



## THE GEOTECHNICAL MAPS FOR THE SOILOF THE GOVERNORATES BAGHDAD, DIYALA, WASIT AND BABYLON

:\_\_\_\_\_

(15 m) ("... 7,5,3,1 " m)

( )

)

( ) (

(64)

(138)

.( 1 : 100000 )

(74) ( 1 : 1500000 )

### ABSTRACT

This study dealt with the geotechnical properties of soil of the governorates ( Baghdad, Diyala, Wasit And Babylon), depending on the induction & comparison & analysis of soil properties .The study involved collecting data, tabulating the information & analyzing them, then maps were drawn for each property at depths ( "1, 3, 5, 7....15" m).

The selected properties were Atterberg limits ( liquid limit & plasticity index ), dry unit weight, initial void ratio, fine particle percent, strength of soil in term of ( number of blows in S.P.T and unconfined compressive strength ), compression index, organic matter percent, sulphate content, Water table level was also taking into account for Baghdad city.

With the aid of computer program, ( 138 ) geotechnical maps was drawn , (64) of them were devoted for the study case area with scale of (1 : 1500000) & ( 74 ) maps were drawn for Baghdad city.

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( Surfer / Version 7 )

( Surfer /

Version 7 )

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(

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"

( Bakir, 1998 )

"

( Al-Naimi, 1996 )

( Charts )

Reconnaissance )

( 2001 )

( Phase

( 2002 )

\_\_\_\_\_:



(Grain Size Analysis)	. 1" m)	(15 13 11 9 7 5 3	
Engineering	.2		
:Properties of Soil		(64)	
(Standard Penetration Test " S.P.T ")	. (1 : 1500000)		(74)
		(5 km × 5 km)	
(Unconfined Compressive Strength " qu ")			.(1 : 100000)
(Compression Index " cc ")			
Chemical	.3		
:Properties of Soil			
(Sulphate Ions " SO <sub>3</sub> % ")	. (	( Low )	( L )
(Organic Matter " ORG % ")	. (	H )	( High )
	.4		
.(Water Table Level " W.T.L ")			
: _____			
		-:	
(1 : 1500000)		Physical	.1
—		:Properties of Soil	
	1990	.(Atterberg Limits)	
		Dry " $\gamma_{dry}$ ")	
)		.( Unit Weight	
(		Initial Void Ratio )	
.(1-1)		.( "e <sub>0</sub> "	
(1 : 50000)			

1. )

( ) .(

( -

2. ) -: 1977

.(

3. ) -:

(1: 100000)

(5 km × 5 km )

.(1-2)

.(

\_\_\_\_\_:

:

:

)

(

(7 m) (36-58 %)

(17 %) ( )

.(LL7-4)

(17-81%)

( ) (17 %)

<sup>1</sup>(LL7-4) (7 m)

( ) (81 %)

.(LL11-6) (11 m)

(5 m)

(LL5-3) ( ) (30 %)

%) (15 m)

:

-6) (LL9-5) (LL7-4) (43

.(LL15-8) (LL13-7) (LL11

\_\_\_\_\_

.1



(LL<sub>15-8</sub>)  
 ( ) ( )  
 (LL<sub>3-2</sub>) (23 %) (3 m) (40-65 %)

-6) (11 m) (69 %)  
 (LL<sub>11</sub>)  
 (LL<sub>13-7</sub>) (13 m) (24 %)

(37-46 %)

9) :  
 (53 %) (m) )  
 (LL<sub>9-5</sub>) ) ( )  
 ( ) (37-68 %)

( )  
 (38-68 %) (32 %) (7 m)  
 (15 m) (44 %)

(LL<sub>15-8</sub>) (38 %) (43-67 %)

(11 m) (81 %)

(24-70 %) (LL) :  
 (24 %) )  
 (LL<sub>5-3</sub>) (5 m)  
 (13 m) (70 %) (33-64 %) ( )  
 (LL<sub>13-7</sub>)

(LL<sub>11-6</sub>) (11 m)  
 : (15 m) (47 %)

