" : plan, details of development, equipment, operations. Proposals for study complementary to that which constitutes the subject of the report are not considered as projects .

16. DATA ELEMENT "UTILIZATION"

See the chapter on "GENERAL POINTS", paragraph 3.3 (options category, question with possible multiple answers) and the chapter "DEFINITIONS" (usage of water).

Tick those boxes relating to data elements for which the report provides numerical data, on the distribution of water for each sector of use .

17. DATA ELEMENT "BIBLIOGRAPHY" to "PLANNING"

Tick the box if the document includes :

BIBLIOGRAPHY	a bibliographical list
FINANCIAL ELEMENTS	an assessment of costs of production, equipment etc...
NEEDS AND WATER DEMANDS	statistical information on present and future water requirements.
PLANNING	outline or master plan of water development for all(or one) of the sectors of activity in a given territory.

18. SUMMARY OF REPORT

The whole of the bottom part of the data sheet can be used to write up a summary of the report; the contents of the summary are left entirely up to the writer; the summary can give all information, whether statistical or not, which is considered to be important by the writer .

If the report is written in French or English, the summary should be written in the same language .

If the report is written in any language apart from French or English, the writer can choose between these two languages.

DATA SHEET

" GROUNDWATER "

GROUNDWATER

AQUIFER	Name : _____	N° of aquifer : . . / . .
Total Area :	. . . . . km ²	
Type of structure :	homogenous single layer 1 heterogenous single layer 2 multilayer 3 <input type="checkbox"/>	
Other countries :	_____	

ELEMENT OF REFERENCE	Name _____	N° : . . / A
Area :	. . . . . km ²	
Type of structure :	homogenous single layer 1 heterogenous single layer 2 multilayer 3 <input type="checkbox"/>	
Other countries :	_____	
Hydrological unit (s) :	_____	

S tratiography

Lithology : carbonated argillaceous detritic cristallin volcanic evaporite

Origin of detritic formations : alluvium dunaries proluvium

Type of environment : fissured porous karstic

State : free confined

percentage of cover :

Reserves : 10⁹m³/yr low 1 important 2

Recharge : 10⁶m³/yr rate of recharge 10⁷

Extent : ≤ 10% 1 10-25% 2 25-50% 3 50-75% 4 > 75% 5

E conomic value : main 1 secondary 2 accessory 3 exploitation index :

Safe yield : 10⁶m³/yr

Accretion : water course, lake rainfall leakage lateral flow

Outlet : water course, lake spring sebkha sea leakage lateral flow

Thickness : from m to m depth of top of the aquifer : from m to m

roductivity : from m³/h m³/h depth of water level : from m to m

Draw-off : 10⁶m³/yr drawdown : from m to m

number of wells and drillings : Date :

water usage 10⁶m³/yr : irrigation domestic (urban rural) industrial

CARTOGRAPHICAL DATA				if included in the hydrogeological map yes 1 no = 0			
Nature	ACSAD N°	Hydrogeological map	N°	Latitude	Longitude		
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	././	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CHARACTERISTIC CATCHMENT WORKS	ACSAD N°	depth of water level	exploitation yield	drawdown	diameter	depth of equipment
Nature _____	_____	. . . . . m <input type="checkbox"/> m ³ /h	. . . . . m	. . . . . mm	. . . . .
_____	_____	. . . . . m <input type="checkbox"/> m ³ /h	. . . . . m	. . . . . mm	. . . . .
_____	_____	. . . . . m <input type="checkbox"/> m ³ /h	. . . . . m	. . . . . mm	. . . . .
_____	_____	. . . . . m <input type="checkbox"/> m ³ /h	. . . . . m	. . . . . mm	. . . . .

COMMENTS

general study of the aquifer? year of last study _____

known recharge? in distribution of the recharge

known reserve? determination of the reserve

water balance? water balance

water balance resources / draw-off? water balance resources / draw-off

simulation model? simulation model

NOTES : _____

GROUNDWATER

AQUIFER	Name: (1) L	N° of aquifer: ... / ... (2) L
---------	-------------	--------------------------------

Total Area	(3) km²	homogenous single layer 1	heterogenous single layer 2	multilayer 3	(4)
Type of structure:	(5) L				
Other countries					

ELEMENT OF REFERENCE	Name: (6) L	N°: ... / A... (7) L
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Area	(8) km²	homogenous single layer 1	heterogenous single layer 2	multilayer 3	(9)
Type of structure	(10) L				
Other countries					

Hydrological unit (s)	(11) L
	(12) L

S stratigraphy						
Lithology (13)	carbonated <input type="checkbox"/>	argillaceous <input type="checkbox"/>	detritic <input type="checkbox"/>	cristallin <input type="checkbox"/>	volcanic <input type="checkbox"/>	evaporite <input type="checkbox"/>
Origin of detritic formations (14)	alluvium <input type="checkbox"/>	dunaries <input type="checkbox"/>	proluvium <input type="checkbox"/>			
Type of environment (15)	fissured <input type="checkbox"/>	porous <input type="checkbox"/>	karstic <input type="checkbox"/>			
State (16)	free <input type="checkbox"/>	confined <input type="checkbox"/>				

