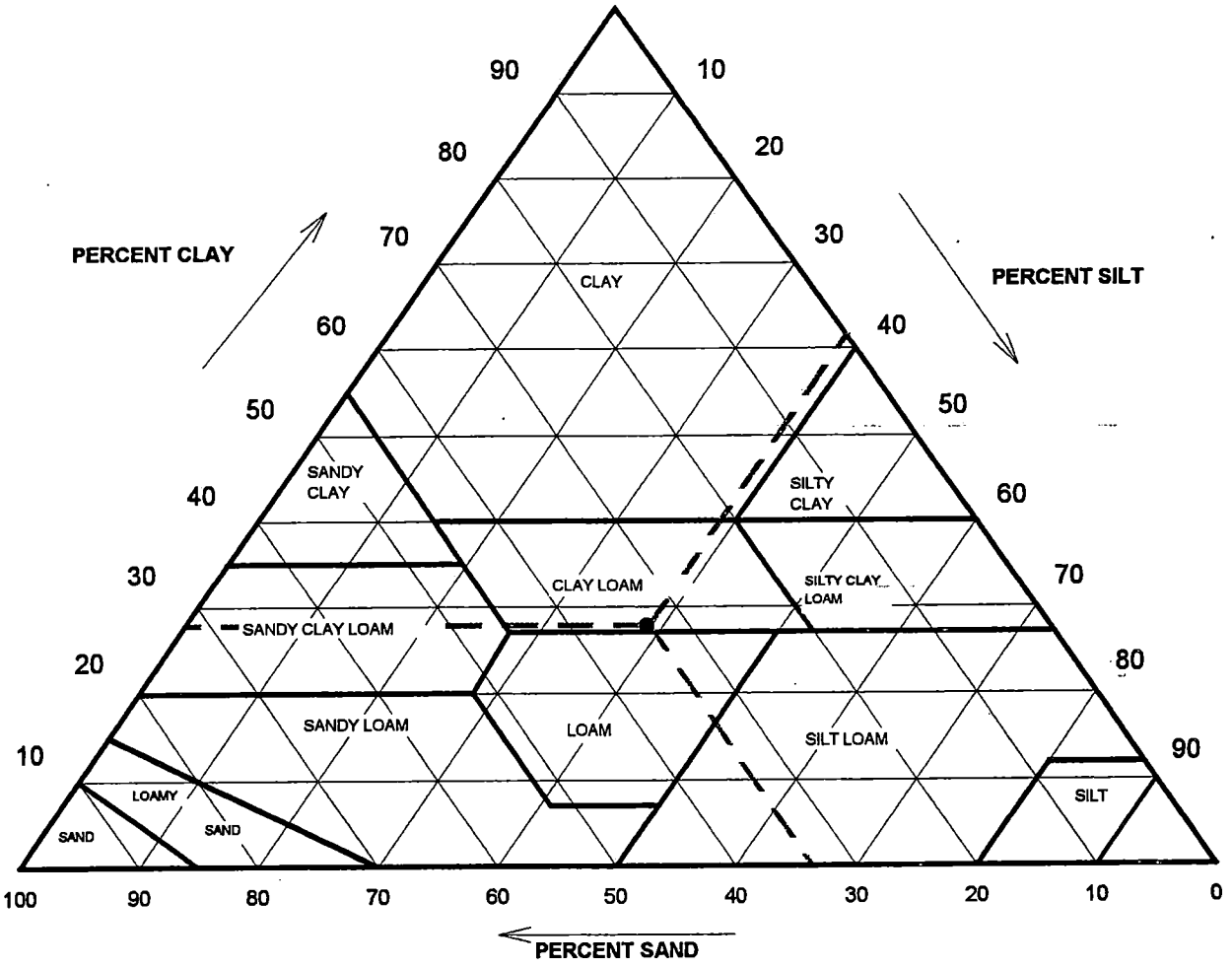
DCN: DS-S3A
DATE: 11/12/96
REVISION: 1

geotechnics

USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.7-3.0 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB14-0103
Lab ID	97178-02.012	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	33.46
Silt	38.66
Clay	27.89
USDA Classification	***CLAY LOAM***

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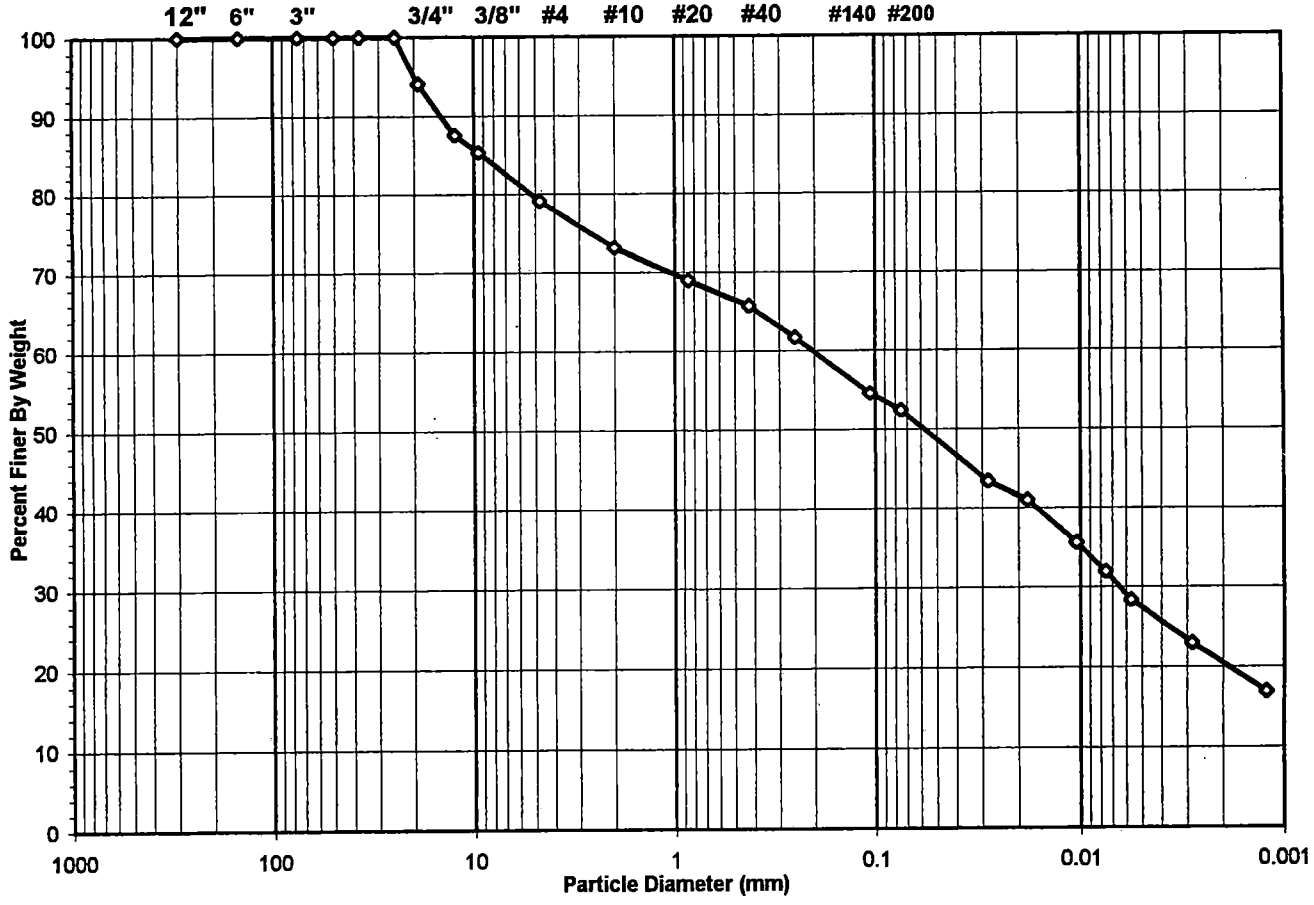
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.7-3.0 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB14-0103
Lab ID	97178-02.012	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	26.78	**0.00**
2	73.22	*Sand*	24.50	**33.46**
0.075	52.39	*Silt*	28.31	**38.66**
0.05	48.72	*Clay*	20.42	**27.89**
0.002	20.42			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY WITH GRAVEL***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.7-3.0 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB14-0103
Lab ID	97178-02.012	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	41.0	42.0	23.6	36.0	83.0	0.0279	**43.5**
5		40.0	23.6	34.0	78.4	0.0180	**41.0**
16		35.5	23.6	29.5	68.0	0.0104	**35.6**
32		32.5	23.6	26.5	61.1	0.0075	**32.0**
60		29.5	23	23.5	54.2	0.0056	**28.4**
250		25.0	22.7	19.0	43.8	0.0028	**22.9**
1440		20.0	24	14.0	32.3	0.0012	**16.9**

Soil Specimen Data		Corrections	
Tare No.	1620	K - Factor	0.01288
Tare + Dry Material (gm)	145.74	a - Factor	0.99
Weight of Tare (gm)	97.77	Composite Correction	5.99
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	52.39
Weight of Dry Material (gm)	42.97		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/4/97 Checked By JCM Date 8-12-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.7-3.0 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB14-0103
Lab ID	97178-02.012	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	860B	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	647.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	593.20	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	104.75	Weight of Tare (gm)	NA
Weight of Water (gm)	54.60	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	488.45	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**11.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	488.45
Dry Weight - 3/4" Sample (gm)	203.72	Weight of minus #200 material (gm)	255.90
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	232.55
Dry Weight + 3/4" Sample (gm)	28.83		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	28.83	5.90	5.90	94.10	**94.10**
1/2"	12.5	32.11	6.57	12.48	87.52	**87.52**
3/8"	9.50	10.51	2.15	14.63	85.37	**85.37**
#4	4.75	30.39	6.22	20.85	79.15	**79.15**
#10	2.00	28.96	5.93	26.78	73.22	**73.22**
#20	0.85	21.13	4.33	31.10	68.90	**68.90**
#40	0.425	15.76	3.23	34.33	65.67	**65.67**
#60	0.250	19.13	3.92	38.25	61.75	**61.75**
#140	0.106	34.87	7.14	45.39	54.61	**54.61**
#200	0.075	10.86	2.22	47.61	52.39	**52.39**
Pan	-	255.90	52.39	100.00	-	-

Tested By TO Date 8/4/97 Checked By Jam Date 8-12-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 8-4-97
Client Project	BAYER 51249	Checked By	JCM 8-25-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	0.70
Depth Pushed	1.0-3.0		
Shelby Tube No.	SM010-TB14-0103		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
1.00					
1.50					
2.00					
2.50		2		BROWN SANDY LEAN CLAY WITH GRAVEL	WATER CONTENT UNIT WGT
3.00		1			GRAIN SIZE HYDROMETER

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number		2000			
Wt. Tare & WS(gm.)		374.52			
Wt. Tare & DS(gm.)		339.57			
Wt. Tare(gm.)		8.13			
Moisture Content(%)		10.5			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	610.63
Wt. Of Tube(gms.)	177.65
Wt. Of WS.(gms.)	432.98
Length 1 (in.)	2.424
Length 2 (in.)	2.404
Length 3 (in.)	2.396
Top Diameter (in.)	2.879
Middle Diameter (in.)	2.896
Bottom Diameter (in.)	2.812
Sample Volume (cc)	253.81
Moisture Content(%)	10.54
Unit Wet Wt.(gms/cc)	1.71
Unit Wet Wt.(pcf.)	106.5
Unit Dry Wt.(pcf.)	96.3
Unit Dry Wt.(gms/cc)	1.54

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	7.5-7.8				
Sample No.	SM010-TB11-0608				
Visual Description	GRAY CLAY AND FINE SAND				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.35
Sample Diameter (cm.)	7.27
Sample Area (cm.^2), A	41.51
Inflow Burette Area, (cm.^2), a-in	4.44
Outflow Burette Area, (cm.^2), a-out	4.43
B Parameter	95%

AVERAGE PERMEABILITY = 3.9E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.9E-09 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-28-97	20	45	0.0	0.0	0.0	188.9	0	23.0	NA
07-29-97	7	25	10.7	17.3	16.1	181.4	0	23.0	4.9E-07
07-29-97	18	50	22.1	32.2	30.7	174.7	0	22.5	4.3E-07
07-30-97	7	15	34.5	46.6	44.9	168.3	0	23.5	3.9E-07
07-30-97	20	0	47.3	60.1	58.0	162.3	0	23.0	3.7E-07
07-31-97	7	10	58.4	72.1	69.3	157.0	1	23.0	3.8E-07
07-31-97	7	15	58.4	72.1	69.3	200.7	0	23.0	NA
07-31-97	20	20	71.5	90.8	88.8	192.0	0	22.5	4.4E-07

PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	7.5-7.8	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB11-0608				

Visual Description GRAY CLAY AND FINE SAND

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1911	781
Wt. Tare & WS(gm.)	234.98	517.90
Wt. Tare & DS(gm.)	200.66	443.90
Wt. Water(gm.)	34.32	74.00
Wt. Tare(gm.)	43.96	85.34
Wt. DS(gm.)	156.70	358.56
Moisture Content(%)	21.9	20.6

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1076.40	NA
Wt. Of Tube(gms.)	287.80	NA
Wt. Of WS.(gms.)	788.60	780.4
Length 1 (in.)	3.861	3.732
Length 2 (in.)	3.843	3.667
Length 3 (in.)	3.843	3.644
Top Diameter (in.)	2.901	2.860
Middle Diameter (in.)	2.884	2.858
Bottom Diameter (in.)	2.863	2.869
Average Length (in)	3.85	3.68
Average Area (in^2)	6.53	6.43
Sample Volume(cc.)	411.65	388.15
Unit Wet Wt.(gms/cc)	1.92	2.01
Unit Wet Wt.(pcf.)	119.5	125.5
Unit Dry Wt.(pcf.)	98.1	104.0
Unit Dry Wt.(gms/cc)	1.57	1.67
Void Ratio,e	0.72	0.62
Porosity, n	0.42	0.38
Pore Volume(cm^3)	172.1	148.5

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PERMEABILITY TEST

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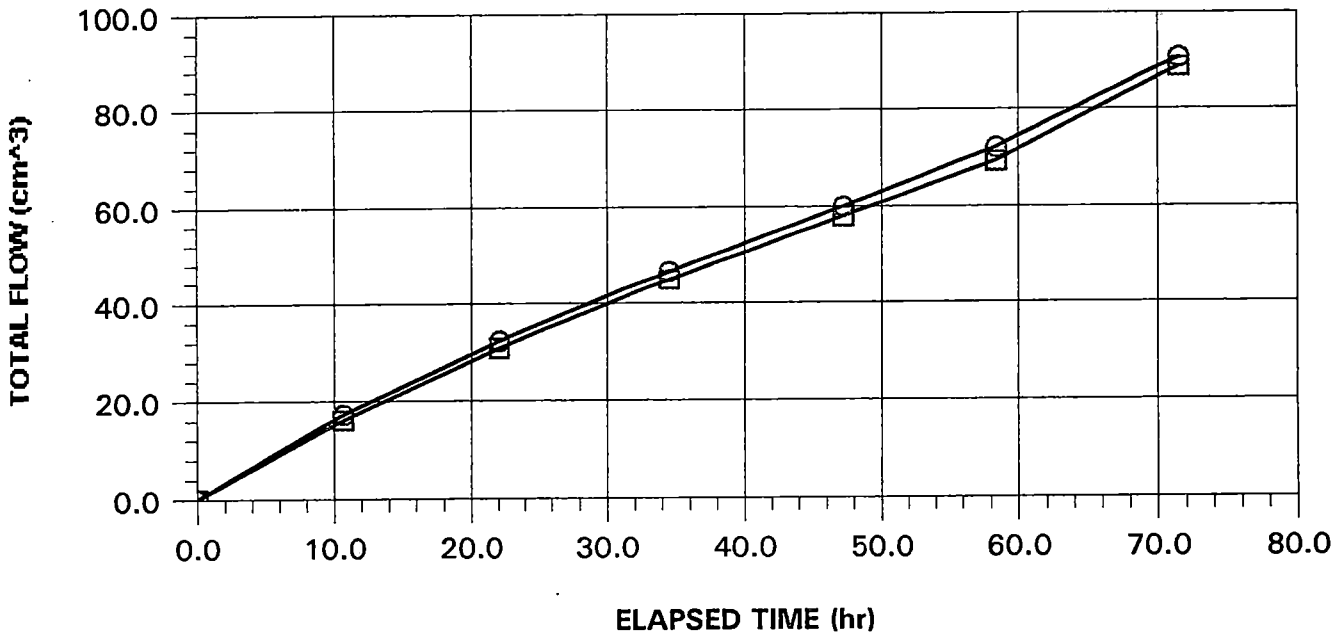
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	7.5-7.8
Project No.	97178-02	Sample No.	SM010-TB11-0608

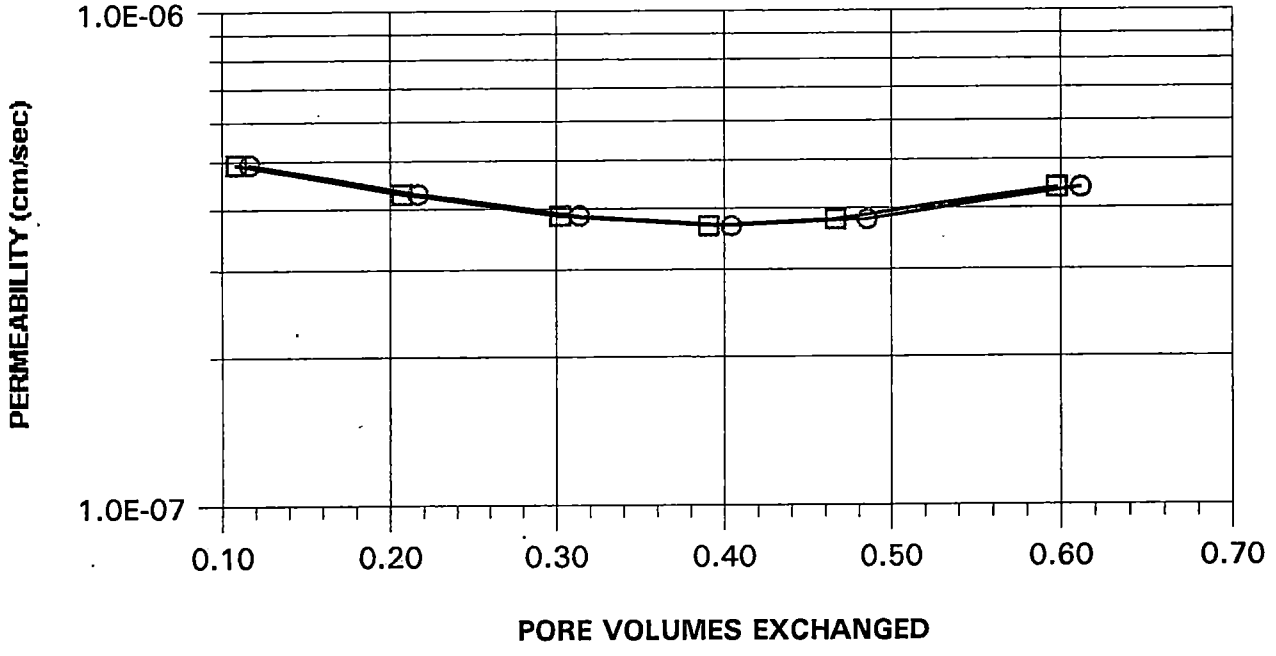
AVERAGE PERMEABILITY = 3.9E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.9E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



INFLOW
OUTFLOW

PORE VOLUMES EXCHANGED vs. PERMEABILITY



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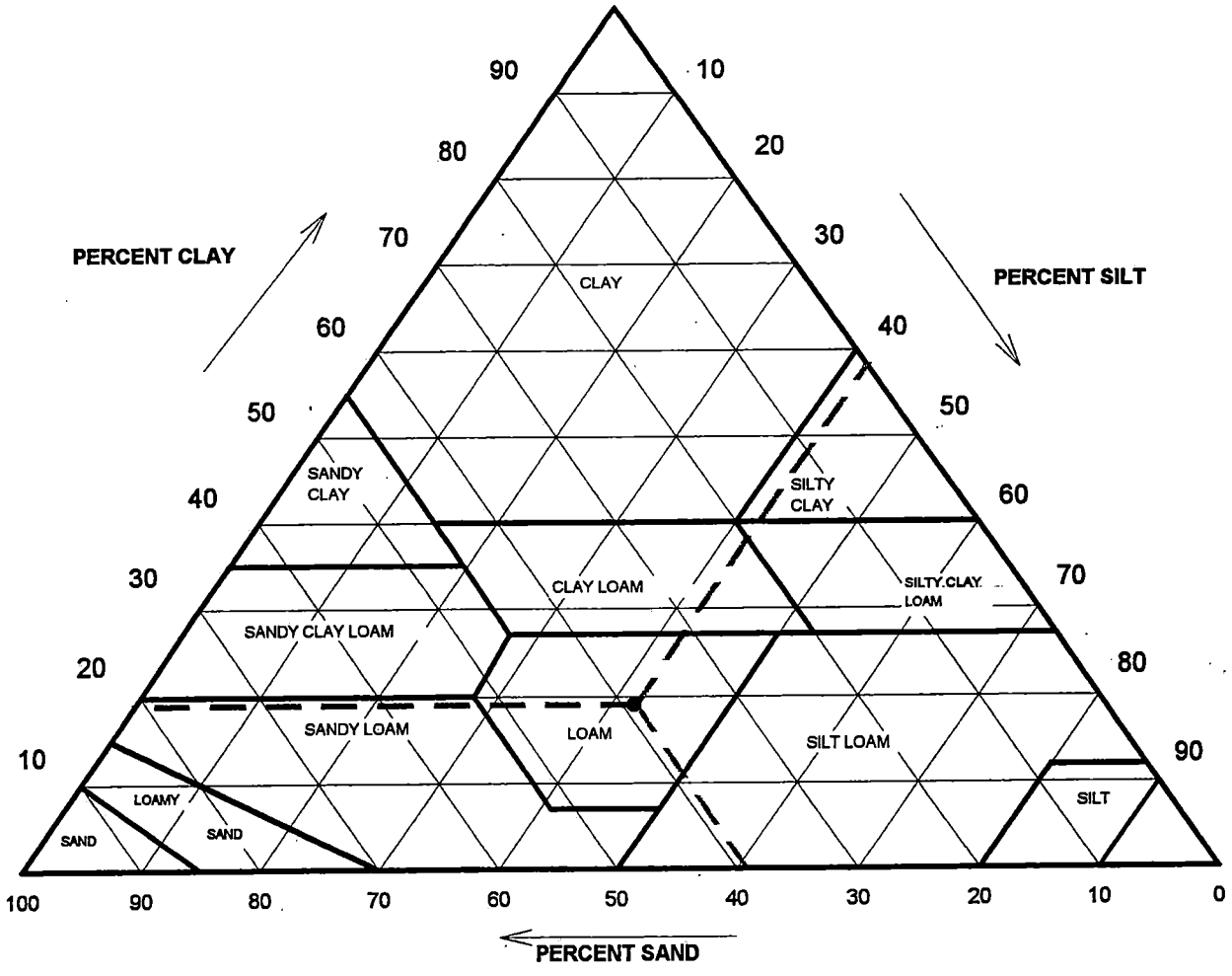
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	7.0-7.5
Project No.	97178-02	Sample No.	SM0010-TB11-0608
Lab ID	97178-02.011	Soil Color	GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	39.01
Silt	41.94
Clay	19.05
USDA Classification	***LOAM***

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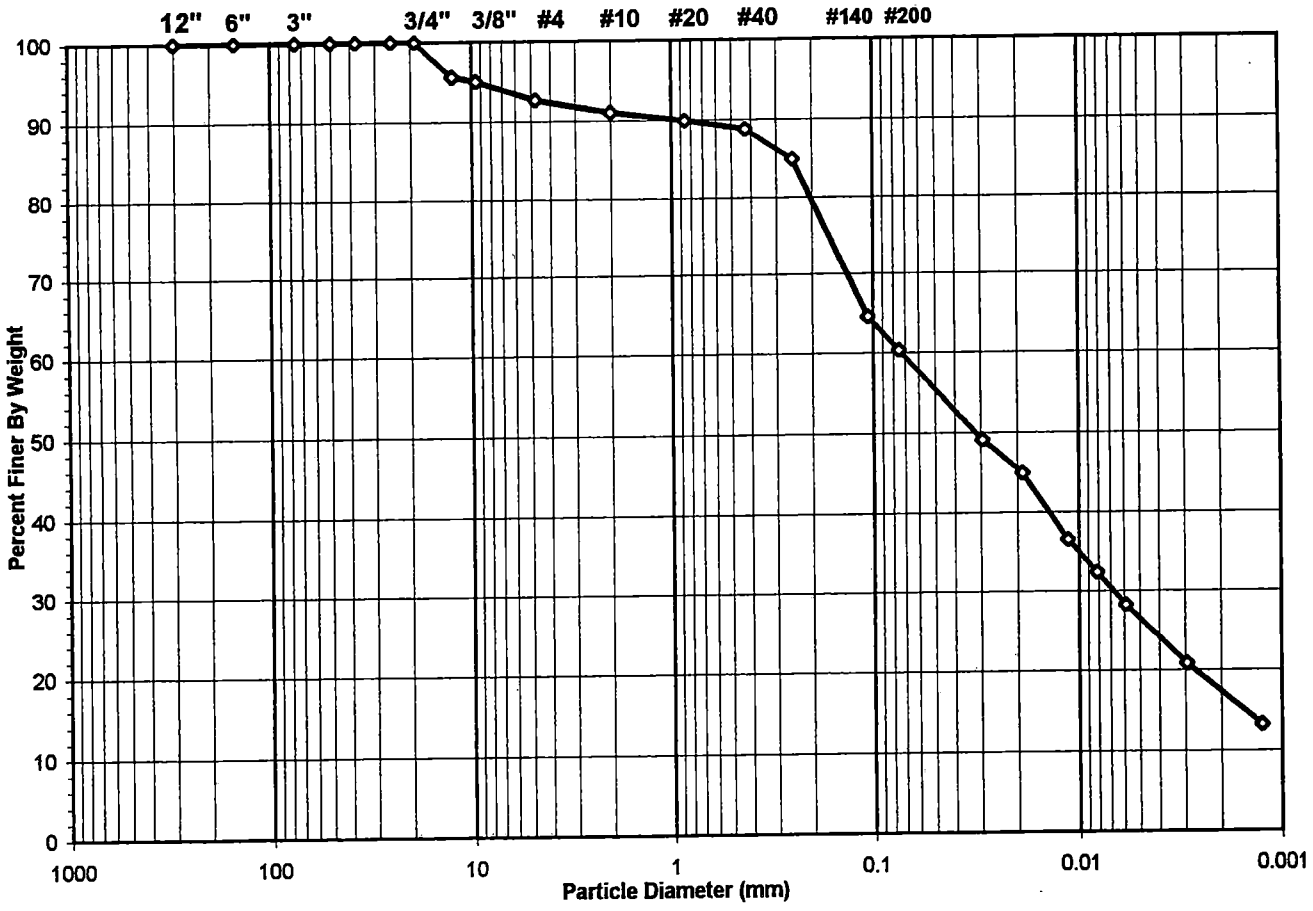
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	7.0-7.5
Project No.	97178-02	Sample No.	SM0010-TB11-0608
Lab ID	97178-02.011	Soil Color	GRAY

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	9.01	**0.00**
2	90.99	*Sand*	35.49	**39.01**
0.075	60.34	*Silt*	38.16	**41.94**
0.05	55.49	*Clay*	17.33	**19.05**
0.002	17.33			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	7.0-7.5
Project No.	97178-02	Sample No.	SM0010-TB11-0608
Lab ID	97178-02.011	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	34.5	35.0	24.5	29.4	81.4	0.0293	**49.1**
5		32.5	24.5	26.9	74.5	0.0189	**44.9**
15		27.5	24.5	21.9	60.6	0.0113	**36.6**
30		25.0	24.5	19.4	53.7	0.0081	**32.4**
60		22.5	23.6	16.9	46.8	0.0058	**28.3**
250		18.0	22.7	12.4	34.4	0.0029	**20.8**
1440		13.5	23.5	7.9	22.0	0.0013	**13.3**

Soil Specimen Data		**Corrections**	
Tare No.	1654	K - Factor	0.01275
Tare + Dry Material (gm)	135.6	a - Factor	0.99
Weight of Tare (gm)	94.77	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	60.34
Weight of Dry Material (gm)	35.83		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/1/97 Checked By LB Date 8-7-97

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DCN: DS-S3A
DATE: 11/12/96
REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	7.0-7.5
Project No.	97178-02	Sample No.	SM0010-TB11-0608
Lab ID	97178-02.011	Soil Color	GRAY

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1706	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	854.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	712.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.34	Weight of Tare (gm)	NA
Weight of Water (gm)	141.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	629.56	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**22.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	629.56
Dry Weight - 3/4" Sample (gm)	249.66	Weight of minus #200 material (gm)	379.90
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	249.66
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	27.60	4.38	4.38	95.62	**95.62**
3/8"	9.50	3.71	0.59	4.97	95.03	**95.03**
#4	4.75	14.86	2.36	7.33	92.67	**92.67**
#10	2.00	10.56	1.68	9.01	90.99	**90.99**
#20	0.85	7.00	1.11	10.12	89.88	**89.88**
#40	0.425	7.03	1.12	11.24	88.76	**88.76**
#60	0.250	24.57	3.90	15.14	84.86	**84.86**
#140	0.106	127.90	20.32	35.46	64.54	**64.54**
#200	0.075	26.43	4.20	39.66	60.34	**60.34**
Pan	-	379.90	60.34	100.00	-	-

Tested By JCM Date 7/28/97 Checked By LB Date 8-7-97

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SHELBY TUBE UNIT WEIGHT

geotechnics

Client	ICF KAISER	Tested By	JCM 7-28-97
Client Project	BAYER 51249	Checked By	JMC 8/22/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.40
Depth Pushed	6.0-8.0		
Shelby Tube No.	SM010-TB11-0608		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
6.00					
6.50					
7.00					GRAIN SIZE HYDROMETER
		3		GRAY SANDY LEAN CLAY	
7.50					PERMEABILITY
		2			
		1			WATER CONTENT
8.00					

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1911		1706		
Wt. Tare & WS(gm.)	234.98		854.30		
Wt. Tare & DS(gm.)	200.66		712.90		
Wt. Tare(gm.)	43.96		83.34		
Moisture Content(%)	21.9		22.5		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1076.40	1603.80
Wt. Of Tube(gms.)	287.80	444.30
Wt. Of WS.(gms.)	788.60	1159.50
Length 1 (in.)	3.861	5.955
Length 2 (in.)	3.843	5.951
Length 3 (in.)	3.844	5.950
Top Diameter (in.)	2.901	2.883
Middle Diameter (in.)	2.884	2.892
Bottom Diameter (in.)	2.863	2.883
Sample Volume (cc)	411.69	638.04
Moisture Content(%)	21.90	22.46
Unit Wet Wt.(gms/cc)	1.92	1.82
Unit Wet Wt.(pcf.)	119.5	113.4
Unit Dry Wt.(pcf.)	98.1	92.6
Unit Dry Wt.(gms/cc)	1.57	1.48

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	3.9-4.3				
Sample No.	SM010-TB11-0305				
Visual Description	GRAY SANDY CLAY AND ROCK FRAGMENTS				

Pressure Heads (Constant.)		Final Sample Dimensions	
Top Cap (psi)	87.5	Sample Length (cm.), L	8.93
Bottom Cap (psi)	90.0	Sample Diameter (cm.)	7.24
Cell (psi)	95.0	Sample Area (cm.^2), A	41.15
Total Pressure Head (cm)	175.8	Inflow Burette Area, (cm.^2), a-in	4.52
		Outflow Burette Area, (cm.^2), a-out	4.48
		B Parameter	95%

AVERAGE PERMEABILITY = 8.2E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 8.2E-07 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-31-97	18	33	0.0	0.0	0.0	199.8	0	22.5	NA
07-31-97	18	37	0.1	18.2	18.5	191.7	0	22.5	8.0E-05
07-31-97	18	42	0.1	40.6	40.9	181.7	0	22.5	8.2E-05
07-31-97	18	49	0.3	74.4	74.3	166.8	0	22.5	9.4E-05
07-31-97	18	54	0.3	97.8	97.8	156.4	0	22.5	9.9E-05
07-31-97	18	58	0.4	116.0	115.2	148.5	1	22.5	1.0E-04
08-01-97	7	30	0.4	116.0	115.2	195.5	0	23.0	NA
08-01-97	7	34	0.5	135.3	134.2	187.0	0	23.0	8.4E-05
08-01-97	7	39	0.6	157.6	157.1	177.0	0	23.0	8.4E-05
08-01-97	7	44	0.6	179.0	178.1	167.6	0	23.0	8.3E-05
08-01-97	7	48	0.7	195.1	194.1	160.5	0	23.0	8.2E-05
08-01-97	7	52	0.8	210.2	209.0	153.8	1	23.0	8.1E-05

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	3.9-4.3	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB11-0305				

Visual Description GRAY SANDY CLAY AND ROCK FRAGMENTS

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1307	1122
Wt. Tare & WS(gm.)	313.86	257.82
Wt. Tare & DS(gm.)	284.38	234.77
Wt. Water(gm.)	29.48	23.05
Wt. Tare(gm.)	102.79	84.72
Wt. DS(gm.)	181.59	150.05
Moisture Content(%)	16.2	15.4

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	973.90	NA
Wt. Of Tube(gms.)	275.11	NA
Wt. Of WS.(gms.)	698.79	693.5
Length 1 (in.)	3.629	3.523
Length 2 (in.)	3.633	3.448
Length 3 (in.)	3.641	3.575
Top Diameter (in.)	2.876	2.847
Middle Diameter (in.)	2.875	2.846
Bottom Diameter (in.)	2.877	2.856
Average Length (in)	3.63	3.52
Average Area (in^2)	6.50	6.38
Sample Volume(cc.)	386.90	367.41
Unit Wet Wt.(gms/cc)	1.81	1.89
Unit Wet Wt.(pcf.)	112.7	117.8
Unit Dry Wt.(pcf.)	97.0	102.1
Unit Dry Wt.(gms/cc)	1.55	1.64
Void Ratio,e	0.74	0.65
Porosity, n	0.42	0.39
Pore Volume(cm^3)	164.2	144.7

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PERMEABILITY TEST

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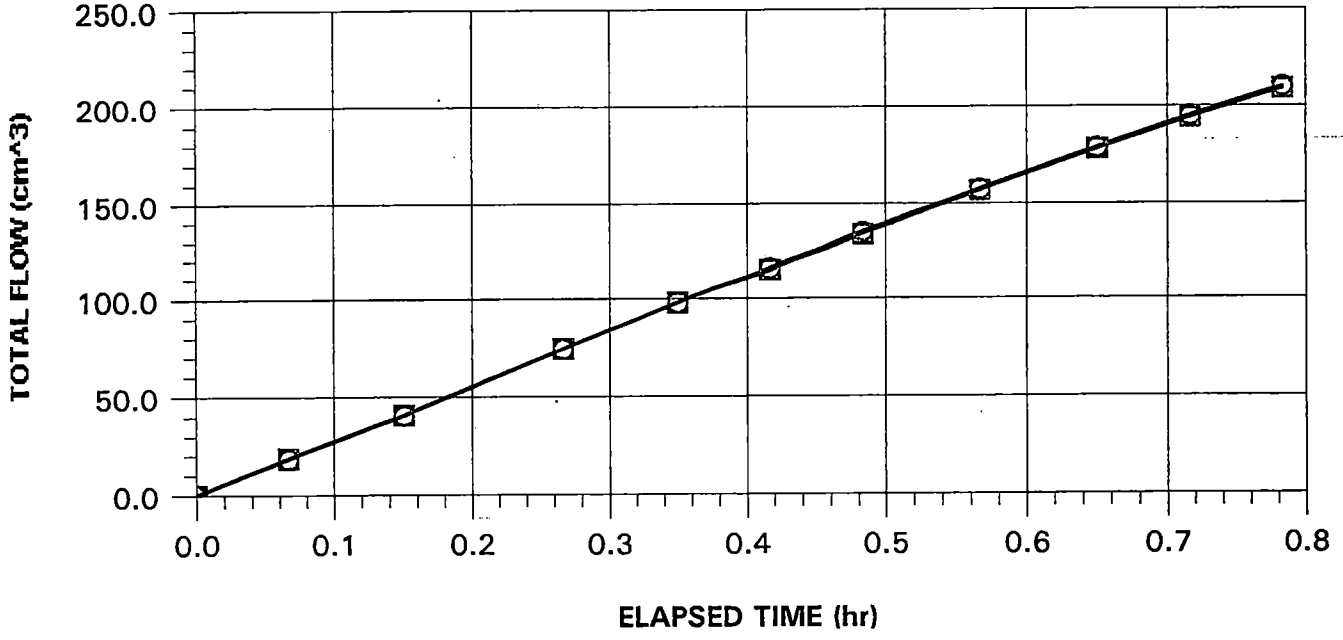
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	3.9-4.3
Project No.	97178-02	Sample No.	SM010-TB11-0305

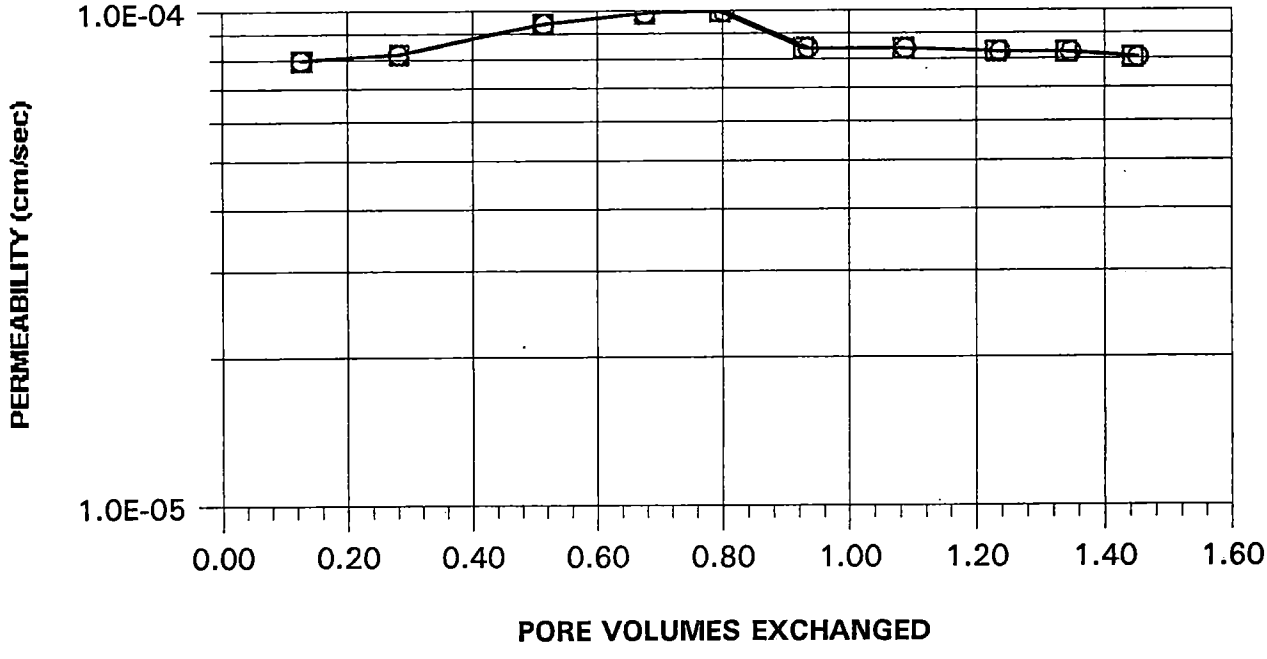
AVERAGE PERMEABILITY = 8.2E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 8.2E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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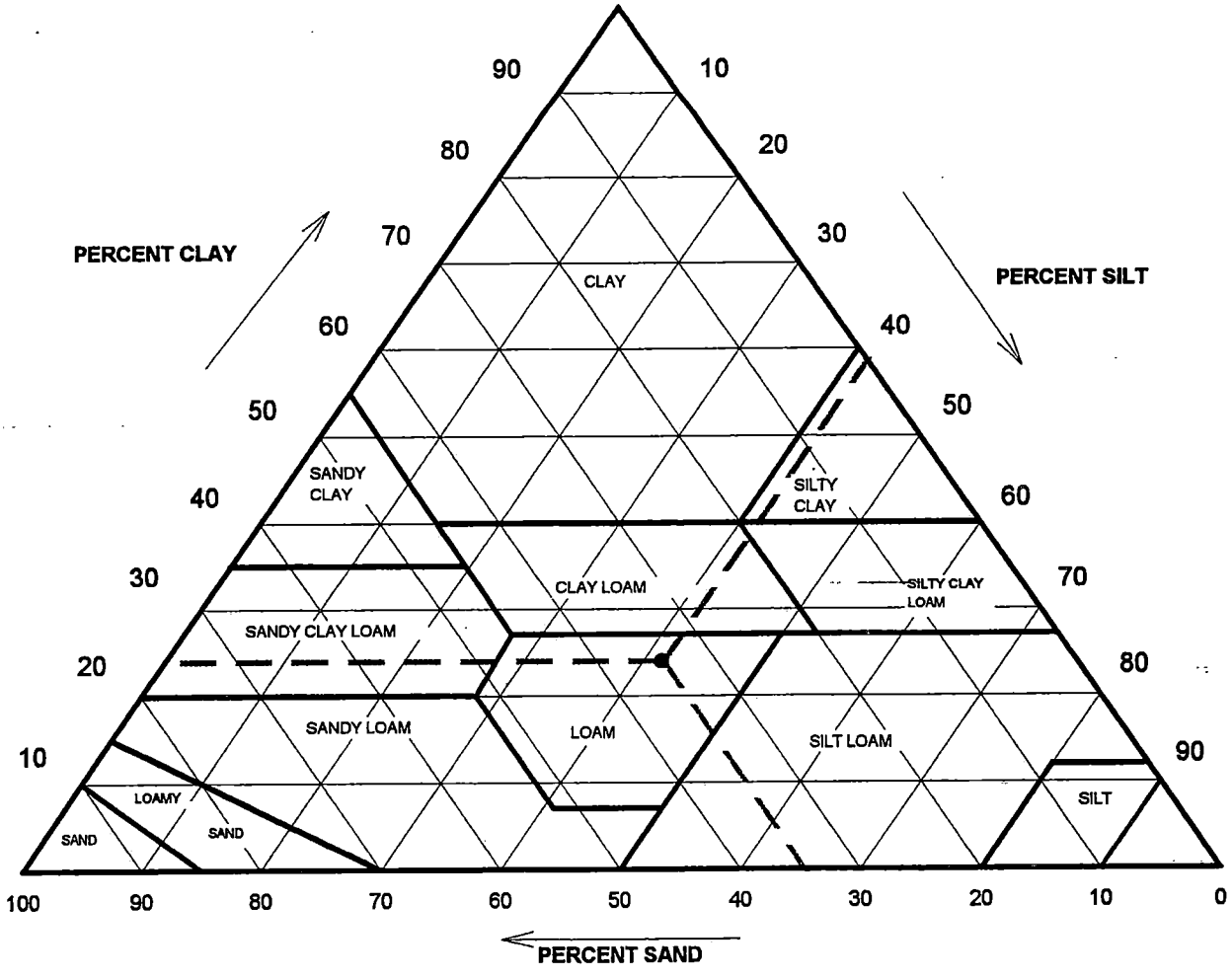
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.5
Project No.	97178-02	Sample No.	SM0010-TB11-0305
Lab ID	97178-02.010	Soil Color	GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	34.52
Silt	41.56
Clay	23.92
USDA Classification	***LOAM***