				)	.1
( )				.(	7
(42-62 %)				)	.2
( 32-42 %)	( )				
(LL <sub>5-3</sub> )	(7 m)	(5 m)			
		(LL <sub>7-4</sub> )			
	(11 m)	(9 m)		.(	
-7)	(LL <sub>9-6</sub> )	(63-66 %)		)	.3
		(LL <sub>11</sub> )			
	:			.(	
	(31-70 %)				
(		)		:	
				:	
%)	(LL <sub>9-5</sub> )	(9m)		(28-66 %)	
(11 m)		(31-48		(54-62 %) ( )	
		(LL <sub>11-6</sub> )		(9 m)	
( )	(55-62 %)			(43 %)	
				(LL <sub>9-5</sub> )	
m)	(49-70 %)			(28-40 %)	
-6)	(31 %)	(11		(9 m)	
	)	(LL <sub>11</sub>	(15 m)	(LL <sub>9-5</sub> )	(56 %)
		(	-8)	(62 %)	
.(37-48 %)				( )	(LL <sub>15</sub> )
%)	( )		(11 m)	(47-62 %)	
(7 m)		(34-62	-6)	(33 %)	
-8)	(15 m)	(LL <sub>7-4</sub> )		( 7)	(LL <sub>11</sub> )
	( )	.(LL <sub>15</sub>		(47-57 %)	
-43 %)				(13 m)	
(5 m)	(11 m)	(33		.(LL <sub>13-7</sub> )	(38 %)
(58 %)				( )	( )



(5 m)	(24 %)	(LL <sub>1-1</sub> )	( )	(LL <sub>5-3</sub> )
		(LL <sub>5-3</sub> )	-39 %)	
-1)	(1 m)	(50 %)	(11 m)	(9 m) (32
		(LL <sub>1</sub> )	(69 %)	(58 %)
	(40-61 %)		(LL <sub>11-6</sub> )	(LL <sub>9-5</sub> )
			(42-65 %)	( )
( 1-1 )			%)	( )
			(11 m)	(50-65
			(LL <sub>11-6</sub> )	(37 %)
			(LL <sub>13-7</sub> )	(36 %)
			( )	( 13m)
			( )	(38-60 %)
			-50 %)	( )
	( )		( )	( ) (34
			(32-44 %)	
			(7 m)	
				:
				(24-61 %)
			(50-58 %)	( )
				(5 m)
			(42-49 %)	( )
				(5 m)
				(LL <sub>5-3</sub> ) (5 m)
				(9 m) (55 %)
				(LL <sub>9-5</sub> ) (59 %)
				(34-55 %)
			(1 m)	(31 %)

**:Conclusions**

(0.12-0.61)	:	.
(0.3)		
(0.61)	(0.3)	(24
:	.	
	(9-63 %)	
%)	(13.8-19 KN/m <sup>3</sup> )	
(0.03-17.36		
(2 %)	(0.523-1.051)	
(2 %)		
.		
هـ	[USCS]	
(0.8-6.43 m)		
)		
(		
.		
.		
:		
_____	(N)	
:	(4-80)	(SPT)
(Liquid Limit)		
(Plasticity Index)		
		(N)
		(32-536 kN/m <sup>2</sup> )



	(0.2 %)		(13.7-17.8 kN/m <sup>3</sup> )
	(0.03-3.56 %)		(0.55-0.895)
			(9-99 %)
(9 m)			(50 %)
(2 %)			[USCS]
	⋮		⋮
	⋮		(N)
			(9-88) (SPT)
			(38-466 KN/m <sup>2</sup> )
	(15.4-16.5 KN/m <sup>3</sup> )		
	(0.573-0.76)		
	(57-94 %)		
(50 %)			(0.08-0.254)
	[USCS]		
	⋮		⋮
	(N)		
(21-36)	(SPT)		(0.07-7.5%)

(N)  
 (5-93) (SPT) (129-366 KN/m<sup>2</sup>)

(0.15-0.235)

(38-458 KN/m<sup>2</sup>)

:

(0.14-0.33)

(0.25-3.86 %)

(0.2 %)

-1.08 %

:

(0.06

(2 %)

(0.04-12.3 %)

\_\_\_\_\_

)

:

(

(0.2 %)

%)

(0.2-7.55

(2 %)

( )

( 13.7-15.5 KN/m<sup>3</sup>)

(4.92-7.55 %)

(0.61-0.98)

**:Recommendations**

(25-98 %)

.1

[USCS]