Reserves	(18)	10³m³/yr				percentage of cover: ... (17)	
Recharge	(19)	10³m³/yr				low 1 important 2 <input type="checkbox"/> (18)	
Extent		≤ 10% 1	10-25% 2	25-50% 3	50-75% 4	rate of recharge 10% (20)	
Economic value		main 1	secondary 2	accessory 3	(22)	> 75% 3 <input type="checkbox"/> (21)	
Safe yield	(23bis)	10³m³/yr					exploitation index: ... (23)

Accretion (24)	water course, lake <input type="checkbox"/>	rainfall <input type="checkbox"/>	leakage <input type="checkbox"/>	lateral flow <input type="checkbox"/>
Outlet (25)	water course, lake <input type="checkbox"/>	spring <input type="checkbox"/>	sebkha <input type="checkbox"/>	sea <input type="checkbox"/>
Thickness (26)	from ... m to ... m	depth of top of the aquifer (27)	from ... m to ... m	
Productivity (29)	from ... m³/h to ... m³/h	depth of water level	from (28) ... m to ... m	
Draw-off (31)	10³m³/yr	drawdown (30)	from ... m to ... m	

water usage 10³m³/yr (33)	irrigation	domestic	(urban ... rural ... industrial)	Date: (31)
---------------------------	------------	----------	----------------------------------	------------

CARTOGRAPHICAL DATA		if included in the hydrogeological map yes 1 no = 0			
Nature	ACSAD N°	Hydrogeological map	N°	Latitude	Longitude
(34) L	(35)	(36)	(36)	(37)	(37)
					(38)

CHARACTERISTIC CATCHMENT WORKS	ACSAD N°	depth of water level	exploitation yield	drawdown	diameter	depth of equipment
Nature	(39)	(41) m <input type="checkbox"/>	(42) m³/h	(43) m	(44) mm	(45)
		m <input type="checkbox"/>	m³/h	m	mm	
		m <input type="checkbox"/>	m³/h	m	mm	
		m <input type="checkbox"/>	m³/h	m	mm	

COMMENTS (46)	general study of the aquifer?	<input type="checkbox"/>	yes = 1 no = 0
	known recharge?	<input type="checkbox"/>	
	known reserve?	<input type="checkbox"/>	
	water balance?	<input type="checkbox"/>	
	water balance resource / draw-off?	<input type="checkbox"/>	
simulation model?	<input type="checkbox"/>		

NOTES (48)		year of last study (47)
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DATA SHEET "GROUNDWATER"

Use this data sheet to describe :

- the aquifers
- the subaquifers

defined according to the "Data bank of water resources"
(see chapter on "DEFINITIONS")

It is necessary to fill out :

- 1 - a data sheet to describe the aquifer (according to the definition) as a whole. The characteristics of the aquifer are given in the section on subaquifers, since the two are assimilated .

- 2 - a data sheet for each individual subaquifer. Remember to identify the "father" aquifer at the top of the data sheet.

Every aquifer that has a name in the lexicon must be the object for a data - sheet .

After describing the geometry of the reservoir and the theoretical possibilities for exploiting the sub-aquifer, the table "characteristic catchment works" is used to describe four typical operations representing actual exploitation . These types of exploitation must without fail be included in the list of "cartographical data " at the bottom of the data sheet .

The procedures for writing up each data element are brought together in the following table; however the data element "STRATIGRAPHY" needs to be examined in more detail .

Data element "STRATIGRAPHY" (comments and examples)

Name the stratigraphic stage (s) attributed to those formations making up the aquifer .

Use only the vocabulary employed in international stratigraphy, which is given in the lexicon "STRATIGRAPHY" . Reference should be made to eras, systems and stages, alone .

If the subaquifer is made up of two formations of different ages (stages, system or era) but following in stratigraphic succession, give both names, separating them with a comma .

Example : APTIEN, ALBIEN

It is possible to show at the most four successive stratigraphic levels. If the subaquifer is made up of more than four stratigraphic levels of the same importance, use the higher-order stratigraphic terms to describe them :

Example : an aquifer of the Continental Terminal (Senonian to Pliocene formations:

SENONIEN, PALEOGENE, NEOGENE

Compound terms (with a hyphen) used in international stratigraphy are considered to be a single word of the lexicon.

Example : CENOMANO-TURONIEN = 1 word

CENOMANIEN, TURONIEN = 2 words

If there is some doubt about the stratigraphy, it is better to put IMPRECISE than to give inaccurate information .