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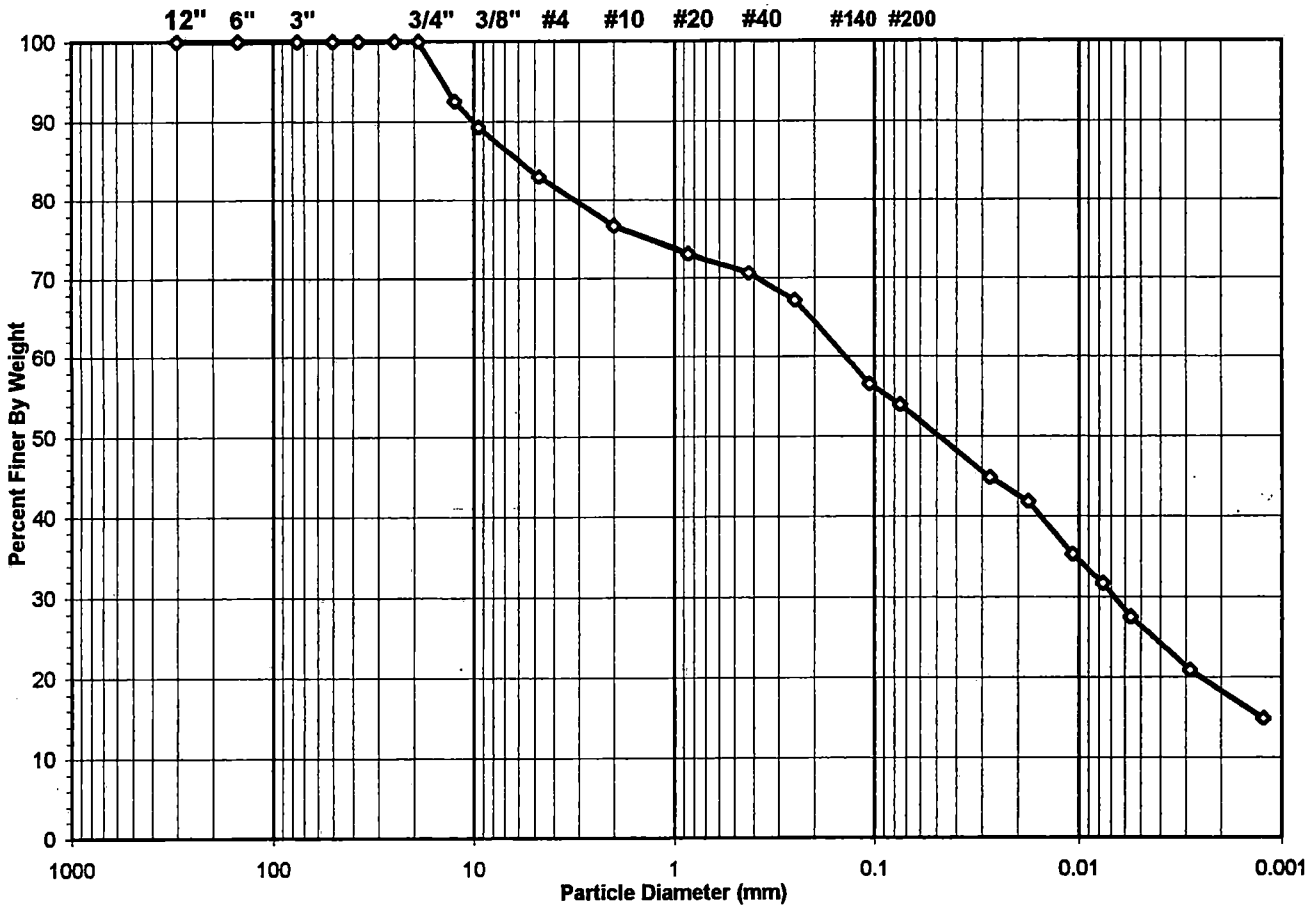
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.5
Project No.	97178-02	Sample No.	SM0010-TB11-0305
Lab ID	97178-02.010	Soil Color	GRAY

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	23.18	**0.00**
2	76.82	*Sand*	26.52	**34.52**
0.075	53.98	*Silt*	31.93	**41.56**
0.05	50.30	*Clay*	18.37	**23.92**
0.002	18.37			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY WITH GRAVEL***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.5
Project No.	97178-02	Sample No.	SM0010-TB11-0305
Lab ID	97178-02.010	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	39.0	43.0	24.5	37.4	83.1	0.0274	**44.8**
5		40.5	24.5	34.9	77.5	0.0177	**41.9**
15		35.0	24.5	29.4	65.3	0.0107	**35.3**
31		32.0	24.5	26.4	58.7	0.0076	**31.7**
60		28.5	23.6	22.9	50.9	0.0056	**27.5**
250		23.0	22.7	17.4	38.7	0.0029	**20.9**
1440		18.0	23.5	12.4	27.6	0.0012	**14.9**

Soil Specimen Data		Corrections	
Tare No.	1623	K - Factor	0.01275
Tare + Dry Material (gm)	147.74	a - Factor	0.99
Weight of Tare (gm)	98.12	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	53.98
Weight of Dry Material (gm)	44.62		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/1/97 Checked By LB Date 8-7-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.5
Project No.	97178-02	Sample No.	SM0010-TB11-0305
Lab ID	97178-02.010	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1729	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	672.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	588.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	81.85	Weight of Tare (gm)	NA
Weight of Water (gm)	83.60	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	507.05	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**16.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	507.05
Dry Weight - 3/4" Sample (gm)	233.36	Weight of minus #200 material (gm)	273.69
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	233.36
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	38.25	7.54	7.54	92.46	**92.46**
3/8"	9.50	16.36	3.23	10.77	89.23	**89.23**
#4	4.75	31.81	6.27	17.04	82.96	**82.96**
#10	2.00	31.13	6.14	23.18	76.82	**76.82**
#20	0.85	18.23	3.60	26.78	73.22	**73.22**
#40	0.425	13.28	2.62	29.40	70.60	**70.60**
#60	0.250	17.00	3.35	32.75	67.25	**67.25**
#140	0.106	54.30	10.71	43.46	56.54	**56.54**
#200	0.075	13.00	2.56	46.02	53.98	**53.98**
Pan	-	273.69	53.98	100.00	-	-

Tested By JCM Date 7/28/97 Checked By LB Date 8-7-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-28-97
Client Project	BAYER 51249	Checked By	JMO 9-5-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.40
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM010-TB11-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					
		3			PERMEABILITY UNIT WGT. WC GRAIN SIZE HYDROMETER
4.50		2		GRAY SANDY LEAN CLAY WITH GRAVEL	WC
5.00		1			

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1307			1729	
Wt. Tare & WS(gm.)	313.86			672.50	
Wt. Tare & DS(gm.)	284.38			588.90	
Wt. Tare(gm.)	102.79			81.85	
Moisture Content(%)	16.2			16.5	

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	973.90	1098.10
Wt. Of Tube(gms.)	275.11	281.42
Wt. Of WS.(gms.)	698.79	816.68
Length 1 (in.)	3.629	3.760
Length 2 (in.)	3.633	3.706
Length 3 (in.)	3.641	3.695
Top Diameter (in.)	2.876	2.880
Middle Diameter (in.)	2.875	2.860
Bottom Diameter (in.)	2.877	2.917
Sample Volume (cc)	386.90	398.72
Moisture Content(%)	16.49	16.49
Unit Wet Wt.(gms/cc)	1.81	2.05
Unit Wet Wt.(pcf.)	112.7	127.8
Unit Dry Wt.(pcf.)	96.8	109.7
Unit Dry Wt.(gms/cc)	1.55	1.76

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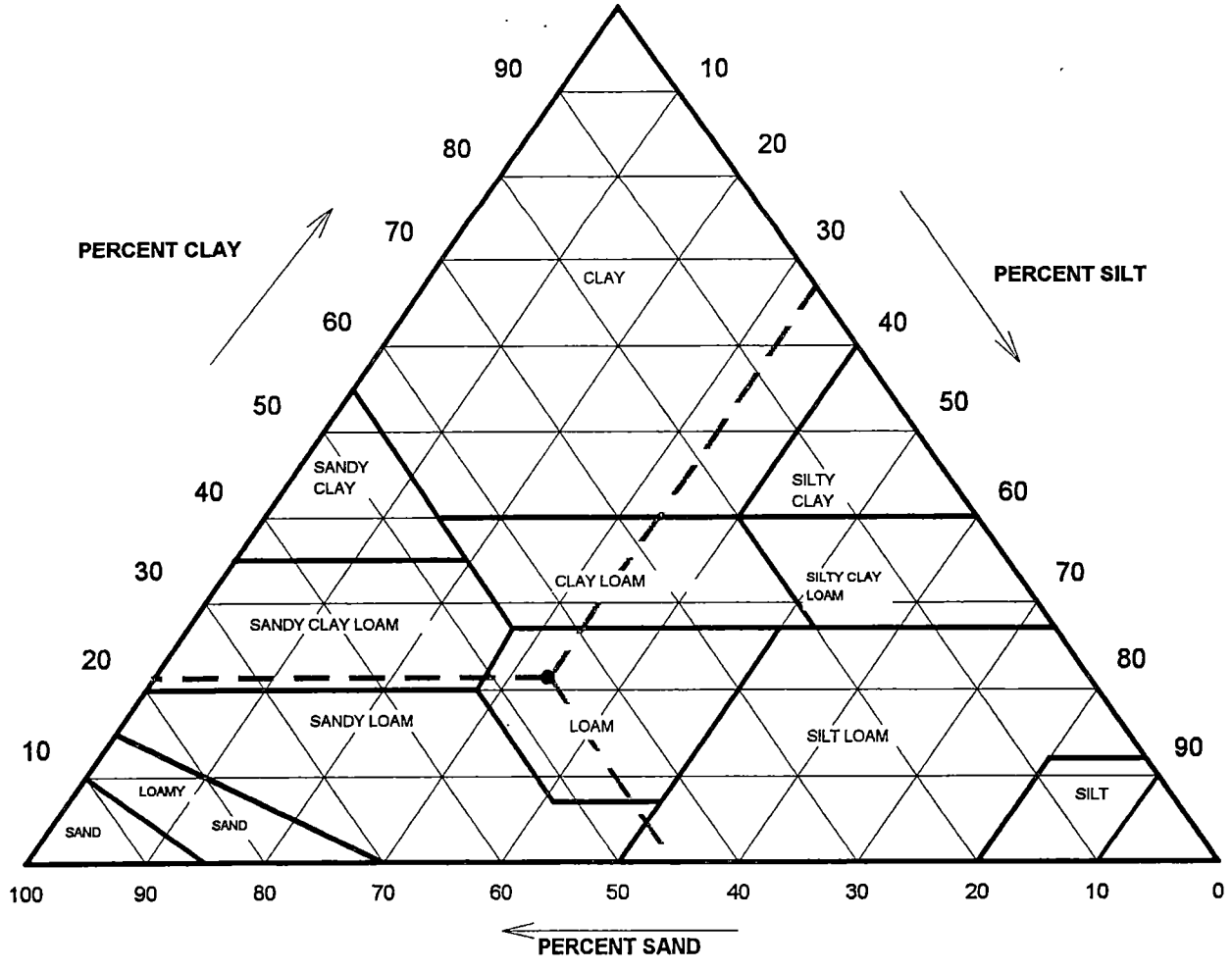
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB11-0103
Lab ID	97178-02.009	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	45.30
Silt	33.31
Clay	21.39
USDA Classification	***LOAM***

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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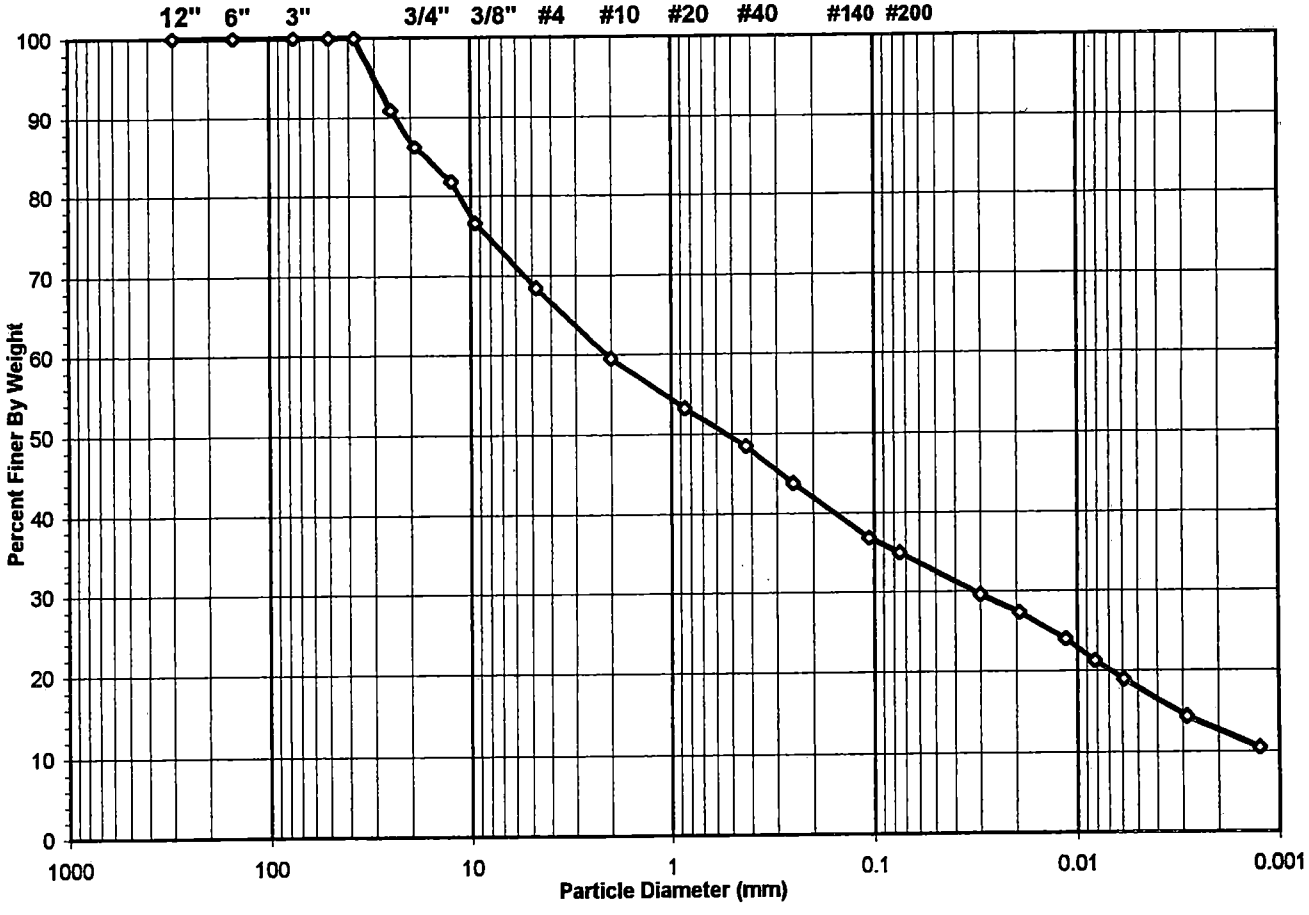
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB11-0103
Lab ID	97178-02.009	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	40.43	**0.00**
2	59.57	*Sand*	26.99	**45.30**
0.075	34.96	*Silt*	19.84	**33.31**
0.05	32.59	*Clay*	12.74	**21.39**
0.002	12.74			

USDA Classification ***LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND WITH GRAVEL***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB11-0103
Lab ID	97178-02.009	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	32.0	32.0	24.3	26.4	84.7	0.0300	**29.6**
5		30.0	24.3	24.4	78.2	0.0193	**27.4**
15		27.0	24.3	21.4	68.6	0.0114	**24.0**
30		24.5	24.3	18.9	60.6	0.0082	**21.2**
60		22.5	23.1	16.9	54.1	0.0059	**18.9**
267		18.5	22.2	12.9	41.3	0.0028	**14.4**
1440		15.0	23.1	9.4	30.0	0.0013	**10.5**

Soil Specimen Data		**Corrections**	
Tare No.	1345	K - Factor	0.01278
Tare + Dry Material (gm)	139.66	a - Factor	0.99
Weight of Tare (gm)	103.85	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	34.96
Weight of Dry Material (gm)	30.81		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/4/97 Checked By LB Date 8-8-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB11-0103
Lab ID	97178-02.009	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1646	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	720.40	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	647.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	99.16	Weight of Tare (gm)	NA
Weight of Water (gm)	73.10	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	548.14	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**13.3**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	548.14
Dry Weight - 3/4" Sample (gm)	280.79	Weight of minus #200 material (gm)	191.63
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	356.51
Dry Weight + 3/4" Sample (gm)	75.72		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	49.69	9.07	9.07	90.93	**90.93**
3/4"	19.0	26.03	4.75	13.81	86.19	**86.19**
1/2"	12.5	24.06	4.39	18.20	81.80	**81.80**
3/8"	9.50	28.92	5.28	23.48	76.52	**76.52**
#4	4.75	44.31	8.08	31.56	68.44	**68.44**
#10	2.00	48.59	8.86	40.43	59.57	**59.57**
#20	0.85	34.93	6.37	46.80	53.20	**53.20**
#40	0.425	25.93	4.73	51.53	48.47	**48.47**
#60	0.250	25.86	4.72	56.25	43.75	**43.75**
#140	0.106	37.83	6.90	63.15	36.85	**36.85**
#200	0.075	10.36	1.89	65.04	34.96	**34.96**
Pan	-	191.63	34.96	100.00	-	-

Tested By TO Date 8/4/97 Checked By LB Date 8-8-97

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SHELBY TUBE UNIT WEIGHT

geotechnics

Client	ICF KAISER	Tested By	TO 8-4-97
Client Project	BAYER 51249	Checked By	JMO 8/22/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.20
Depth Pushed	.5-2.5		
Shelby Tube No.	SM010-TB11-0103		

SOIL PROFILE AND SAMPLING

	DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
0.50						
1.00						
1.50						
2.00			2		BROWN CLAYEY SAND WITH GRAVEL	WATER CONTENT UNIT WGT
2.50			1			GRAIN SIZE HYDROMETER

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number		2011			
Wt. Tare & WS(gm.)		449.70			
Wt. Tare & DS(gm.)		396.54			
Wt. Tare(gm.)		8.40			
Moisture Content(%)		13.7			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1022.60
Wt. Of Tube(gms.)	277.03
Wt. Of WS.(gms.)	745.57
Length 1 (in.)	3.684
Length 2 (in.)	3.659
Length 3 (in.)	3.663
Top Diameter (in.)	2.876
Middle Diameter (in.)	2.860
Bottom Diameter (in.)	2.907
Sample Volume (cc)	391.72
Moisture Content(%)	13.70
Unit Wet Wt.(gms/cc)	1.90
Unit Wet Wt.(pcf.)	118.8
Unit Dry Wt.(pcf.)	104.5
Unit Dry Wt.(gms/cc)	1.67

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	14.5 - 14.8				
Sample No.	SM010-TB08-1315				
Visual Description	GRAY CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	8.87
Sample Diameter (cm.)	7.26
Sample Area (cm.^2), A	41.44
Inflow Burette Area, (cm.^2), a-in	4.51
Outflow Burette Area, (cm.^2), a-out	4.60
B Parameter	99%

AVERAGE PERMEABILITY = 9.3E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 9.3E-10 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-28-97	20	45	0.0	0.0	0.0	193.0	0	23.0	NA
07-29-97	7	25	10.7	3.6	12.0	189.6	0	23.0	2.1E-07
07-29-97	18	50	22.1	7.2	18.7	187.3	0	22.5	1.3E-07
07-30-97	7	15	34.5	11.8	23.4	185.3	0	23.5	1.1E-07
07-30-97	20	0	47.3	15.4	27.6	183.6	0	23.0	9.1E-08
07-31-97	7	10	58.4	19.0	31.2	182.0	0	23.0	9.8E-08
07-31-97	20	20	71.6	23.1	34.8	180.3	0	22.5	9.1E-08
08-01-97	8	35	83.8	26.2	39.0	178.7	0	23.0	9.1E-08

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	14.5 - 14.8	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB08-1315				

Visual Description GRAY CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1280	783
Wt. Tare & WS(gm.)	264.59	807.20
Wt. Tare & DS(gm.)	212.30	655.97
Wt. Water(gm.)	52.29	151.23
Wt. Tare(gm.)	34.45	85.98
Wt. DS(gm.)	177.85	569.99
Moisture Content(%)	29.4	26.5

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	991.70	NA
Wt. Of Tube(gms.)	256.96	NA
Wt. Of WS.(gms.)	734.74	718.4
Length 1 (in.)	3.429	3.488
Length 2 (in.)	3.464	3.488
Length 3 (in.)	3.447	3.499
Top Diameter (in.)	2.892	2.861
Middle Diameter (in.)	2.883	2.857
Bottom Diameter (in.)	2.876	2.861
Average Length (in)	3.45	3.49
Average Area (in^2)	6.53	6.42
Sample Volume(cc.)	368.88	367.50
Unit Wet Wt.(gms/cc)	1.99	1.95
Unit Wet Wt.(pcf.)	124.3	122.0
Unit Dry Wt.(pcf.)	96.1	96.4
Unit Dry Wt.(gms/cc)	1.54	1.55
Void Ratio,e	0.75	0.75
Porosity, n	0.43	0.43
Pore Volume(cm^3)	158.6	157.2

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PERMEABILITY TEST

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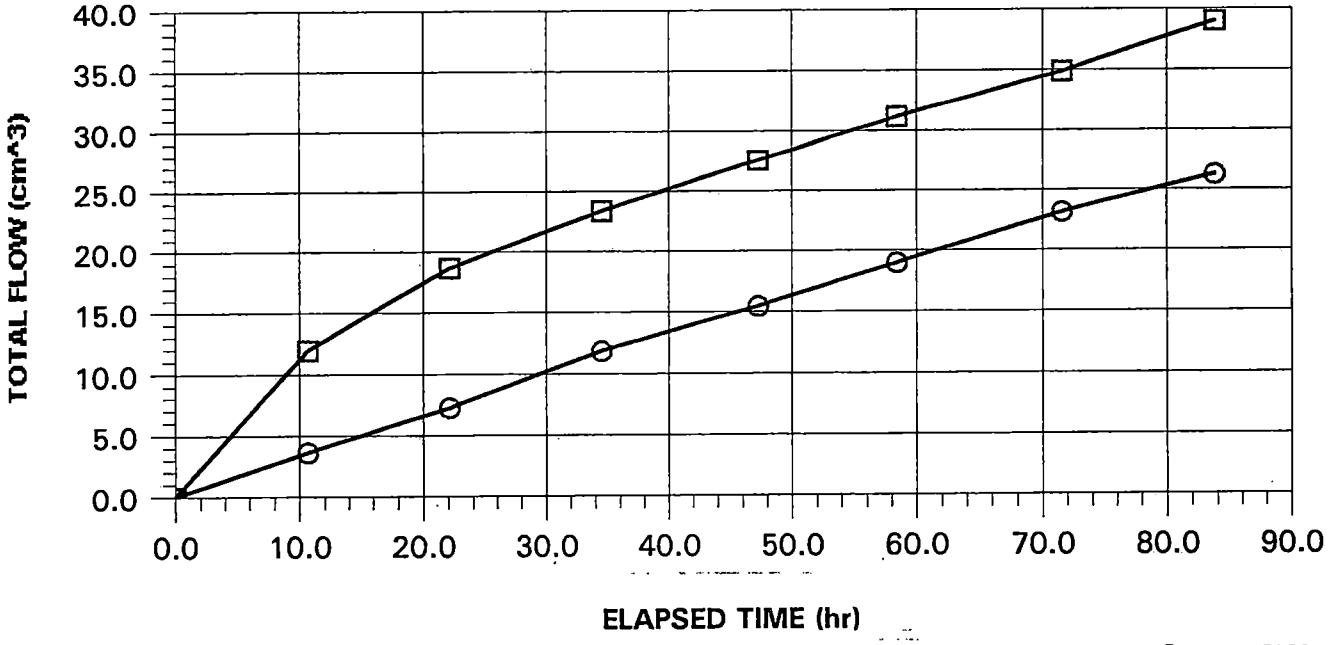
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	14.5 - 14.8
Project No.	97178-02	Sample No.	SM010-TB08-1315

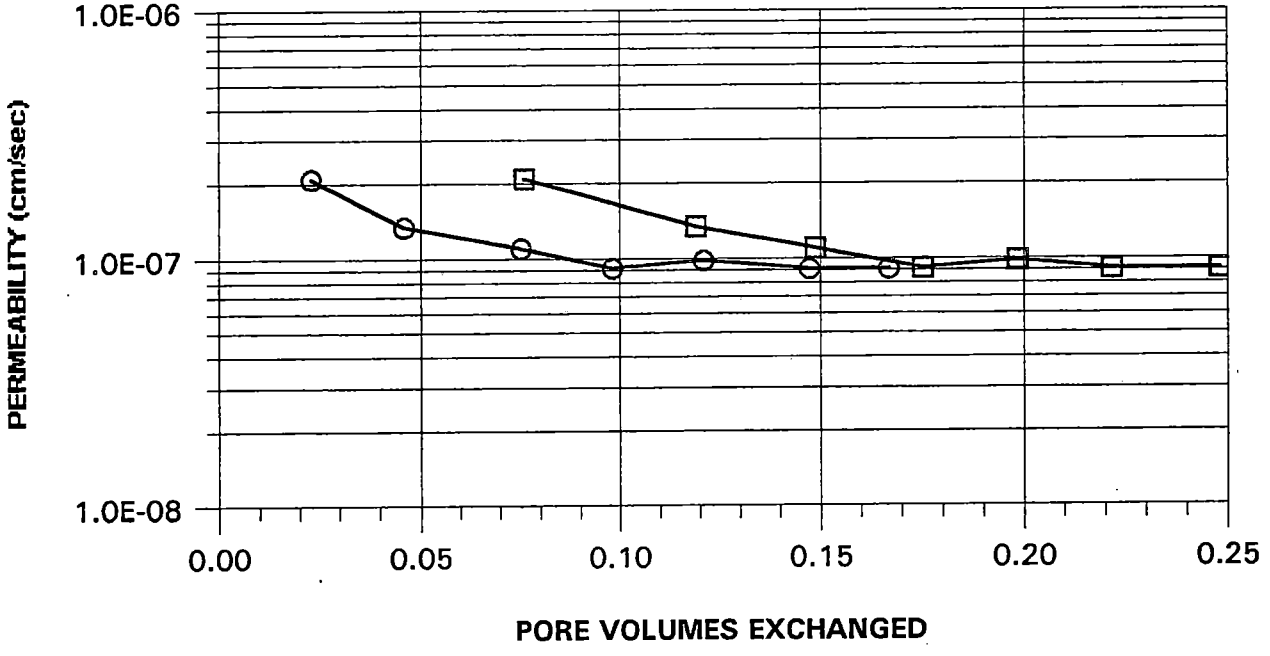
AVERAGE PERMEABILITY = 9.3E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 9.3E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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DCN: DS-S3A
DATE: 11/12/96
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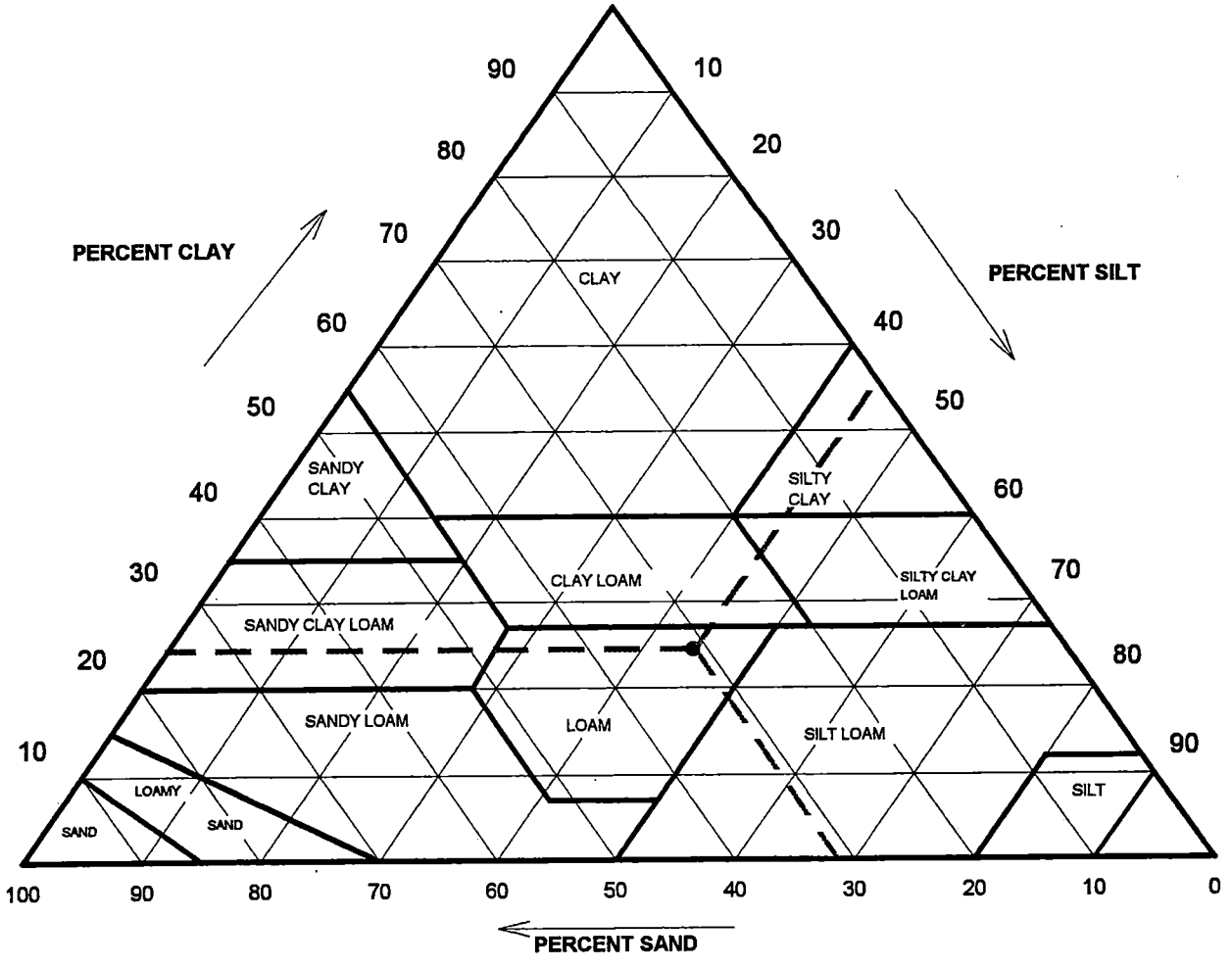
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.0-14.5
Project No.	97178-02	Sample No.	SM0010-TB08-1315
Lab ID	97178-02.008	Soil Color	GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	31.21
Silt	44.32
Clay	24.48
USDA Classification	***LOAM***

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DCN: DS-S3A
DATE: 11/12/96
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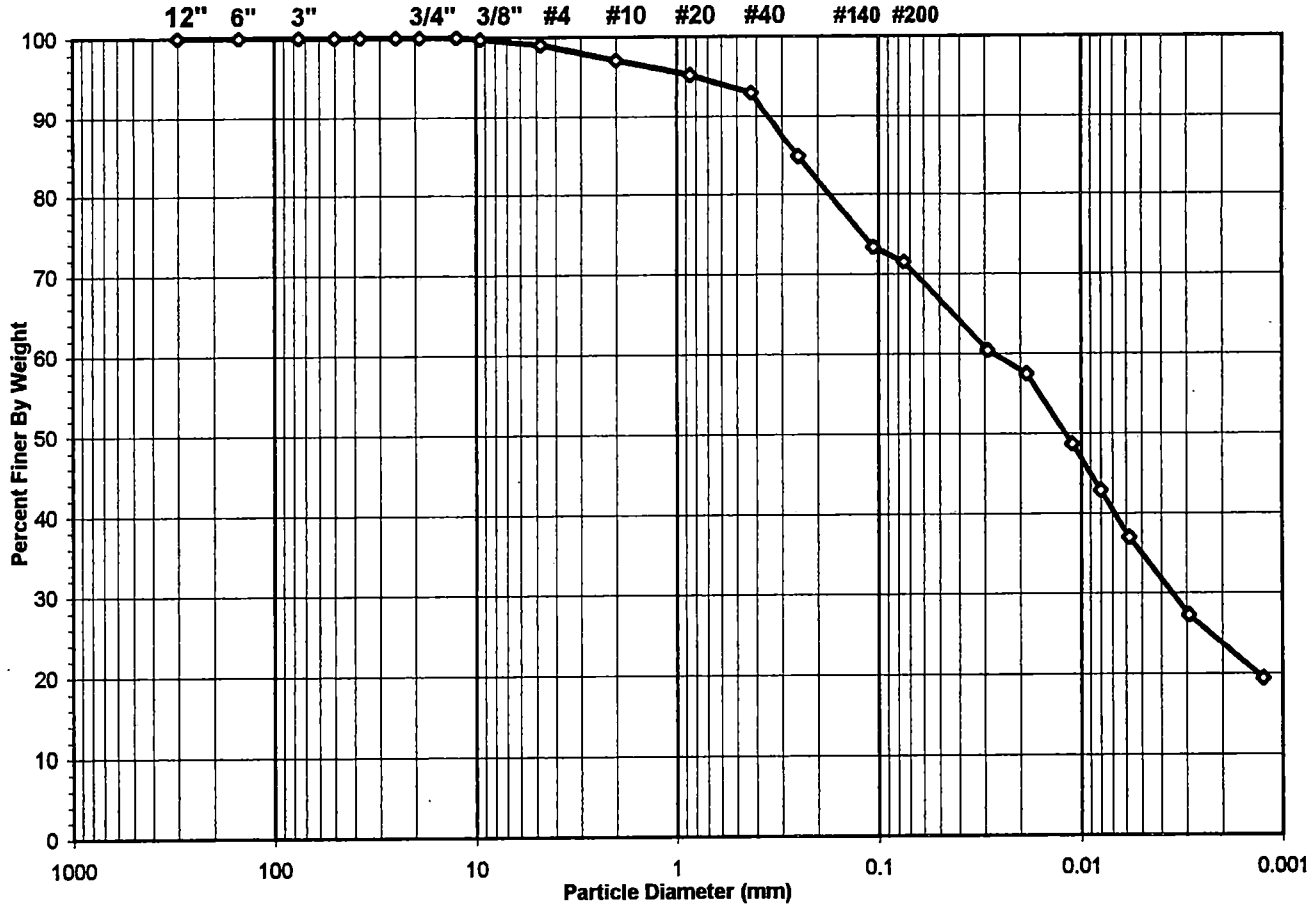
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.0-14.5
Project No.	97178-02	Sample No.	SM0010-TB08-1315
Lab ID	97178-02.008	Soil Color	GRAY

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	2.91	**0.00**
2	97.09	*Sand*	30.30	**31.21**
0.075	71.52	*Silt*	43.03	**44.32**
0.05	66.79	*Clay*	23.76	**24.48**
0.002	23.76			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.0-14.5
Project No.	97178-02	Sample No.	SM0010-TB08-1315
Lab ID	97178-02.008	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	36.0	36.5	24.5	30.9	84.5	0.0289	**60.4**
5		35.0	24.5	29.4	80.4	0.0185	**57.5**
15		30.5	24.5	24.9	68.1	0.0111	**48.7**
30		27.5	24.5	21.9	59.9	0.0080	**42.8**
60		24.5	23.6	18.9	51.7	0.0058	**37.0**
250		19.5	22.7	13.9	38.1	0.0029	**27.2**
1440		15.5	23.5	9.9	27.2	0.0012	**19.4**

Soil Specimen Data		Corrections	
Tare No.	1096	K - Factor	0.01275
Tare + Dry Material (gm)	137.32	a - Factor	0.99
Weight of Tare (gm)	96.05	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	71.52
Weight of Dry Material (gm)	36.27		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/1/97 Checked By LB Date 8-7-97

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DATE: 11/12/96
REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.0-14.5
Project No.	97178-02	Sample No.	SM0010-TB08-1315
Lab ID	97178-02.008	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	673	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	820.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	650.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	73.04	Weight of Tare (gm)	NA
Weight of Water (gm)	169.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	577.26	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**29.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	577.26
Dry Weight - 3/4" Sample (gm)	164.39	Weight of minus #200 material (gm)	412.87
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	164.39
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	1.53	0.27	0.27	99.73	**99.73**
#4	4.75	4.16	0.72	0.99	99.01	**99.01**
#10	2.00	11.10	1.92	2.91	97.09	**97.09**
#20	0.85	10.55	1.83	4.74	95.26	**95.26**
#40	0.425	13.12	2.27	7.01	92.99	**92.99**
#60	0.250	47.58	8.24	15.25	84.75	**84.75**
#140	0.106	65.80	11.40	26.65	73.35	**73.35**
#200	0.075	10.55	1.83	28.48	71.52	**71.52**
Pan	-	412.87	71.52	100.00	-	-

Tested By JCM Date 7/28/97 Checked By LB Date 8-7-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-28-97
Client Project	BAYER 51249	Checked By	JMO 8/22/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.80
Depth Pushed	13.0-15.0		
Shelby Tube No.	SM010-TB08-1315		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
13.00					
13.50					
14.00					GRAIN SIZE HYDROMETER
		3		GRAY LEAN CLAY WITH SAND	
14.50					PERMEABILITY
		2			
		1			WATER CONTENT
15.00					

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1280		673		
Wt. Tare & WS(gm.)	264.59		820.00		
Wt. Tare & DS(gm.)	212.30		650.30		
Wt. Tare(gm.)	34.45		73.04		
Moisture Content(%)	29.4		29.4		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	991.70	1728.10
Wt. Of Tube(gms.)	256.96	460.00
Wt. Of WS.(gms.)	734.74	1268.10
Length 1 (in.)	3.429	6.189
Length 2 (in.)	3.464	6.195
Length 3 (in.)	3.447	6.186
Top Diameter (in.)	2.892	2.880
Middle Diameter (in.)	2.883	2.886
Bottom Diameter (in.)	2.876	2.896
Sample Volume (cc)	368.88	664.16
Moisture Content(%)	29.40	29.40
Unit Wet Wt.(gms/cc)	1.99	1.91
Unit Wet Wt.(pcf.)	124.3	119.1
Unit Dry Wt.(pcf.)	96.1	92.1
Unit Dry Wt.(gms/cc)	1.54	1.48

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	4.5-4.8				
Sample No.	SM010-TB08-0305				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.31
Sample Diameter (cm.)	7.25
Sample Area (cm.^2), A	41.30
Inflow Burette Area, (cm.^2), a-in	4.37
Outflow Burette Area, (cm.^2), a-out	4.94
B Parameter	95%

AVERAGE PERMEABILITY = 7.5E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.5E-10 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-28-97	15	35	0.0	0.0	0.0	200.2	0	23.0	NA
07-28-97	20	45	5.2	2.0	2.3	199.3	0	23.0	1.2E-07
07-29-97	7	25	15.8	5.4	5.7	197.8	0	23.0	9.4E-08
07-29-97	18	50	27.3	8.3	8.5	196.6	0	22.5	7.6E-08
07-30-97	7	15	39.7	11.8	11.3	195.2	0	23.5	7.5E-08
07-30-97	20	0	52.4	14.7	14.7	193.8	0	23.0	7.4E-08
07-31-97	7	10	63.6	17.2	17.5	192.7	0	23.0	7.1E-08
07-31-97	20	20	76.8	20.6	20.9	191.2	0	22.5	8.0E-08