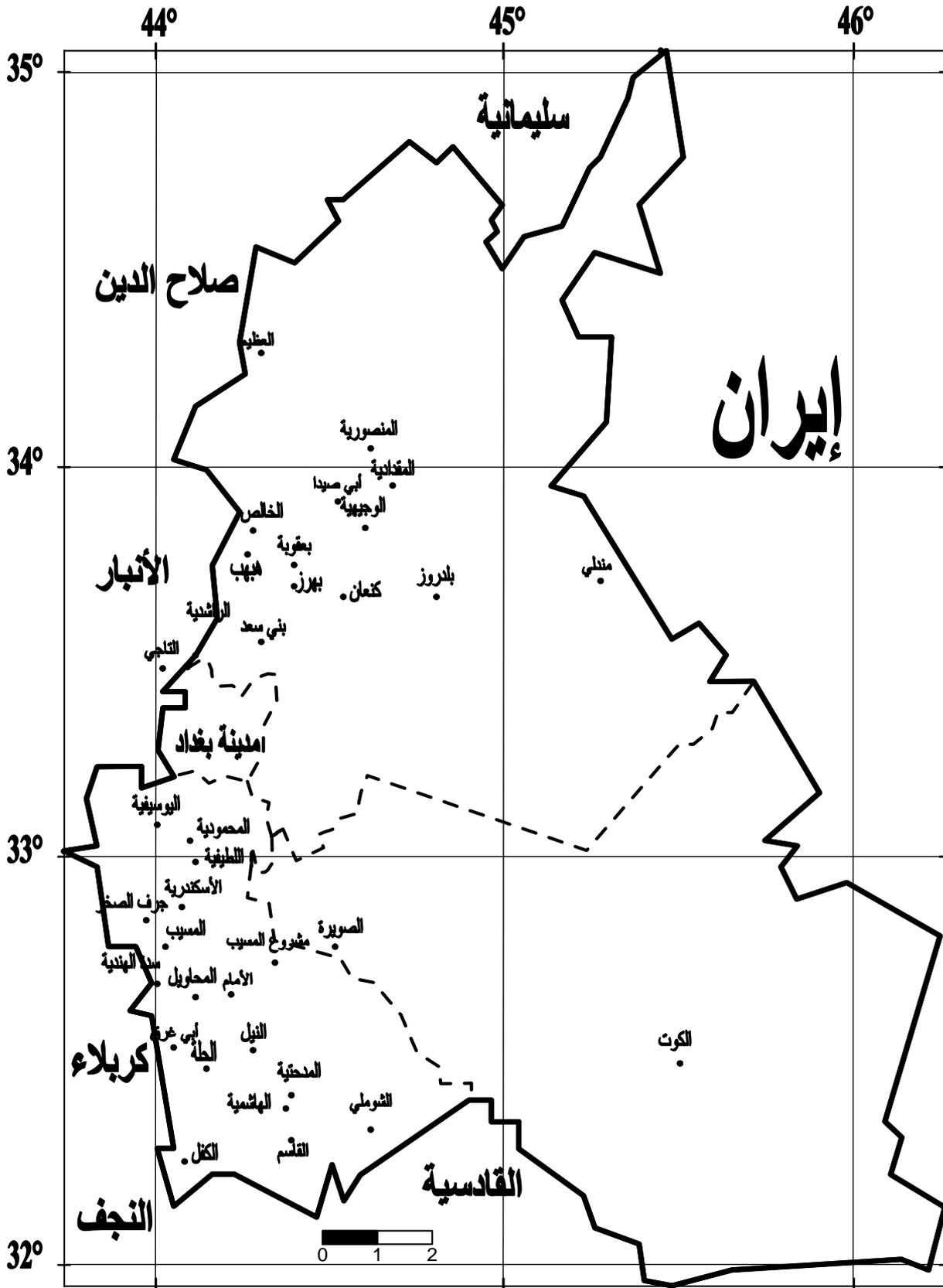
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- Al-naimi, Ghaidaa A. 1996, (Evaluation Of Shear Strength Parameters Of Baghdad Soil ) M. Sc. Thesis, University of Technology, Baghdad. .2
- Bakir, A. M., 1998, ( The Geotechnical Maps Of Iraq [ Southern Region ] ), M. Sc. Thesis, University Of Baghdad – College of Engineering. .3
- ) 2002 -
- ( - .4
- 1990 -
- 1977 -
- ) 2001 -
- ( - .5