GROUNDWATER

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Paragraph (category)	Observations, Examples, etc...
1- NAME OF AQUIFER	AQUIFERS NAME		Name of aquifer
2- No OF AQUIFER	AQUIFERS No OF AQUIFER		No corresponding to the above name
3- TOTAL AREA	- -	GENERAL 3.1. whole POINTS Number	Surface area of the aquifer in the country under consideration, whether this outcrops or not. Always evaluate this surface area, if the aquifer is poorly defined, give some indication of size .
4- TYPE OF STRUC- TURE	- -	GENERAL 3.3 option POINTS	"Single layer" ;permeable rock layer, laterally and vertically unbroken . "Multilayered" ;two or more aquiferous layers, separated by semi-permeable rocks . "Homogenous" ;having the same lateral and vertical lithology . "Heterogeneous" ;made up of several distinct lithological constituents, vertically and laterally.
5- OTHER COUNTRIES	COUNTRY NAME	STUDIES DATA ELE- MENT 12 for syntax	Give the names of arab or non-arab countries apart from that for which the data sheet is being filled out (code in No of aquifer), into which the aquifer may extend (in the hydrogeological sense of the word).
6 - (bis) ELEMENT OF REFERENCE*	ELEMENT OF REFERENCE		Fill out only in the case of description of sub-aquifer, give the term Sub-aquifer

* do not fill out in case of a description of an aquifer

DATA element No	Lexicon to consult Column	REFER TO Chapter Paragraph (category)	Observations, Examples, etc...
6 - NAME*	AQUIFERS NAME OF SUBAQUIFER		Fill out just in case of a description of a subaquifer, Put the term "sous-aquifer"
7 - No OF SUBAQUIFER	" No OF SUB- AQUIFER		Number corresponding to the name in data element.6. in the case of an aquifer repeat the No of the aquifer (data - element 2)
8 - AREA*	- -	GENERAL 3.1 whole POINTS Number	Same remarks as for data element 3 as supplied to subaquifers.
9 - TYPE OF STRUCTURE*	- -	DATA ELEMENT 3 above	Remarks and definitions given for the aquifers which also apply to the subaquifer.
10 - OTHER COUNTRIES*	COUNTRY NAME	DATA ELEMENT 4 above	The same remarks applied to the subaquifer.
11 - HYDROLOGICAL UNITS (S)	BASINS NAME OF BA- SIN OR SUB- BASIN	STUDIES DATA ELE- MENT 13	Names of basins, sectors or basin elements where whole or part of the subaquifer under consideration is to be found.
12 - STRATIGRAPHY	STRATIGRAPHY	EXPLANATIONS GIVEN IN THE TEXT	

"GROUNDWATER"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Paragraph (category)	Observations, Examples, etc...
13- LITHOLOGY	-	GENERAL 3.3 option POINTS	Describe the lithology of the formation(s) making up the aquifer unit (in the case of a multi-layered aquifer, the aquiferous and semi-permeable layers). Several boxes can be ticked in describing the lithology. For example "detritic" and "carbonated" to describe a limestone conglomerate. N.B. "Argillaceous" will always be ticked off together with another qualifier, since a totally argillaceous layer is not an aquifer, furthermore, "Evaporite" means "aquiferous rock containing a marked proportion of evaporite".
14- ORIGIN OF DETRITIC ELEMENTS	-	GENERAL 3.3option POINTS	Only fill this in if the box detritic has been ticked in the data element "lithology" "Proluvium" ;accumulation of colluvium and eluvium, slope deposits .
15- TYPE OF ENVIRONMENT	-	" "	
16- STATE	-	" "	Both boxes can be ticked
17- PERCENTAGE OF COVER	-	" 3.1 whole Number	Give the proportion of the aquifer which is covered by an impermeable layer of rock in the country under consideration .

DATA element No	Lexicon to consult Column	REFER TO Chapter Paragraph (category)	Observations, Examples, etc...
18 - RESERVES	- -	GENERAL POINTS 3.1 decimal N 3.3option	The volume of water contained within the aquifer in billion of m ³ or in km ³ , corresponding to an estimated average state of the piezometric level. If possible make a quantitative estimation of reserves and assess the importance of them compared with other aquiferous reserves reserves recognized in the country .
19- RECHARGE	- -	" 3.1decimal Number	Indicate the average replenishment (sum of different methods of recharge: infiltration, drainage inflow, river loses, etc.)
20 - RATE OF RE-CHARGE	- -	" 3.1 whole Number	Ratio between recharge and reserves. Give some indication of the rate of recharge in powers of 10, round up to the nearest . All figures above 5.10 ⁻ⁿ should be rounded up to 10 ⁻⁽ⁿ⁻¹⁾ Eg. Recharge rate $\approx 8.10^{-6} \rightarrow 10^{-5}$ on the data sheet .
21 - EXTENT	- -	" 3.3option	Give the surface area of the subaquifer as a proportion of the surface area of the country. Eg. :the aquifer described covers 60% of country, write 4 on the data sheet.
22 - ECONOMIC VALUE	- -	" "	One reply only. Estimate the economic value of the subaquifer according to criteria for that country taking into account present usage of the resources, as represented by the amount of draw-off, the number of drilling operations and the allocation of water in the different sectors of economic activity.