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	4.5-4.8	Sample Condition	REMOLDED		
Sample No.	SM010-TB08-0305				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1439	1734
Wt. Tare & WS(gm.)	326.99	399.67
Wt. Tare & DS(gm.)	283.74	340.41
Wt. Water(gm.)	43.25	59.26
Wt. Tare(gm.)	44.07	83.11
Wt. DS(gm.)	239.67	257.30
Moisture Content(%)	18.0	23.0

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1063.30	NA
Wt. Of Tube(gms.)	270.96	NA
Wt. Of WS.(gms.)	792.34	825.8
Length 1 (in.)	3.661	3.754
Length 2 (in.)	3.676	3.652
Length 3 (in.)	3.675	3.587
Top Diameter (in.)	2.892	2.853
Middle Diameter (in.)	2.890	2.852
Bottom Diameter (in.)	2.887	2.860
Average Length (in)	3.67	3.66
Average Area (in^2)	6.56	6.40
Sample Volume(cc.)	394.49	384.41
Unit Wet Wt.(gms/cc)	2.01	2.15
Unit Wet Wt.(pcf.)	125.3	134.0
Unit Dry Wt.(pcf.)	106.2	109.0
Unit Dry Wt.(gms/cc)	1.70	1.75
Void Ratio,e	0.59	0.55
Porosity, n	0.37	0.35
Pore Volume(cm^3)	145.9	135.8

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PERMEABILITY TEST

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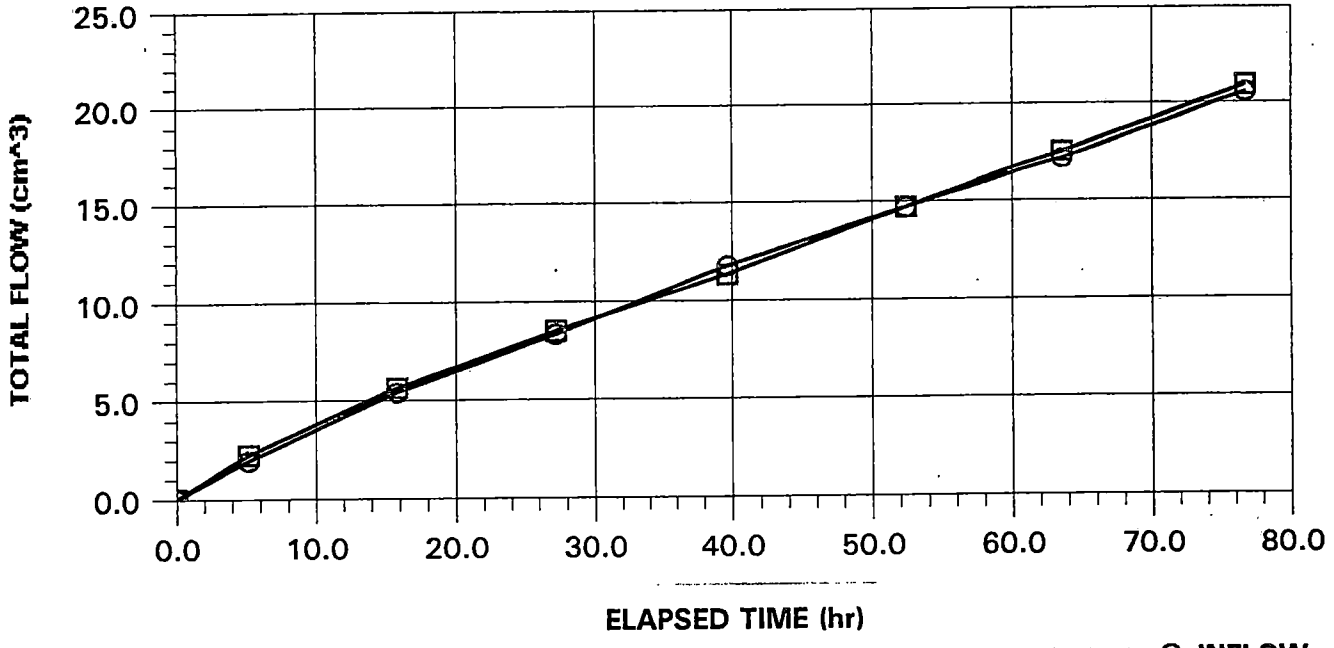
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.5-4.8
Project No.	97178-02	Sample No.	SM010-TB08-0305

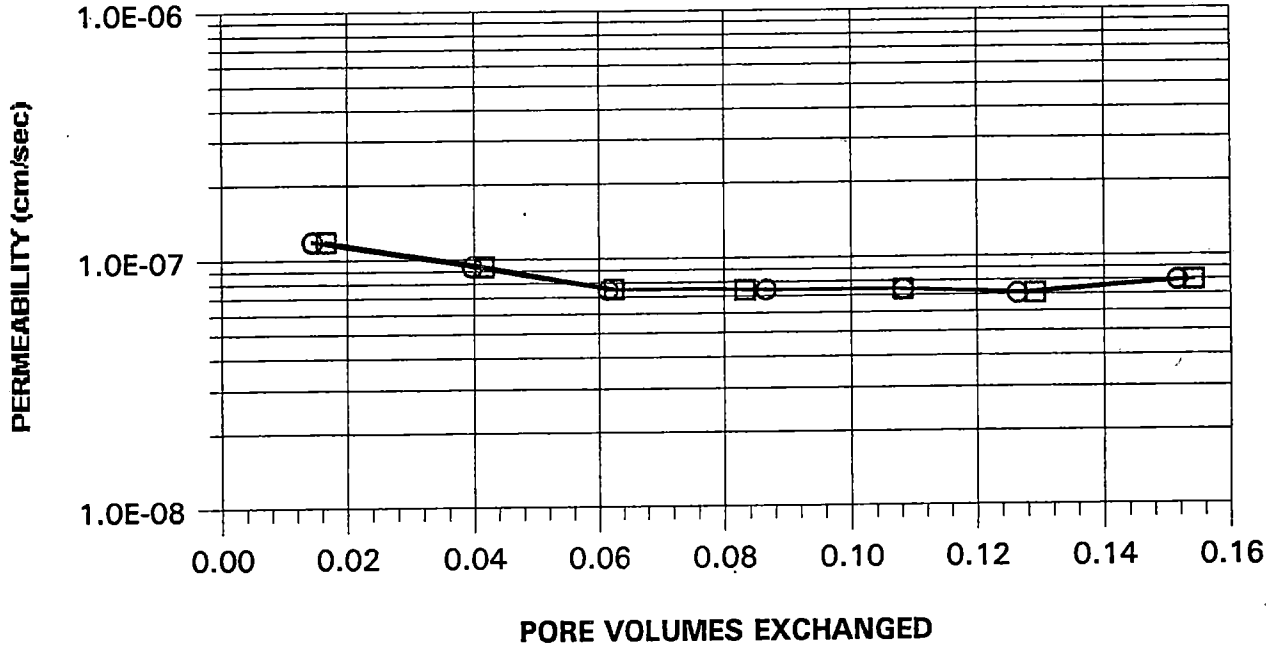
AVERAGE PERMEABILITY = 7.5E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.5E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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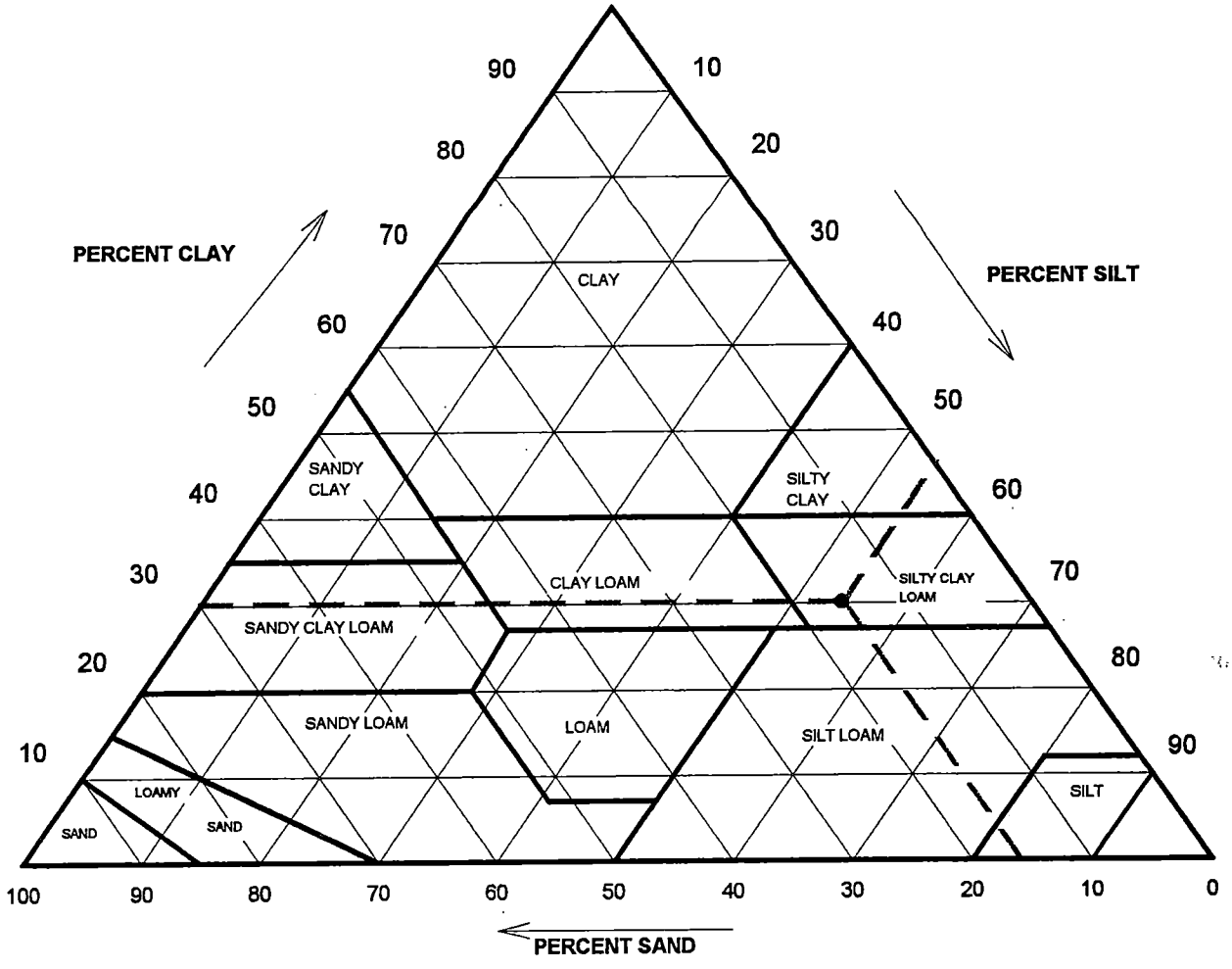
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM0010-TB08-0305
Lab ID	97178-02.007	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	15.76
Silt	54.05
Clay	30.18
USDA Classification	***SILTY CLAY LOAM***

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM0010-TB08-0305
Lab ID	97178-02.007	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay

Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	23.91	**0.00**
2	76.09	*Sand*	11.99	**15.76**
0.075	67.82	*Silt*	41.13	**54.05**
0.05	64.09	*Clay*	22.96	**30.18**
0.002	22.96			

USDA Classification ***SILTY CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***GRAVELLY LEAN CLAY***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM0010-TB08-0305
Lab ID	97178-02.007	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	52.0	52.0	24.5	46.4	85.2	0.0251	**57.8**
5		50.0	24.5	44.4	81.5	0.0162	**55.3**
15		44.0	24.5	38.4	70.5	0.0099	**47.8**
30		40.0	24.5	34.4	63.2	0.0073	**42.8**
60		34.5	23.6	28.9	53.1	0.0054	**36.0**
250		27.0	22.7	21.4	39.3	0.0028	**26.7**
1440		19.5	23.5	13.9	25.6	0.0012	**17.3**

Soil Specimen Data		Corrections	
Tare No.	K-3	K - Factor	0.01275
Tare + Dry Material (gm)	161.97	a - Factor	0.99
Weight of Tare (gm)	102.98	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	67.82
Weight of Dry Material (gm)	53.99		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/1/97 Checked By LB Date 8-7-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM0010-TB08-0305
Lab ID	97178-02.007	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1741	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	730.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	629.70	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.67	Weight of Tare (gm)	NA
Weight of Water (gm)	100.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	546.03	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**18.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	546.03
Dry Weight - 3/4" Sample (gm)	175.70	Weight of minus #200 material (gm)	370.33
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	175.70
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	58.96	10.80	10.80	89.20	**89.20**
3/8"	9.50	1.40	0.26	11.05	88.95	**88.95**
#4	4.75	37.25	6.82	17.88	82.12	**82.12**
#10	2.00	32.96	6.04	23.91	76.09	**76.09**
#20	0.85	20.02	3.67	27.58	72.42	**72.42**
#40	0.425	9.63	1.76	29.34	70.66	**70.66**
#60	0.250	6.30	1.15	30.50	69.50	**69.50**
#140	0.106	7.13	1.31	31.80	68.20	**68.20**
#200	0.075	2.05	0.38	32.18	67.82	**67.82**
Pan	-	370.33	67.82	100.00	-	-

Tested By JCM Date 7/28/97 Checked By JB Date 8-7-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-28-97
Client Project	BAYER 51249	Checked By	JMO 8/22/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.60
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM010-TB08-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					GRAIN SIZE HYDROMETER
		3		BROWN GRAVELLY LEAN CLAY	
4.50					PERMEABILITY
		2			
		1			WATER CONTENT
5.00					

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1439		1741		
Wt. Tare & WS(gm.)	326.99		730.50		
Wt. Tare & DS(gm.)	283.74		629.70		
Wt. Tare(gm.)	44.07		83.61		
Moisture Content(%)	18.0		18.5		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1063.30	1652.70
Wt. Of Tube(gms.)	270.96	443.80
Wt. Of WS.(gms.)	792.34	1208.90
Length 1 (in.)	3.661	5.982
Length 2 (in.)	3.676	6.030
Length 3 (in.)	3.675	5.995
Top Diameter (in.)	2.892	2.887
Middle Diameter (in.)	2.890	2.875
Bottom Diameter (in.)	2.887	2.881
Sample Volume (cc)	394.49	641.21
Moisture Content(%)	18.05	18.46
Unit Wet Wt.(gms/cc)	2.01	1.89
Unit Wet Wt.(pcf.)	125.3	117.6
Unit Dry Wt.(pcf.)	106.2	99.3
Unit Dry Wt.(gms/cc)	1.70	1.59

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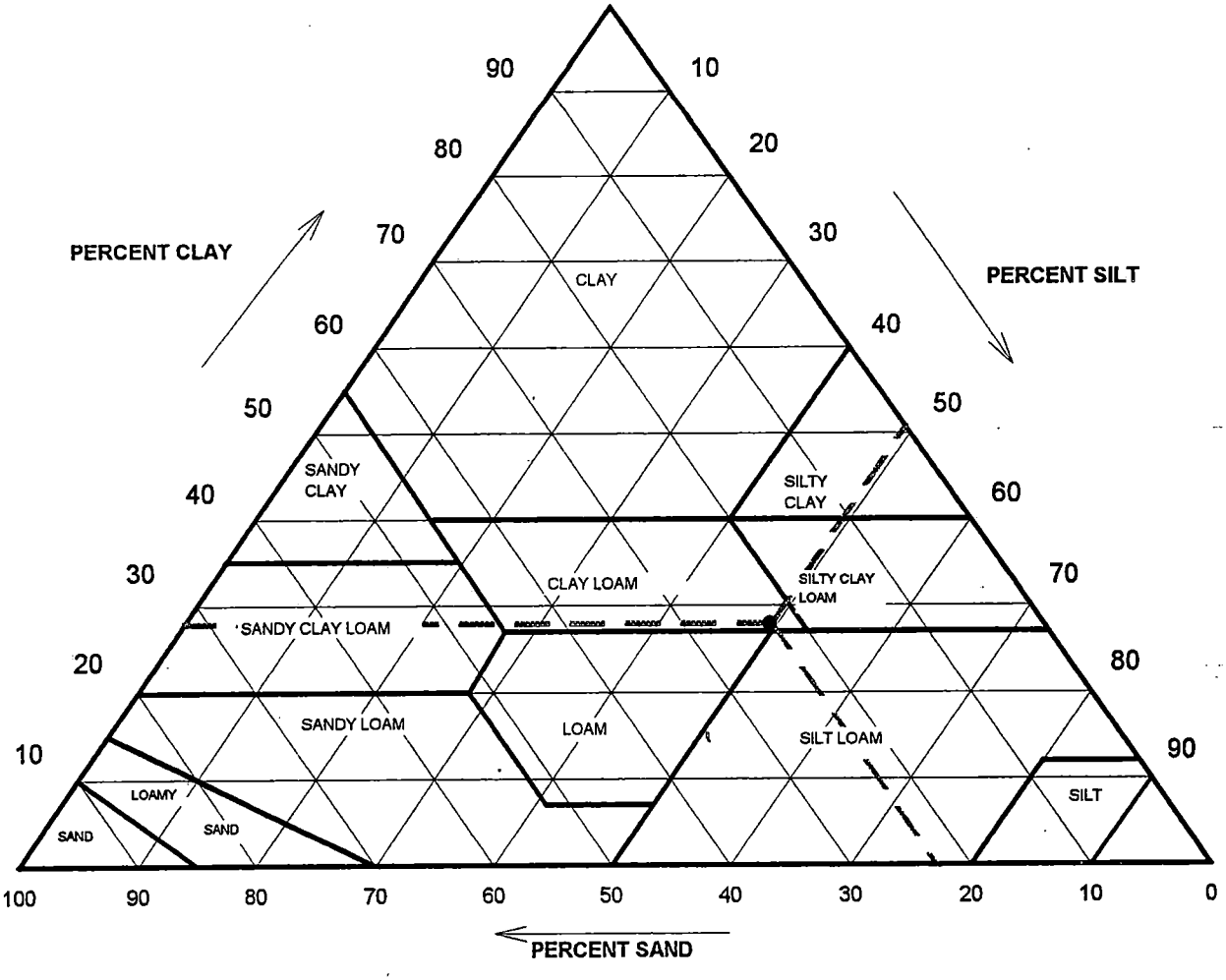
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB08-0103
Lab ID	97178-02.006	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	22.68
Silt	49.40
Clay	27.93
USDA Classification	***CLAY LOAM***

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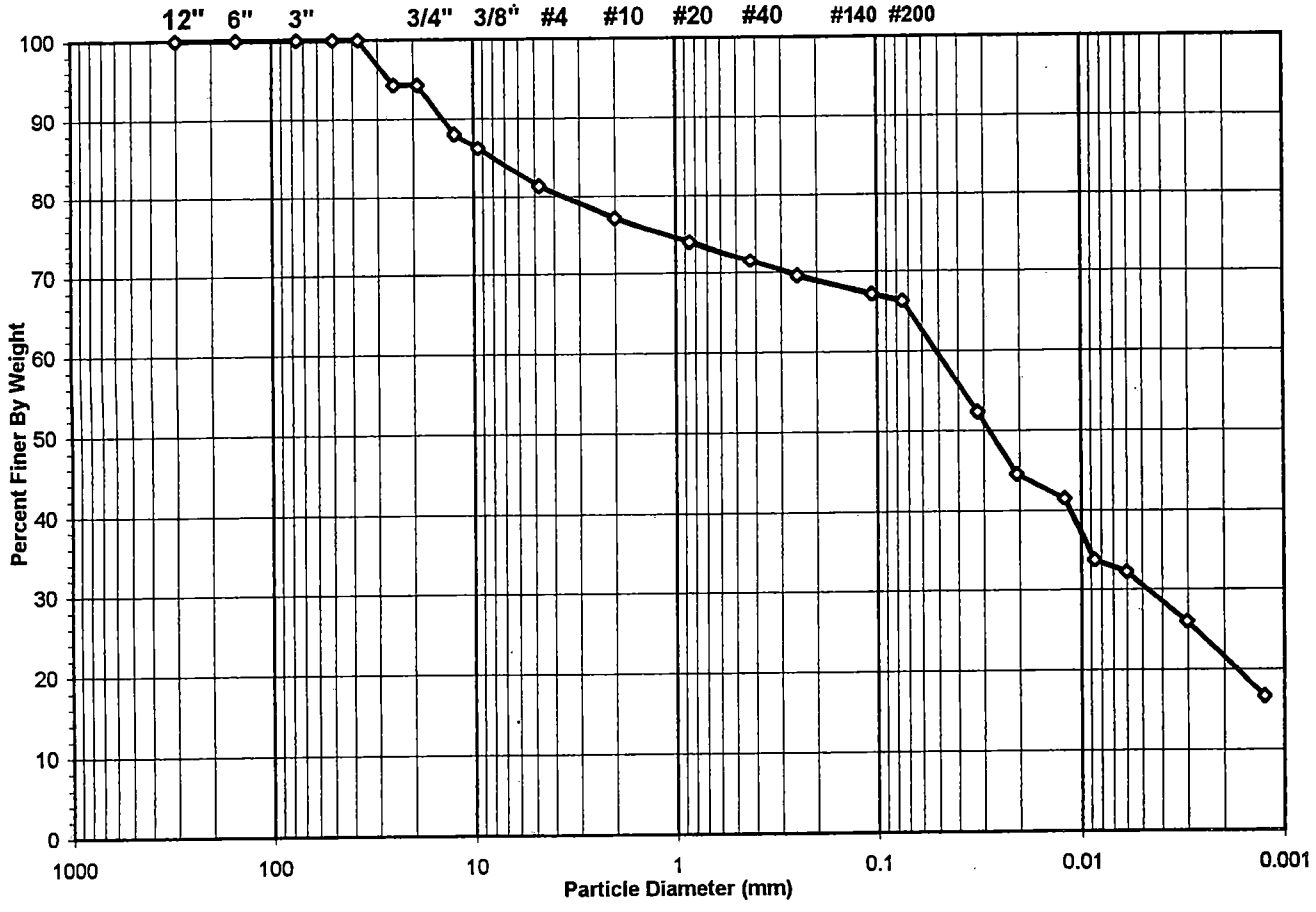
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB08-0103
Lab ID	97178-02.006	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	22.85	**0.00**
2	77.15	*Sand*	17.50	**22.68**
0.075	66.31	*Silt*	38.11	**49.40**
0.05	59.65	*Clay*	21.54	**27.93**
0.002	21.54			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***GRAVELLY LEAN CLAY WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB08-0103
Lab ID	97178-02.006	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	22.5	22.5	24.3	16.9	79.0	0.0321	**52.4**
5		20.0	24.3	14.4	67.3	0.0206	**44.6**
15		19.0	24.3	13.4	62.6	0.0120	**41.5**
30		16.5	24.3	10.9	50.9	0.0086	**33.7**
62		16.0	23.5	10.4	48.5	0.0060	**32.2**
250		14.0	23.5	8.4	39.1	0.0030	**26.0**
1487		11.0	23.8	5.4	25.1	0.0013	**16.6**

Soil Specimen Data		Corrections	
Tare No.	680	K - Factor	0.01278
Tare + Dry Material (gm)	130.57	a - Factor	0.99
Weight of Tare (gm)	104.45	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	66.31
Weight of Dry Material (gm)	21.12		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/14/97 Checked By JCM Date 8-21-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-02	Sample No.	SM010-TB08-0103
Lab ID	97178-02.006	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1624	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	828.70	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	699.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	101.10	Weight of Tare (gm)	NA
Weight of Water (gm)	128.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	598.80	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**21.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	598.80
Dry Weight - 3/4" Sample (gm)	167.44	Weight of minus #200 material (gm)	397.04
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	201.76
Dry Weight + 3/4" Sample (gm)	34.32		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	34.32	5.73	5.73	94.27	**94.27**
3/4"	19.0	0.00	0.00	5.73	94.27	**94.27**
1/2"	12.5	37.37	6.24	11.97	88.03	**88.03**
3/8"	9.50	10.46	1.75	13.72	86.28	**86.28**
#4	4.75	29.17	4.87	18.59	81.41	**81.41**
#10	2.00	25.51	4.26	22.85	77.15	**77.15**
#20	0.85	18.48	3.09	25.94	74.06	**74.06**
#40	0.425	14.69	2.45	28.39	71.61	**71.61**
#60	0.250	12.32	2.06	30.45	69.55	**69.55**
#140	0.106	14.05	2.35	32.79	67.21	**67.21**
#200	0.075	5.39	0.90	33.69	66.31	**66.31**
Pan	-	397.04	66.31	100.00	-	-

Tested By TO Date 8/4/97 Checked By Jam Date 8.21.97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 8-4-97
Client Project	BAYER 51249	Checked By	JMO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.50
Depth Pushed	.5-2.5		
Shelby Tube No.	SM010-TB08-0103		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
0.50					
1.00					
1.50					
2.00		3		BROWN GRAVELLY LEAN CLAY WITH SAND	HYDROMETER
		2			UNIT WGT. WC.
2.50		1			GRAINSIZE

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number		W39			
Wt. Tare & WS(gm.)		376.80			
Wt. Tare & DS(gm.)		341.96			
Wt. Tare(gm.)		8.24			
Moisture Content(%)		10.4			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	954.10
Wt. Of Tube(gms.)	262.37
Wt. Of WS.(gms.)	691.73
Length 1 (in.)	3.521
Length 2 (in.)	3.509
Length 3 (in.)	3.499
Top Diameter (in.)	2.886
Middle Diameter (in.)	2.887
Bottom Diameter (in.)	2.882
Sample Volume (cc)	375.89
Moisture Content(%)	10.44
Unit Wet Wt.(gms/cc)	1.84
Unit Wet Wt.(pcf.)	114.8
Unit Dry Wt.(pcf.)	104.0
Unit Dry Wt.(gms/cc)	1.67

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	12.8-13.1				
Sample No.	SM010-TB05-1214				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	8.98
Sample Diameter (cm.)	7.01
Sample Area (cm.^2), A	38.54
Inflow Burette Area, (cm.^2), a-in	4.68
Outflow Burette Area, (cm.^2), a-out	4.49
B Parameter	95%

AVERAGE PERMEABILITY = 1.2E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.2E-09 m/sec @ 20°C

DATE		TIME	ELAPSED TIME (t)	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD (h)	FLOW 0 FLOW 1 STOP	TEMP	INCREMENTAL PERMEABILITY @ 20°C
mon-dy-yr	hr	min	hr	cm^3	cm^3	cm		°C	cm/sec
07-28-97	15	35	0.0	0.0	0.0	191.4	0	23.0	NA
07-28-97	20	45	5.2	1.6	1.4	190.8	0	23.0	9.0E-08
07-29-97	7	25	15.8	5.2	4.6	189.3	0	23.0	1.0E-07
07-29-97	18	50	27.3	8.4	7.4	188.0	0	22.5	8.4E-08
07-30-97	7	15	39.7	11.5	10.2	186.7	0	23.5	7.6E-08
07-30-97	20	0	52.4	14.6	13.4	185.3	0	23.0	8.1E-08
07-31-97	7	10	63.6	18.8	17.6	183.5	0	23.0	1.2E-07
07-31-97	20	20	76.8	23.5	22.7	181.3	1	23.5	1.2E-07
08-01-97	12	50	76.8	23.5	22.7	194.1	0	23.0	NA
08-01-97	17	45	81.7	25.1	24.6	193.3	0	22.5	1.1E-07
08-02-97	11	15	99.2	32.4	32.0	190.1	0	23.0	1.3E-07
08-04-97	7	30	143.4	48.6	48.7	182.9	0	23.0	1.2E-07
08-04-97	19	55	155.8	53.3	53.3	180.9	0	22.7	1.3E-07
08-05-97	8	0	167.9	57.5	57.5	179.1	0	23.2	1.2E-07

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	12.8-13.1	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB05-1214				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	9	1727
Wt. Tare & WS(gm.)	393.00	793.20
Wt. Tare & DS(gm.)	339.82	666.11
Wt. Water(gm.)	53.18	127.09
Wt. Tare(gm.)	74.47	82.91
Wt. DS(gm.)	265.35	583.20
Moisture Content(%)	20.0	21.8

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	991.70	NA
Wt. Of Tube(gms.)	272.78	NA
Wt. Of WS.(gms.)	718.92	729.4
Length 1 (in.)	3.629	3.534
Length 2 (in.)	3.618	3.532
Length 3 (in.)	3.622	3.545
Top Diameter (in.)	2.872	2.568
Middle Diameter (in.)	2.878	2.842
Bottom Diameter (in.)	2.875	2.864
Average Length (in)	3.62	3.54
Average Area (in^2)	6.49	5.97
Sample Volume(cc.)	385.42	346.27
Unit Wet Wt.(gms/cc)	1.87	2.11
Unit Wet Wt.(pcf.)	116.4	131.4
Unit Dry Wt.(pcf.)	97.0	107.9
Unit Dry Wt.(gms/cc)	1.55	1.73
Void Ratio,e	0.74	0.56
Porosity, n	0.42	0.36
Pore Volume(cm^3)	163.6	124.5

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PERMEABILITY TEST

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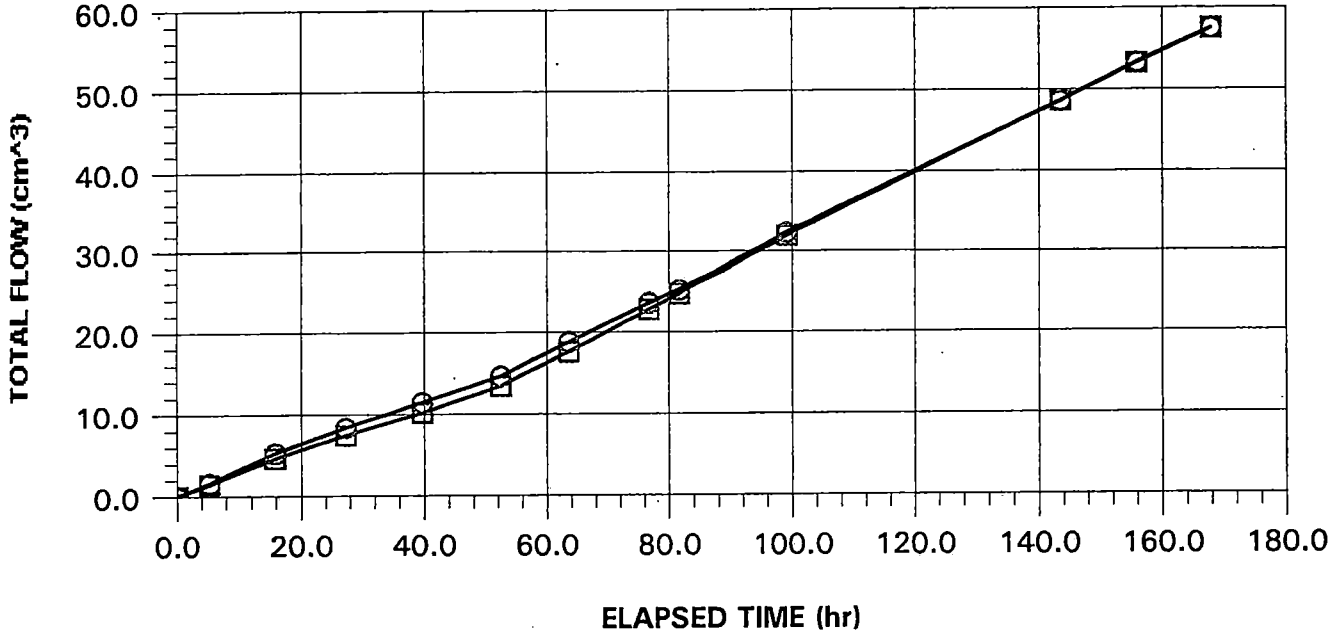
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	12.8-13.1
Project No.	97178-02	Sample No.	SM010-TB05-1214

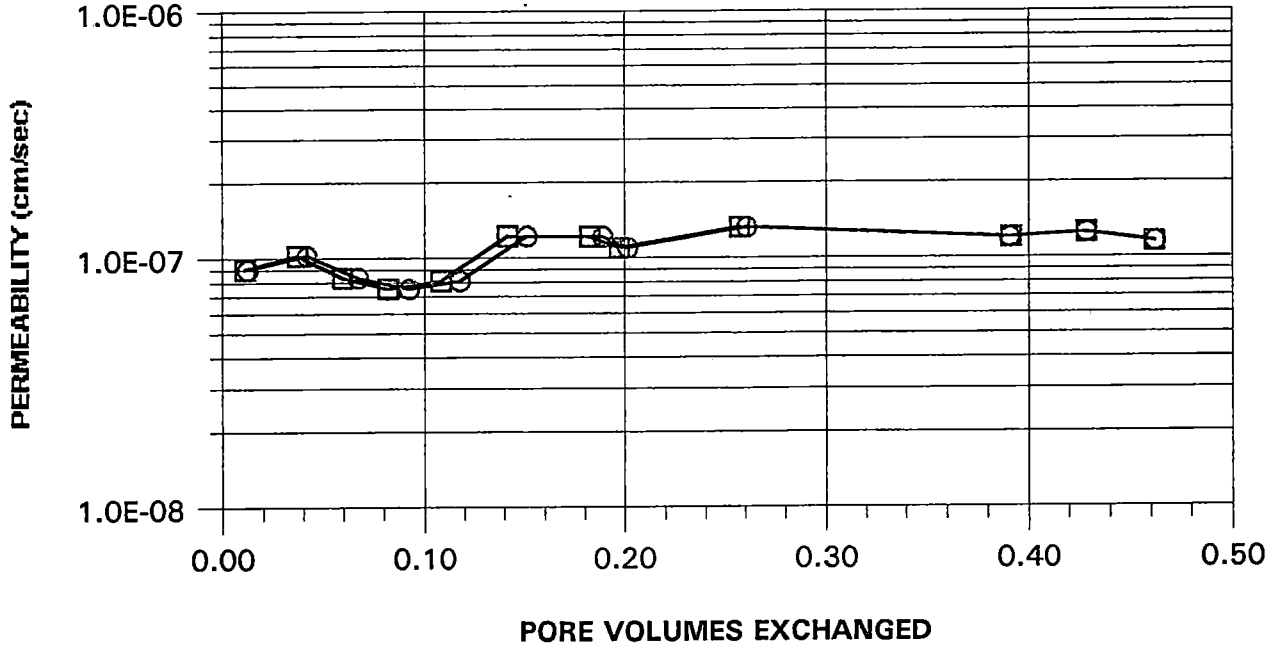
AVERAGE PERMEABILITY = 1.2E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.2E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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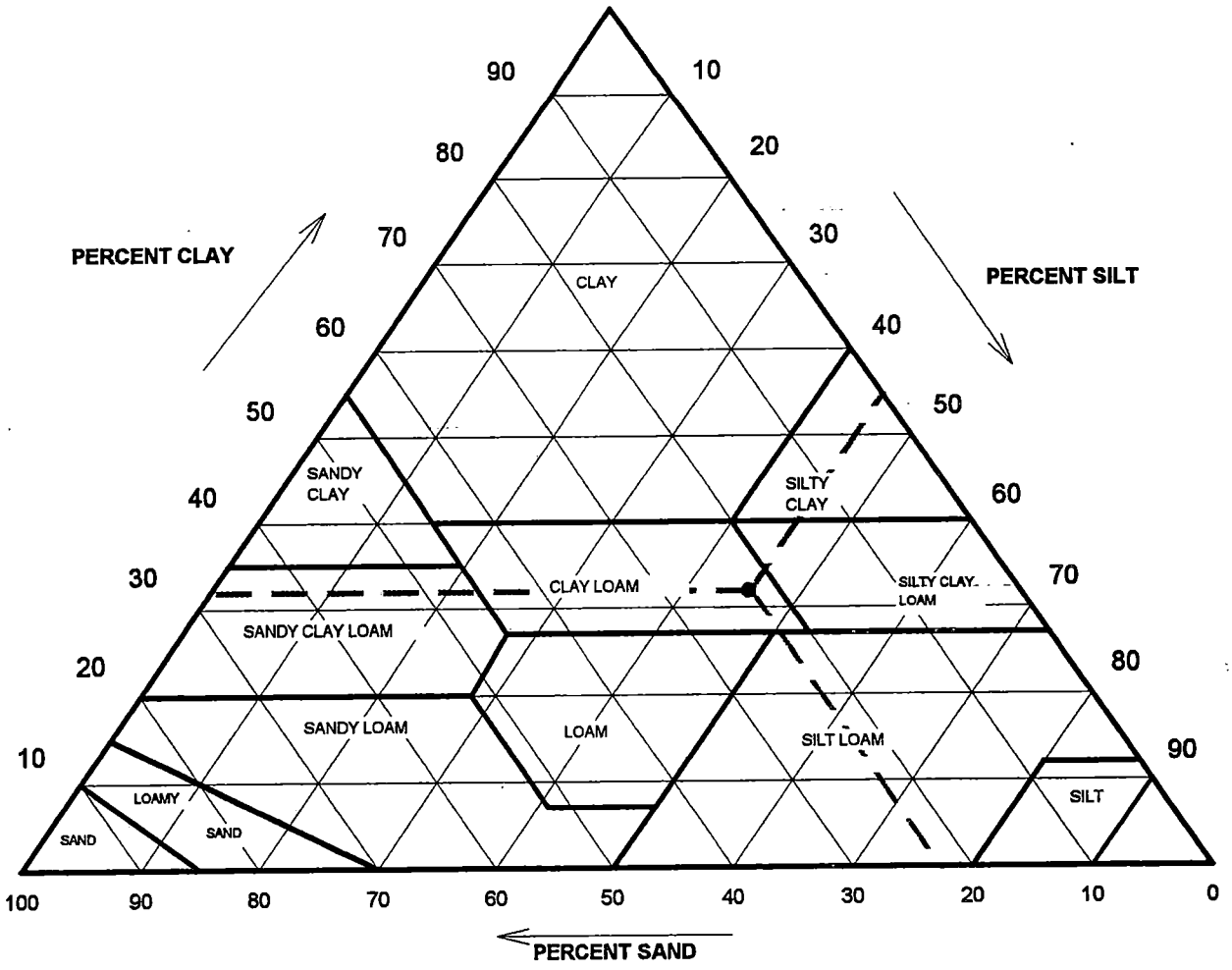
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.8-13.1
Project No.	97178-02	Sample No.	SM0010-TB05-1214
Lab ID	97178-02.005	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	22.58
Silt	45.49
Clay	31.93
USDA Classification	***CLAY LOAM***

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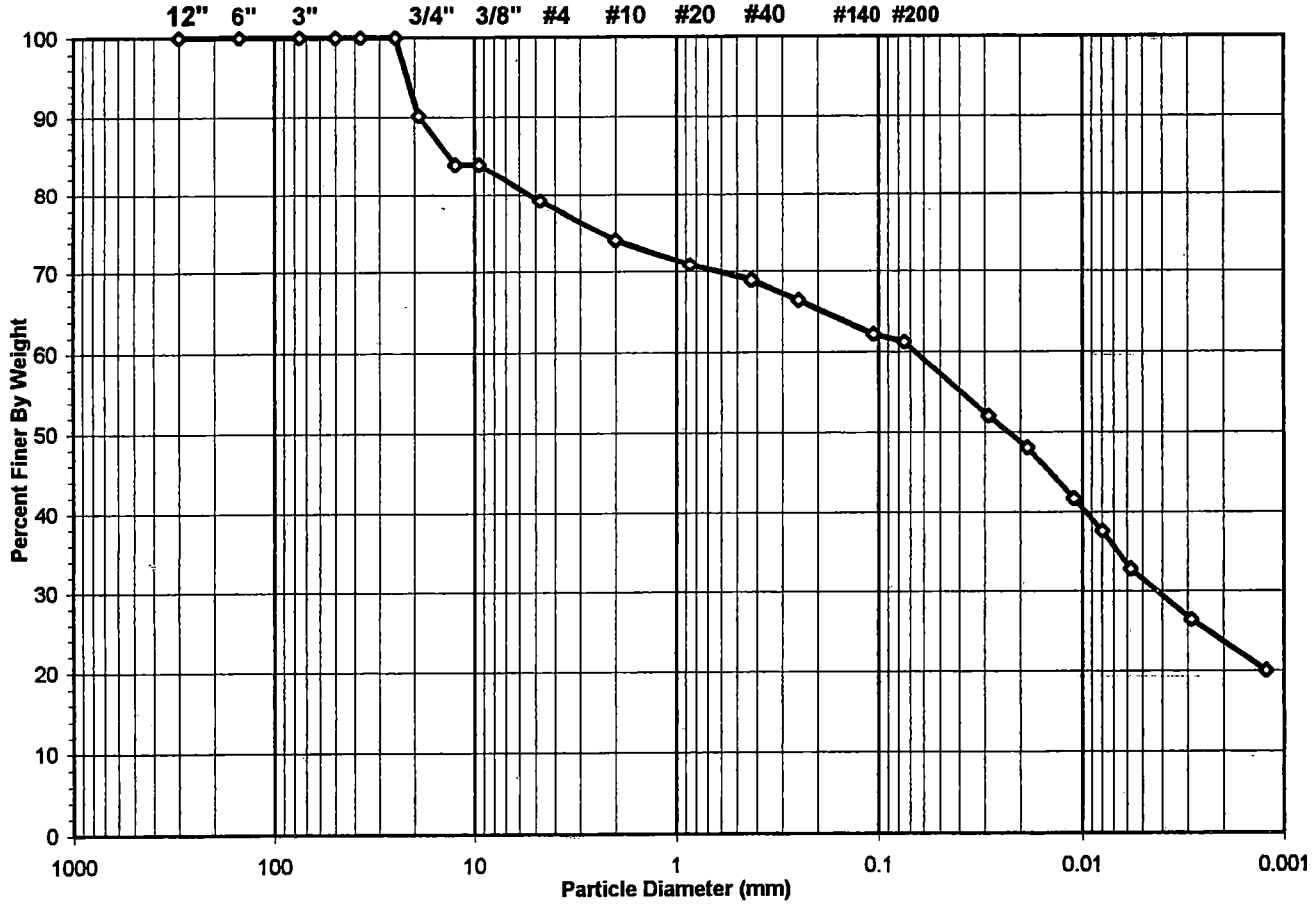
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.8-13.1
Project No.	97178-02	Sample No.	SM0010-TB05-1214
Lab ID	97178-02.005	Soil Color	BROWN