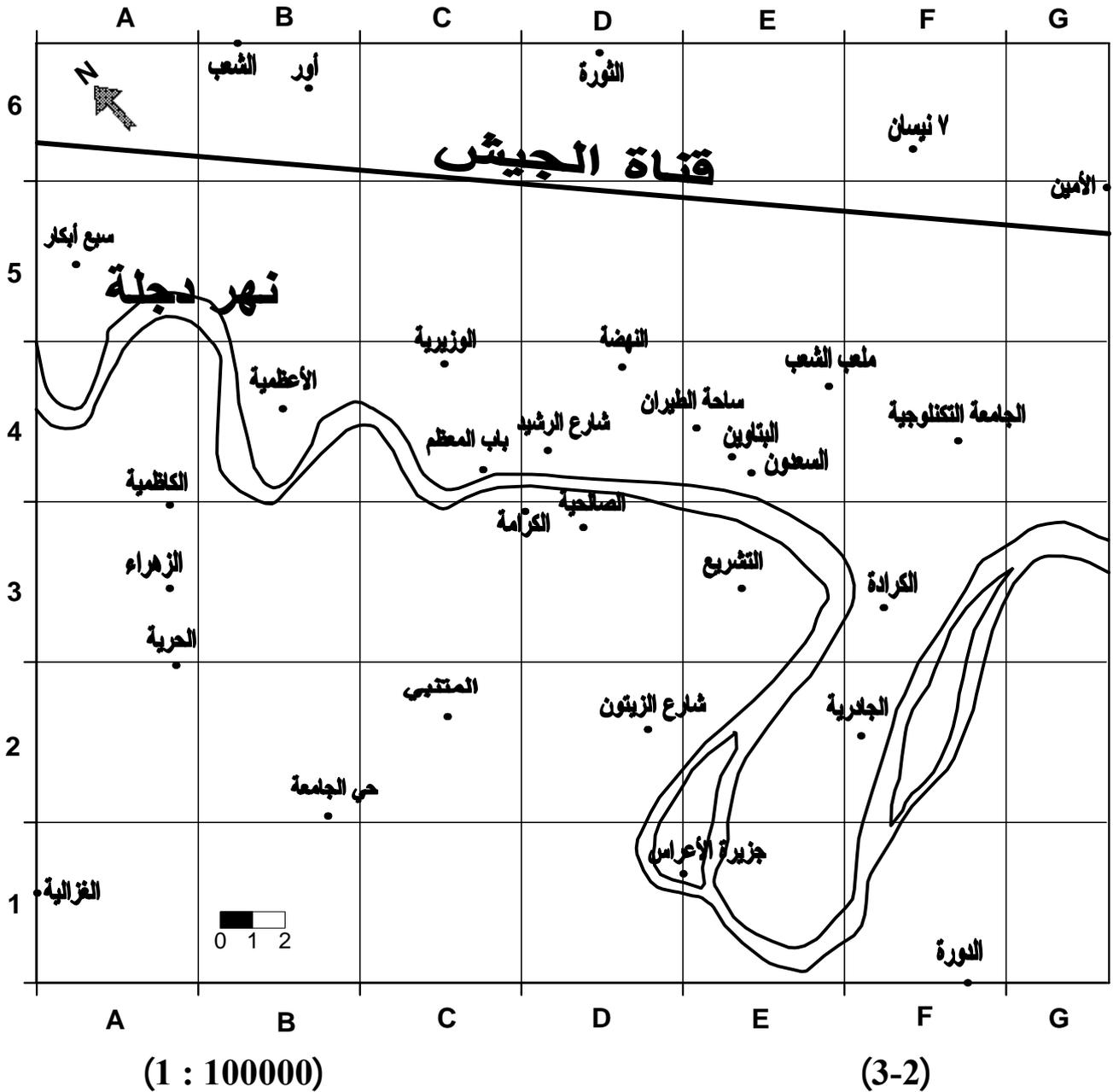
( 1-1 )