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
23- EXPLOITATION INDEX	- -	GENERAL 3.1 whole POINTS Number	Percentage of draw-off compared to recharge. This can be greater than 100 in the case of overexploitation of an aquifer or of mining exploitation of confined aquifer .
23-bis - SAFE YIELD	- -	" 3.1 dec. Number	Flow which exploitation seems to be possible in view of economical, technical criterias.. Give in free language the source of information .
24- ACCRETION	- -	" 3.3 option	More than one box can be ticked. "Lateral flux" :lateral recharge coming from a tributary aquifer unit .
25- OULET	- -	" "	More than one box can be ticked "Lateral flow" :underground flow of water to a neighbouring aquifer unit .
26- THICKNESS	- -	" 3.1 whole Number	Give the minimum and maximum known extremes of thickness of the aquifer (saturated thickness). The minimum can be 0 .
27- DEPTH OF TOP OF THE AQUI- FER	- -	" . "	Vertical distance between the top of the aquifer and the ground,fill this in only if the aquifer has an impermeable cover and is confined. Minimum depth can be 0 (when only one part of the aquifer is confined).
28- DEPTH OF WATER LEVEL	- -	" "	Vertical distance from the average natural water level in the aquifer to the ground. This can be nought. Indicate the extreme values observed . In the case of an artesian flow mark a "+" in front of the height of the water above ground level

"GROUNDWATER"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
29- PRODUCTIVITY	-	GENERAL POINTS 3.1 whole Number	Potential yields of drillings as determined by pumping tests. N.B. give the normal range of values in m3/h (not extremes).
30- DRAWDOWN	-	"	Range of values for drawdown, corresponding to productivity (see previous data element).
31- DRAW-OFF AND DATE	-	"	Annual volume extracted, estimated (measured volume + estimated non-calculable volume) for the date given at the end of the line.
32- NO OF WELLS AND DRILLINGS	-	"	The number of drillings of all kinds reaching the aquifer unit being considered and exploiting it. It is hoped that these drillings would be those for which the inventory was used to estimate draw-off.
33- WATER UTILIZATION	-	" DEFINITIONS UTILIZATION	Give the amount of water pumped and used for each activity
34- NATURE	NATURE		
35- ACSAD No	COUNTRY CODE	SURFACE WATER DATA ELEMENT 35	Make sure the drilling operation is included in the list of cartographical data at the bottom of the data sheet. This is essential
36- HYDROGEOLOGICAL MAP	HYDROGEOLOGICAL No MAP		Name and No of the document 1/1000 000 if it exists (otherwise 1/2 000 000), where the point being described is situated.

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1

"GROUNDWATER"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
37- LATITUDE LONGITUDE	- -	GENERAL POINTS 3.1 coordinates	
38- REPRESENTATION	- -	" 3.3option	Indicate whether this data is represented on the hydrogeologic map of the arab countries .
39- NATURE	NATURE		Nature of the catch work being described
40- ACSAD No	COUNTRY CODE	" 3.1 whole Number SURFACE WATER DATA ELEMENT 35	Verify that the catchwork is listed in the list of obligatory cartographic data .
41- DEPTH OF WATER LEVEL	- -	GENERAL POINTS 3.1 dec. Number	In the case of an artesian flowing well mark an "+" before the height above ground level. For a foggarra, give the depth of the water at the highest point of the gallery .
42- EXPLOITATION YIELD	- -	" 3.1 whole Number	Actual yield obtained by drillings
43- DRAWDOWN	- -	" 3.1 dec. Number	In the case of a foggarra, do not fill this out . Otherwise, mark the drawdown corresponding to the yield given in the previous data element .
44- DIAMETER	- -	" 3.1 whole Number	Interior diameter of the drilling at the base, possibly with casing or screen in cm (= diameter in inches x 2,54). For a foggarra give the width of the gallery .