	SIEVE ANALYSIS			HYDROMETER	
USCS	gravel		sand	silt and clay fraction	
USDA	gravel		sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	25.90	**0.00**
2	74.10	*Sand*	16.73	**22.58**
0.075	61.21	*Silt*	33.71	**45.49**
0.05	57.36	*Clay*	23.66	**31.93**
0.002	23.66			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***GRAVELLY LEAN CLAY WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.8-13.1
Project No.	97178-02	Sample No.	SM0010-TB05-1214
Lab ID	97178-02.005	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	37.5	38.0	24.5	32.4	85.1	0.0286	**52.1**
5		35.5	24.5	29.9	78.5	0.0185	**48.1**
15		31.5	24.5	25.9	68.0	0.0110	**41.6**
30		29.0	24.5	23.4	61.5	0.0079	**37.6**
60		26.0	23.6	20.4	53.6	0.0057	**32.8**
250		22.0	22.7	16.4	43.1	0.0029	**26.4**
1440		18.0	23.5	12.4	32.6	0.0012	**20.0**

Soil Specimen Data		Corrections	
Tare No.	865	K - Factor	0.01275
Tare + Dry Material (gm)	148.16	a - Factor	0.99
Weight of Tare (gm)	105.39	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	61.21
Weight of Dry Material (gm)	37.77		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/1/97 Checked By LB Date 8-7-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.8-13.1
Project No.	97178-02	Sample No.	SM0010-TB05-1214
Lab ID	97178-02.005	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	9	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	393.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	339.82	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	74.47	Weight of Tare (gm)	NA
Weight of Water (gm)	53.18	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	265.35	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**20.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	265.35
Dry Weight - 3/4" Sample (gm)	76.64	Weight of minus #200 material (gm)	162.43
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	102.92
Dry Weight + 3/4" Sample (gm)	26.28		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	26.28	9.90	9.90	90.10	**90.10**
1/2"	12.5	16.74	6.31	16.21	83.79	**83.79**
3/8"	9.50	0.00	0.00	16.21	83.79	**83.79**
#4	4.75	12.07	4.55	20.76	79.24	**79.24**
#10	2.00	13.64	5.14	25.90	74.10	**74.10**
#20	0.85	8.59	3.24	29.14	70.86	**70.86**
#40	0.425	5.15	1.94	31.08	68.92	**68.92**
#60	0.250	6.61	2.49	33.57	66.43	**66.43**
#140	0.106	11.11	4.19	37.76	62.24	**62.24**
#200	0.075	2.73	1.03	38.79	61.21	**61.21**
Pan	-	162.43	61.21	100.00	-	-

Tested By JCM Date 7/28/97 Checked By LB Date 8-7-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-28-97
Client Project	BAYER 51249	Checked By	JMO 4-5-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.20
Depth Pushed	12.0-14.0		
Shelby Tube No.	SM010-TB05-1214		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
12.00					
12.50					
13.00		4		BROWN GRAVELLY LEAN CLAY WITH SAND	PERMEABILITY
		3			GRIAN SIZE WC, HYDROMETER
13.50		2		BLACK COARSE SAND	NO TEST
14.00		1			NO TEST

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number			9		
Wt. Tare & WS(gm.)			393.00		
Wt. Tare & DS(gm.)			339.82		
Wt. Tare(gm.)			74.47		
Moisture Content(%)			20.0		

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	991.70
Wt. Of Tube(gms.)	272.78
Wt. Of WS.(gms.)	718.92
Length 1 (in.)	3.629
Length 2 (in.)	3.618
Length 3 (in.)	3.622
Top Diameter (in.)	2.872
Middle Diameter (in.)	2.878
Bottom Diameter (in.)	2.875
Sample Volume (cc)	385.42
Moisture Content(%)	20.04
Unit Wet Wt.(gms/cc)	1.87
Unit Wet Wt.(pcf.)	116.4
Unit Dry Wt.(pcf.)	97.0
Unit Dry Wt.(gms/cc)	1.55

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	4.1-4.3				
Sample No.	SM010-TB05-0305				
Visual Description	BROWN CLAY AND ROCK FRAGMENTS				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	6.37
Sample Diameter (cm.)	7.10
Sample Area (cm.^2), A	39.61
Inflow Burette Area, (cm.^2), a-in	4.50
Outflow Burette Area, (cm.^2), a-out	4.37
B Parameter	96%

AVERAGE PERMEABILITY = 7.4E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.4E-08 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-28-97	15	35	0.0	0.0	0.0	196.1	0	23.0	NA
07-28-97	20	45	5.2	86.8	85.6	157.3	1	23.0	3.9E-06
07-29-97	15	34	5.2	86.8	85.6	201.8	0	22.5	NA
07-29-97	15	47	5.4	93.3	92.9	198.7	0	22.5	6.7E-06
07-29-97	16	30	6.1	114.7	113.8	189.1	0	22.5	6.4E-06
07-29-97	17	30	7.1	139.7	139.1	177.8	0	22.5	5.8E-06
07-29-97	18	52	8.5	171.1	170.2	163.7	1	22.5	5.6E-06
07-31-97	14	45	8.5	171.1	170.2	193.6	0	22.5	NA
07-31-97	15	35	9.3	201.0	199.9	180.2	0	22.5	8.1E-06
07-31-97	15	58	9.7	214.0	213.0	174.3	0	22.5	8.1E-06
07-31-97	16	23	10.1	227.0	225.6	168.5	0	22.5	7.6E-06
07-31-97	17	23	11.1	254.9	253.8	155.8	0	22.5	7.3E-06
07-31-97	17	41	11.4	262.4	260.7	152.6	0	22.5	6.5E-06

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.74 MEASURED		
Depth(ft.)	4.1-4.3	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB05-0305				

Visual Description BROWN CLAY AND ROCK FRAGMENTS

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	700	1741
Wt. Tare & WS(gm.)	638.50	564.50
Wt. Tare & DS(gm.)	552.50	491.60
Wt. Water(gm.)	86.00	72.90
Wt. Tare(gm.)	76.12	83.62
Wt. DS(gm.)	476.38	407.98
Moisture Content(%)	18.1	17.9

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	665.40	NA
Wt. Of Tube(gms.)	196.14	NA
Wt. Of WS.(gms.)	469.26	468.5
Length 1 (in.)	2.560	2.614
Length 2 (in.)	2.600	2.536
Length 3 (in.)	2.592	2.379
Top Diameter (in.)	2.872	2.756
Middle Diameter (in.)	2.872	2.800
Bottom Diameter (in.)	2.882	2.832
Average Length (in)	2.58	2.51
Average Area (in^2)	6.49	6.14
Sample Volume(cc.)	274.95	252.51
Unit Wet Wt.(gms/cc)	1.71	1.86
Unit Wet Wt.(pcf.)	106.5	115.8
Unit Dry Wt.(pcf.)	90.2	98.2
Unit Dry Wt.(gms/cc)	1.45	1.57
Void Ratio,e	0.90	0.74
Porosity, n	0.47	0.43
Pore Volume(cm^3)	129.9	107.4

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PERMEABILITY TEST

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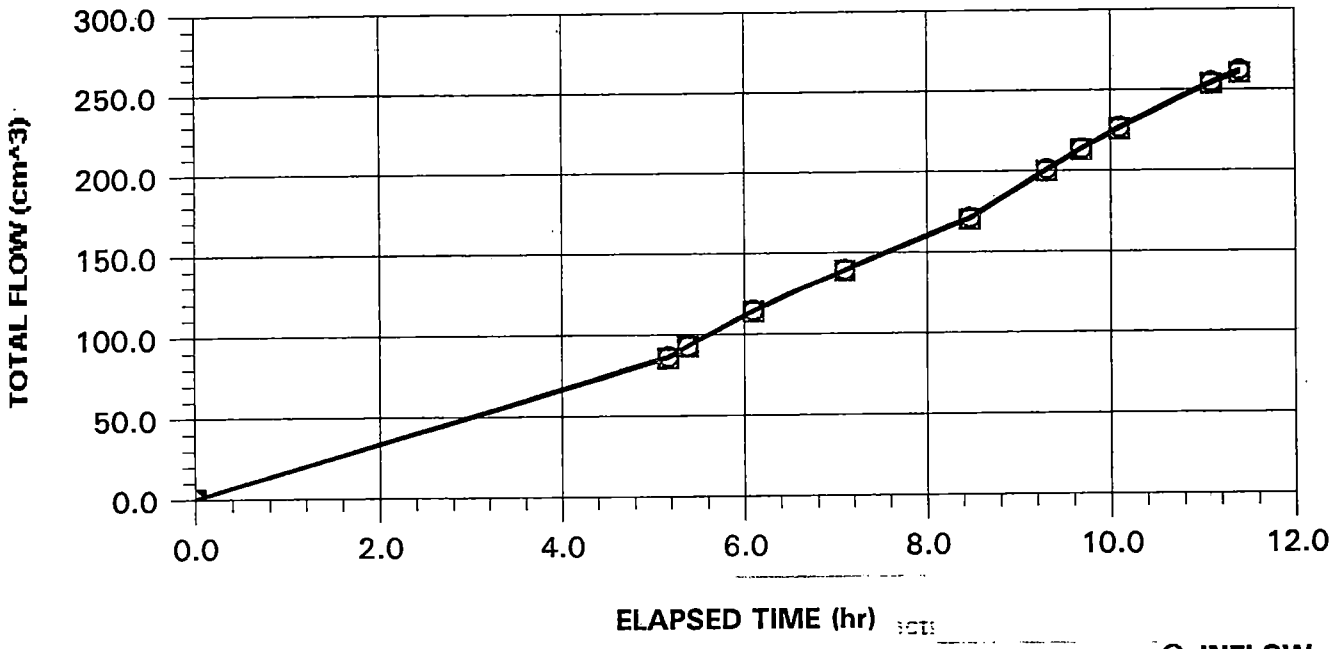
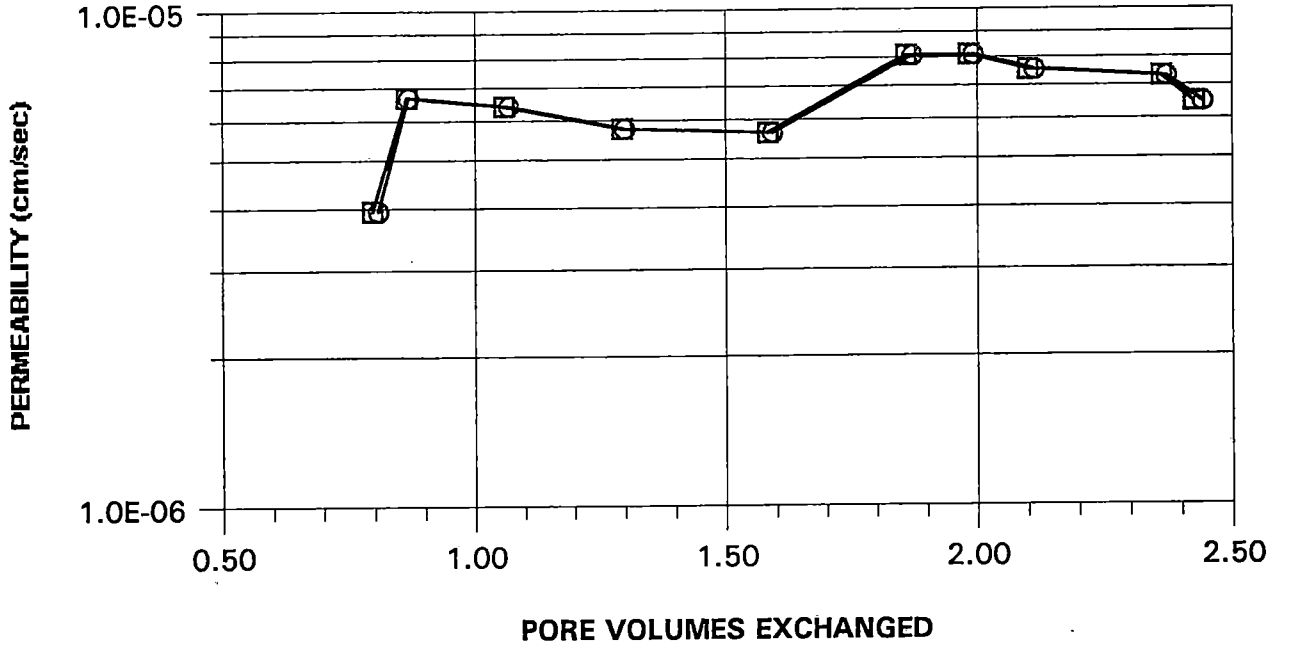
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.1-4.3
Project No.	97178-02	Sample No.	SM010-TB05-0305

AVERAGE PERMEABILITY = 7.4E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.4E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



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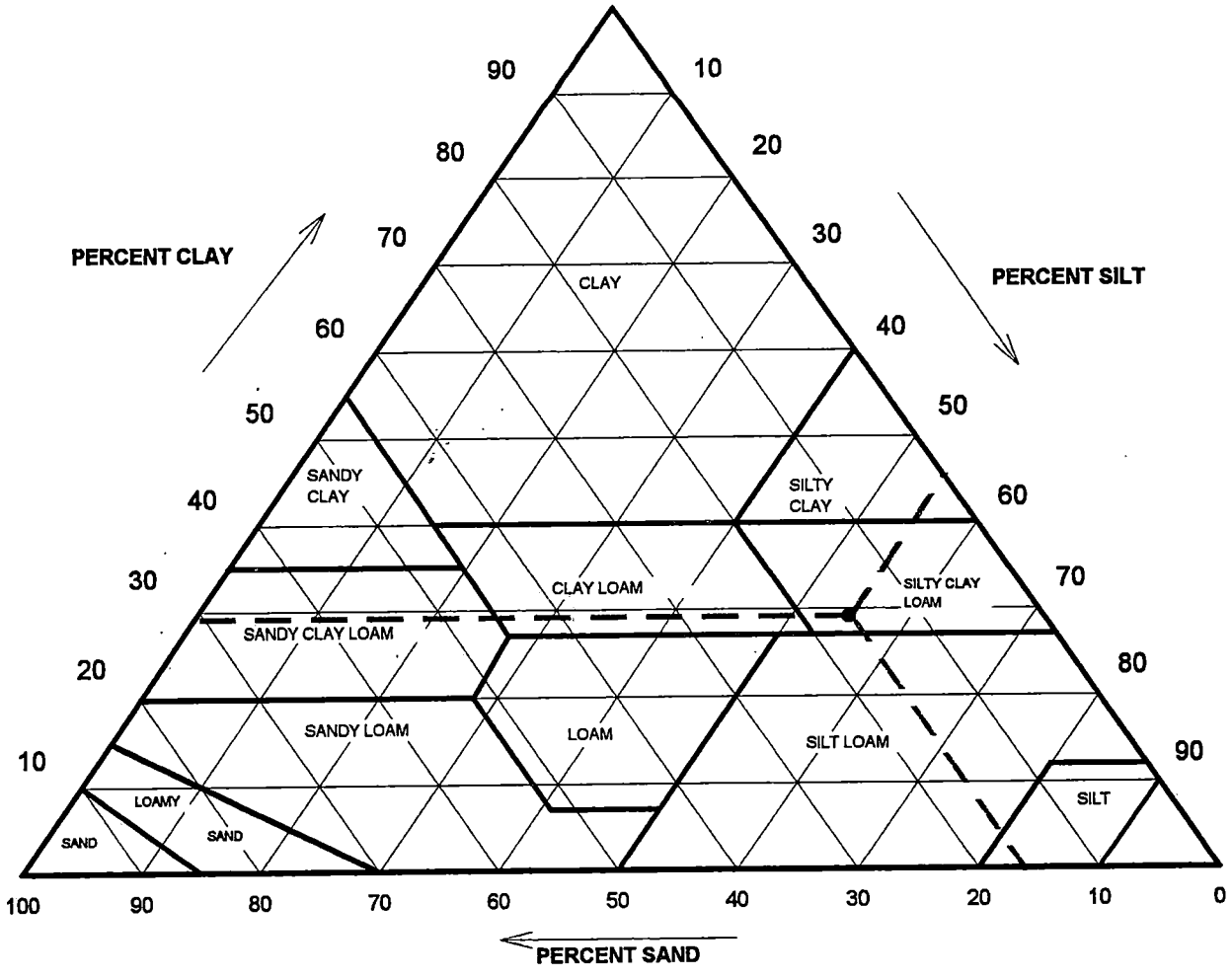
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.3-5.0
Project No.	97178-02	Sample No.	SM0010-TB05-0305
Lab ID	97178-02.004	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	16.04
Silt	54.84
Clay	29.12
USDA Classification	***SILTY CLAY LOAM***

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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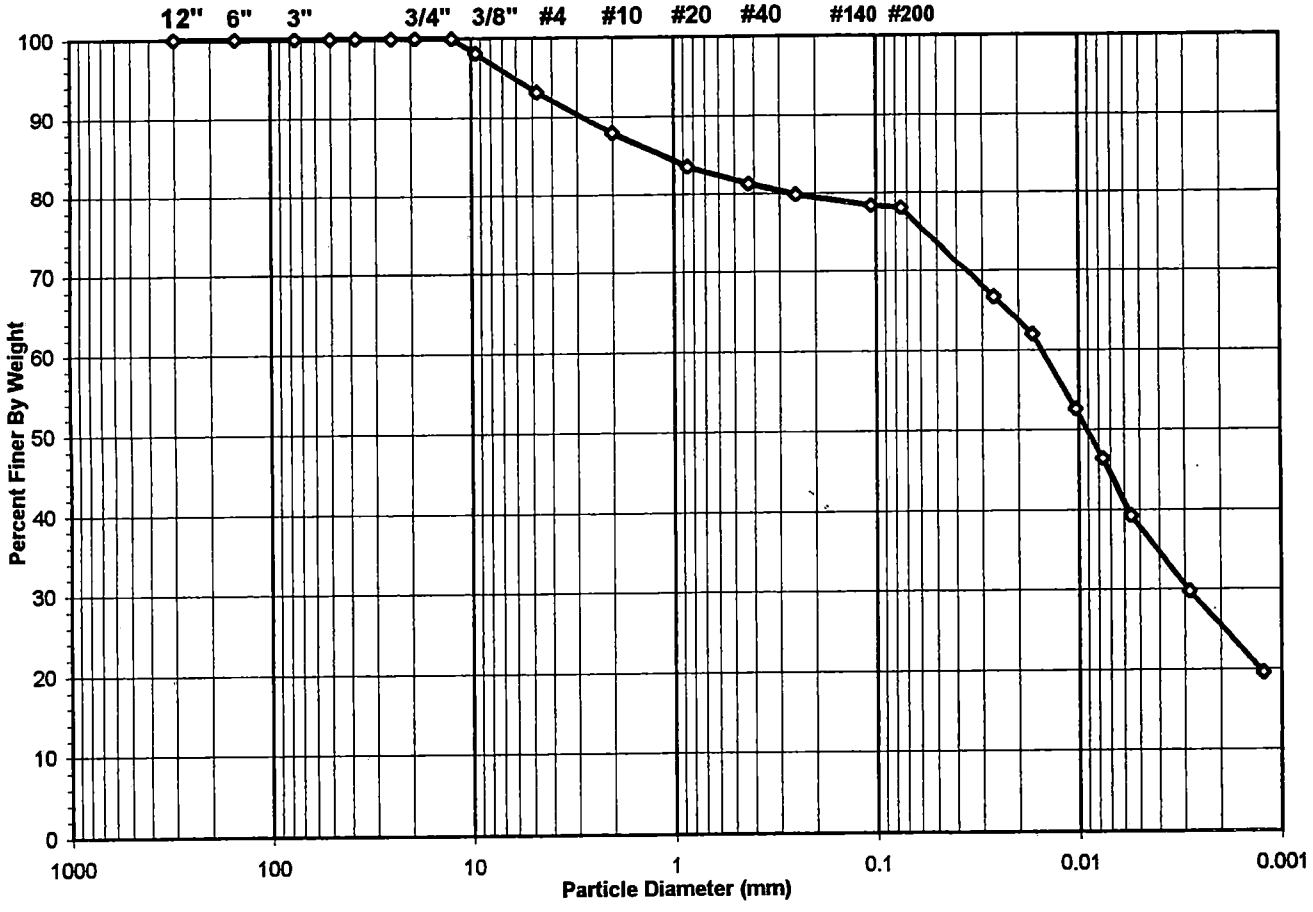
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.3-5.0
Project No.	97178-02	Sample No.	SM0010-TB05-0305
Lab ID	97178-02.004	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	12.17	**0.00**
2	87.83	*Sand*	14.09	**16.04**
0.075	78.10	*Silt*	48.17	**54.84**
0.05	73.74	*Clay*	25.57	**29.12**
0.002	25.57			

USDA Classification	***SILTY CLAY LOAM***
USCS Symbol	***cl, ASSUMED***
USCS Classification	***LEAN CLAY WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.3-5.0
Project No.	97178-02	Sample No.	SM0010-TB05-0305
Lab ID	97178-02.004	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	47.0	48.0	24.5	42.4	85.5	0.0262	**66.8**
5		45.0	24.5	39.4	79.5	0.0170	**62.1**
15		39.0	24.5	33.4	67.4	0.0104	**52.6**
30		35.0	24.5	29.4	59.3	0.0076	**46.3**
60		30.5	23.6	24.9	50.3	0.0055	**39.3**
250		24.5	22.7	18.9	38.2	0.0028	**29.8**
1440		18.0	23.5	12.4	25.1	0.0012	**19.6**

Soil Specimen Data		Corrections	
Tare No.	863	K - Factor	0.01275
Tare + Dry Material (gm)	159.81	a - Factor	0.99
Weight of Tare (gm)	105.67	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	78.10
Weight of Dry Material (gm)	49.14		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/1/97 Checked By LB Date 8-7-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.3-5.0
Project No.	97178-02	Sample No.	SM0010-TB05-0305
Lab ID	97178-02.004	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	700	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	638.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	552.50	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	76.12	Weight of Tare (gm)	NA
Weight of Water (gm)	86.00	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	476.38	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**18.1**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	476.38
Dry Weight - 3/4" Sample (gm)	104.35	Weight of minus #200 material (gm)	372.03
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	104.35
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	8.88	1.86	1.86	98.14	**98.14**
#4	4.75	23.85	5.01	6.87	93.13	**93.13**
#10	2.00	25.25	5.30	12.17	87.83	**87.83**
#20	0.85	20.58	4.32	16.49	83.51	**83.51**
#40	0.425	10.88	2.28	18.77	81.23	**81.23**
#60	0.250	6.38	1.34	20.11	79.89	**79.89**
#140	0.106	6.91	1.45	21.56	78.44	**78.44**
#200	0.075	1.62	0.34	21.90	78.10	**78.10**
Pan	-	372.03	78.10	100.00	-	-

Tested By JCM Date 7/28/97 Checked By LB Date 8-7-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER
Client Project	BAYER 51249
Project No.	97178-02
Boring No.	NA
Depth Pushed	3.0-5.0
Shelby Tube No.	SM010-TB05-0305

Tested By JCM 7-28-97
Checked By JMO 9-5-97

Tube Recovery 0.80

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00		2			PERMEABILITY
4.50				BROWN LEAN CLAY WITH SAND TUBE OUT OF ROUND	GRAIN SIZE HYDROMETER WC
5.00		1			

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	700				
Wt. Tare & WS(gm.)	638.50				
Wt. Tare & DS(gm.)	552.50				
Wt. Tare(gm.)	76.12				
Moisture Content(%)	18.1				

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	665.40
Wt. Of Tube(gms.)	196.14
Wt. Of WS.(gms.)	469.26
Length 1 (in.)	2.560
Length 2 (in.)	2.600
Length 3 (in.)	2.592
Top Diameter (in.)	2.872
Middle Diameter (in.)	2.875
Bottom Diameter (in.)	2.882
Sample Volume (cc)	275.15
Moisture Content(%)	18.05
Unit Wet Wt.(gms/cc)	1.71
Unit Wet Wt.(pcf.)	106.4
Unit Dry Wt.(pcf.)	90.1
Unit Dry Wt.(gms/cc)	1.44

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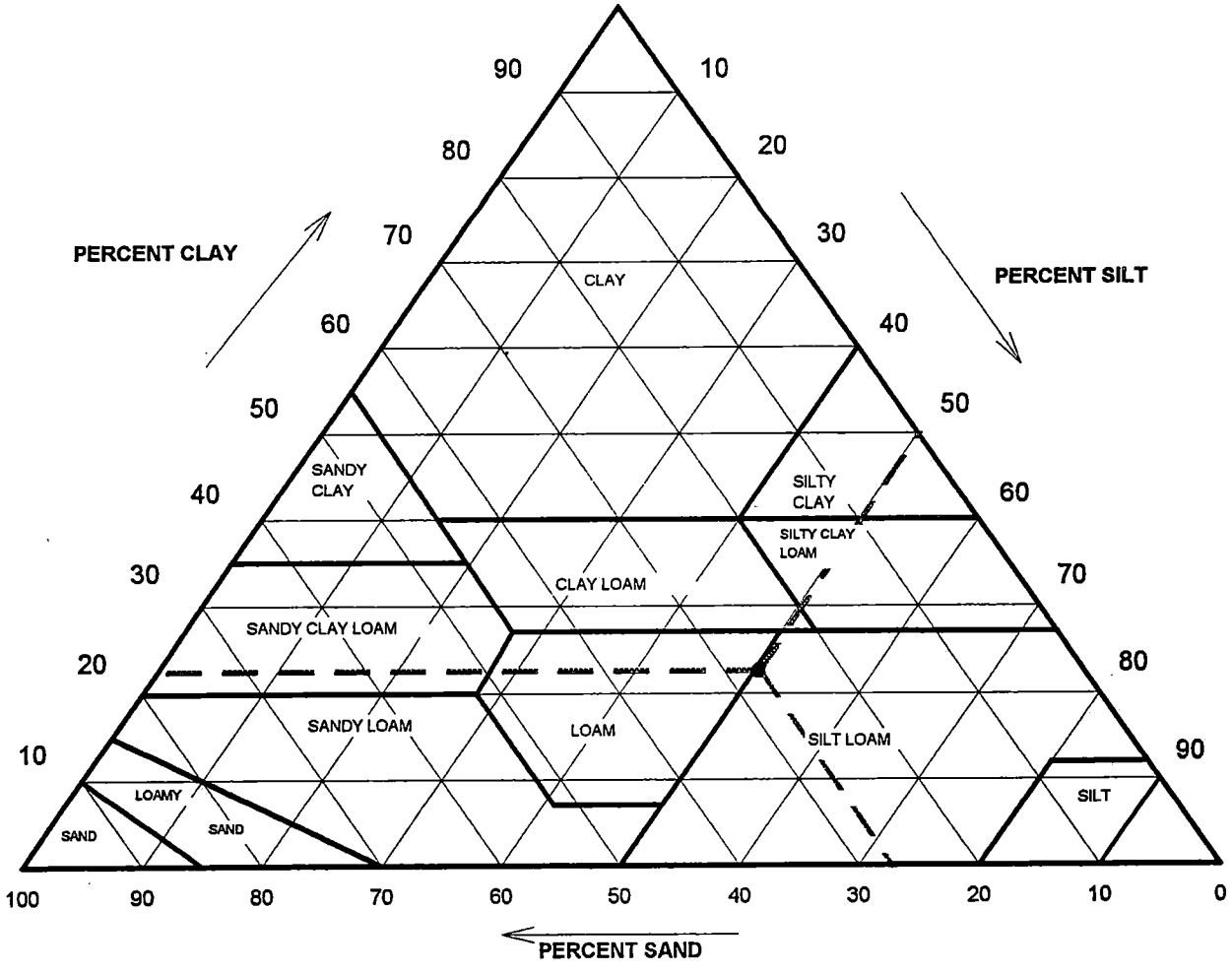
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.0-3.0
Project No.	97178-02	Sample No.	SM010-TB05-0103
Lab ID	97178-02.003	Soil Color	GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	27.05
Silt	50.32
Clay	22.63
USDA Classification	***SILT LOAM***

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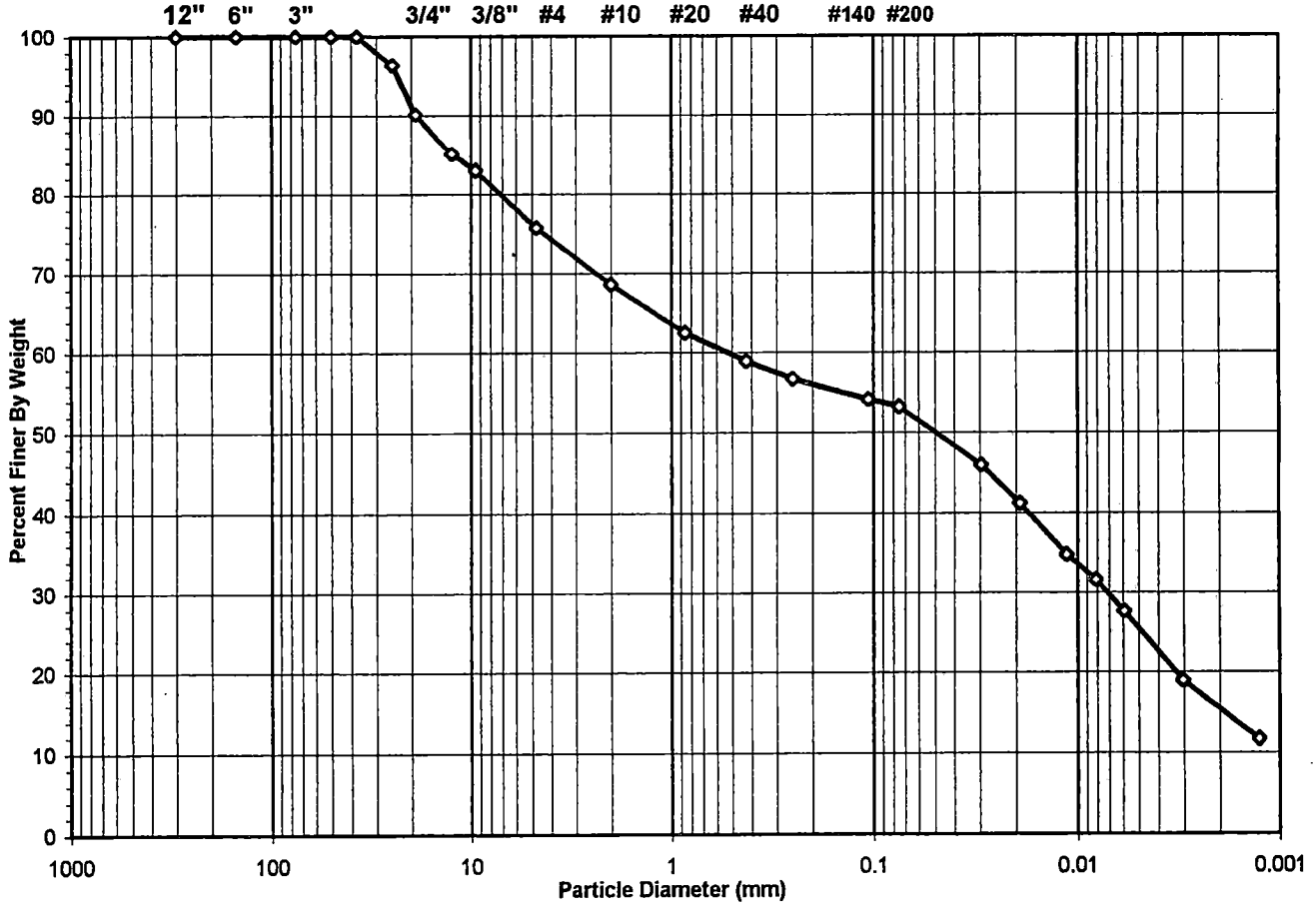
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.0-3.0
Project No.	97178-02	Sample No.	SM010-TB05-0103
Lab ID	97178-02.003	Soil Color	GRAY

	SIEVE ANALYSIS			HYDROMETER	
USCS	gravel		sand	silt and clay fraction	
USDA	gravel		sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	31.38	**0.00**
2	68.62	*Sand*	18.56	**27.05**
0.075	53.21	*Silt*	34.53	**50.32**
0.05	50.06	*Clay*	15.53	**22.63**
0.002	15.53			

USDA Classification ***SILT LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***GRAVELLY LEAN CLAY WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.0-3.0
Project No.	97178-02	Sample No.	SM010-TB05-0103
Lab ID	97178-02.003	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	33.0	34.5	24.4	28.9	86.3	0.01276	0.0294	**45.9**
5		31.5	24.4	25.9	77.4	0.01276	0.0190	**41.2**
15		27.5	24.4	21.9	65.4	0.01276	0.0113	**34.8**
30		25.5	24.4	19.9	59.4	0.01276	0.0081	**31.6**
60		23.0	23.3	17.4	52.0	0.01293	0.0059	**27.7**
250		17.5	22.5	11.9	35.5	0.01305	0.0030	**18.9**
1440		13.0	24.6	7.4	22.1	0.01273	0.0013	**11.8**

Soil Specimen Data		Other Corrections	
Tare No.	1667		
Tare + Dry Material (gm)	138.15	a - Factor	0.99
Weight of Tare (gm)	100.01	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	53.21
Weight of Dry Material (gm)	33.14		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/26/97 Checked By KBe Date 9-4-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.0-3.0
Project No.	97178-02	Sample No.	SM010-TB05-0103
Lab ID	97178-02.003	Soil Color	GRAY

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1714	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	730.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	667.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.49	Weight of Tare (gm)	NA
Weight of Water (gm)	62.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	584.41	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**10.7**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	584.41
Dry Weight - 3/4" Sample (gm)	215.96	Weight of minus #200 material (gm)	310.97
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	273.44
Dry Weight + 3/4" Sample (gm)	57.48		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	21.29	3.64	3.64	96.36	**96.36**
3/4"	19.0	36.19	6.19	9.84	90.16	**90.16**
1/2"	12.5	29.93	5.12	14.96	85.04	**85.04**
3/8"	9.50	12.04	2.06	17.02	82.98	**82.98**
#4	4.75	42.37	7.25	24.27	75.73	**75.73**
#10	2.00	41.56	7.11	31.38	68.62	**68.62**
#20	0.85	35.63	6.10	37.48	62.52	**62.52**
#40	0.425	20.81	3.56	41.04	58.96	**58.96**
#60	0.250	13.09	2.24	43.28	56.72	**56.72**
#140	0.106	15.36	2.63	45.90	54.10	**54.10**
#200	0.075	5.17	0.88	46.79	53.21	**53.21**
Pan	-	310.97	53.21	100.00	-	-

Tested By JCM Date 8/24/97 Checked By KBL Date 9-4-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 8-4-97
Client Project	BAYER 51249	Checked By	JCM 9.5.97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.30
Depth Pushed	1.0-3.0		
Shelby Tube No.	SM010-TB05-0103		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
1.00					
1.50					
2.00				UNABLE TO GET DENSITY	
2.50				GRAY GRAVELLY LEAN CLAY WITH SAND	WC GRAIN SIZE HYDROMETER
3.00		1			

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1714				
Wt. Tare & WS(gm.)	730.30				
Wt. Tare & DS(gm.)	667.90				
Wt. Tare(gm.)	83.49				
Moisture Content(%)	10.7				

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	
Wt. Of Tube(gms.)	
Wt. Of WS.(gms.)	
Length 1 (in.)	
Length 2 (in.)	
Length 3 (in.)	
Top Diameter (in.)	
Middle Diameter (in.)	
Bottom Diameter (in.)	
Sample Volume (cc)	
Moisture Content(%)	
Unit Wet Wt.(gms/cc)	
Unit Wet Wt.(pcf.)	
Unit Dry Wt.(pcf.)	
Unit Dry Wt.(gms/cc)	

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-18-97
Client Project	BAYER 51249	Checked By	JMD	Date	8-27-97
Project No.	97178-03				
Boring No.	NA				
Depth(ft.)	14.5-14.8				
Sample No.	SM010-TB02-1315				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.21
Sample Diameter (cm.)	7.26
Sample Area (cm.^2), A	41.37
Inflow Burette Area, (cm.^2), a-in	4.37
Outflow Burette Area, (cm.^2), a-out	4.94
B Parameter	97%

AVERAGE PERMEABILITY = 9.0E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 9.0E-10 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
08-18-97	15	10	0.0	0.0	0.0	195.4	0	22.6	NA
08-18-97	21	5	5.9	2.0	2.3	194.5	0	23.0	1.1E-07
08-19-97	7	15	16.1	5.4	5.1	193.1	0	23.0	9.2E-08
08-19-97	19	15	28.1	9.8	9.1	191.3	0	22.5	1.1E-07
08-20-97	7	5	39.9	13.2	12.4	189.8	0	23.0	8.7E-08
08-20-97	20	40	53.5	17.2	16.4	188.1	0	22.5	8.9E-08
08-21-97	7	25	64.3	20.6	19.2	186.8	0	23.0	9.0E-08
08-21-97	18	45	75.6	24.0	22.6	185.3	0	22.3	9.5E-08

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-18-97
Client Project	BAYER 51249	Checked By	JMO	Date	8-27-97
Project No.	97178-03				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	14.5-14.8	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB02-1315				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1012	676
Wt. Tare & WS(gm.)	323.80	393.89
Wt. Tare & DS(gm.)	281.85	334.81
Wt. Water(gm.)	41.95	59.08
Wt. Tare(gm.)	90.70	74.52
Wt. DS(gm.)	191.15	260.29
Moisture Content(%)	21.9	22.7

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1005.00	NA
Wt. Of Tube(gms.)	254.65	NA
Wt. Of WS.(gms.)	750.35	755.0
Length 1 (in.)	3.627	3.621
Length 2 (in.)	3.632	3.640
Length 3 (in.)	3.635	3.619
Top Diameter (in.)	2.881	2.854
Middle Diameter (in.)	2.896	2.861
Bottom Diameter (in.)	2.891	2.857
Average Length (in)	3.63	3.63
Average Area (in^2)	6.56	6.41
Sample Volume(cc.)	390.17	381.08
Unit Wet Wt.(gms/cc)	1.92	1.98
Unit Wet Wt.(pcf.)	120.0	123.6
Unit Dry Wt.(pcf.)	98.4	100.8
Unit Dry Wt.(gms/cc)	1.58	1.61
Void Ratio,e	0.71	0.67
Porosity, n	0.42	0.40
Pore Volume(cm^3)	162.3	153.2

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PERMEABILITY TEST

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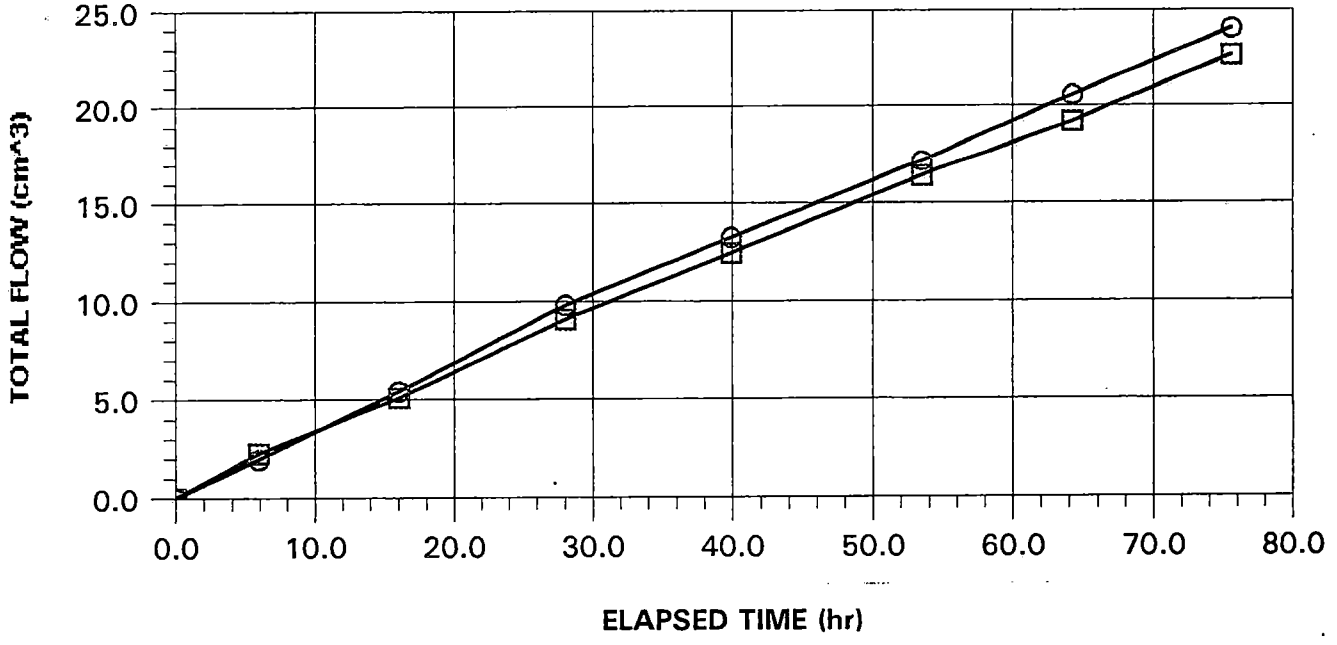
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	14.5-14.8
Project No.	97178-03	Sample No.	SM010-TB02-1315