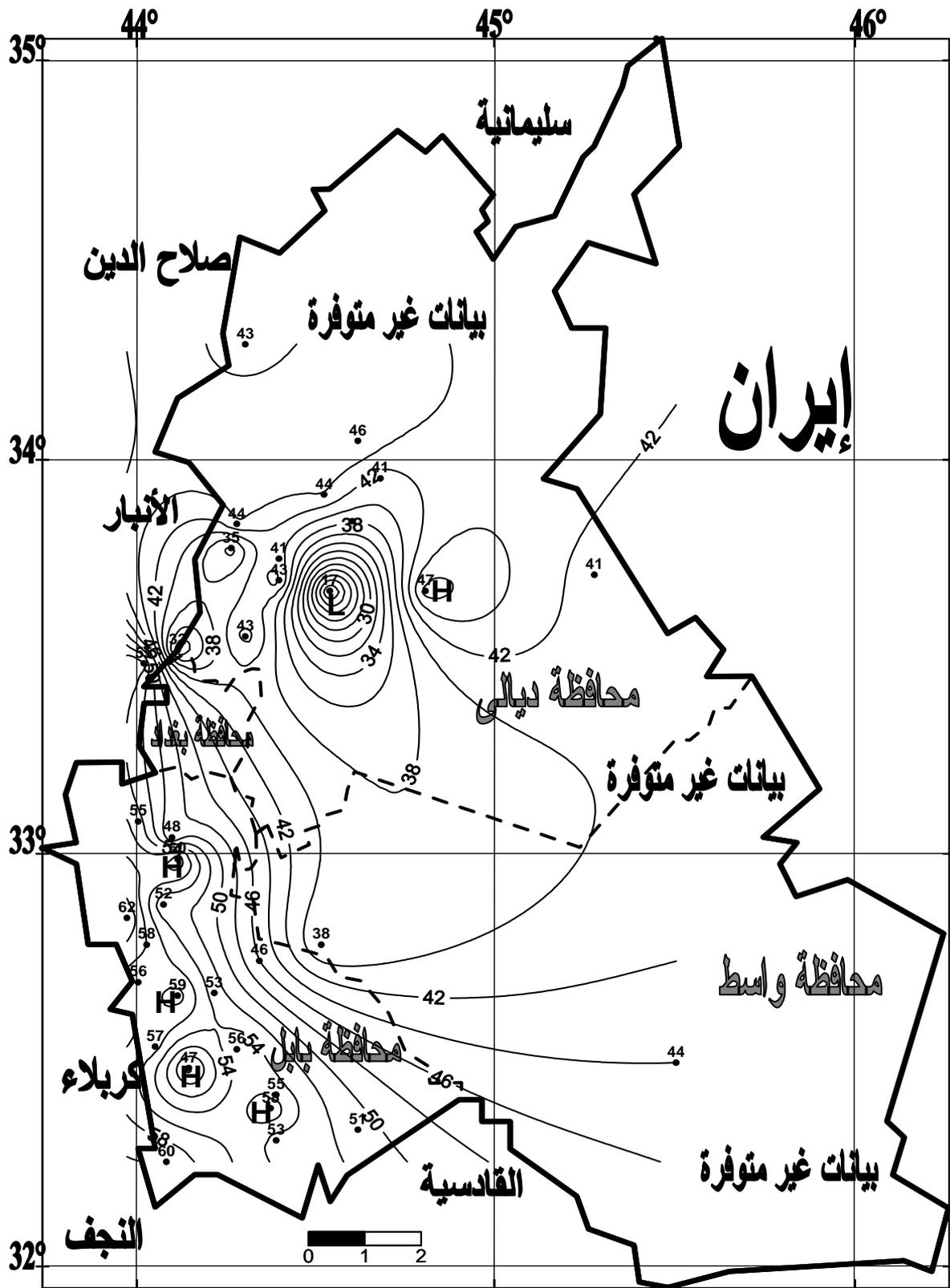
24	70	17	81	%		1
9	63	10	43	%		2
13.8	19	13.7	18.8	kN/m3		3
0.523	1.051	0.5	1.07	---		4
7	99	9	99	%		5
4	80	5	93			6
32	536	24	498	kN/m2		7
0.12	0.61	0.08	0.33	---		8
0.03	17.36	0.04	12.3	%		9
0.12	7.7	0.03	7.55	%		10
0.8	6.43	---	---	m		11