"GROUNDWATER"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
45- DEPTH OF E- QUIPMENT	- -	GENERAL 3.1 dec. POINTS Number	Depth at which the pump is installed leave blank for fogarras .
46- COMMENTS	- -	" 3.3option	Reply to the questions with 0 (= no) or 1 (= yes)*. For the first question, if the answer is positive, give the date and pass over to other questions .
47- YEAR OF THE LAST STUDY	- -		Indicate for each theme the year of the most recent study .
48- NOTES	- -	" 3.2 free language	

* In the case of positive answer to the first question, give the date and go to the other questions

DATA SHEET

" HYDROMETRIC STATIONS "

Country : _____ N° of station : . . . / B /

Hydrological unit : _____

Name of station : _____ Surface area :

Location Latitude . . . ° . . . ' . . . " Longitude . . . ° . . . ' . . . " Altitude

Hydrogeological map : _____ N° : . . . / . . . *

State of flow : Perennial 1 Ephemeral 2 Gauging flume 3 Channel 4

Type of station : Dam 1 Weir 2 Gauging flume 3 Channel 4

Date of start : . . . / nbr of years of records: . . . in

Methods of measurements: Discharge : dilution method 1 float 2 combination 3
 Velocity : current meter 1 staff gauges 2 combination 3
 Stage : water level recorder 1 water sampling combination 3
 Sediment sampling : yes = 1 no = 0 water sampling combination 3

GENERAL INFORMATIONS

FLOW MEASUREMENT

annual average: : 10⁶m³/yr

wet year : 10⁶m³/yr

dry year : 10⁶m³/yr

instantaneous min : m³/s

instantaneous max : m³/s

SEDIMENT FLOW

annual yield: : tons

period of flood : from to

flood flow : tons.

low water flow: : tons

HYDROCHEMISTRY

total mineralisation: representative value : g/l

average of minimums : g/l

average of maximums : g/l

conductivity : representative value : mmhos/cm

average of minimums : mmhos/cm

average of maximums : mmhos/cm

PH : representative value :

average of minimums :

average of maximums :

DEGREE OF POLLUTION

serious 1 moderate 2: null 3

MONTHLY FLOWS

year	flow (10 ⁶ m ³)	year	flow (10 ⁶ m ³)	year	flow (10 ⁶ m ³)	year	flow (10 ⁶ m ³)	year	flow (10 ⁶ m ³)
01	01	.....	01	.....	01	.....	01	.....
02	02	.....	02	.....	02	.....	02	.....
03	03	.....	03	.....	03	.....	03	.....
04	04	.....	04	.....	04	.....	04	.....
05	05	.....	05	.....	05	.....	05	.....
06	06	.....	06	.....	06	.....	06	.....
07	07	.....	07	.....	07	.....	07	.....
08	08	.....	08	.....	08	.....	08	.....
09	09	.....	09	.....	09	.....	09	.....
10	10	.....	10	.....	10	.....	10	.....
11	11	.....	11	.....	11	.....	11	.....
12	12	.....	12	.....	12	.....	12	.....

* put 1 in the box if the station is represented on the hydrogeological map

Country : 2 L N° of station : ... / B 3 L / ...

Hydrological unit : 4 L

Name of station : 5 Surface area : 6

Location 7 Latitude ° ' " Longitude ° ' " Altitude

State of flow : 8 Hydrogeological map : _____ N° : ... / *
 Perennial 1 Ephemeral 2 9

Type of station : Dam 1 Weir 2 Gauging flume 3 Channel 4 10

Date of start : ... / ... / ... 11 nbr of years of records : ... in ... 12

Methods of measurements: Discharge : dilution method 1 float 2 combination 3
13 Velocity : current meter 1 staff gauges 2 combination 3
 Stage : water level recorder 1 water sampling
 Sediment sampling : yes = 1 no = 0 water sampling yes = 1 no = 0

GENERAL INFORMATIONS

FLOW MEASUREMENT annual average: 14 10⁶m³/yr
 wet year 15 10⁶m³/yr
 dry year 15 10⁶m³/yr
 instantaneous min 16 m³/s
 instantaneous max 16 m³/s

SEDIMENT FLOW annual yield: 17 tons
 period of flood 18 from to
 flood flow 19 tons.
 low water flow: 20 tons

HYDROCHEMISTRY
 total mineralisation: representative value 23 g/l
 average of minimums 21 g/l
 average of maximums 22 g/l
 conductivity : representative value 23 mmhos/cm
 average of minimums 21 mmhos/cm
 average of maximums 22 mmhos/cm
 PH : representative value 23
 average of minimums 21
 average of maximums 22

DEGREE OF POLLUTION serious 1 moderate 2: null 3 24

MONTHLY FLOWS

year	flow	year	flow	year	flow	year	flow	year	flow
<u>25</u>	(10 ⁶ m ³)		(10 ⁶ m ³)		(10 ⁶ m ³)		(10 ⁶ m ³)		(10 ⁶ m ³)
01	<u>26</u>	01	.....	01	.....	01	.....	01	.....
02	02	.....	02	.....	02	.....	02	.....
03	03	.....	03	.....	03	.....	03	.....
04	04	.....	04	.....	04	.....	04	.....
05	05	.....	05	.....	05	.....	05	.....
06	06	.....	06	.....	06	.....	06	.....
07	07	.....	07	.....	07	.....	07	.....
08	08	.....	08	.....	08	.....	08	.....
09	09	.....	09	.....	09	.....	09	.....
10	10	.....	10	.....	10	.....	10	.....
11	11	.....	11	.....	11	.....	11	.....
12	12	.....	12	.....	12	.....	12	.....