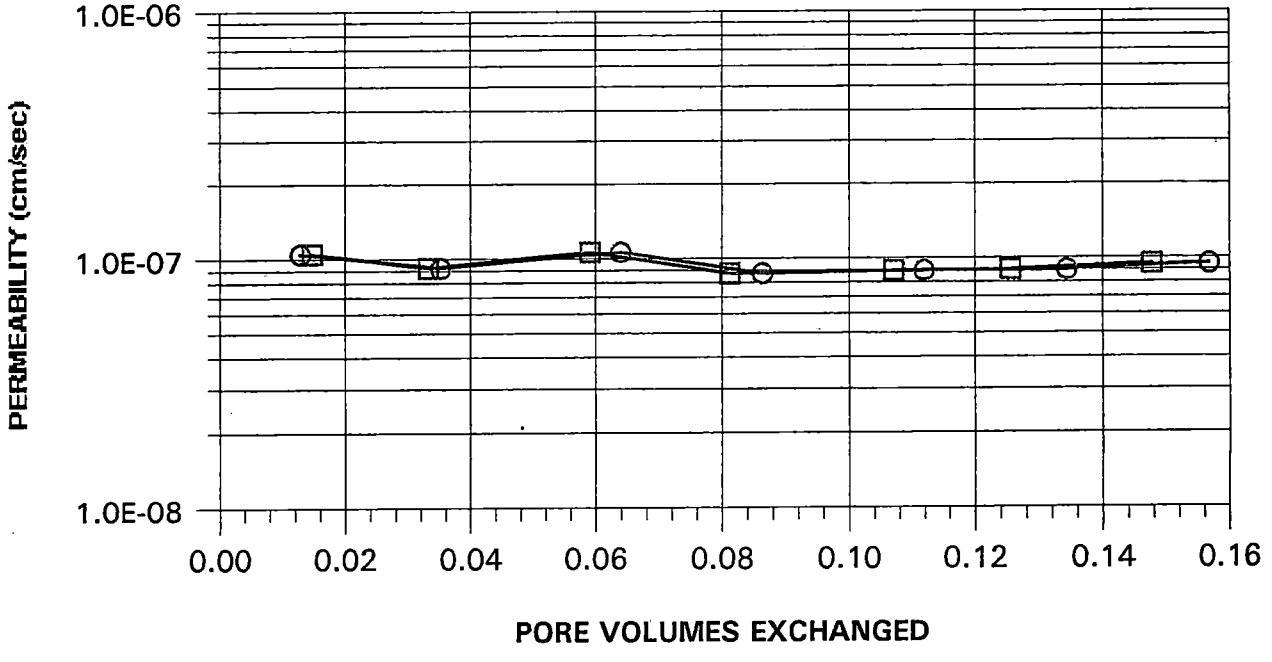
AVERAGE PERMEABILITY = 9.0E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 9.0E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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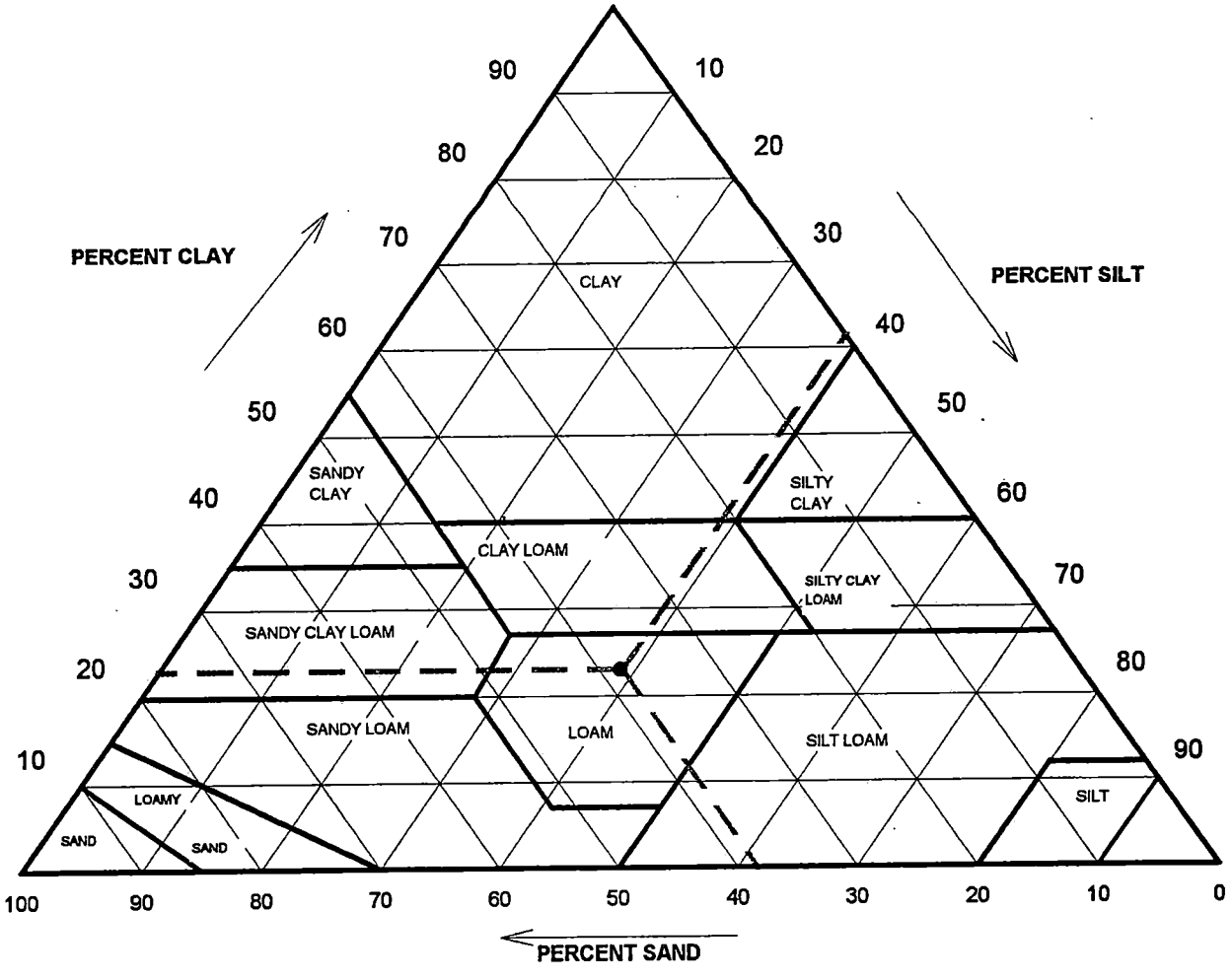
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.1-14.5
Project No.	97178-03	Sample No.	SM010-TB02-1315
Lab ID	97178-03.005	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	38.22
Silt	38.76
Clay	23.03
USDA Classification	***LOAM***

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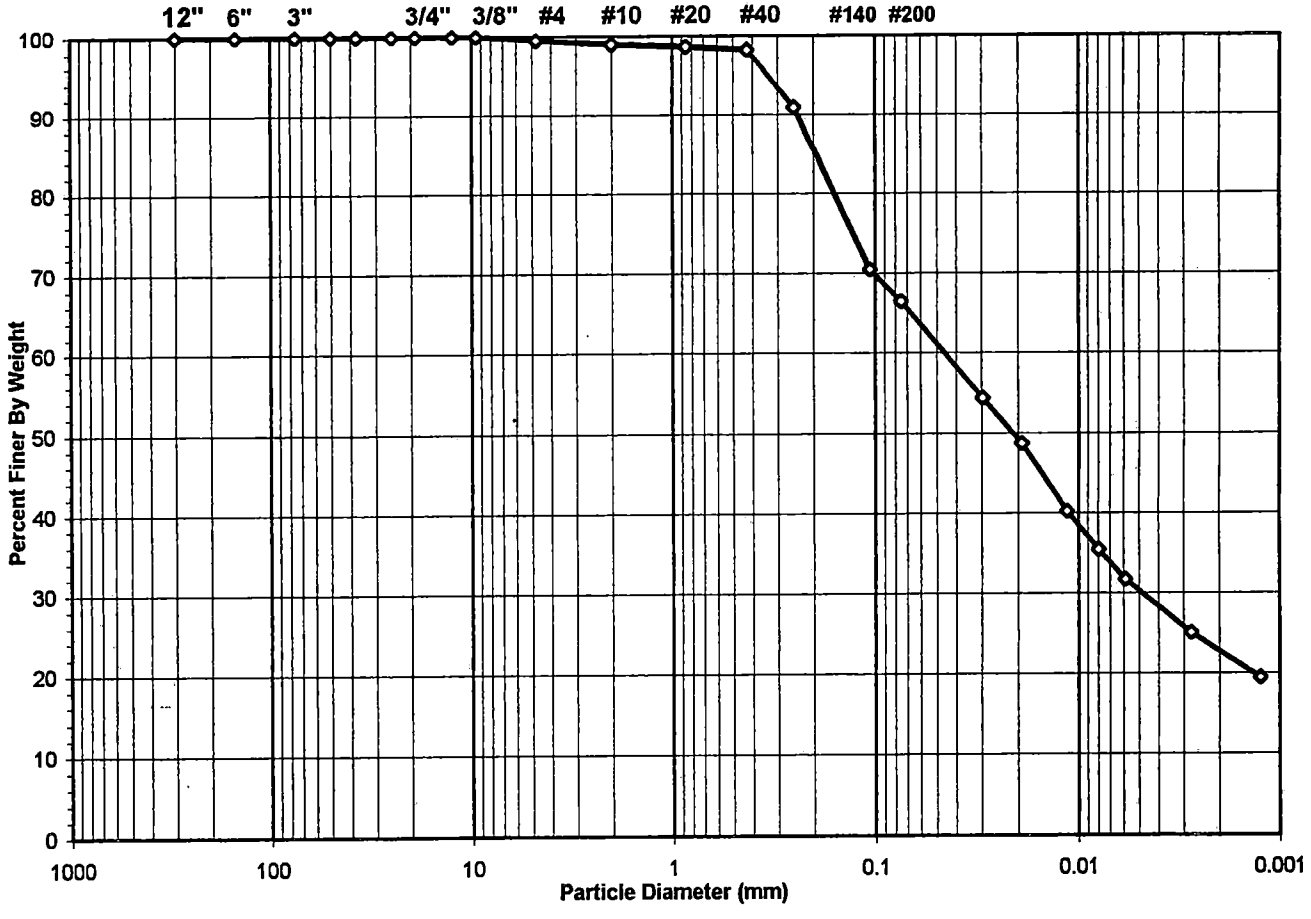
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.1-14.5
Project No.	97178-03	Sample No.	SM010-TB02-1315
Lab ID	97178-03.005	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	0.95	**0.00**
2	99.05	*Sand*	37.86	**38.22**
0.075	66.47	*Silt*	38.39	**38.76**
0.05	61.19	*Clay*	22.81	**23.03**
0.002	22.81			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.1-14.5
Project No.	97178-03	Sample No.	SM010-TB02-1315
Lab ID	97178-03.005	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	33.5	34.5	24.2	28.8	81.7	0.0295	**54.3**
5		31.5	24.2	25.8	73.2	0.0191	**48.7**
15		27.0	24.2	21.3	60.5	0.0114	**40.2**
32		24.5	24.2	18.8	53.4	0.0079	**35.5**
60		22.5	23.5	16.8	47.7	0.0059	**31.7**
284		19.0	22.6	13.3	37.8	0.0028	**25.1**
1440		16.0	22.4	10.3	29.2	0.0012	**19.4**

Soil Specimen Data		Corrections	
Tare No.	1623	K - Factor	0.01279
Tare + Dry Material (gm)	138.14	a - Factor	0.99
Weight of Tare (gm)	98.26	Composite Correction	5.70
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	66.47
Weight of Dry Material (gm)	34.88		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/18/97 Checked By [signature] Date 8-28-97

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DCN: DS-S3A
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REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.1-14.5
Project No.	97178-03	Sample No.	SM010-TB02-1315
Lab ID	97178-03.005	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1740	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	746.90	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	618.50	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.55	Weight of Tare (gm)	NA
Weight of Water (gm)	128.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	534.95	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**24.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	534.95
Dry Weight - 3/4" Sample (gm)	179.38	Weight of minus #200 material (gm)	355.57
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	179.38
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	2.65	0.50	0.50	99.50	**99.50**
#10	2.00	2.43	0.45	0.95	99.05	**99.05**
#20	0.85	1.92	0.36	1.31	98.69	**98.69**
#40	0.425	1.94	0.36	1.67	98.33	**98.33**
#60	0.250	39.32	7.35	9.02	90.98	**90.98**
#140	0.106	109.91	20.55	29.57	70.43	**70.43**
#200	0.075	21.21	3.96	33.53	66.47	**66.47**
Pan	-	355.57	66.47	100.00	-	-

Tested By JCM Date 8/18/97 Checked By T. O. Date 8/28/97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 8-18-97
Client Project	BAYER 51249	Checked By	JHC 9-3 97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	13.0-15.0		
Shelby Tube No.	SM010-TB02-1315		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
13.00					
13.50					
14.00					GRAIN SIZE HYDROMETER UNIT WGT. WC
14.50		3		BROWN SANDY LEAN CLAY	PERMEABILITY
15.00		2 1			WATER CONTENT

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1012		1740		
Wt. Tare & WS(gm.)	323.80		746.90		
Wt. Tare & DS(gm.)	281.85		618.50		
Wt. Tare(gm.)	90.70		83.55		
Moisture Content(%)	21.9		24.0		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1005.00	1343.00
Wt. Of Tube(gms.)	254.65	331.79
Wt. Of WS.(gms.)	750.35	1011.21
Length 1 (in.)	3.627	4.747
Length 2 (in.)	3.632	4.734
Length 3 (in.)	3.635	4.757
Top Diameter (in.)	2.881	2.884
Middle Diameter (in.)	2.896	2.878
Bottom Diameter (in.)	2.891	2.880
Sample Volume (cc)	390.17	506.88
Moisture Content(%)	21.95	24.00
Unit Wet Wt.(gms/cc)	1.92	1.99
Unit Wet Wt.(pcf.)	120.0	124.5
Unit Dry Wt.(pcf.)	98.4	100.4
Unit Dry Wt.(gms/cc)	1.58	1.61

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-18-97
Client Project	BAYER 51249	Checked By	JMO	Date	9-3-97
Project No.	97178-03				
Boring No.	NA				
Depth(ft.)	8.7-9.0				
Sample No.	SM010-TB02-0709				
Visual Description	BROWN CLAYEY SAND				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.25
Sample Diameter (cm.)	7.16
Sample Area (cm.^2), A	40.31
Inflow Burette Area, (cm.^2), a-in	4.51
Outflow Burette Area, (cm.^2), a-out	4.60
B Parameter	95%

AVERAGE PERMEABILITY = 1.6E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.6E-08 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
08-18-97	15	10	0.0	0.0	0.0	198.1	0	22.6	NA
08-18-97	21	5	5.9	35.5	35.3	182.5	0	23.0	1.9E-06
08-19-97	7	15	16.1	92.6	91.5	157.7	1	23.0	1.9E-06
08-19-97	7	30	16.1	92.6	91.5	201.1	0	23.0	NA
08-19-97	19	15	27.8	161.0	158.5	171.4	1	22.5	1.9E-06
08-19-97	19	20	27.8	161.0	158.5	203.2	0	22.5	NA
08-20-97	7	5	39.6	226.3	223.5	174.6	0	23.0	1.7E-06
08-20-97	20	40	53.2	286.0	282.8	148.5	1	22.5	1.6E-06
08-20-97	20	45	53.2	286.0	282.8	202.7	0	22.5	NA
08-21-97	7	25	63.8	340.0	336.9	179.0	0	23.0	1.6E-06
08-21-97	18	45	75.2	389.4	385.7	157.4	0	22.5	1.5E-06

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-18-97
Client Project	BAYER 51249	Checked By	JMD	Date	9-3-97
Project No.	97178-03				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	8.7-9.0	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB02-0709				

Visual Description BROWN CLAYEY SAND

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	90	G
Wt. Tare & WS(gm.)	176.80	550.70
Wt. Tare & DS(gm.)	165.72	476.70
Wt. Water(gm.)	11.08	74.00
Wt. Tare(gm.)	100.94	73.52
Wt. DS(gm.)	64.78	403.18
Moisture Content(%)	17.1	18.4

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	765.50	NA
Wt. Of Tube(gms.)	0.00	NA
Wt. Of WS.(gms.)	765.50	773.7
Length 1 (in.)	3.724	3.648
Length 2 (in.)	3.648	3.639
Length 3 (in.)	3.692	3.638
Top Diameter (in.)	2.871	2.808
Middle Diameter (in.)	2.875	2.822
Bottom Diameter (in.)	2.881	2.832
Average Length (in)	3.69	3.64
Average Area (in^2)	6.49	6.25
Sample Volume(cc.)	392.52	372.90
Unit Wet Wt.(gms/cc)	1.95	2.07
Unit Wet Wt.(pcf.)	121.7	129.5
Unit Dry Wt.(pcf.)	103.9	109.4
Unit Dry Wt.(gms/cc)	1.67	1.75
Void Ratio,e	0.62	0.54
Porosity, n	0.38	0.35
Pore Volume(cm^3)	150.4	130.8

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PERMEABILITY TEST

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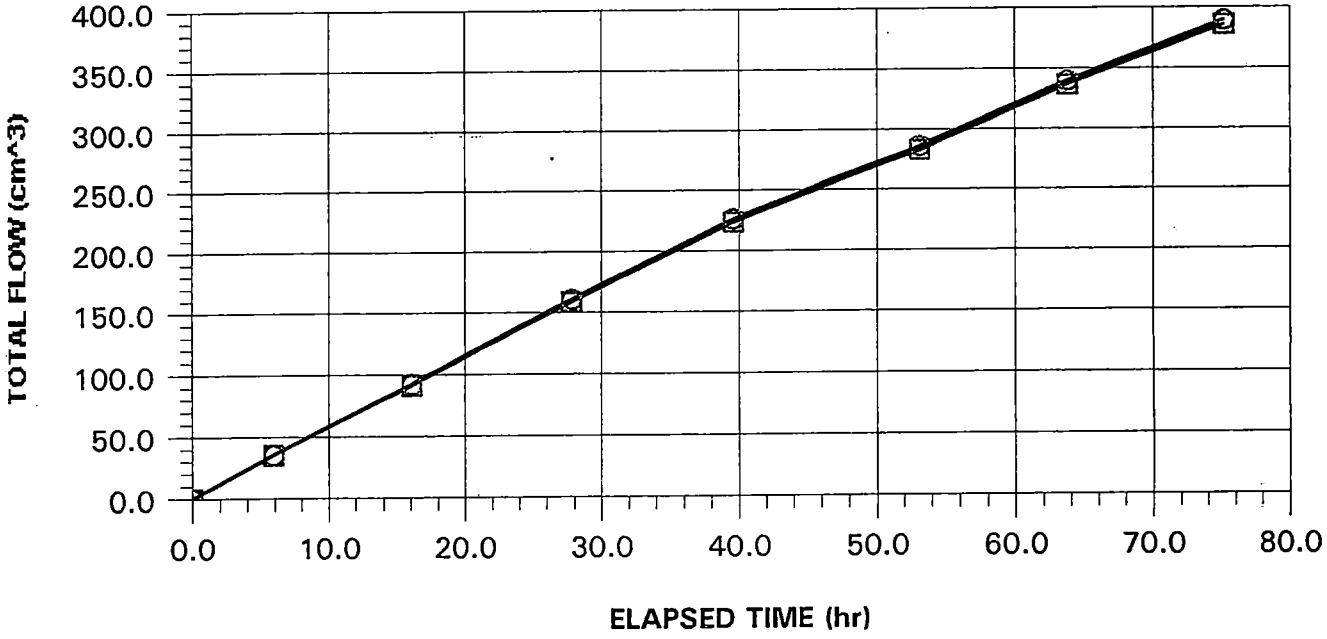
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	8.7-9.0
Project No.	97178-03	Sample No.	SM010-TB02-0709

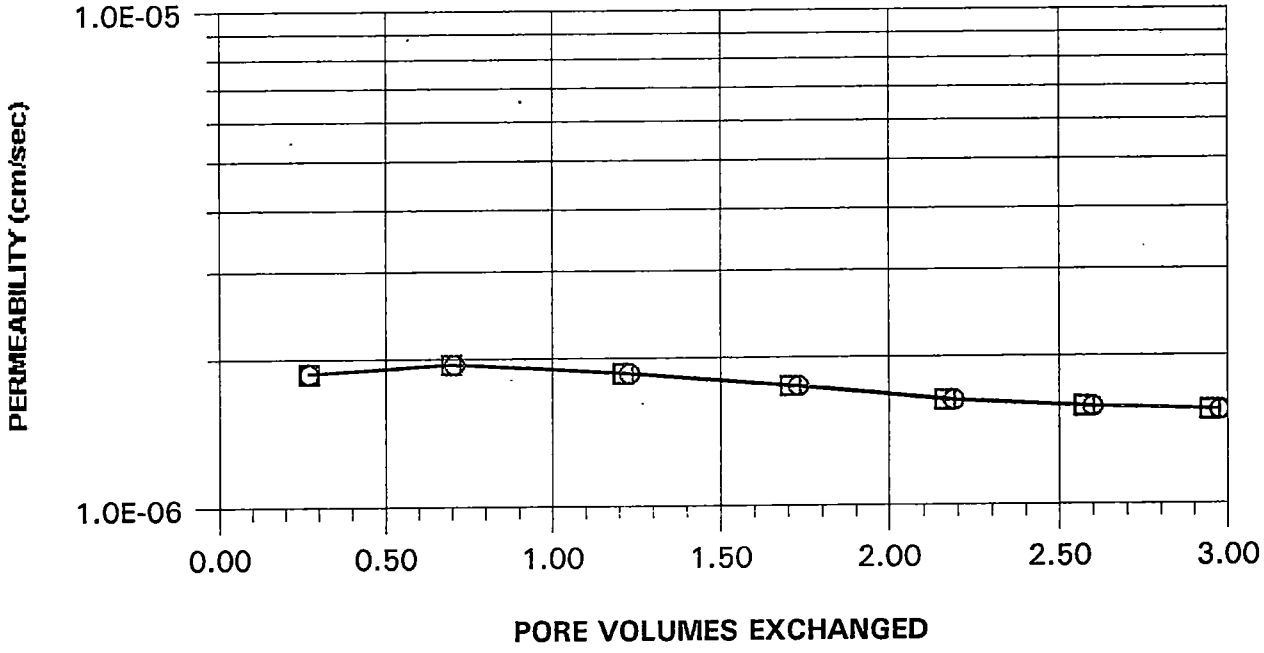
AVERAGE PERMEABILITY = 1.6E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.6E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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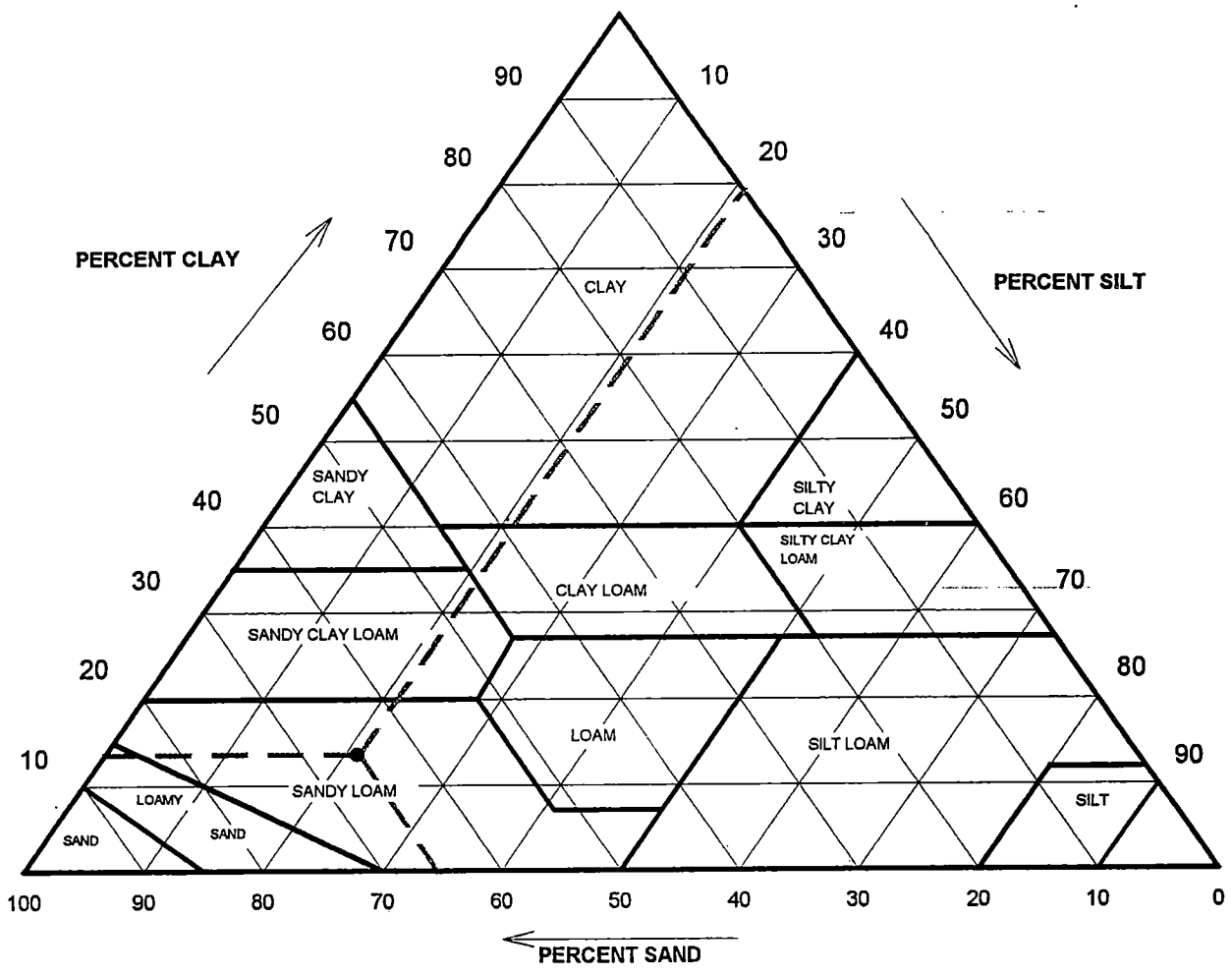
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	8.7-9.0
Project No.	97178-03	Sample No.	SM010-TB02-0709
Lab ID	97178-03.004	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	65.31
Silt	21.04
Clay	13.65
USDA Classification	***SANDY LOAM***

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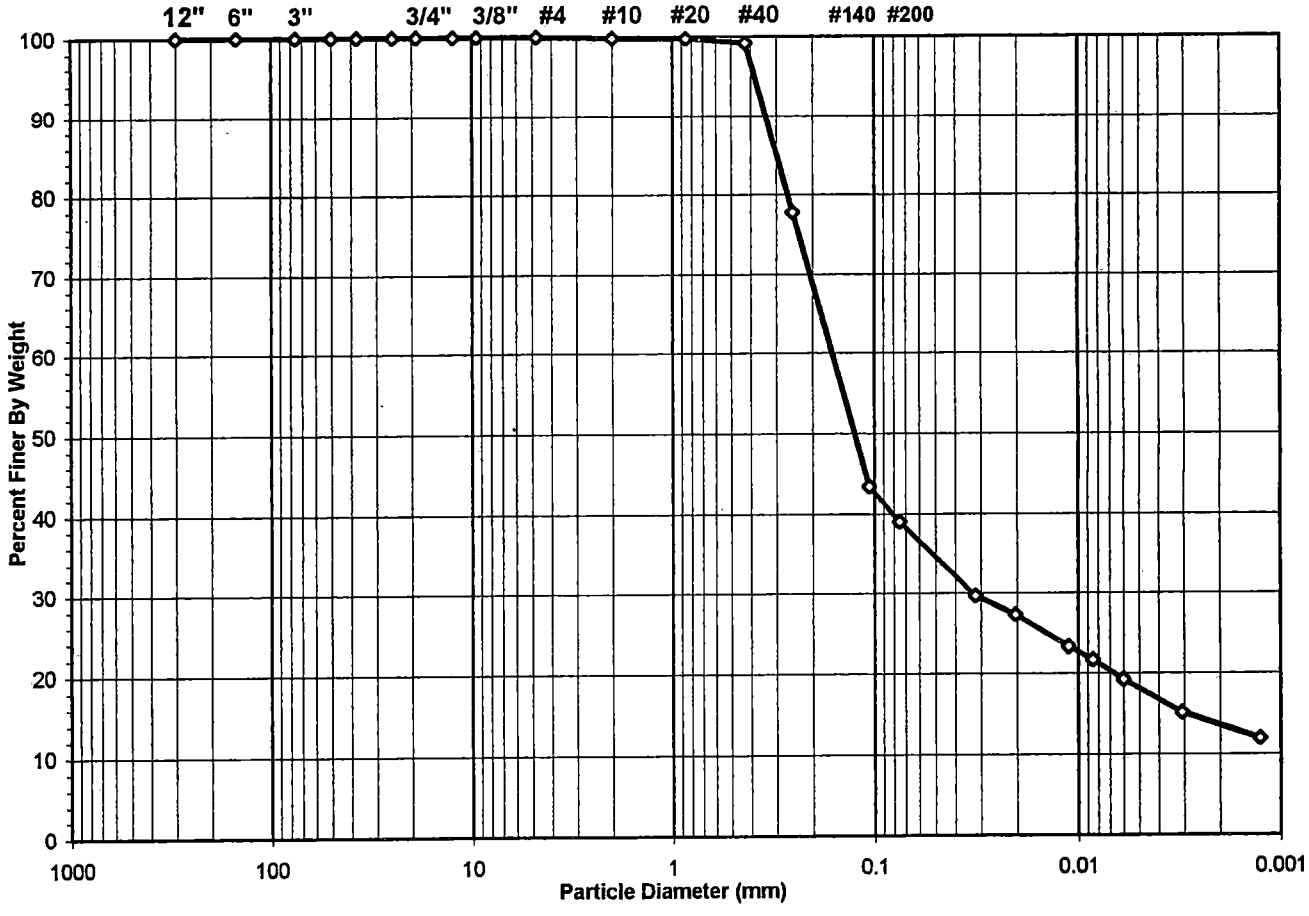
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	8.7-9.0
Project No.	97178-03	Sample No.	SM010-TB02-0709
Lab ID	97178-03.004	Soil Color	**BROWN**

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	0.17	**0.00**
2	99.83	*Sand*	65.20	**65.31**
0.075	39.00	*Silt*	21.00	**21.04**
0.05	34.63	*Clay*	13.63	**13.65**
0.002	13.63			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	8.7-9.0
Project No.	97178-03	Sample No.	SM010-TB02-0709
Lab ID	97178-03.004	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	23.0	24.0	24.4	18.4	76.2	0.01276	0.0317	**29.7**
5		22.5	24.4	16.9	70.0	0.01276	0.0203	**27.3**
17		20.0	24.4	14.4	59.6	0.01276	0.0112	**23.3**
30		19.0	24.4	13.4	55.5	0.01276	0.0085	**21.6**
63		17.5	23.3	11.9	49.3	0.01293	0.0060	**19.2**
250		15.0	22.5	9.4	38.9	0.01305	0.0031	**15.2**
1440		13.0	24.6	7.4	30.7	0.01273	0.0013	**12.0**

Soil Specimen Data		**Other Corrections**	
Tare No.	1624		
Tare + Dry Material (gm)	130.86	a - Factor	0.99
Weight of Tare (gm)	101.96	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	39.00
Weight of Dry Material (gm)	23.9		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/26/97 Checked By KBL Date 9-4-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	8.7-9.0
Project No.	97178-03	Sample No.	SM010-TB02-0709
Lab ID	97178-03.004	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	G	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	550.70	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	476.70	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	73.52	Weight of Tare (gm)	NA
Weight of Water (gm)	74.00	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	403.18	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**18.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	403.18
Dry Weight - 3/4" Sample (gm)	245.92	Weight of minus #200 material (gm)	157.26
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	245.92
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.68	0.17	0.17	99.83	**99.83**
#20	0.85	0.40	0.10	0.27	99.73	**99.73**
#40	0.425	2.29	0.57	0.84	99.16	**99.16**
#60	0.250	85.98	21.33	22.16	77.84	**77.84**
#140	0.106	138.90	34.45	56.61	43.39	**43.39**
#200	0.075	17.67	4.38	61.00	39.00	**39.00**
Pan	-	157.26	39.00	100.00	-	-

Tested By JCM Date 8/22/97 Checked By KBL Date 9-4-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 8-22-97
Client Project	BAYER 51249	Checked By	JMC 9-5-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	0.40
Depth Pushed	7.0-9.0		
Shelby Tube No.	SM010-TB02-0709		

SOIL PROFILE AND SAMPLING

	DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
7.00						
7.50						
8.00						
8.50					BROWN CLAYEY SAND	WC
9.00			1			GRAIN SIZE HYDROMETER PERMEABILITY

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number		90			
Wt. Tare & WS(gm.)		176.80			
Wt. Tare & DS(gm.)		165.72			
Wt. Tare(gm.)		100.94			
Moisture Content(%)		17.1			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	765.50
Wt. Of Tube(gms.)	0.00
Wt. Of WS.(gms.)	765.50
Length 1 (in.)	3.724
Length 2 (in.)	3.648
Length 3 (in.)	3.692
Top Diameter (in.)	2.871
Middle Diameter (in.)	2.875
Bottom Diameter (in.)	2.881
Sample Volume (cc)	392.52
Moisture Content(%)	17.10
Unit Wet Wt.(gms/cc)	1.95
Unit Wet Wt.(pcf.)	121.7
Unit Dry Wt.(pcf.)	103.9
Unit Dry Wt.(gms/cc)	1.67

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-18-97
Client Project	BAYER 51249	Checked By	JMO	Date	9-3-97
Project No.	97178-03				
Boring No.	NA				
Depth(ft.)	4.7-5.0				
Sample No.	SM010-TB02-0305				
Visual Description	BROWN SANDY CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	8.68
Sample Diameter (cm.)	7.25
Sample Area (cm.^2), A	41.32
Inflow Burette Area, (cm.^2), a-in	4.91
Outflow Burette Area, (cm.^2), a-out	4.45
B Parameter	96%

AVERAGE PERMEABILITY = 3.2E-07 **cm/sec @ 20°C**
AVERAGE PERMEABILITY = 3.2E-09 **m/sec @ 20°C**

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
08-18-97	15	10	0.0	0.0	0.0	194.0	0	22.6	NA
08-18-97	21	5	5.9	8.7	7.9	190.4	0	23.0	4.0E-07
08-19-97	7	15	16.1	21.5	20.6	185.0	0	23.0	3.6E-07
08-19-97	19	15	28.1	35.5	34.3	179.1	0	22.5	3.5E-07
08-20-97	7	5	39.9	48.4	47.0	173.6	0	23.0	3.3E-07
08-20-97	20	40	53.5	61.9	60.2	167.9	0	22.5	3.2E-07
08-21-97	7	25	64.3	72.4	70.8	163.3	0	23.0	3.2E-07
08-21-97	18	45	75.6	83.4	81.3	158.7	0	22.3	3.3E-07

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-18-97
Client Project	BAYER 51249	Checked By	JMD	Date	9-3-97
Project No.	97178-03				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	4.7-5.0	Sample Condition	UNDISTURBED		
Sample No.	SM010-TB02-0305				

Visual Description BROWN SANDY CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1280	9
Wt. Tare & WS(gm.)	255.91	669.70
Wt. Tare & DS(gm.)	215.66	592.40
Wt. Water(gm.)	40.25	77.30
Wt. Tare(gm.)	34.45	74.47
Wt. DS(gm.)	181.21	517.93
Moisture Content(%)	22.2	14.9

UNIT WEIGHT

Wt. Tube & WS.(gms.)	1029.00	NA
Wt. Of Tube(gms.)	244.19	NA
Wt. Of WS.(gms.)	784.81	738.0
Length 1 (in.)	3.527	3.456
Length 2 (in.)	3.546	3.389
Length 3 (in.)	3.551	3.407
Top Diameter (in.)	2.892	2.850
Middle Diameter (in.)	2.880	2.850
Bottom Diameter (in.)	2.889	2.867
Average Length (in)	3.54	3.42
Average Area (in^2)	6.55	6.40
Sample Volume(cc.)	379.88	358.67
Unit Wet Wt.(gms/cc)	2.07	2.06
Unit Wet Wt.(pcf.)	128.9	128.4
Unit Dry Wt.(pcf.)	105.5	111.7
Unit Dry Wt.(gms/cc)	1.69	1.79
Void Ratio,e	0.60	0.51
Porosity, n	0.37	0.34
Pore Volume(cm^3)	142.0	120.8

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PERMEABILITY TEST

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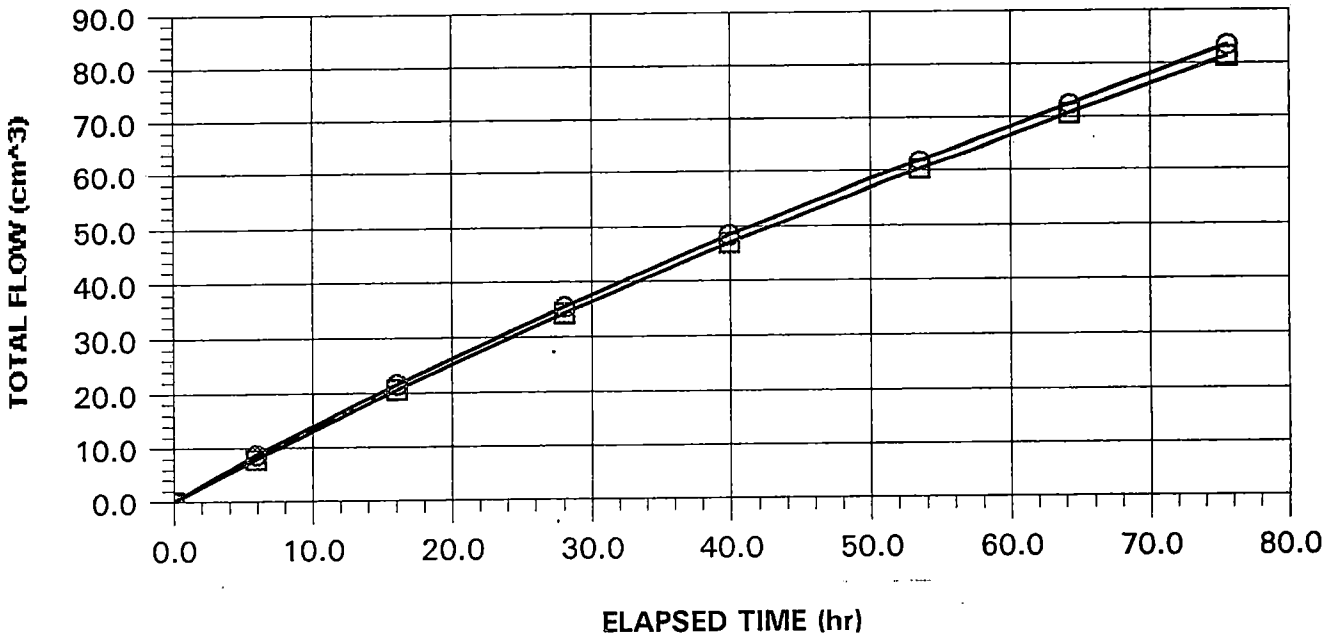
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.7-5.0
Project No.	97178-03	Sample No.	SM010-TB02-0305