الشكل (3-1) خارطة المنطقة الوسطى ((بغداد ، ديالى ، بابل ، واسط)) الإدارية

((1 : 1500000))



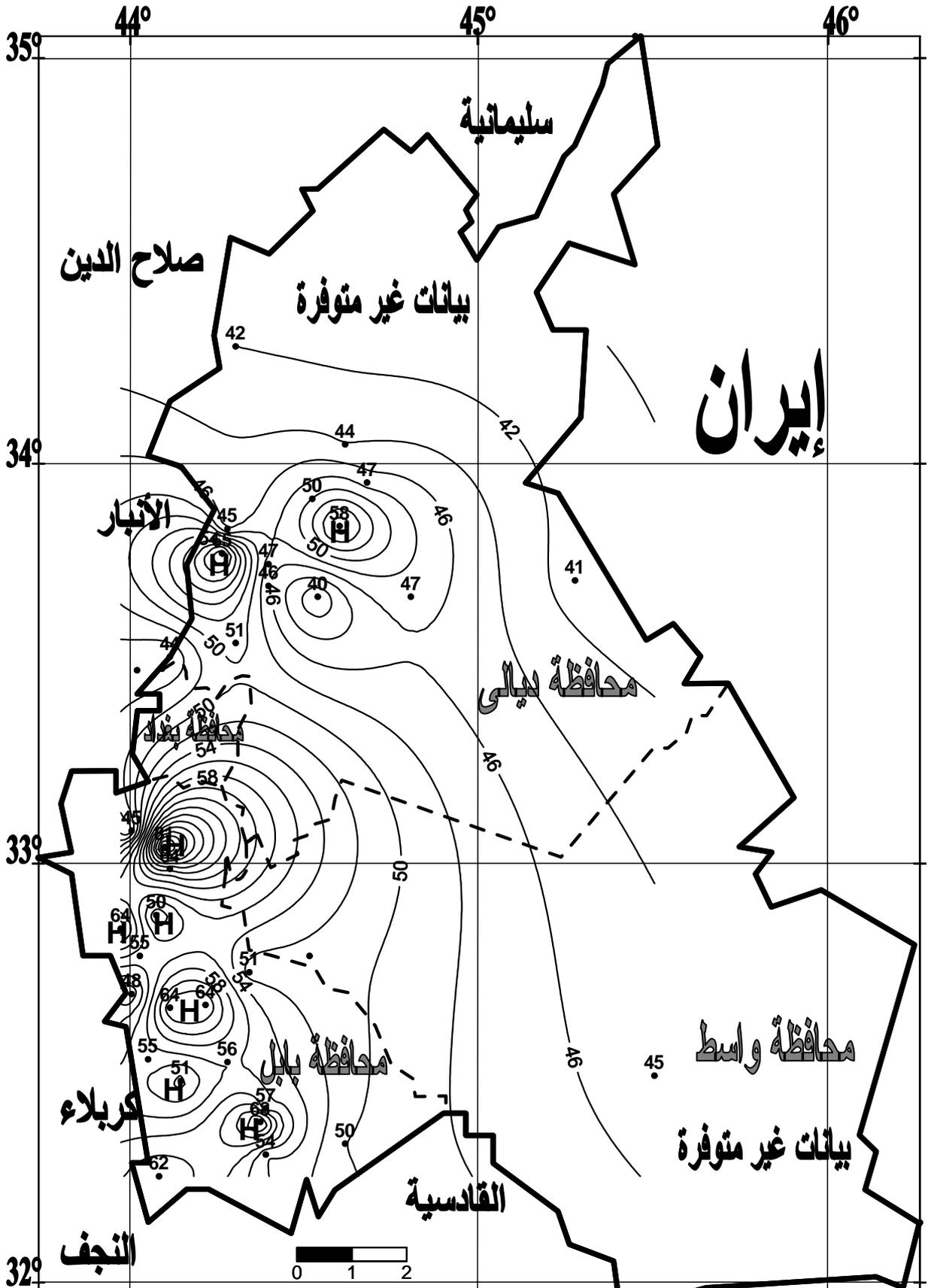


(7 m)

(2 %)

(N.G.L)

(LL<sub>7-4</sub>)



(11 m)

(2 %)

(N.G.L)

(LL<sub>11-6</sub>)