* put 1 in the box if the station is represented on the hydrogeological map

DATA SHEET "HYDROMETRIC STATIONS"

The data sheet serves to :

- identify all gauging stations selected by the ACSAD : stations in existence for six months, which are kept in working order by taking measurements of yields at least once a day ,
- describe the main physical and chemical characteristics of the water at the station (general information) ,
- collect series of monthly values for yields observed at the station since it became operational .

The data sheet "HYDROMETRIC STATIONS" consists purely of those stations quoted in the data element "CARTOGRAPHIC DATA" on the data sheet "SURFACE WATER" .

The procedures for filling out the document are given in the following table .

The data in the table for monthly yields is only taken into account if the "General Information" section has been completed .

Fill out one column of the monthly yield table each year, with just one value for each month, the first yield value recorded should correspond to the date on which the station became operational (data element 11). If insufficient space has been provided for the data available, continue on a second data sheet; repeating the number of the station and numbering the documents .

"HYDROMETRIC STATIONS"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
1- PAGE	- -	GENERAL POINTS 3.1 page	
2- COUNTRY	COUNTRY NAME		
3- No OF STATION	BASINS No OF SUB-BASIN	" 3.1 whole Number SURFACE WATER DATA ELEMENT 35	No of station = No of hydrological unit determined by the station and ACSAD code number of the station in the ponctual data bank. For example :IQ/B02-07/000452 = station identified as No 452, determining the partial basin of Bagdad.
4- HYDROLOGICAL UNIT	BASIN NAME OF BASIN NAME OF SUBBASIN		Name of hydrological unit determined by the station. Example above BAGDAD corresponding to IQ/B02-07.
5- NAME OF STATION	- -	GENERAL POINTS 3.2 free LANGUAGE	
6- AREA	- -	" 3.1 whole Number	Surface area in km2 of the hydrological unit above the station, in the country concerned.
7- LOCATION	- -	" 3.1 coordinates	Place either "+" or "-" in the box according to whether the station is located above or below sea-level.
8- HYDROGEOLOGICAL MAP	HYDROGEOLOGICAL MAP		(Name and) number of the hydrogeological map of arab countries, on the scale 1/1 000 000 (or 1/2 000 000 if the sheet 1/1000 000 does not exist).

"HYDROMETRIC STATIONS"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
9- STATE OF FLOW	-	GENERAL POINTS 3.3option	One reply only
10- TYPE OF STA-TION	-	" "	One reply only
11- DATE OF START	-	" 3.1 date	Date of the first monthly measurement recorded in the table for monthly yields at the bottom of the data sheet .
12- No OF YEARS RECORDED .. IN ..	-	" 3.1 whole Number	Number of years (following the western calendar) for which there is complete data cover. Give the date on which this information was recorded. Example :A station put into operation in March 1968, measurements were taken until November 1981, the data sheet filled in 1982 No of years covered by data = 12 in 1968 and 1981 being incomplete years .
13 - METHODS OF MEASUREMENT	-	" 3.3option	One reply for each method of measurement described .
14- AVERAGE AN-NUAL FLOW	-	" 3.1 dec. Number	Average yield calculated at the station covering the whole period of complete available data (see data element 12).
15- WET, DRY YEAR	-	" 3.1 dec. Number SURFACE WATER Minimum & maximum flow(data element 12)	

"HYDROMETRIC STATIONS"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
16 - MINIMUM AND MAXIMUM INSTANTANEOUS YIELD	- -	GENERAL POINTS 3.1 dec. Number	
17 - ANNUAL SEDIMENT FLOW	- -	AS ABOVE	Total average annual yield over the whole period of available data, this is equal to the sum of solid yields for flood and low water.
18 - PERIOD OF FLOOD		GENERAL POINTS 3.1 whole Number	First and last month of the period ; - of high water (permanent river) - of continuous flow (seasonal river only) - of flooding (river flowing intermittently)
19 - FLOOD FLOW	- -	" 3.1 dec. Number	- Total solid yield transported during the period of flood for an average year (for permanent flow). - Average over "N" years of total solid yield transported during periods of relative high water for a year (regular seasonal flow). - Average over "N" years of total solid yield transported during all periods of river flow (intermittent flow).

"HYDROMETRIC STATIONS"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
20- LOW WATER FLOW	- -	GENERAL POINTS 3.1 dec. Number	<ul style="list-style-type: none"> - Total yield transported during the period of low water for an average year (for permanent flow). - Average over "N" years of total solid yield transported, apart from during periods of relative high water (for regular seasonal flow). - This is zero for an intermittently flowing river .
21- AVERAGE OF MINIMUMS	- -	" "	Average of minimum annual values, calculated for the whole period of available measurements .
22- AVERAGE OF MAXIMUMS	- -	" "	Average of maximum annual values, calculated for the same period .
23- REPRESENTATIVE VALUE	- -	" "	Personal estimation.
24- DEGREE OF POLLUTION	- -	" 3.3option	Personal estimation of the degree of pollution at the station. One reply only.
25- YEAR	- -		Given in four figures .
26- FLOW	- -	" 3.1 dec. Number	Amount of flow at the station over the month, given in millions of m ³ .