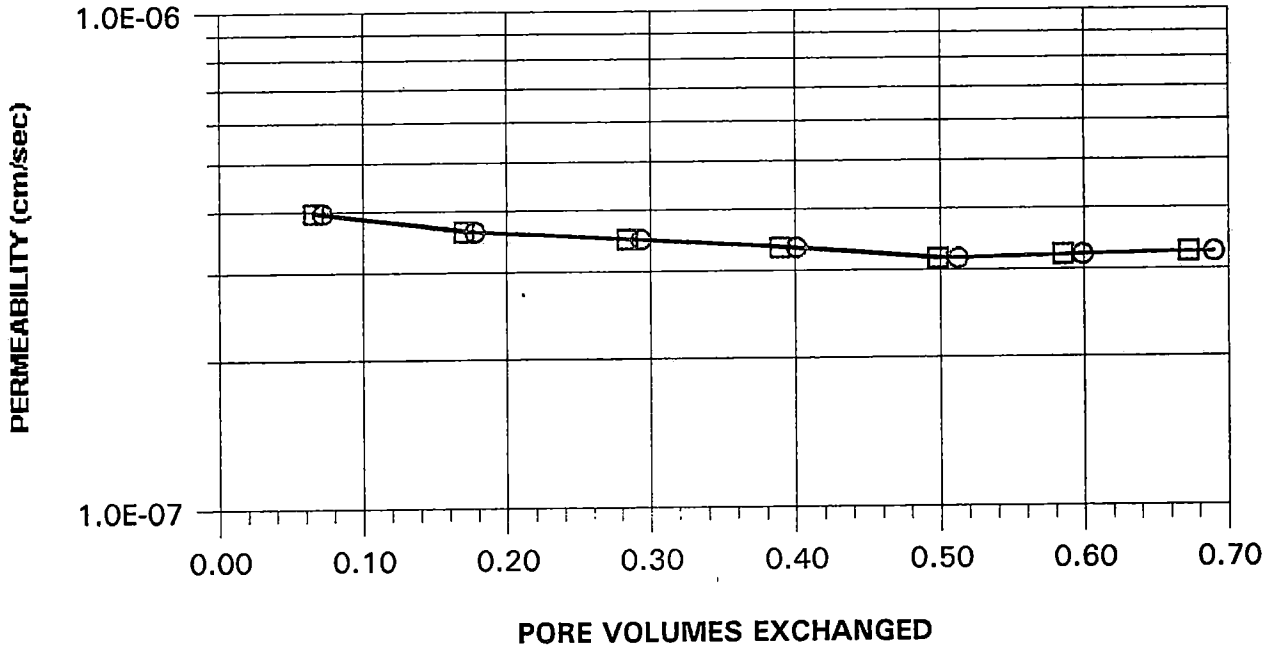
AVERAGE PERMEABILITY = 3.2E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.2E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



⊖ INFLOW
⊟ OUTFLOW

PORE VOLUMES EXCHANGED vs. PERMEABILITY



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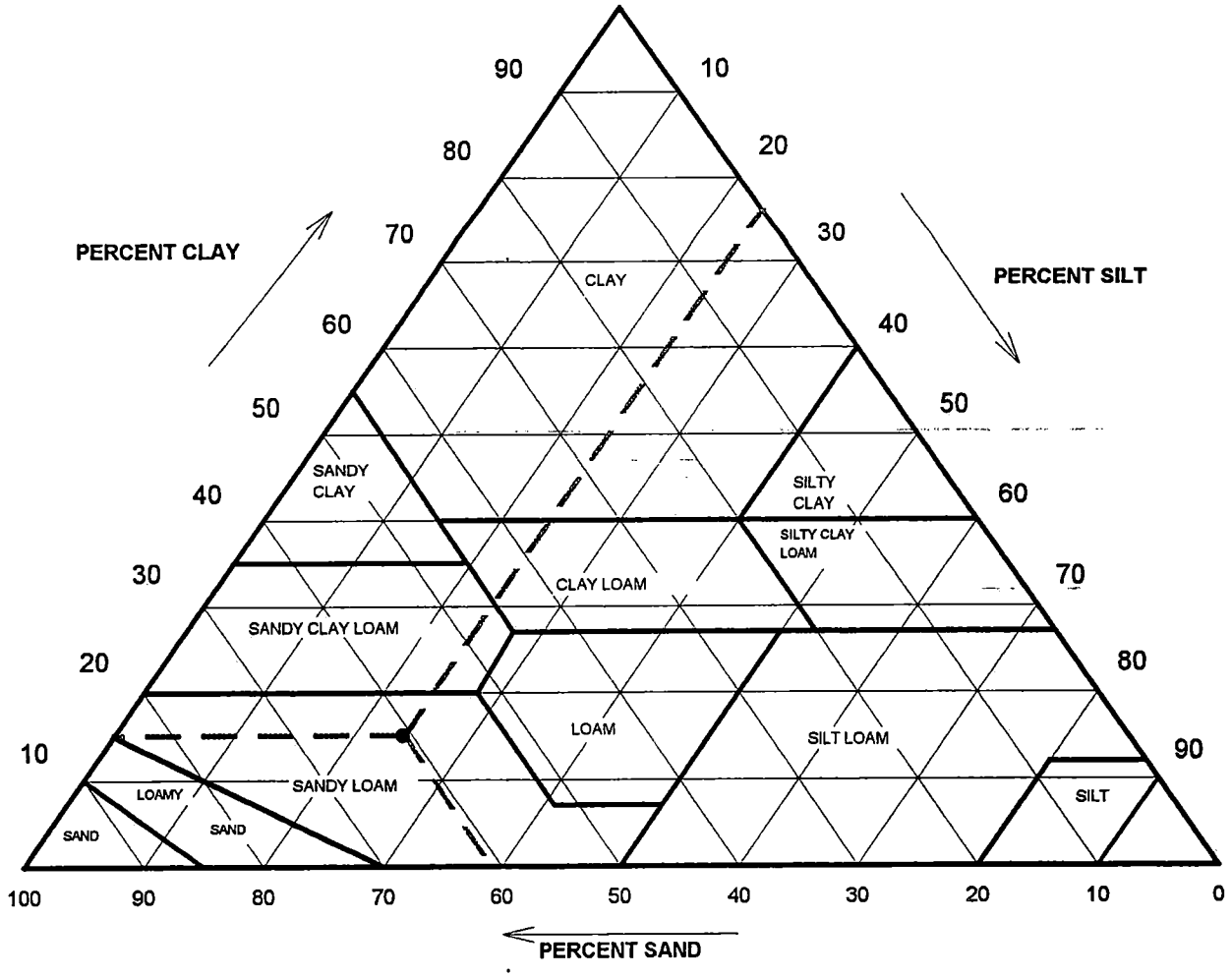
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.7-5.0
Project No.	97178-03	Sample No.	SM010-TB02-0305
Lab ID	97178-03.003	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	60.76
Silt	24.10
Clay	15.15
USDA Classification	***SANDY LOAM***

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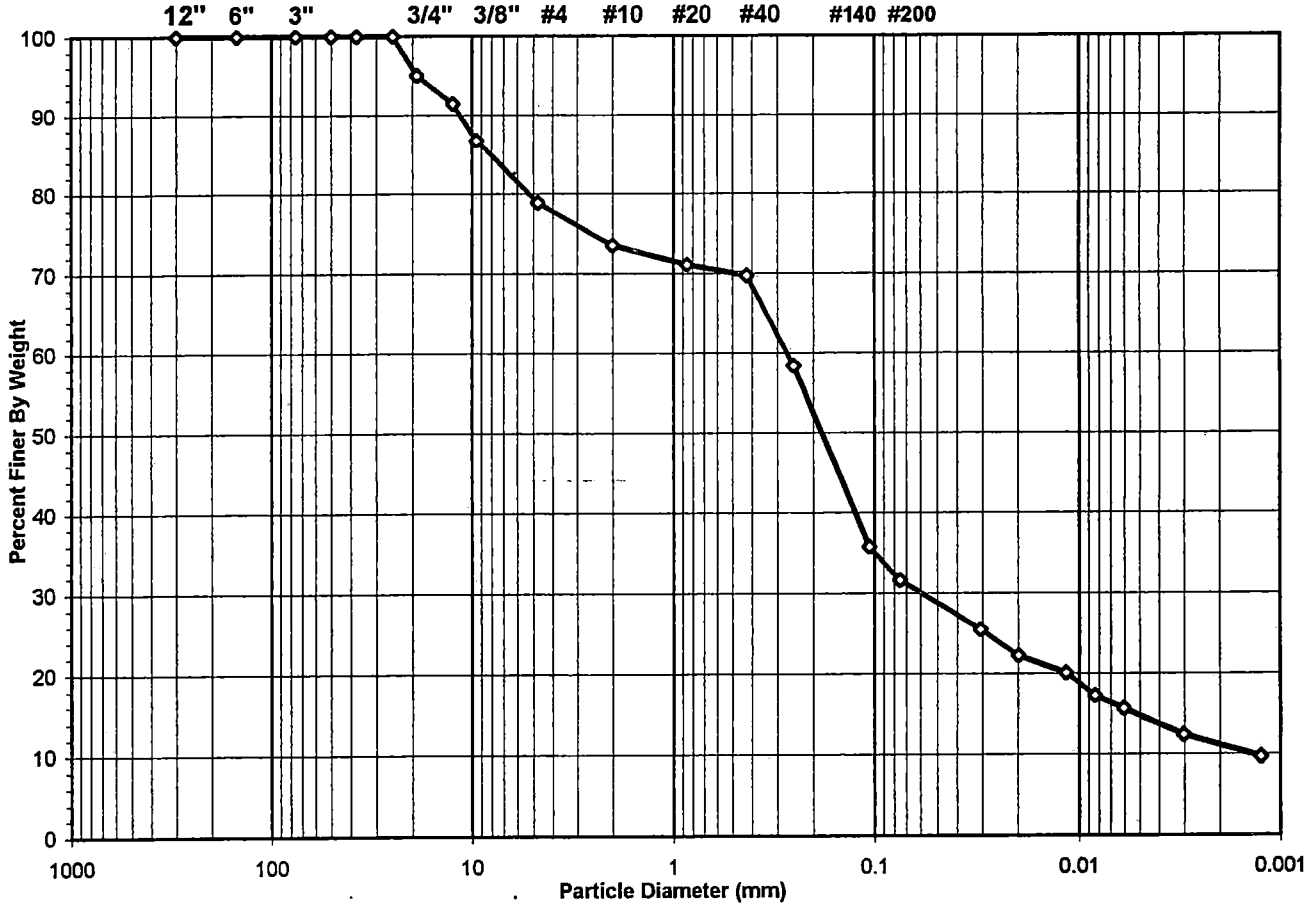
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.7-5.0
Project No.	97178-03	Sample No.	SM010-TB02-0305
Lab ID	97178-03.003	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	26.45	**0.00**
2	73.55	*Sand*	44.69	**60.76**
0.075	31.66	*Silt*	17.73	**24.10**
0.05	28.87	*Clay*	11.14	**15.15**
0.002	11.14			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND WITH GRAVEL***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.7-5.0
Project No.	97178-03	Sample No.	SM010-TB02-0305
Lab ID	97178-03.003	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA
2	28.0	29.0	24.4	23.4	80.5	0.01276	0.0307	**25.5**
5		26.0	24.4	20.4	70.2	0.01276	0.0198	**22.2**
15		24.0	24.4	18.4	63.3	0.01276	0.0116	**20.1**
30		21.5	24.4	15.9	54.7	0.01276	0.0083	**17.3**
60		20.0	23.3	14.4	49.6	0.01293	0.0060	**15.7**
250		17.0	22.5	11.4	39.2	0.01305	0.0030	**12.4**
1440		14.5	24.6	8.9	30.6	0.01273	0.0013	**9.7**

Soil Specimen Data		**Other Corrections**	
Tare No.	1658		
Tare + Dry Material (gm)	126.57	a - Factor	0.99
Weight of Tare (gm)	92.81	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	31.66
Weight of Dry Material (gm)	28.76		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/22/97 Checked By KBl Date 9-4-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.7-5.0
Project No.	97178-03	Sample No.	SM010-TB02-0305
Lab ID	97178-03.003	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	9	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	669.70	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	592.40	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	74.47	Weight of Tare (gm)	NA
Weight of Water (gm)	77.30	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	517.93	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**14.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	517.93
Dry Weight - 3/4" Sample (gm)	328.14	Weight of minus #200 material (gm)	163.96
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	353.97
Dry Weight + 3/4" Sample (gm)	25.83		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	25.83	4.99	4.99	95.01	**95.01**
1/2"	12.5	18.68	3.61	8.59	91.41	**91.41**
3/8"	9.50	24.25	4.68	13.28	86.72	**86.72**
#4	4.75	40.44	7.81	21.08	78.92	**78.92**
#10	2.00	27.77	5.36	26.45	73.55	**73.55**
#20	0.85	12.69	2.45	28.90	71.10	**71.10**
#40	0.425	7.20	1.39	30.29	69.71	**69.71**
#60	0.250	58.58	11.31	41.60	58.40	**58.40**
#140	0.106	117.25	22.64	64.23	35.77	**35.77**
#200	0.075	21.28	4.11	68.34	31.66	**31.66**
Pan	-	163.96	31.66	100.00	-	-

Tested By JCM Date 8/22/97 Checked By KGL Date 9-4-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 8-18-97
Client Project	BAYER 51249	Checked By	JMO 9-5-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	0.30
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM010-TB02-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					
4.50				BROWN CLAYEY SAND WITH GRAVEL	WC
5.00		1			GRAIN SIZE HYDROMETER PERMEABILITY

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number		1280			
Wt. Tare & WS(gm.)		255.91			
Wt. Tare & DS(gm.)		215.66			
Wt. Tare(gm.)		34.45			
Moisture Content(%)		22.2			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1029.00
Wt. Of Tube(gms.)	244.19
Wt. Of WS.(gms.)	784.81
Length 1 (in.)	3.527
Length 2 (in.)	3.546
Length 3 (in.)	3.551
Top Diameter (in.)	2.892
Middle Diameter (in.)	2.880
Bottom Diameter (in.)	2.889
Sample Volume (cc)	379.88
Moisture Content(%)	22.21
Unit Wet Wt.(gms/cc)	2.07
Unit Wet Wt.(pcf.)	128.9
Unit Dry Wt.(pcf.)	105.5
Unit Dry Wt.(gms/cc)	1.69

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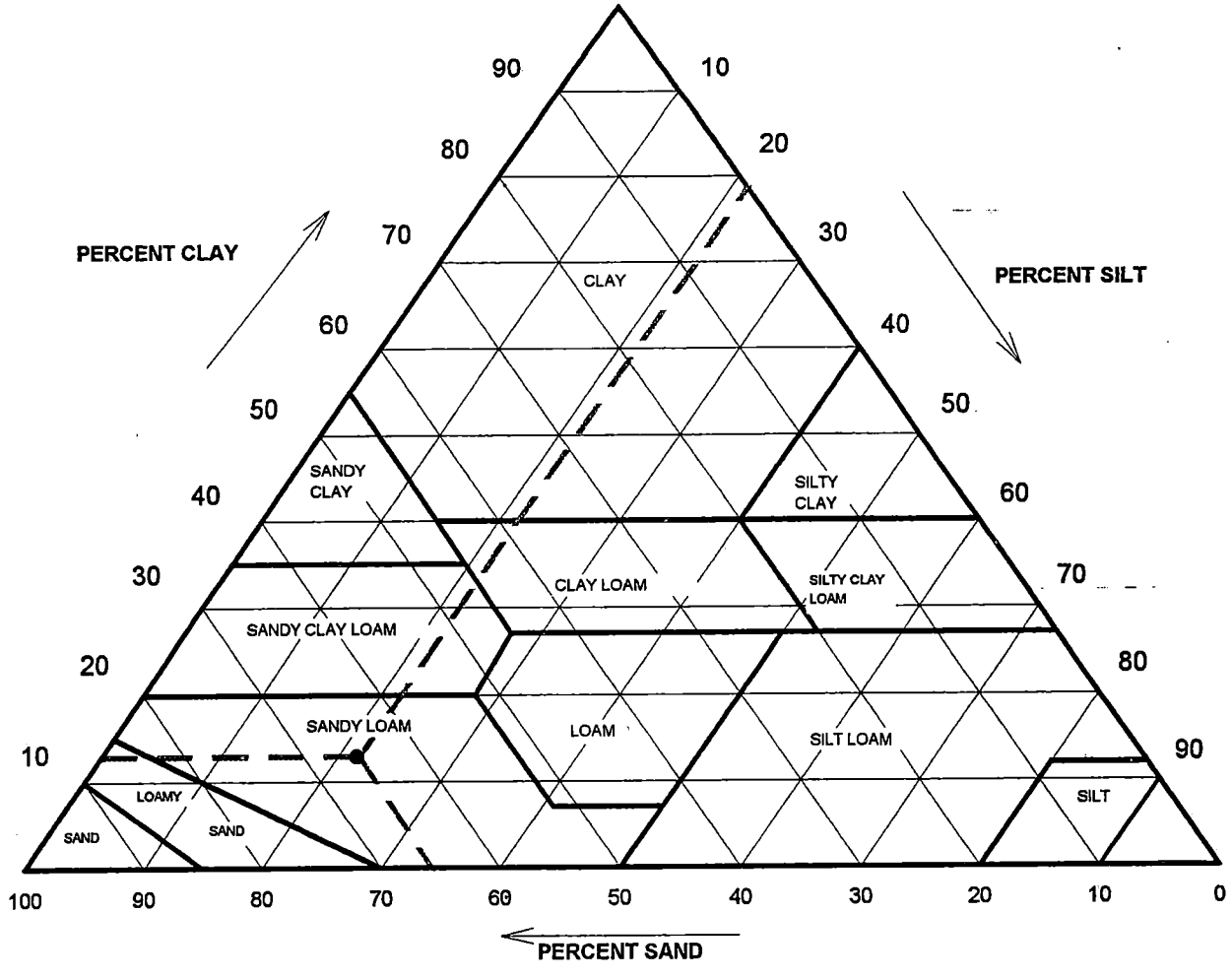
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-03	Sample No.	SM010-TB02-0103
Lab ID	97178-03.002	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	65.56
Silt	21.58
Clay	12.86
USDA Classification	***SANDY LOAM***

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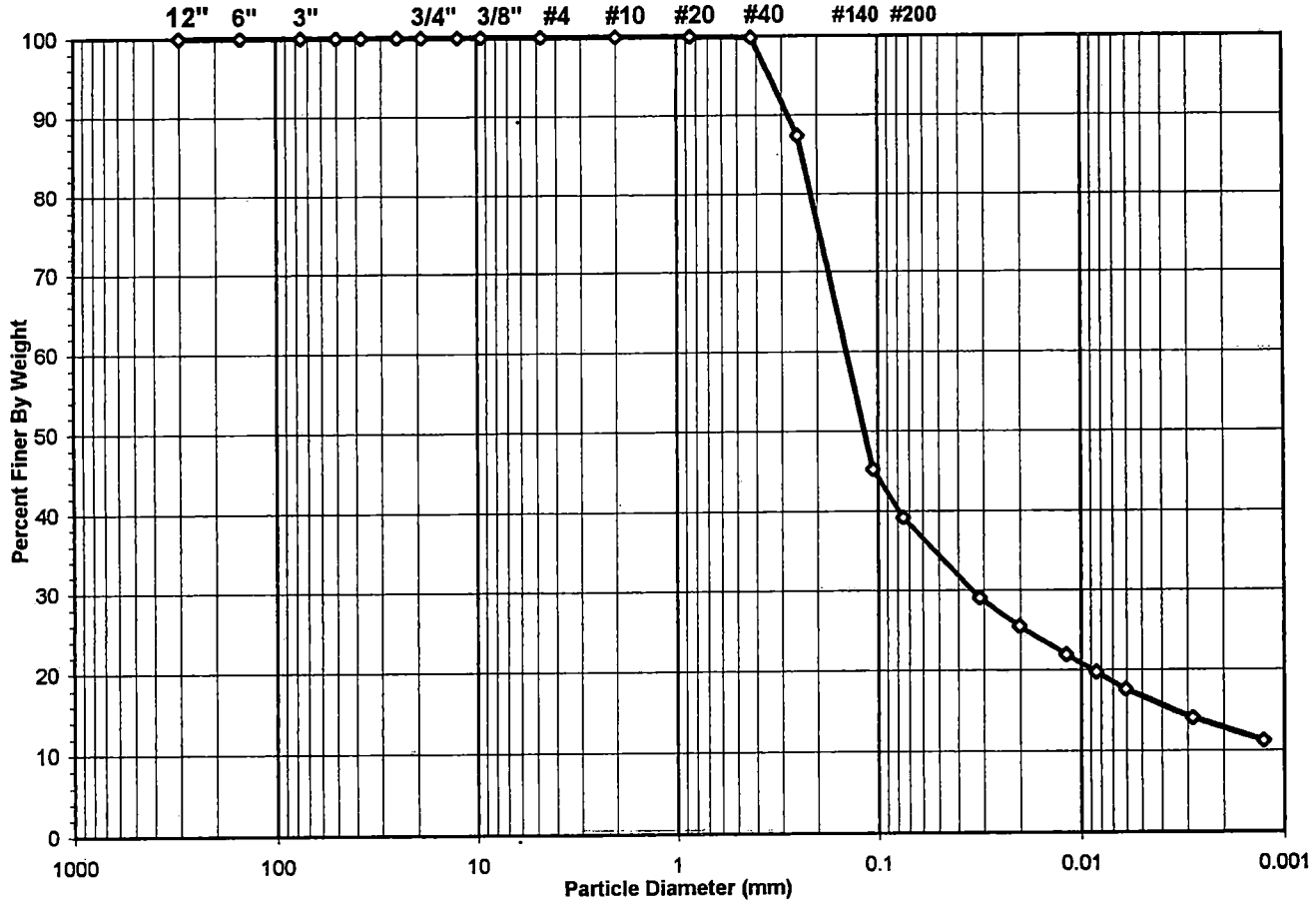
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-03	Sample No.	SM010-TB02-0103
Lab ID	97178-03.002	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	0.00	**0.00**
2	100.00	*Sand*	65.56	**65.56**
0.075	39.14	*Silt*	21.58	**21.58**
0.05	34.44	*Clay*	12.86	**12.86**
0.002	12.86			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sm, ASSUMED***

USCS Classification ***SILTY SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-03	Sample No.	SM010-TB02-0103
Lab ID	97178-03.002	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	25.0	26.0	24.4	20.4	74.1	0.0313	**29.0**
5		23.5	24.4	17.9	65.1	0.0201	**25.5**
15		21.0	24.4	15.4	56.0	0.0118	**21.9**
30		19.5	24.4	13.9	50.5	0.0084	**19.8**
60		18.0	23.7	12.4	45.1	0.0060	**17.6**
280		15.5	22.7	9.9	36.0	0.0028	**14.1**
1440		13.5	23.9	7.9	28.7	0.0013	**11.2**

Soil Specimen Data		**Corrections**	
Tare No.	1135	K - Factor	0.01276
Tare + Dry Material (gm)	134.04	a - Factor	0.99
Weight of Tare (gm)	101.8	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	39.14
Weight of Dry Material (gm)	27.24		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/27/97 Checked By JMO Date 8/29/97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-03	Sample No.	SM010-TB02-0103
Lab ID	97178-03.002	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1667	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	767.60	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	674.80	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	99.85	Weight of Tare (gm)	NA
Weight of Water (gm)	92.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	574.95	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**16.1**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	574.95
Dry Weight - 3/4" Sample (gm)	349.94	Weight of minus #200 material (gm)	225.01
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	349.94
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.00	0.00	0.00	100.00	**100.00**
#20	0.85	0.17	0.03	0.03	99.97	**99.97**
#40	0.425	0.53	0.09	0.12	99.88	**99.88**
#60	0.250	71.65	12.46	12.58	87.42	**87.42**
#140	0.106	242.70	42.21	54.80	45.20	**45.20**
#200	0.075	34.89	6.07	60.86	39.14	**39.14**
Pan	-	225.01	39.14	100.00	-	-

Tested By BL Date 8/18/97 Checked By JMD Date 8/29/97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-18-97
Client Project	BAYER 51249	Checked By	JMO 9-5-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	2.30
Depth Pushed	1.0-3.0		
Shelby Tube No.	SM010-TB02-0103		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
1.00					
1.50					
2.00					
2.50		2		BROWN SILTY SAND	UNIT WGT. WC. GRAIN SIZE HYDROMETER
3.00		1			NO TEST

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number		1667			
Wt. Tare & WS(gm.)		767.60			
Wt. Tare & DS(gm.)		674.80			
Wt. Tare(gm.)		99.85			
Moisture Content(%)		16.1			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1091.30
Wt. Of Tube(gms.)	278.63
Wt. Of WS.(gms.)	812.67
Length 1 (in.)	3.617
Length 2 (in.)	3.603
Length 3 (in.)	3.591
Top Diameter (in.)	2.863
Middle Diameter (in.)	2.878
Bottom Diameter (in.)	2.867
Sample Volume (cc)	381.85
Moisture Content(%)	16.14
Unit Wet Wt.(gms/cc)	2.13
Unit Wet Wt.(pcf.)	132.8
Unit Dry Wt.(pcf.)	114.3
Unit Dry Wt.(gms/cc)	1.83

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-25-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	13.3-13.5				
Sample No.	SM009-TB02-1214				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	5.81
Sample Diameter (cm.)	7.24
Sample Area (cm.^2), A	41.12
Inflow Burette Area, (cm.^2), a-in	4.22
Outflow Burette Area, (cm.^2), a-out	4.39
B Parameter	95%

AVERAGE PERMEABILITY = 7.5E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.5E-10 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-25-97	15	0	0.0	0.0	0.0	194.5	0	23.4	NA
07-25-97	19	0	4.0	1.9	2.2	193.5	0	23.0	9.8E-08
07-26-97	7	15	16.3	8.7	9.0	190.4	0	24.0	1.0E-07
07-27-97	8	15	41.3	21.4	21.1	184.6	0	23.5	9.5E-08
07-28-97	7	20	64.3	31.6	31.4	179.9	0	23.5	8.8E-08
07-28-97	20	45	77.8	36.9	36.8	177.4	0	23.0	8.2E-08
07-29-97	7	25	88.4	40.3	40.4	175.7	0	23.0	6.8E-08
07-29-97	18	50	99.8	43.7	43.5	174.2	0	22.5	6.1E-08

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-25-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.74 MEASURED		
Depth(ft.)	13.3-13.5	Sample Condition	UNDISTURBED		
Sample No.	SM009-TB02-1214				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	19	726
Wt. Tare & WS(gm.)	276.07	571.80
Wt. Tare & DS(gm.)	244.80	480.40
Wt. Water(gm.)	31.27	91.40
Wt. Tare(gm.)	90.96	85.87
Wt. DS(gm.)	153.84	394.53
Moisture Content(%)	20.3	23.2

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	478.90	NA
Wt. Of Tube(gms.)	0.00	NA
Wt. Of WS.(gms.)	478.90	490.2
Length 1 (in.)	2.278	2.292
Length 2 (in.)	2.294	2.293
Length 3 (in.)	2.284	2.274
Top Diameter (in.)	2.856	2.859
Middle Diameter (in.)	2.850	2.847
Bottom Diameter (in.)	2.845	2.840
Average Length (in)	2.29	2.29
Average Area (in^2)	6.38	6.37
Sample Volume(cc.)	238.96	238.79
Unit Wet Wt.(gms/cc)	2.00	2.05
Unit Wet Wt.(pcf.)	125.1	128.1
Unit Dry Wt.(pcf.)	103.9	104.0
Unit Dry Wt.(gms/cc)	1.67	1.67
Void Ratio,e	0.65	0.64
Porosity, n	0.39	0.39
Pore Volume(cm^3)	93.7	93.5

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PERMEABILITY TEST

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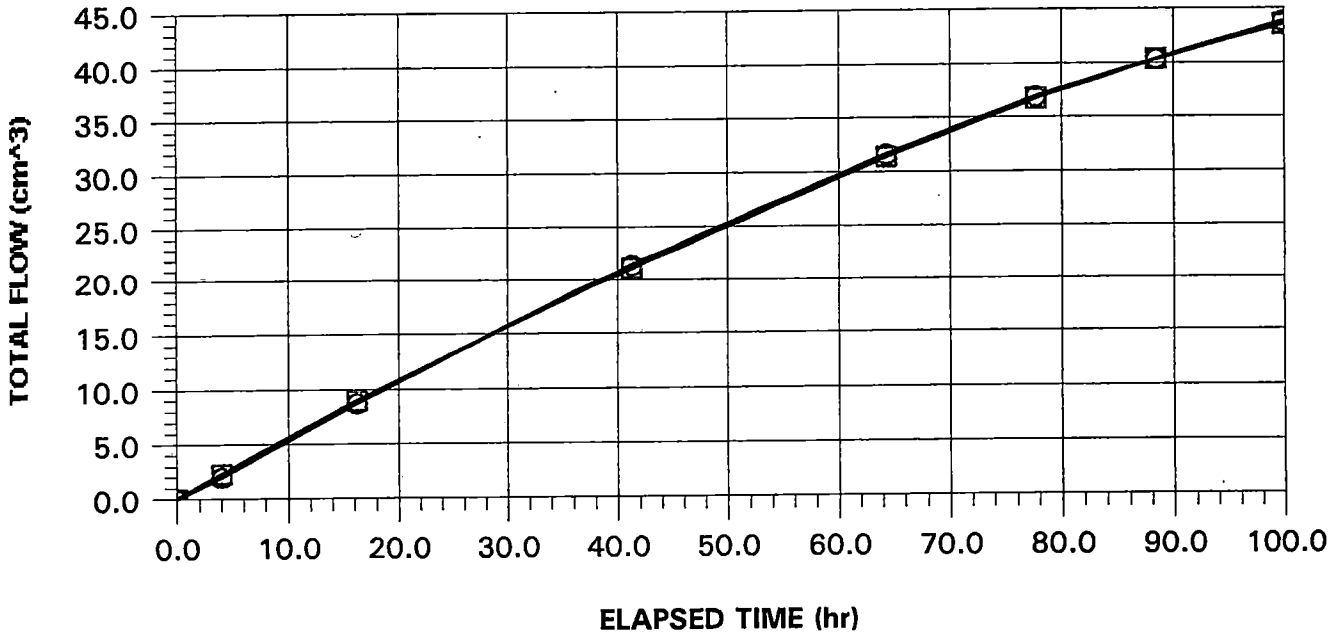
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	13.3-13.5
Project No.	97178-01	Sample No.	SM009-TB02-1214

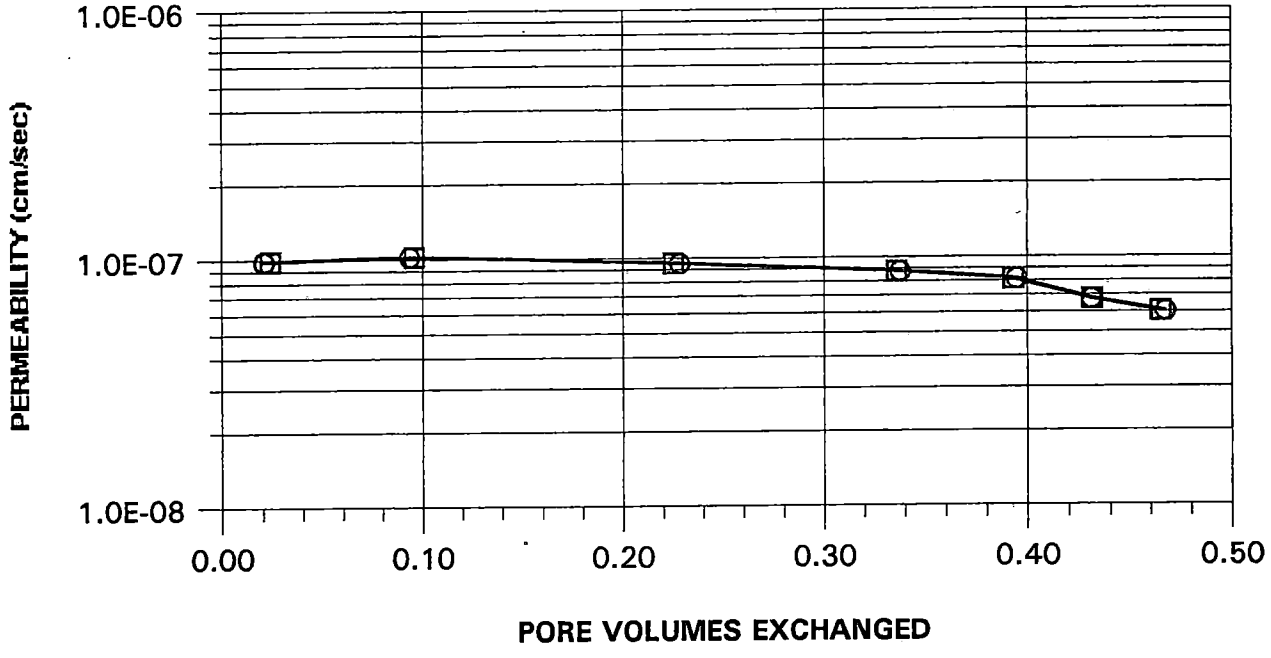
AVERAGE PERMEABILITY = 7.5E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.5E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	13.5-13.8				
Sample No.	SM009-TB02-1214				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.06
Sample Diameter (cm.)	7.23
Sample Area (cm.^2), A	41.04
Inflow Burette Area, (cm.^2), a-in	4.52
Outflow Burette Area, (cm.^2), a-out	4.48

AVERAGE PERMEABILITY = 3.4E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.4E-07 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-29-97	15	38	0.0	0.0	0.0	199.3	0	22.5	NA
07-29-97	15	40	0.0	6.2	6.5	196.5	0	22.5	5.6E-05
07-29-97	15	50	0.2	31.2	31.4	185.4	0	22.5	4.5E-05
07-29-97	15	59	0.3	48.4	49.4	177.6	0	22.5	3.7E-05
07-29-97	16	4	0.4	57.7	57.9	173.7	0	22.5	3.5E-05
07-29-97	16	17	0.7	78.6	78.3	164.5	0	22.5	3.3E-05
07-29-97	16	35	1.0	103.0	103.3	153.5	0	22.5	3.0E-05

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.74 MEASURED		
Depth(ft.)	13.5-13.8	Sample Condition	UNDISTURBED		
Sample No.	SM009-TB02-1214				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	19	1712
Wt. Tare & WS(gm.)	276.07	500.80
Wt. Tare & DS(gm.)	244.80	419.80
Wt. Water(gm.)	31.27	81.00
Wt. Tare(gm.)	90.96	82.83
Wt. DS(gm.)	153.84	336.97
Moisture Content(%)	20.3	24.0

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	988.20	NA
Wt. Of Tube(gms.)	267.90	NA
Wt. Of WS.(gms.)	720.30	742.5
Length 1 (in.)	3.506	3.579
Length 2 (in.)	3.526	3.574
Length 3 (in.)	3.501	3.550
Top Diameter (in.)	2.870	2.844
Middle Diameter (in.)	2.871	2.844
Bottom Diameter (in.)	2.883	2.850
Average Length (in)	3.51	3.57
Average Area (in^2)	6.49	6.36
Sample Volume(cc.)	373.42	371.92
Unit Wet Wt.(gms/cc)	1.93	2.00
Unit Wet Wt.(pcf.)	120.4	124.6
Unit Dry Wt.(pcf.)	100.0	100.4
Unit Dry Wt.(gms/cc)	1.60	1.61
Void Ratio,e	0.71	0.70
Porosity, n	0.41	0.41
Pore Volume(cm^3)	154.9	153.4

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PERMEABILITY TEST

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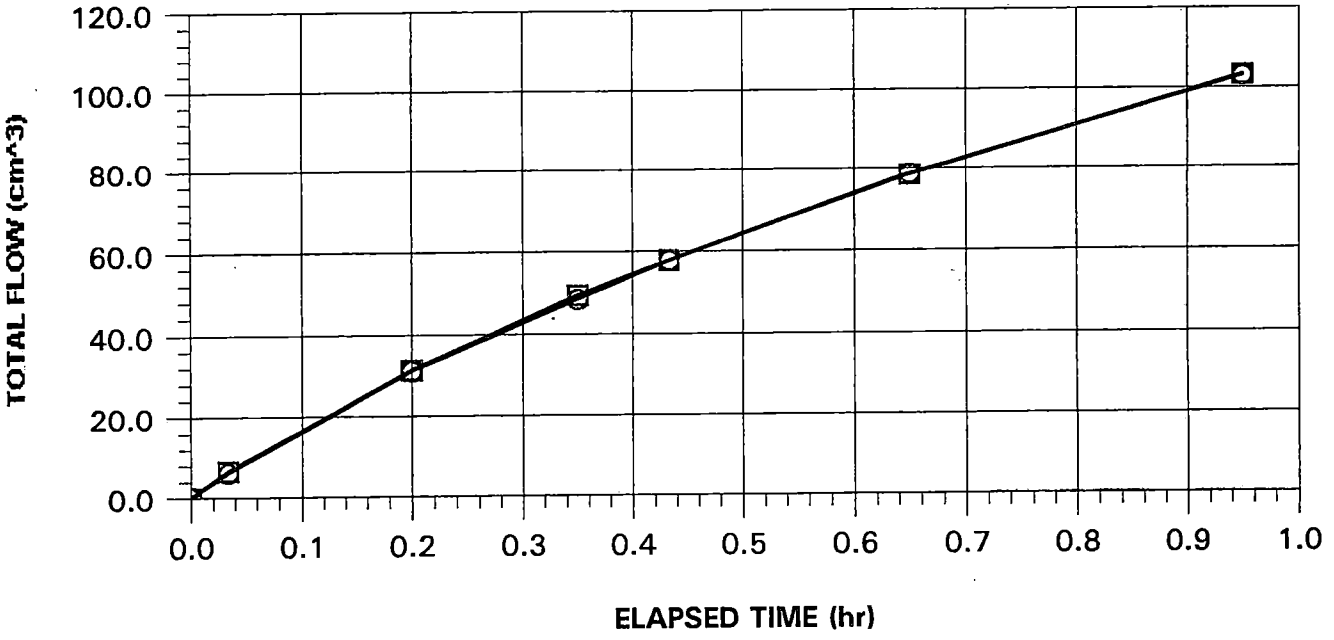
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	13.5-13.8
Project No.	97178-01	Sample No.	SM009-TB02-1214

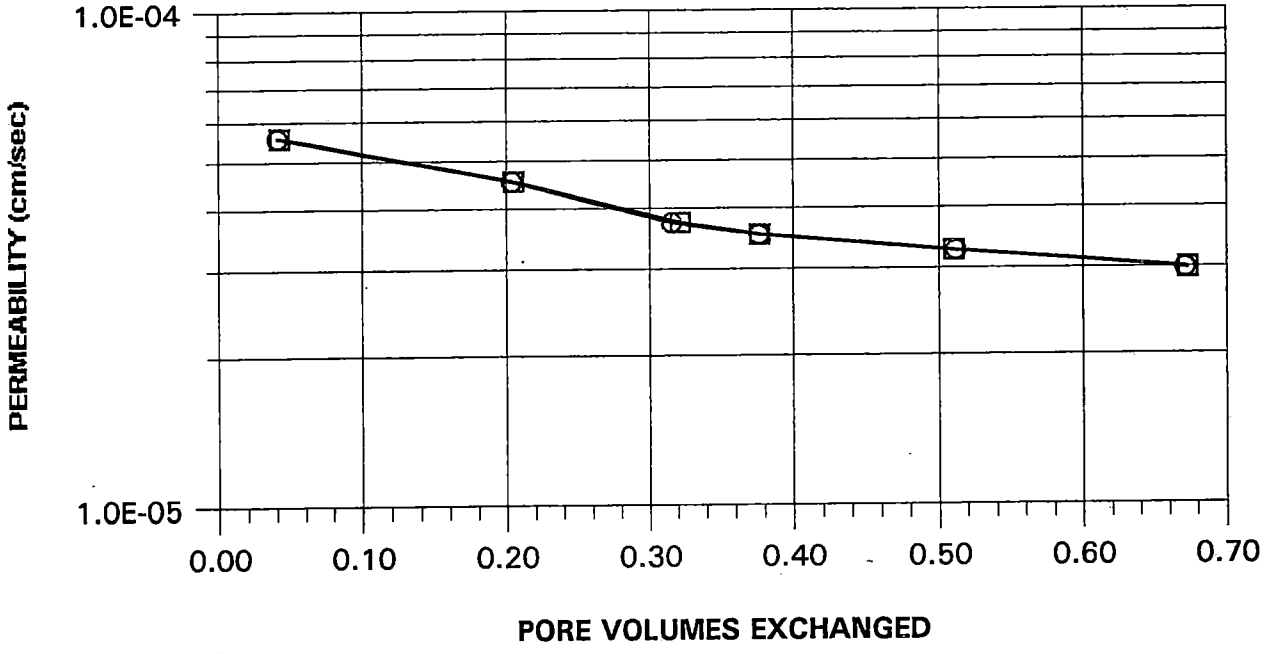
AVERAGE PERMEABILITY = 3.4E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.4E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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DCN: CT-S5
DATE: 11/13/96
REVISION: 1

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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12-14
Project No.	97178-01	Sample No.	SM009-TB02-1214
Lab ID	97178-01.0.026	Visual Description	**BROWN CLAY** (Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	448	449
Weight of Pycnometer + Soil + Water (gm)	737.4	737.9
Temperature, T (°Celcius)	21.6	20.6
Weight of Pycnometer + Water (gm)	681.55	683.77
Tare Number	684	1324
Weight of Tare + Dry Soil (gm)	192.41	186.54
Weight of Tare (gm)	104.21	101.49
Weight of Dry Soil (gm)	88.20	85.05
Specific Gravity of Soil @ T	2.727	2.751
Specific Gravity of Water @ T	0.9979	0.9981
Conversion Factor for Temperature T	0.9997	0.9999
Specific Gravity @ 20° Celcius	2.727	2.751