DATA SHEET

" PIEZOMETRY "

Country : _____
 Hydrological unit : _____
 Aquifer unit : _____
 Name of site : _____

Station N° : . . / A /

Observations since : . . / . . / Type of piezometer : borehole, well 1 piezometer 2
 Location : Latitude . . ° . . ' . . " Longitude . . ° . . ' . . " Ground altitude m
 Hydrogeological map : _____ N° : . . / . .

Year	Month	Depth of work (m)	Depth		Influenced	Measure manual 1 limni 2	NOTES
			Water / ground (m) <input type="checkbox"/>	dry <input type="checkbox"/>			
.....	01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* put 1 in the box if the station is represented on the map
 ▲ put + in the box if spouting
 Δ yes = 1 no = 0

Country : _____ (2) (L)
 Hydrological unit : _____ (3) (L)
 Aquifer unit : _____ (4) (L)
 Name of site : _____ (6)

Station N° : . . / A . (5) (L) /

Observations since : . . / (7) / Type of piezometer : borehole, well | piezometer 2 (8)

Location (9) : Latitude . . ° . . ' . . " Longitude . . ° . . ' . . " Ground altitude m

(10) Hydrogeological map : _____ N° : . . / . .

Year	Month	Depth of work (m)	Depth		Influenced	Measure manual 1 limni 2	NOTES
			Water / ground (m) <input type="checkbox"/>	dry <input type="checkbox"/>			
.	01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____ (16) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
	02	. . . . . (11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
.	01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
	02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
.	01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
	02	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	04	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	05	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	07	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	08	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	09	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* put 1 in the box if the station is represented on the map
 ▲ put + in the box if spouting
 Δ yes = 1 no = 0

DATA SHEET " PIEZOMETRY "

This data sheet is aimed at describing observation point of the aquiferous level, chosen due to :

- its representativeness
- the quality of observations
- the duration and continuity of measurements

The procedures for filling out the various categories have been brought together in the table on the following pages.

It should be added that concerning the table for piezometric data, it is necessary to :

- fill out one line each month
- report informations even if the values are identical to those of the previous month.
- fill out another data sheet if more than three years of data are available :

in this case, it is essential to number the data sheets and give the number of the station .

"PEIZOMETRY"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
1 - PAGE	- -	GENERAL 3.1 page POINTS	
2 - COUNTRY	COUNTRY NAME		
3 - HYDROLOGICAL UNIT	BASINS NAME OF BASIN OR SUBBASIN		
4 - AQUIFER UNIT	AQUIFERS NAME OF AQUIFER OR SUBAQUIFER		
5 - No OF STATION	AQUIFERS No OF A- QUIFER OR SUBAQUIFER	" 3.1 whole GROUND Number WATER data ele- ment 35	Example :SY/A02-../000 051 aquifer No ACSAD
6 - NAME OF SITE	- -	" 3.2 free language	Free language
7 - OBSERVATIONS SINCE	- -	" 3.1 date	Date of earliest recorded observation.
8 - TYPE OF PIE- ZOMETER	- -	" 3.3option	One reply only.
9- LOCATION	- -	" 3.1 geo- graphical coordina- tes	Place either "+" or "-" in the box if al- titude is above or below sea level.

"PIEZOMETRY"

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para (data element)	Observations, Examples, etc...
10- HYDROGEOLOGICAL MAP	HYDROGEOLOGICAL MAP NAME AND No		Name and No of the sheet, scale 1/1000000 or scale 1/2000 000 if the former do not exist .
11- DEPTH OF WORK	-	GENERAL POINTS 3.1 dec. Number	Depth in meters, measured from the ground .
12- WATER DEPTH	-	"	Depth in meters from the ground : place "+" in the box if in the case of artesian water leave data element blank if piezo-meter is dry .
13- DRY PIEZOMETER	-	" 3.3option	One reply only, if reply = 0, check water depth < depth of operation .
14- PIEZOMETRIC	-	" 3.3 option	One reply only .
15- MEASUREMENT	-	" "	One reply only .
16- NOTES	-	" 3.2 free language	

DATA SHEET

" QUALITY OF WATER "

LEXICON

N° of site : . . / /

Country : _____

↑
B if surface water
A if ground water

B → IF SURFACE WATER
is it a hydrometric station yes = 1 no = 0

Hydrological unit : _____

A → IF GROUNDWATER
is it a well or a borehole 1, a spring 2, a piezometer 3?

Aquifer unit : _____

Name of site : _____

Observations since : . . / . . /

Location : Latitude . . ° . . ' . . " Longitude . . ° . . ' . . " Altitude m

Hydrogeological map : _____ N° : . . / . .

Year	Month	Total salinity g/l	Conductivity m mhos/cm	Sulphates g/l	Nitrates g/l	Hardness Th		Turbidity g/l	PH
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

* put | in the box if the station is represented on the map

Country : _____ ② L

N° of site : . . / . . ③ L /

↑
B if surface water
A if ground water

B → IF SURFACE WATER
is it a hydrometric station yes = 1 no = 0 ④

Hydrological unit : _____ ⑤ L

A → IF GROUNDWATER
is it a well or a borehole 1. a spring 2. a piezometer 3? ⑥

Aquifer unit : _____ ⑦ L

Name of site : _____ ⑧ Observations since : . . / ⑨ /

Location : ⑩ Latitude . . ° . . ' . . " Longitude . . ° . . ' . . " Altitude m

⑪ Hydrogeological map : _____ N° : . . / . . *

Year	Month	Total salinity g/l	Conductivity m mhos/cm	Sulphates g/l	Nitrates g/l	Hardness Th		Turbidity g/l	PH
⑫	⑫	⑬	⑭	⑮	⑮	⑯		⑰	⑱
.
.
.
.
.
.
.
.

* put 1 in the box if the station is represented on the map

DATA SHEET " QUALITY OF WATER "

This data sheet is aimed at :

- describing the draw-off point for surface or groundwater; draw-off carried out with a view of study or surveillance of the chemical composition of the water, chosen due to :
 - its representativeness
 - the quality of observations
 - the long duration of observations
- obtaining analytical results for water draw-off .

The observation points, which this data sheet concerns , must without fail have already been described in the table " Cartographic Data" on the data sheets "SURFACE WATER" or "GROUNDWATER" according to the origin of the analysed water.

The procedures for writing up these informations have been brought together in the table on the following page .

Regarding the table for results of analyses :

- only two analyses per year at the most can be recorded (corresponding to extreme mineralisations for example);
- informations must be repeated, even if it is identical to what is written above;
- if the table is not long enough, record the results on a second data sheet, not forgetting to number each data sheet and repeat the number .

" QUALITY OF WATER "

DATA SHEET

DATA element No	Lexicon to consult Column	REFER TO Chapter Para	Observations, Examples, etc...
- PAGE	-	GENERAL 3.1 page POINTS	
- COUNTRY	COUNTRY NAME		
- No OF SITE	BASINS No OF BA - SIN OR SUB - BASIN AQUIFERS No OF AQUI - FER OR SUB - AQUIFER	" 3.1 whole Number GROUND OR SURFACE WATER	No of site :No of hydrological unit (with an A) characterized by the sampling point + the reference ACSAD No for this point. Example :SY/A07-02/Q000187 = point 187 in Damascus aquifer (lacustrine limestone) Example :LB/B04-../000026 = surface draw- off point No 26 in the Litani basin .
- IF SURFACE WATER	-	GENERAL 3.3option POINTS	One reply only, if 1, checkthat the site number contains the number of the sub- basin .
- HYDROLOGICAL UNIT	BASINS NAME OF BASIN OR SUBBASIN		Name corresponding to the number of the hydrological unit in the site number .
- IF GROUND WATER	-	" "	One reply only
- AQUIFER UNIT	AQUIFER NAME OF A - QUIFER OR SUBAQUIFER		Name corresponding to the number of the aquifer unit in the site number.
- SITE NAME	-	" 3.2 free language	
- OBSERVATIONS SINCE...	-	" 3.1 date	Date of the first recorded analysis
- LOCATION	-	" 3.1 coor- dinates	Place "+" or "-" in the box if altitude is above or below sea level .

" QUALITY OF WATER "

DATA SHEET

DATA element No	Lexicon to consult Name Column	REFER TO Chapter Para (Data element)	Observations, Examples, etc...
1 - HYDROGEOLOGICAL MAP	HYDROGEOLOGICAL MAP		(Name and) number of the hydrogeological map of arab countries at scale 1/1000 000 or 1/2 000 000 if the former does not exist.
2 - YEAR, MONTH	- -	GENERAL 3.1 date POINTS	Total mineralisation in g/L
3 - TOTAL SALINITY	- -	" 3.1 dec. Number	At 20° C.
4 - CONDUCTIVITY	- -	AS ABOVE	
5 - SULPHATES, NITRATES PH	- -	AS ABOVE	
6 - HARDNESS	- -	GENERAL 3.1 whole POINTS Number	Hydrometric title T.H. in French degrees $TH = (rCa^{++} + rMg^{++}) 5$ r = symbol of milliequivalence
7 - TURBIDITY	- -	" 3.1 dec. Number	Sediments in suspension in g/L.