Average Specific Gravity @ 20° Celcius	2.74

Tested By TM *Date* 7/30/97 *Checked By* LB *Date* 7-31-97

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DATE: 11/12/96
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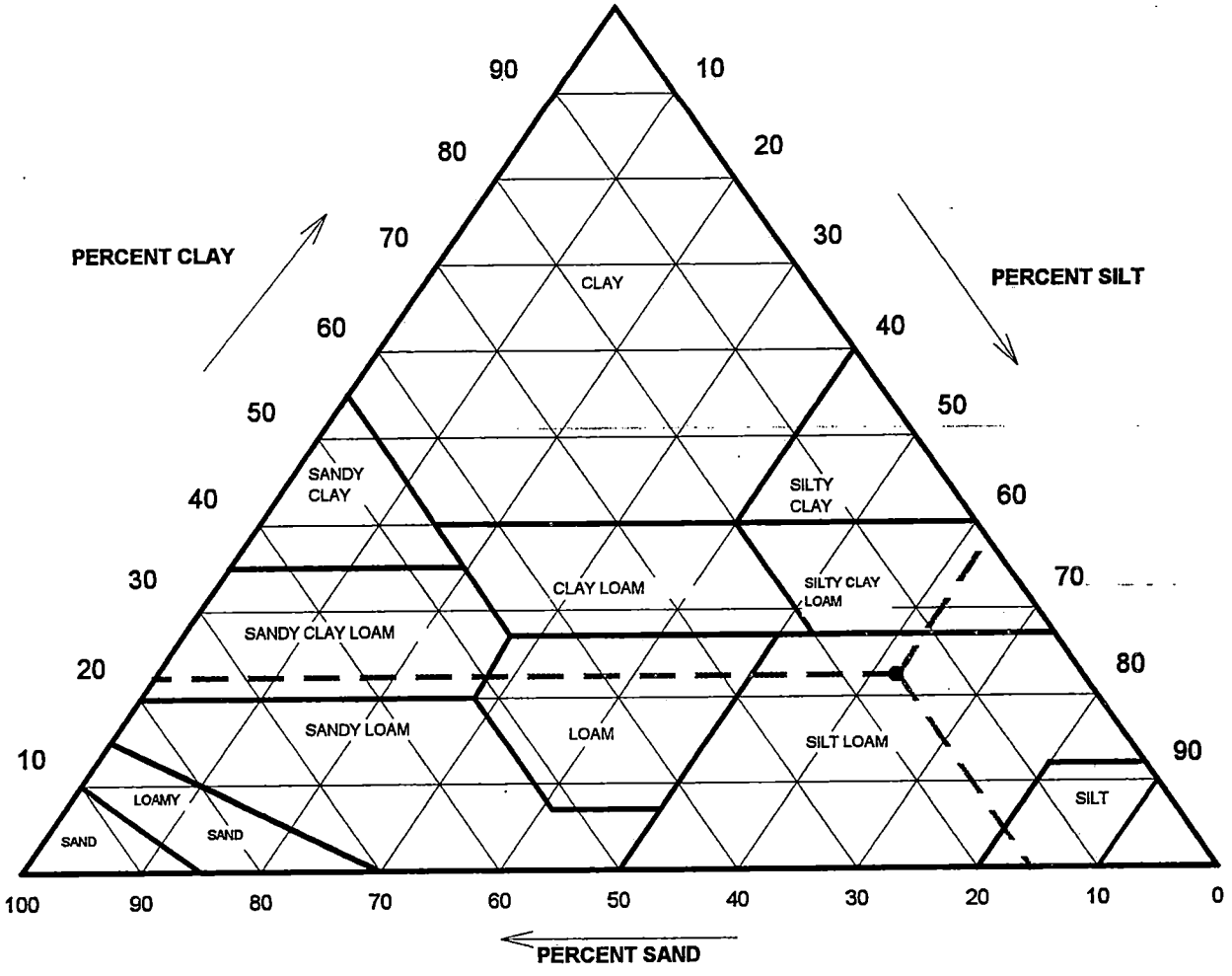
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.0-14.0
Project No.	97178-01	Sample No.	SM009-TB02-1214
Lab ID	97178-01.026	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	15.43
Silt	62.12
Clay	22.45
USDA Classification	***SILT LOAM***

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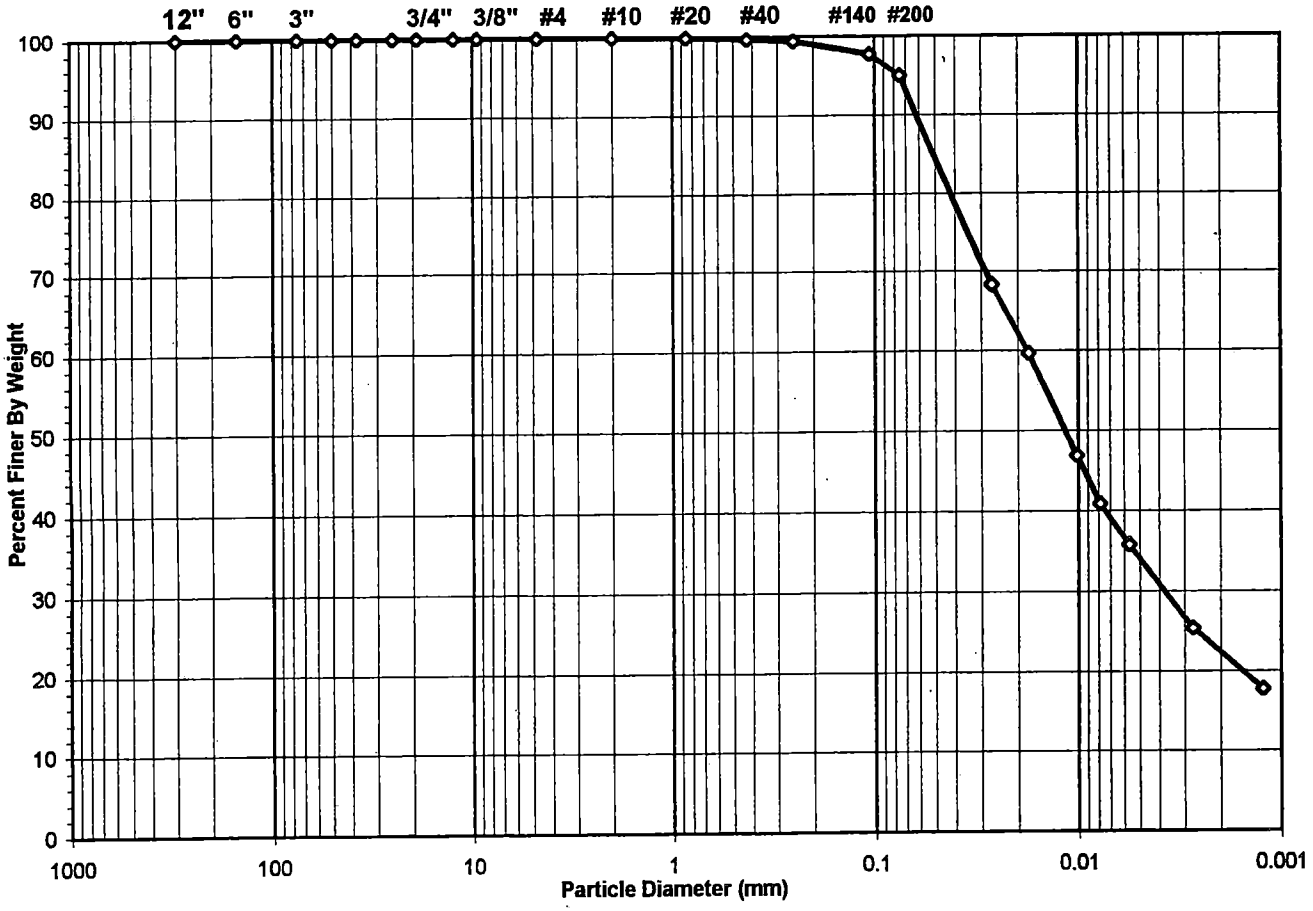
DCN: DS-S3A
DATE: 11/12/96
REVISION: 1

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.0-14.0
Project No.	97178-01	Sample No.	SM009-TB02-1214
Lab ID	97178-01.026	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	0.02	**0.00**
2	99.98	*Sand*	15.42	**15.43**
0.075	94.98	*Silt*	62.11	**62.12**
0.05	84.55	*Clay*	22.44	**22.45**
0.002	22.44			

USDA Classification ***SILT LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.0-14.0
Project No.	97178-01	Sample No.	SM009-TB02-1214
Lab ID	97178-01.026	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	46.0	45.5	24.3	39.9	71.9	0.0265	**68.3**
5		40.5	24.3	34.9	62.9	0.0176	**59.7**
17		33.0	24.3	27.4	49.3	0.0101	**46.9**
30		29.5	24.3	23.9	43.0	0.0078	**40.9**
60		26.5	23.5	20.9	37.6	0.0056	**35.7**
278		20.5	23	14.9	26.8	0.0027	**25.4**
1440		16.0	24	10.4	18.7	0.0012	**17.7**

Soil Specimen Data		Corrections	
Tare No.	1619	K - Factor	0.01263
Tare + Dry Material (gm)	156.68	a - Factor	0.982
Weight of Tare (gm)	97.24	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	94.98
Weight of Dry Material (gm)	54.44		
		Specific Gravity	2.74 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/28/97 Checked By LB Date 8-4-97

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DCN: DS-S3A
DATE: 11/12/96
REVISION: 1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.0-14.0
Project No.	97178-01	Sample No.	SM009-TB02-1214
Lab ID	97178-01.026	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1122	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	592.70	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	507.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	84.70	Weight of Tare (gm)	NA
Weight of Water (gm)	85.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	422.60	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**20.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	422.60
Dry Weight - 3/4" Sample (gm)	21.22	Weight of minus #200 material (gm)	401.38
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	21.22
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.10	0.02	0.02	99.98	**99.98**
#20	0.85	0.41	0.10	0.12	99.88	**99.88**
#40	0.425	0.73	0.17	0.29	99.71	**99.71**
#60	0.250	1.28	0.30	0.60	99.40	**99.40**
#140	0.106	7.18	1.70	2.30	97.70	**97.70**
#200	0.075	11.52	2.73	5.02	94.98	**94.98**
Pan	-	401.38	94.98	100.00	-	-

Tested By JCM Date 7/24/97 Checked By LB Date 8-4-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-24-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	NA
Depth Pushed	12.0-14.0		
Shelby Tube No.	SM009-TB02-1214		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
12.00					
12.50					
13.00					
		3			PERMEABILITY
13.50				BROWN LEAN CLAY VERY BRITTLE EASY TO FRACTURE	
		2			PERMEABILITY
14.00		1			WC.

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	19				
Wt. Tare & WS(gm.)	276.07				
Wt. Tare & DS(gm.)	244.80				
Wt. Tare(gm.)	90.96				
Moisture Content(%)	20.3				

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	988.20	478.90
Wt. Of Tube(gms.)	267.90	0.00
Wt. Of WS.(gms.)	720.30	478.90
Length 1 (in.)	3.506	2.278
Length 2 (in.)	3.526	2.294
Length 3 (in.)	3.501	2.284
Top Diameter (in.)	2.870	2.856
Middle Diameter (in.)	2.871	2.850
Bottom Diameter (in.)	2.883	2.846
Sample Volume (cc)	373.42	239.02
Moisture Content(%)	20.33	20.33
Unit Wet Wt.(gms/cc)	1.93	2.00
Unit Wet Wt.(pcf.)	120.4	125.0
Unit Dry Wt.(pcf.)	100.0	103.9
Unit Dry Wt.(gms/cc)	1.60	1.67

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	4.5-4.8				
Sample No.	SM009-TB02-0305				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.74
Sample Diameter (cm.)	7.27
Sample Area (cm.^2), A	41.48
Inflow Burette Area, (cm.^2), a-in	4.48
Outflow Burette Area, (cm.^2), a-out	4.48
B Parameter	96%

AVERAGE PERMEABILITY = 3.1E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.1E-10 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-24-97	18	50	0.0	0.0	0.0	195.4	0	23.0	NA
07-25-97	7	10	12.3	1.5	1.5	194.8	0	23.5	3.8E-08
07-25-97	19	0	24.2	3.6	3.1	194.0	0	23.0	4.7E-08
07-26-97	7	15	36.4	5.1	4.6	193.3	0	24.0	3.8E-08
07-27-97	8	15	61.4	7.7	6.7	192.2	0	23.5	2.9E-08
07-28-97	7	20	84.5	10.2	8.7	191.2	0	23.5	3.1E-08
07-28-97	20	45	97.9	11.2	9.7	190.8	0	23.0	2.4E-08

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.69 MEASURED		
Depth(ft.)	4.5-4.8	Sample Condition	REMOLDED		
Sample No.	SM009-TB02-0305				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1712	1743
Wt. Tare & WS(gm.)	276.76	474.10
Wt. Tare & DS(gm.)	243.80	415.10
Wt. Water(gm.)	32.96	59.00
Wt. Tare(gm.)	82.77	83.86
Wt. DS(gm.)	161.03	331.24
Moisture Content(%)	20.5	17.8

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1140.70	NA
Wt. Of Tube(gms.)	294.00	NA
Wt. Of WS.(gms.)	846.70	828.0
Length 1 (in.)	3.843	3.833
Length 2 (in.)	3.846	3.822
Length 3 (in.)	3.840	3.848
Top Diameter (in.)	2.869	2.855
Middle Diameter (in.)	2.867	2.861
Bottom Diameter (in.)	2.876	2.867
Average Length (in)	3.84	3.83
Average Area (in^2)	6.47	6.43
Sample Volume(cc.)	407.59	403.94
Unit Wet Wt.(gms/cc)	2.08	2.05
Unit Wet Wt.(pcf.)	129.6	127.9
Unit Dry Wt.(pcf.)	107.6	108.6
Unit Dry Wt.(gms/cc)	1.72	1.74
Void Ratio,e	0.56	0.55
Porosity, n	0.36	0.35
Pore Volume(cm^3)	146.3	142.7

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PERMEABILITY TEST

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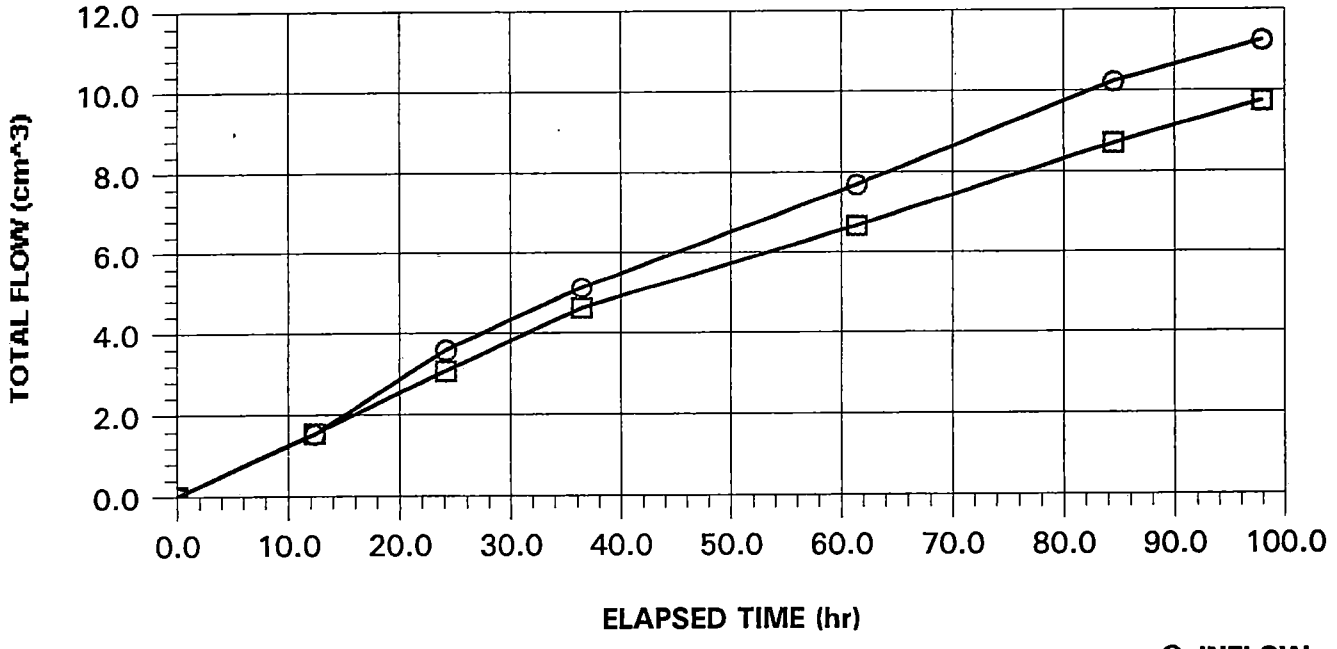
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.5-4.8
Project No.	97178-01	Sample No.	SM009-TB02-0305

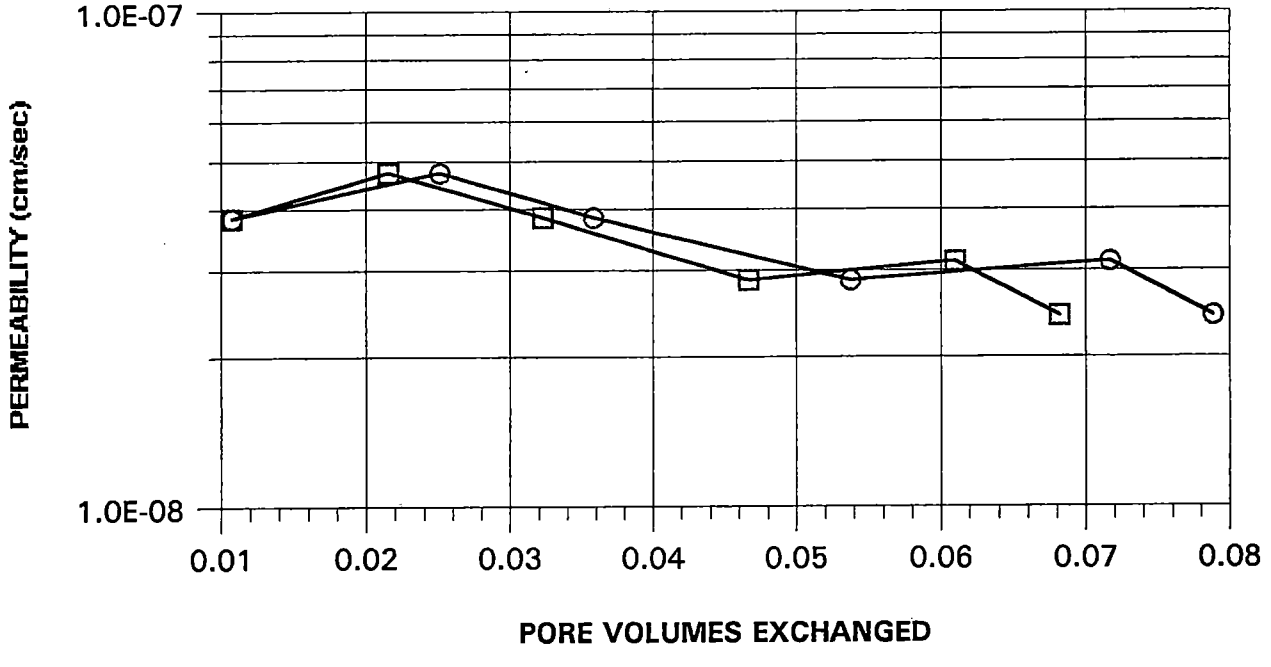
AVERAGE PERMEABILITY = 3.1E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.1E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-01	Sample No.	SM009-TB02-0305
Lab ID	97178-01.0.025	Visual Description	**BROWN CLAY** (Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	448	449
Weight of Pycnometer + Soil + Water (gm)	725.8	723.5
Temperature, T (°Celcius)	25.6	25.1
Weight of Pycnometer + Water (gm)	681.07	683.24
Tare Number	1063	1092
Weight of Tare + Dry Soil (gm)	175.15	168.82
Weight of Tare (gm)	103.67	104.93
Weight of Dry Soil (gm)	71.48	63.89
Specific Gravity of Soil @ T	2.673	2.704
Specific Gravity of Water @ T	0.9969	0.9970
Conversion Factor for Temperature T	0.9987	0.9988
Specific Gravity @ 20° Celcius	2.676	2.707

Average Specific Gravity @ 20° Celcius	2.69

Tested By TM *Date* 7/30/97 *Checked By* LB *Date* 7-31-97

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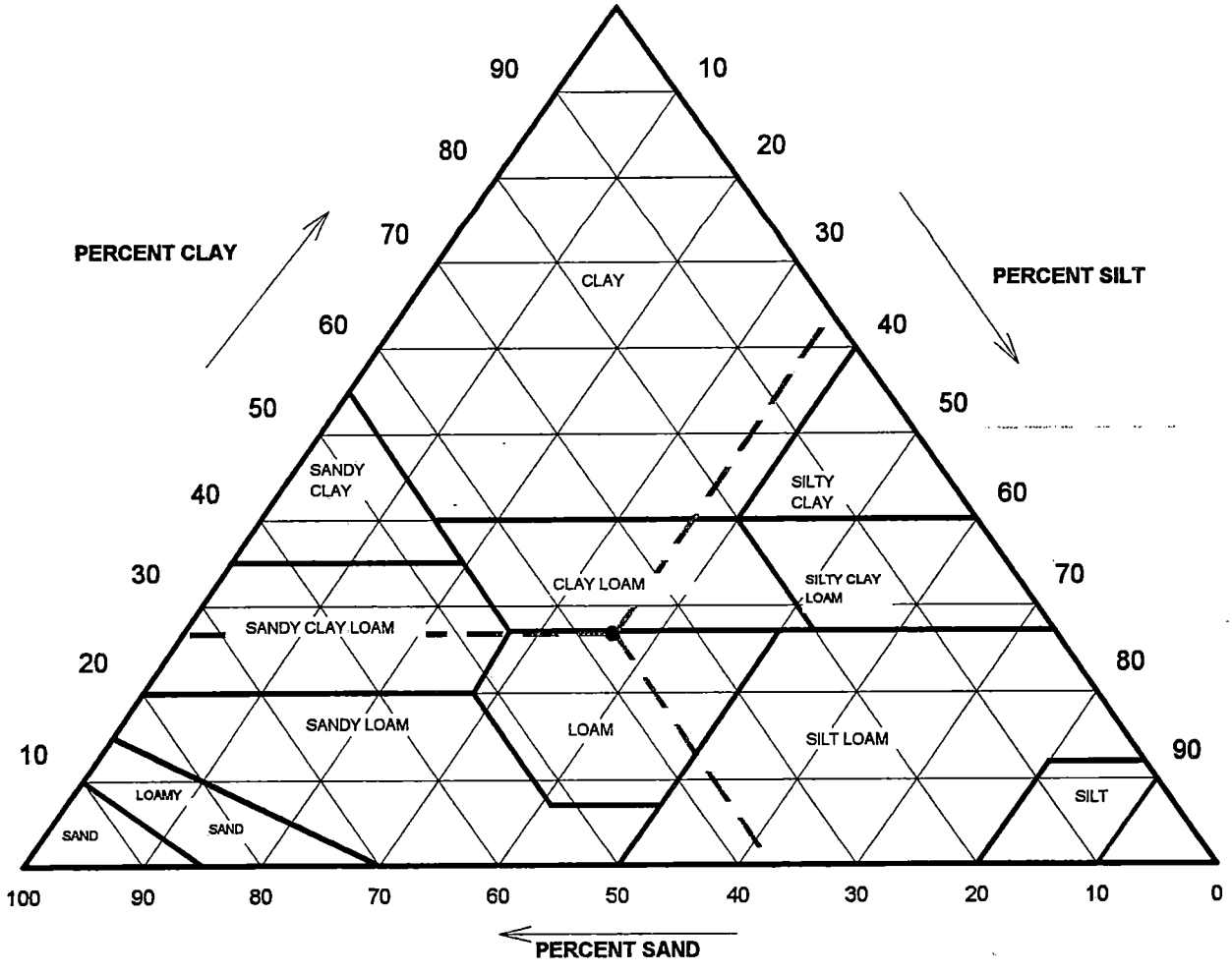
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-01	Sample No.	SM009-TB02-0305
Lab ID	97178-01.025	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	37.05
Silt	36.20
Clay	26.75
USDA Classification	***LOAM***

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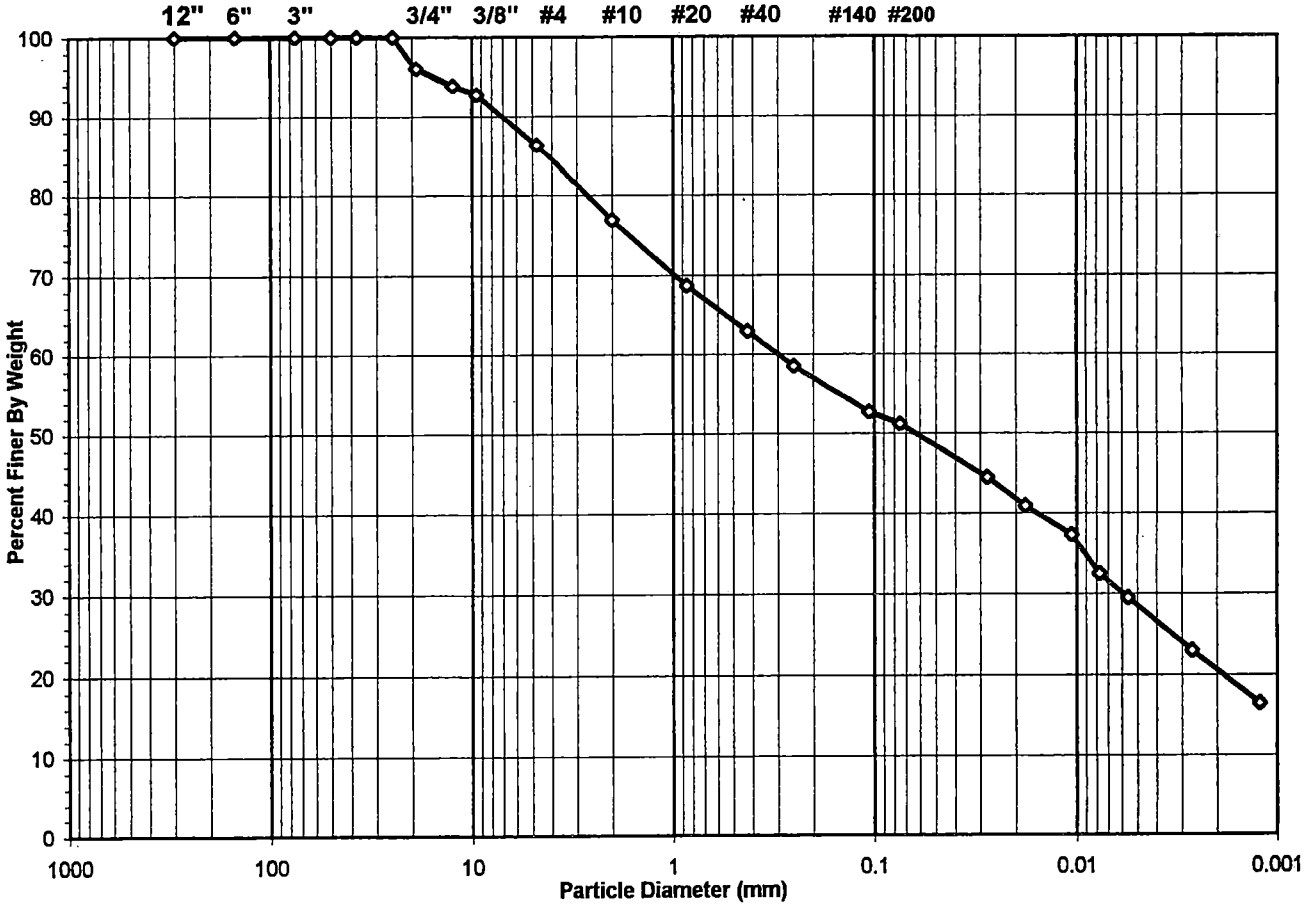
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-01	Sample No.	SM009-TB02-0305
Lab ID	97178-01.025	Soil Color	**BROWN**

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	23.04	**0.00**
2	76.96	*Sand*	28.51	**37.05**
0.075	51.20	*Silt*	27.86	**36.20**
0.05	48.45	*Clay*	20.59	**26.75**
0.002	20.59			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-01	Sample No.	SM009-TB02-0305
Lab ID	97178-01.025	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	42.0	43.0	24.3	37.4	86.7	0.0276	**44.4**
5		40.0	24.3	34.4	79.8	0.0179	**40.8**
15		37.0	24.3	31.4	72.8	0.0106	**37.3**
30		33.0	24.3	27.4	63.5	0.0077	**32.5**
60		30.5	23.5	24.9	57.7	0.0056	**29.5**
281		25.0	23	19.4	44.9	0.0027	**23.0**
1440		19.5	24	13.9	32.2	0.0012	**16.5**

Soil Specimen Data		Corrections	
Tare No.	1914	K - Factor	0.01282
Tare + Dry Material (gm)	152.09	a - Factor	0.992
Weight of Tare (gm)	104.37	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	51.20
Weight of Dry Material (gm)	42.72		
		Specific Gravity	2.69 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/28/97 Checked By LB Date 8-4-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-01	Sample No.	SM009-TB02-0305
Lab ID	97178-01.025	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	676	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	889.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	765.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	74.54	Weight of Tare (gm)	NA
Weight of Water (gm)	123.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	691.06	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**17.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	691.06
Dry Weight - 3/4" Sample (gm)	309.80	Weight of minus #200 material (gm)	353.82
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	337.24
Dry Weight + 3/4" Sample (gm)	27.44		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	27.44	3.97	3.97	96.03	**96.03**
1/2"	12.5	14.95	2.16	6.13	93.87	**93.87**
3/8"	9.50	7.87	1.14	7.27	92.73	**92.73**
#4	4.75	44.27	6.41	13.68	86.32	**86.32**
#10	2.00	64.70	9.36	23.04	76.96	**76.96**
#20	0.85	57.36	8.30	31.34	68.66	**68.66**
#40	0.425	39.61	5.73	37.07	62.93	**62.93**
#60	0.250	30.10	4.36	41.43	58.57	**58.57**
#140	0.106	40.03	5.79	47.22	52.78	**52.78**
#200	0.075	10.91	1.58	48.80	51.20	**51.20**
Pan	-	353.82	51.20	100.00	-	-

Tested By JCM Date 7/24/97 Checked By LB Date 8-4-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-24-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	1.70
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM009-TB02-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					UNIT WGT WC. GRAINSIZE HYDROMETER SP.GR.
4.50		3		BROWN SANDY LEAN CLAY	PERMEABILITY
		2			
5.00		1			WC.

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1712		676		
Wt. Tare & WS(gm.)	276.76		889.00		
Wt. Tare & DS(gm.)	243.80		765.60		
Wt. Tare(gm.)	82.77		74.54		
Moisture Content(%)	20.5		17.9		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1140.70	1743.10
Wt. Of Tube(gms.)	294.00	461.20
Wt. Of WS.(gms.)	846.70	1281.90
Length 1 (in.)	3.843	6.067
Length 2 (in.)	3.846	6.055
Length 3 (in.)	3.840	6.060
Top Diameter (in.)	2.869	2.864
Middle Diameter (in.)	2.867	2.874
Bottom Diameter (in.)	2.876	2.871
Sample Volume (cc)	407.59	642.35
Moisture Content(%)	20.47	17.86
Unit Wet Wt.(gms/cc)	2.08	2.00
Unit Wet Wt.(pcf.)	129.6	124.5
Unit Dry Wt.(pcf.)	107.6	105.7
Unit Dry Wt.(gms/cc)	1.72	1.69

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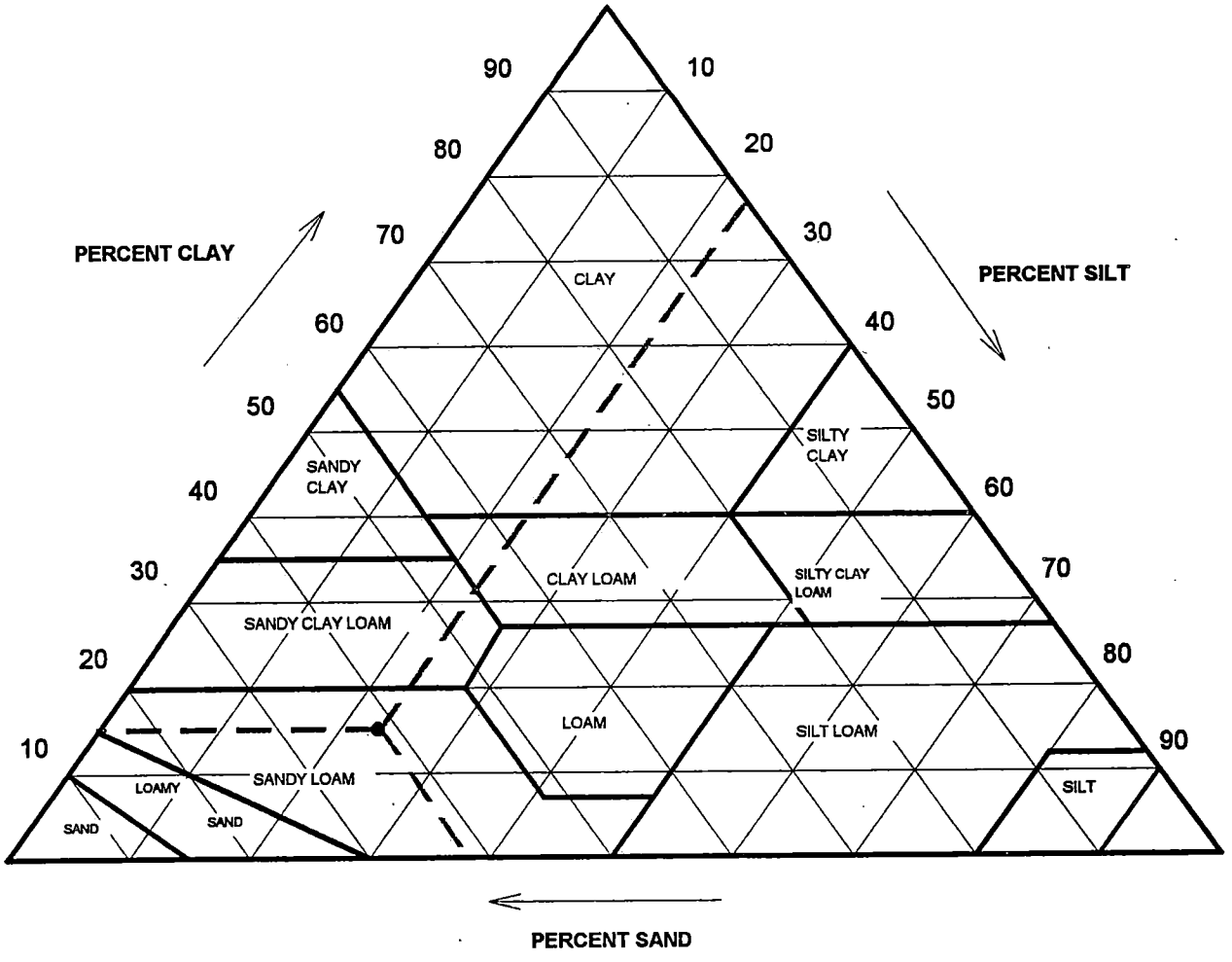
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM009-TB02-0002
Lab ID	97178-01.024	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	61.67
Silt	23.17
Clay	15.15
USDA Classification	***SANDY LOAM***

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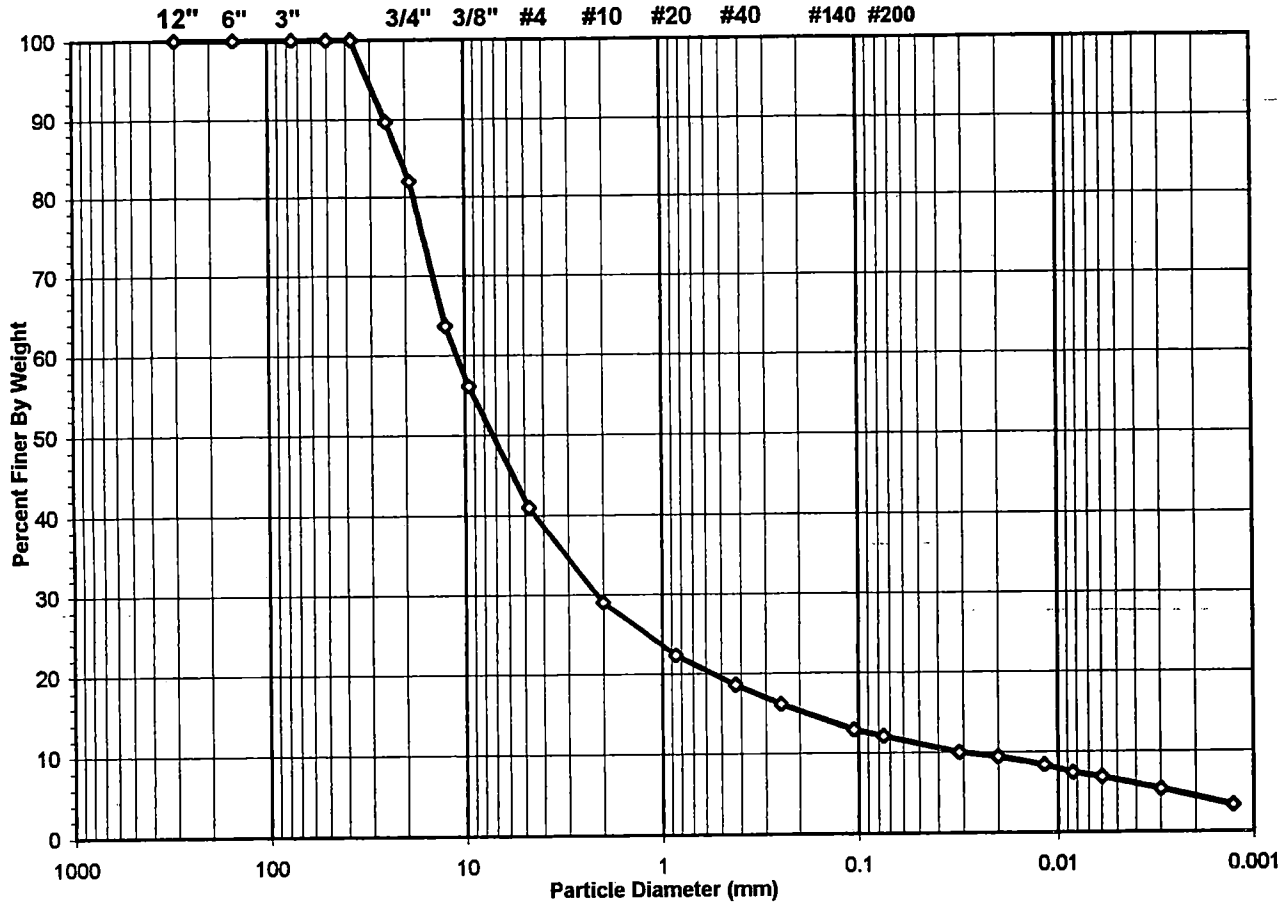
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM009-TB02-0002
Lab ID	97178-01.024	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	70.93	**0.00**
2	29.07	*Sand*	17.93	**61.67**
0.075	12.15	*Silt*	6.74	**23.17**
0.05	11.14	*Clay*	4.41	**15.15**
0.002	4.41			

USDA Classification	***SANDY LOAM***
USCS Symbol	***gc, ASSUMED***
USCS Classification	***CLAYEY GRAVEL WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM009-TB02-0002
Lab ID	97178-01.024	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	25.0	25.0	24.5	19.4	82.2	0.0315	**10.0**
5		24.0	24.5	18.4	78.0	0.0200	**9.5**
15		22.0	24.5	16.4	69.6	0.0117	**8.5**
30		20.0	24.5	14.4	61.1	0.0084	**7.4**
60		19.0	23.4	13.4	56.9	0.0060	**6.9**
250		16.0	22.7	10.4	44.2	0.0030	**5.4**
1440		12.0	24.7	6.4	27.3	0.0013	**3.3**

Soil Specimen Data		Corrections	
Tare No.	1626	K - Factor	0.01275
Tare + Dry Material (gm)	128.98	a - Factor	0.99
Weight of Tare (gm)	100.57	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	12.15
Weight of Dry Material (gm)	23.41		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/17/97 Checked By LB Date 7-22-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM009-TB02-0002
Lab ID	97178-01.024	Soil Color	BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	684	Tare No.	X
Wgt.Tare + Wet Specimen (gm)	1535.30	Wgt.Tare + Wet Specimen (gm)	421.30
Wgt.Tare + Dry Specimen (gm)	1486.90	Wgt.Tare + Dry Specimen (gm)	416.70
Weight of Tare (gm)	104.39	Weight of Tare (gm)	8.27
Weight of Water (gm)	48.40	Weight of Water (gm)	4.60
Weight of Dry Soil (gm)	1382.51	Weight of Dry Soil (gm)	408.43
Moisture Content (%)	**3.5**	**Moisture Content (%)**	**1.1**

Wet Weight -3/4" Sample (gm)	4596	Weight of the Dry Specimen (gm)	1382.51
Dry Weight - 3/4" Sample (gm)	4440.5	Weight of minus #200 material (gm)	204.82
Wet Weight +3/4" Sample (gm)	972.20	Weight of plus #200 material (gm)	1177.69
Dry Weight + 3/4" Sample (gm)	961.37		
Total Dry Weight Sample (gm)	5401.9	**J - Factor (Percent Finer than 3/4")**	**0.8200**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	559.10		10.35	10.35	89.65	**89.65**
3/4"	19	413.10		7.65	18.00	82.00	**82.00**
1/2"	12.5	309.10		22.36	22.36	77.64	**63.67**
3/8"	9.5	127.44		9.22	31.58	68.42	**56.11**
#4	4.75	255.10		18.45	50.03	49.97	**40.98**
#10	2	200.80		14.52	64.55	35.45	**29.07**
#20	0.85	113.62	(**)	8.22	72.77	27.23	**22.33**
#40	0.425	62.17		4.50	77.27	22.73	**18.64**
#60	0.25	41.67		3.01	80.28	19.72	**16.17**
#140	0.106	53.86		3.90	84.18	15.82	**12.98**
#200	0.075	13.93		1.01	85.18	14.82	**12.15**
Pan	-	204.82		14.82	100.00	-	-

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Specimen*

Tested By BS Date 7/15/97 Checked By LB Date 7-22-97

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	15.5-15.8				
Sample No.	SM008-TB01-1416				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	8.94
Sample Diameter (cm.)	7.19
Sample Area (cm.^2), A	40.64
Inflow Burette Area, (cm.^2), a-in	4.65
Outflow Burette Area, (cm.^2), a-out	4.22
B Parameter	97%

AVERAGE PERMEABILITY = 1.7E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.7E-09 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-24-97	18	50	0.0	0.0	0.0	193.3	0	23.0	NA
07-25-97	7	10	12.3	4.8	4.3	191.3	0	23.5	1.1E-07
07-25-97	19	0	24.2	11.1	9.6	188.7	0	23.0	1.5E-07
07-26-97	7	15	36.4	17.5	15.8	185.8	0	24.0	1.5E-07
07-27-97	8	15	61.4	31.3	28.7	179.8	0	23.5	1.6E-07
07-28-97	7	20	84.5	44.0	40.6	174.2	0	23.5	1.7E-07
07-28-97	20	45	97.9	52.0	48.3	170.7	0	23.0	1.9E-07

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.71 MEASURED		
Depth(ft.)	15.5-15.8	Sample Condition	REMOLDED		
Sample No.	SM008-TB01-1416				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1122	1744
Wt. Tare & WS(gm.)	288.45	475.20
Wt. Tare & DS(gm.)	255.80	411.80
Wt. Water(gm.)	32.65	63.40
Wt. Tare(gm.)	84.68	83.70
Wt. DS(gm.)	171.12	328.10
Moisture Content(%)	19.1	19.3

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1028.00	NA
Wt. Of Tube(gms.)	264.81	NA
Wt. Of WS.(gms.)	763.19	764.7
Length 1 (in.)	3.526	3.500
Length 2 (in.)	3.518	3.538
Length 3 (in.)	3.515	3.522
Top Diameter (in.)	2.871	2.830
Middle Diameter (in.)	2.867	2.832
Bottom Diameter (in.)	2.867	2.834
Average Length (in)	3.52	3.52
Average Area (in^2)	6.46	6.30
Sample Volume(cc.)	372.69	363.35
Unit Wet Wt.(gms/cc)	2.05	2.10
Unit Wet Wt.(pcf.)	127.8	131.3
Unit Dry Wt.(pcf.)	107.3	110.1
Unit Dry Wt.(gms/cc)	1.72	1.76
Void Ratio,e	0.58	0.54
Porosity, n	0.37	0.35
Pore Volume(cm^3)	136.2	126.8

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PERMEABILITY TEST

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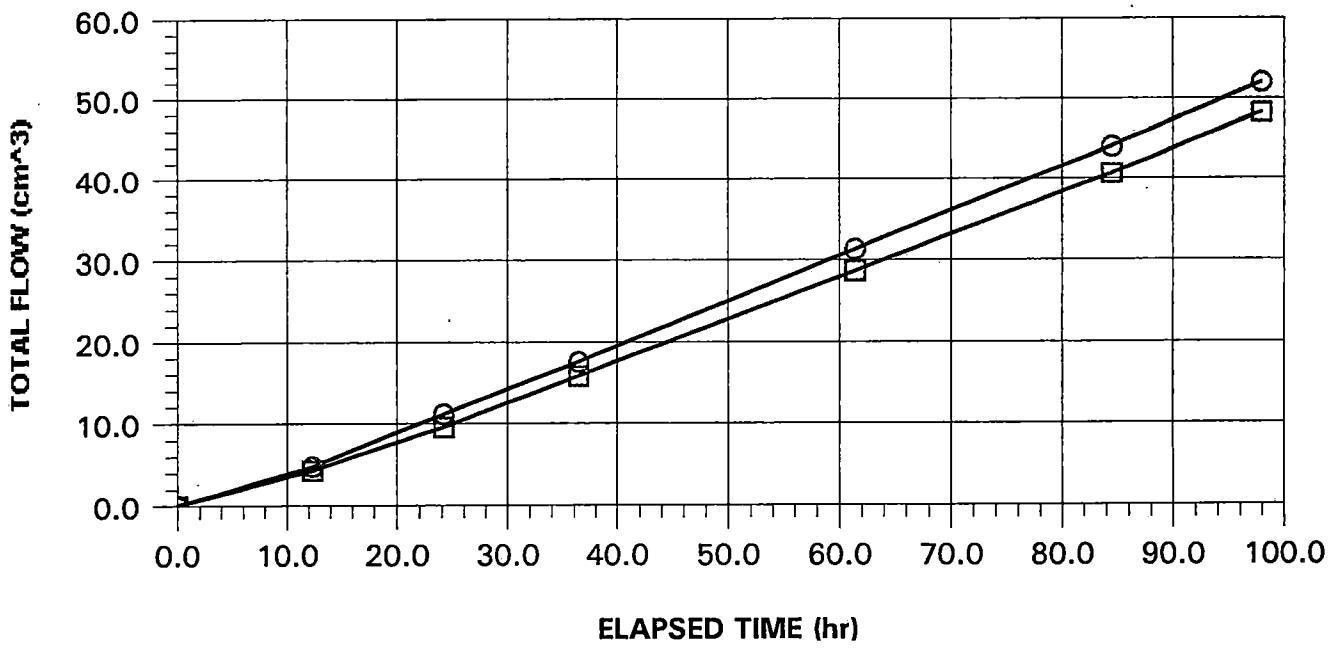
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	15.5-15.8
Project No.	97178-01	Sample No.	SM008-TB01-1416

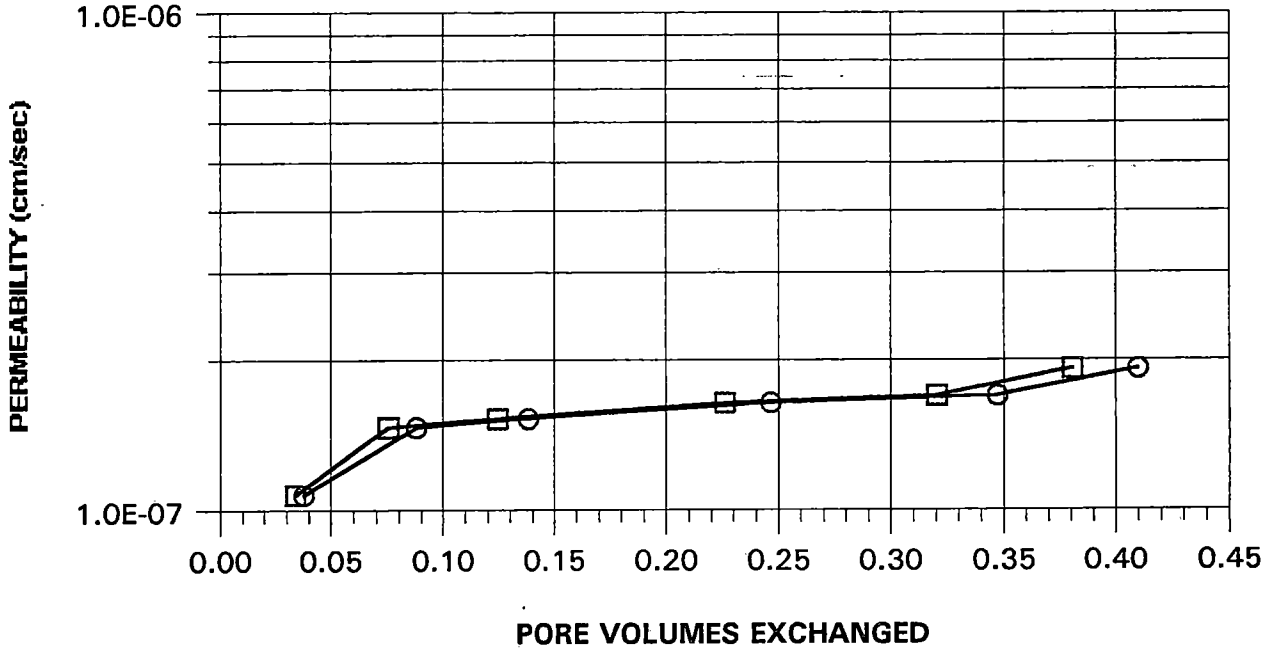
AVERAGE PERMEABILITY = 1.7E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.7E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.0-15.5
Project No.	97178-01	Sample No.	SM008-TB01-1416
Lab ID	97178-01.023	Visual Description	**BROWN CLAY** (Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	448	449
Weight of Pycnometer + Soil + Water (gm)	738.9	737.2
Temperature, T (°Celcius)	24.9	24.5
Weight of Pycnometer + Water (gm)	681.16	683.32
Tare Number	1675	1301
Weight of Tare + Dry Soil (gm)	191.5	188.11
Weight of Tare (gm)	99.81	102.8
Weight of Dry Soil (gm)	91.69	85.31
Specific Gravity of Soil @ T	2.701	2.715
Specific Gravity of Water @ T	0.9971	0.9972
Conversion Factor for Temperature T	0.9989	0.9990
Specific Gravity @ 20° Celcius	2.704	2.718

Average Specific Gravity @ 20° Celcius	2.71

Tested By TM *Date* 7/30/97 *Checked By* LB *Date* 7-31-97

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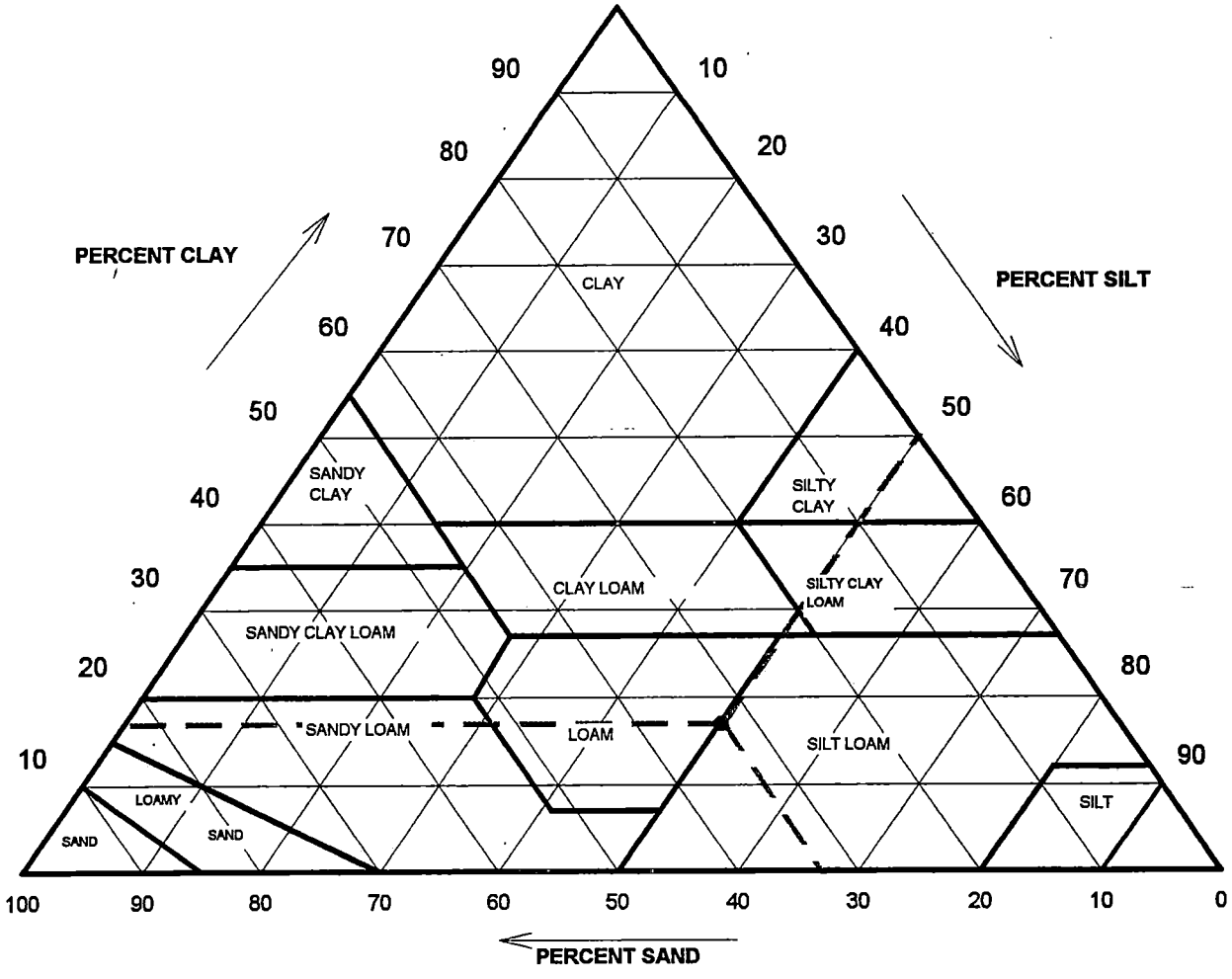
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.0-15.5
Project No.	97178-01	Sample No.	SM008-TB01-1416
Lab ID	97178-01.023	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	32.85
Silt	50.16
Clay	16.99
USDA Classification	***SILT LOAM***

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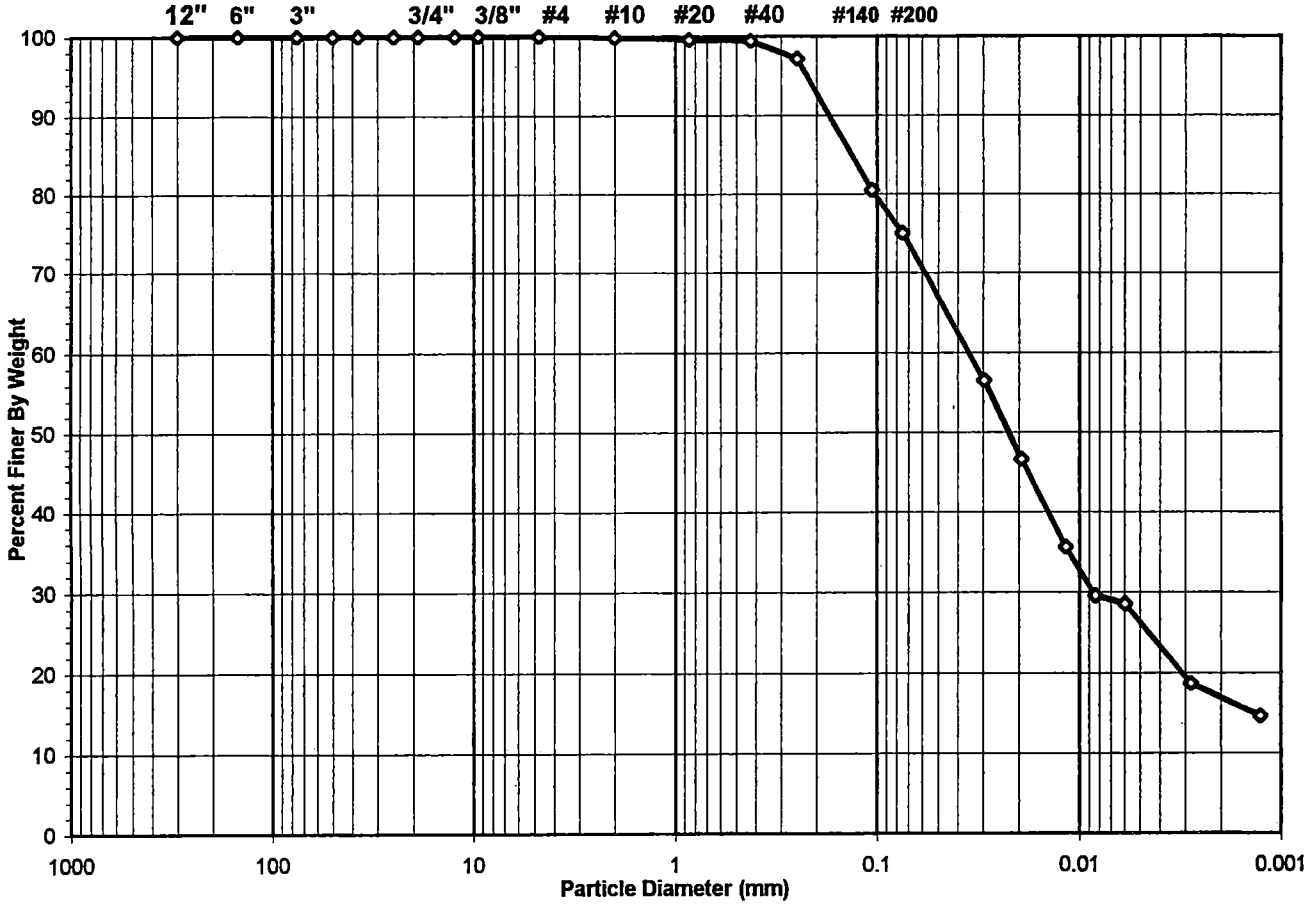
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.0-15.5
Project No.	97178-01	Sample No.	SM008-TB01-1416
Lab ID	97178-01.023	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	0.18	**0.00**
2	99.82	*Sand*	32.79	**32.85**
0.075	75.07	*Silt*	50.07	**50.16**
0.05	67.03	*Clay*	16.96	**16.99**
0.002	16.96			

USDA Classification ***SILT LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.0-15.5
Project No.	97178-01	Sample No.	SM008-TB01-1416
Lab ID	97178-01.023	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	33.0	34.0	24.3	28.4	75.4	0.0295	**56.6**
5		29.0	24.3	23.4	62.1	0.0194	**46.6**
15		23.5	24.3	17.9	47.4	0.0116	**35.6**
30		20.5	24.3	14.9	39.5	0.0084	**29.6**
60		20.0	23.5	14.4	38.1	0.0059	**28.6**
284		15.0	23	9.4	24.9	0.0028	**18.7**
1440		13.0	24	7.4	19.5	0.0013	**14.7**

Soil Specimen Data		**Corrections**	
Tare No.	1003	K - Factor	0.01274
Tare + Dry Material (gm)	147.3	a - Factor	0.988
Weight of Tare (gm)	105.13	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	75.07
Weight of Dry Material (gm)	37.17		
		Specific Gravity	2.71 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/28/97 Checked By LB Date 8-4-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.0-15.5
Project No.	97178-01	Sample No.	SM008-TB01-1416
Lab ID	97178-01.023	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1734	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	934.90	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	796.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.16	Weight of Tare (gm)	NA
Weight of Water (gm)	138.30	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	713.44	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**19.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	713.44
Dry Weight - 3/4" Sample (gm)	177.86	Weight of minus #200 material (gm)	535.58
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	177.86
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.11	0.02	0.02	99.98	**99.98**
#10	2.00	1.16	0.16	0.18	99.82	**99.82**
#20	0.85	1.63	0.23	0.41	99.59	**99.59**
#40	0.425	1.39	0.19	0.60	99.40	**99.40**
#60	0.250	16.04	2.25	2.85	97.15	**97.15**
#140	0.106	118.85	16.66	19.51	80.49	**80.49**
#200	0.075	38.68	5.42	24.93	75.07	**75.07**
Pan	-	535.58	75.07	100.00	-	-

Tested By JCM Date 7/24/97 Checked By LB Date 8-4-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-24-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	1.90
Depth Pushed	14.0-16.0		
Shelby Tube No.	SM008-TB01-1416		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
14.00					
14.50					
15.00					UNIT WGT WC. GRAINSIZE HYDROMETER SP.GR.
15.50		3		BROWN LEAN CLAY WITH SAND	PERMEABILITY
		2			
16.00		1			WC.

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1122		1734		
Wt. Tare & WS(gm.)	288.45		934.90		
Wt. Tare & DS(gm.)	255.80		796.60		
Wt. Tare(gm.)	84.68		83.16		
Moisture Content(%)	19.1		19.4		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1028.00	1748.40
Wt. Of Tube(gms.)	264.81	450.10
Wt. Of WS.(gms.)	763.19	1298.30
Length 1 (in.)	3.526	5.972
Length 2 (in.)	3.518	5.953
Length 3 (in.)	3.515	5.996
Top Diameter (in.)	2.871	2.867
Middle Diameter (in.)	2.867	2.866
Bottom Diameter (in.)	2.867	2.868
Sample Volume (cc)	372.69	631.96
Moisture Content(%)	19.08	19.38
Unit Wet Wt.(gms/cc)	2.05	2.05
Unit Wet Wt.(pcf.)	127.8	128.2
Unit Dry Wt.(pcf.)	107.3	107.4
Unit Dry Wt.(gms/cc)	1.72	1.72

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	4.1-4.4				
Sample No.	SM008-TB01-0305				
Visual Description	GRAY SANDY CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.15
Sample Diameter (cm.)	7.16
Sample Area (cm.^2), A	40.30
Inflow Burette Area, (cm.^2), a-in	4.49
Outflow Burette Area, (cm.^2), a-out	4.48
B Parameter	96%

AVERAGE PERMEABILITY = 1.9E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.9E-08 m/sec @ 20°C

DATE		TIME	ELAPSED TIME (t)	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD (h)	FLOW 0 FLOW 1 STOP	TEMP	INCREMENTAL PERMEABILITY @ 20°C
mon-dy-yr	hr	min	hr	cm^3	cm^3	cm		°C	cm/sec
07-24-97	18	50	0.0	0.0	0.0	202.1	0	23.0	NA
07-24-97	23	20	4.5	30.1	29.6	188.8	1	23.5	2.0E-06
07-25-97	10	27	4.5	30.1	29.6	194.5	0	23.4	NA
07-25-97	12	25	6.5	45.2	44.7	187.8	0	23.4	2.3E-06
07-25-97	14	16	8.3	57.9	56.8	182.3	0	23.4	2.1E-06
07-25-97	19	0	13.1	85.6	85.0	169.8	0	23.0	2.0E-06
07-26-97	7	15	25.3	144.4	144.2	143.5	1	24.0	1.8E-06
07-26-97	7	20	25.3	144.4	144.2	201.7	0	24.0	NA
07-26-97	12	0	30.0	172.1	171.9	189.3	0	23.5	1.8E-06

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Client	ICF KAISER	Tested By	JCM	Date	07-24-97
Client Project	BAYER 51249	Checked By	LG	Date	8-11-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.68 MEASURED		
Depth(ft.)	4.1-4.4	Sample Condition	UNDISTURBED		
Sample No.	SM008-TB01-0305				

Visual Description GRAY SANDY CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1698	1735
Wt. Tare & WS(gm.)	723.50	798.10
Wt. Tare & DS(gm.)	630.90	673.10
Wt. Water(gm.)	92.60	125.00
Wt. Tare(gm.)	81.47	82.33
Wt. DS(gm.)	549.43	590.77
Moisture Content(%)	16.9	21.2

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1007.60	NA
Wt. Of Tube(gms.)	274.71	NA
Wt. Of WS.(gms.)	732.89	759.9
Length 1 (in.)	3.589	3.588
Length 2 (in.)	3.620	3.602
Length 3 (in.)	3.602	3.612
Top Diameter (in.)	2.876	2.817
Middle Diameter (in.)	2.876	2.827
Bottom Diameter (in.)	2.883	2.816
Average Length (in)	3.60	3.60
Average Area (in^2)	6.51	6.25
Sample Volume(cc.)	384.25	368.53
Unit Wet Wt.(gms/cc)	1.91	2.06
Unit Wet Wt.(pcf.)	119.0	128.7
Unit Dry Wt.(pcf.)	101.9	106.2
Unit Dry Wt.(gms/cc)	1.63	1.70
Void Ratio,e	0.64	0.57
Porosity, n	0.39	0.36
Pore Volume(cm^3)	150.2	134.5

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PERMEABILITY TEST

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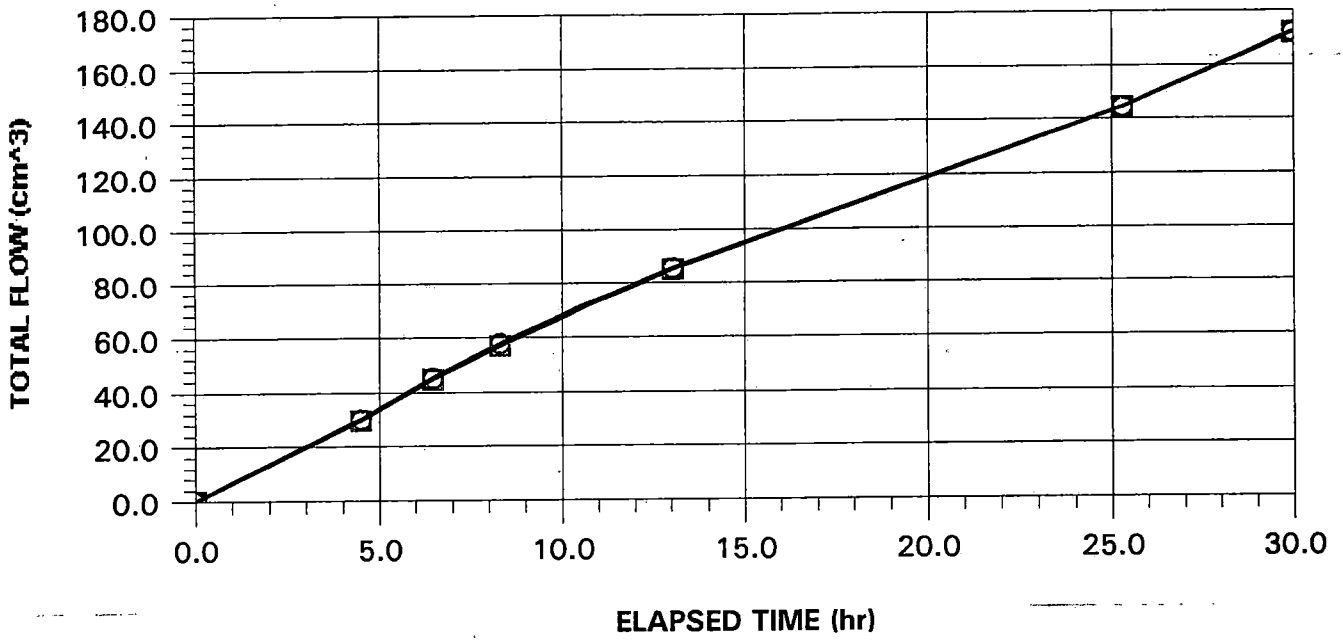
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.1-4.4
Project No.	97178-01	Sample No.	SM008-TB01-0305

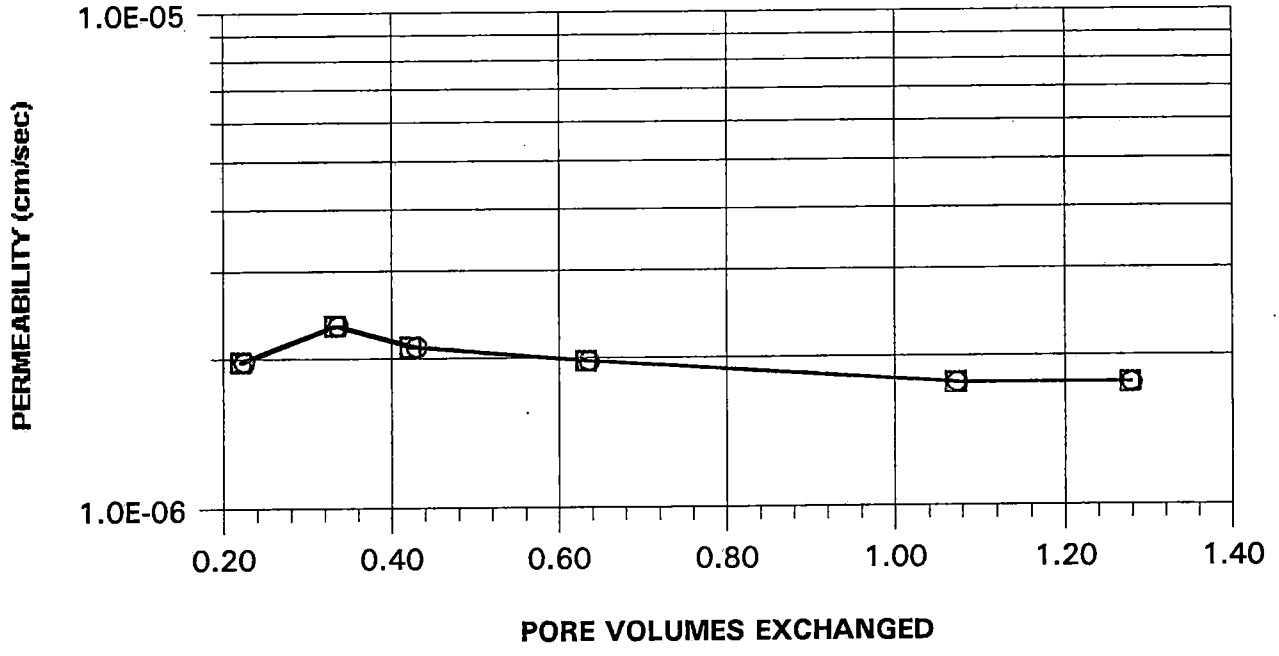
AVERAGE PERMEABILITY = 1.9E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.9E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-4.8
Project No.	97178-01	Sample No.	SM008-TB01-0305
Lab ID	97178-01.022	Visual Description	**BROWN CLAY**
			(Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	448	449
Weight of Pycnometer + Soil + Water (gm)	701.3	703.3
Temperature, T (°Celcius)	24.8	24.6
Weight of Pycnometer + Water (gm)	681.17	683.30
Tare Number	K-3	1653
Weight of Tare + Dry Soil (gm)	135.03	132.13
Weight of Tare (gm)	102.81	100.32
Weight of Dry Soil (gm)	32.22	31.81
Specific Gravity of Soil @ T	2.665	2.693
Specific Gravity of Water @ T	0.9971	0.9972
Conversion Factor for Temperature T	0.9989	0.9989
Specific Gravity @ 20° Celcius	2.668	2.696

Average Specific Gravity @ 20° Celcius	2.68

Tested By TM *Date* 7/30/97 *Checked By* LB *Date* 8-4-97

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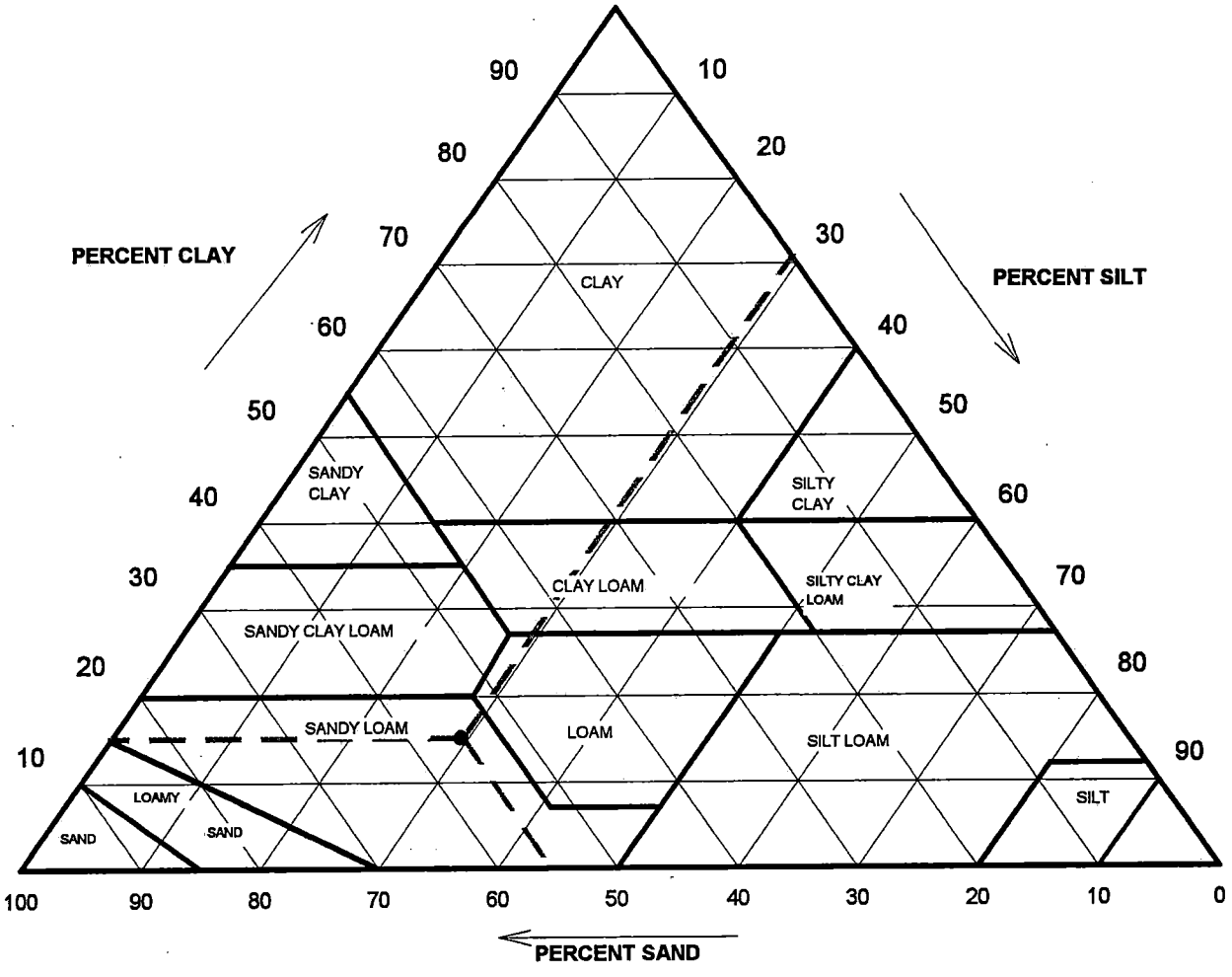
REVISION: 1

geotechnics

USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-4.8
Project No.	97178-01	Sample No.	SM008-TB01-0305
Lab ID	97178-01.022	Soil Color	GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	55.43
Silt	29.39
Clay	15.18
USDA Classification	***SANDY LOAM***

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DCN: DS-S3A
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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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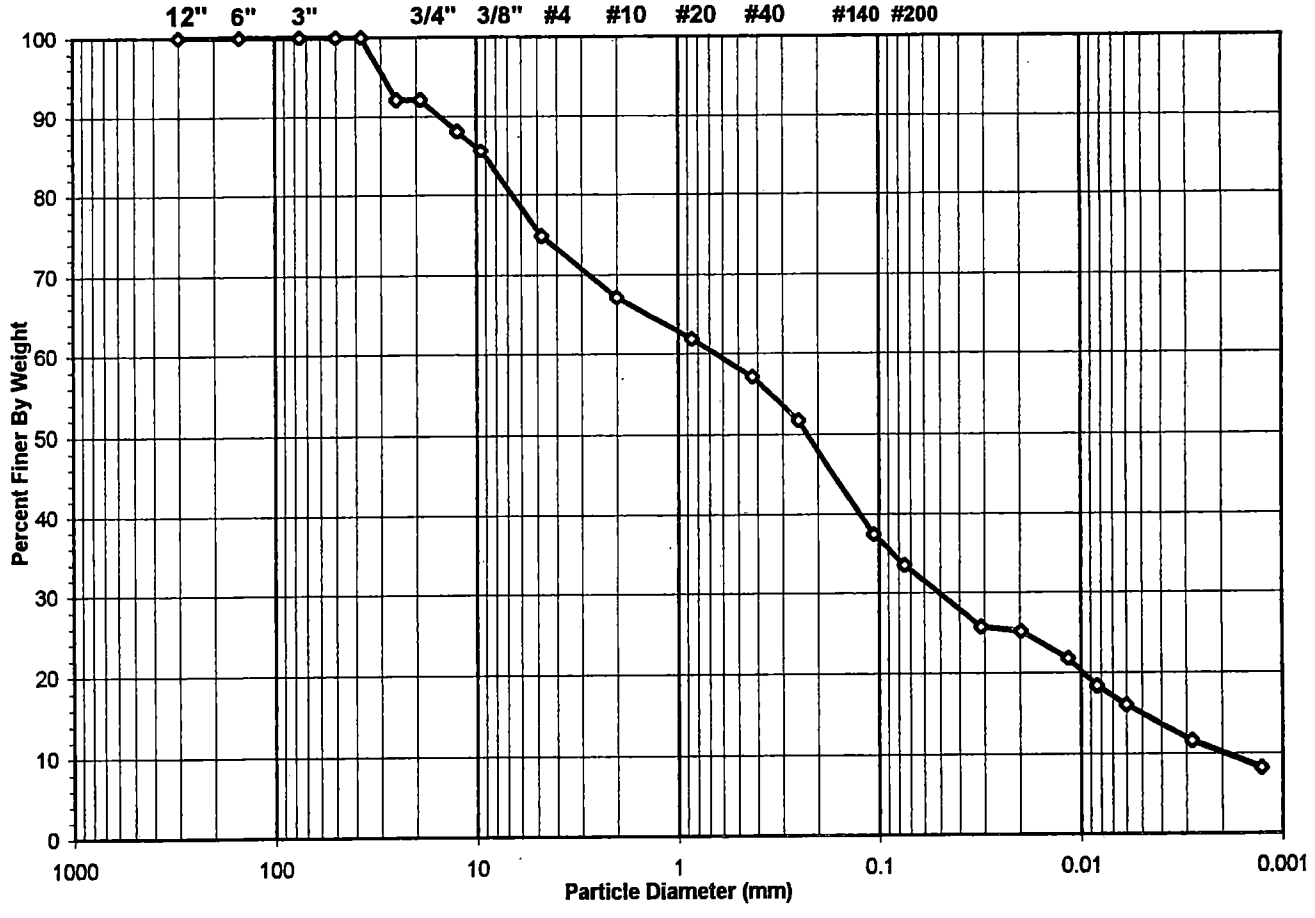
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-4.8
Project No.	97178-01	Sample No.	SM008-TB01-0305
Lab ID	97178-01.022	Soil Color	GRAY

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	32.86	**0.00**
2	67.14	*Sand*	37.22	**55.43**
0.075	33.51	*Silt*	19.73	**29.39**
0.05	29.92	*Clay*	10.19	**15.18**
0.002	10.19			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND WITH GRAVEL***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-4.8
Project No.	97178-01	Sample No.	SM008-TB01-0305
Lab ID	97178-01.022	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	28.5	28.5	24.3	22.9	76.7	0.0310	**25.7**
5		28.0	24.3	22.4	75.0	0.0197	**25.1**
15		25.0	24.3	19.4	64.9	0.0116	**21.8**
30		22.0	24.3	16.4	54.9	0.0084	**18.4**
60		20.0	23.5	14.4	48.2	0.0060	**16.1**
287		16.0	23	10.4	34.7	0.0028	**11.6**
1440		13.0	24	7.4	24.7	0.0013	**8.3**

Soil Specimen Data		**Corrections**	
Tare No.	1058	K - Factor	0.01285
Tare + Dry Material (gm)	138.22	a - Factor	0.994
Weight of Tare (gm)	103.6	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	33.51
Weight of Dry Material (gm)	29.62		
		Specific Gravity	2.68 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/28/97 Checked By LB Date 8-4-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-4.8
Project No.	97178-01	Sample No.	SM008-TB01-0305
Lab ID	97178-01.022	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1698	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	723.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	630.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	81.47	Weight of Tare (gm)	NA
Weight of Water (gm)	92.60	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	549.43	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**16.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	549.43
Dry Weight - 3/4" Sample (gm)	321.73	Weight of minus #200 material (gm)	184.10
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	365.33
Dry Weight + 3/4" Sample (gm)	43.60		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	43.60	7.94	7.94	92.06	**92.06**
3/4"	19.0	0.00	0.00	7.94	92.06	**92.06**
1/2"	12.5	21.92	3.99	11.93	88.07	**88.07**
3/8"	9.50	13.83	2.52	14.44	85.56	**85.56**
#4	4.75	58.85	10.71	25.15	74.85	**74.85**
#10	2.00	42.34	7.71	32.86	67.14	**67.14**
#20	0.85	28.79	5.24	38.10	61.90	**61.90**
#40	0.425	26.15	4.76	42.86	57.14	**57.14**
#60	0.250	30.02	5.46	48.32	51.68	**51.68**
#140	0.106	78.42	14.27	62.60	37.40	**37.40**
#200	0.075	21.41	3.90	66.49	33.51	**33.51**
Pan	-	184.10	33.51	100.00	-	-

Tested By JCM Date 7/24/97 Checked By LB Date 8-4-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-24-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM008-TB01-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					PERMEABILITY
4.50		3		GRAY CLAYEY SAND WITH GRAVEL	UNIT WGT WC. GRAINSIZE HYDROMETER SP.GR.
		2			
5.00		1			NO TEST

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number		1698			
Wt. Tare & WS(gm.)		723.50			
Wt. Tare & DS(gm.)		630.90			
Wt. Tare(gm.)		81.47			
Moisture Content(%)		16.9			

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1290.90	1007.60
Wt. Of Tube(gms.)	360.18	274.71
Wt. Of WS.(gms.)	930.72	732.89
Length 1 (in.)	4.718	3.589
Length 2 (in.)	4.715	3.620
Length 3 (in.)	4.735	3.602
Top Diameter (in.)	2.853	2.876
Middle Diameter (in.)	2.873	2.876
Bottom Diameter (in.)	2.874	2.883
Sample Volume (cc)	499.50	384.25
Moisture Content(%)	16.85	16.85
Unit Wet Wt.(gms/cc)	1.86	1.91
Unit Wet Wt.(pcf.)	116.3	119.0
Unit Dry Wt.(pcf.)	99.5	101.9
Unit Dry Wt.(gms/cc)	1.59	1.63

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DATE: 11/12/96
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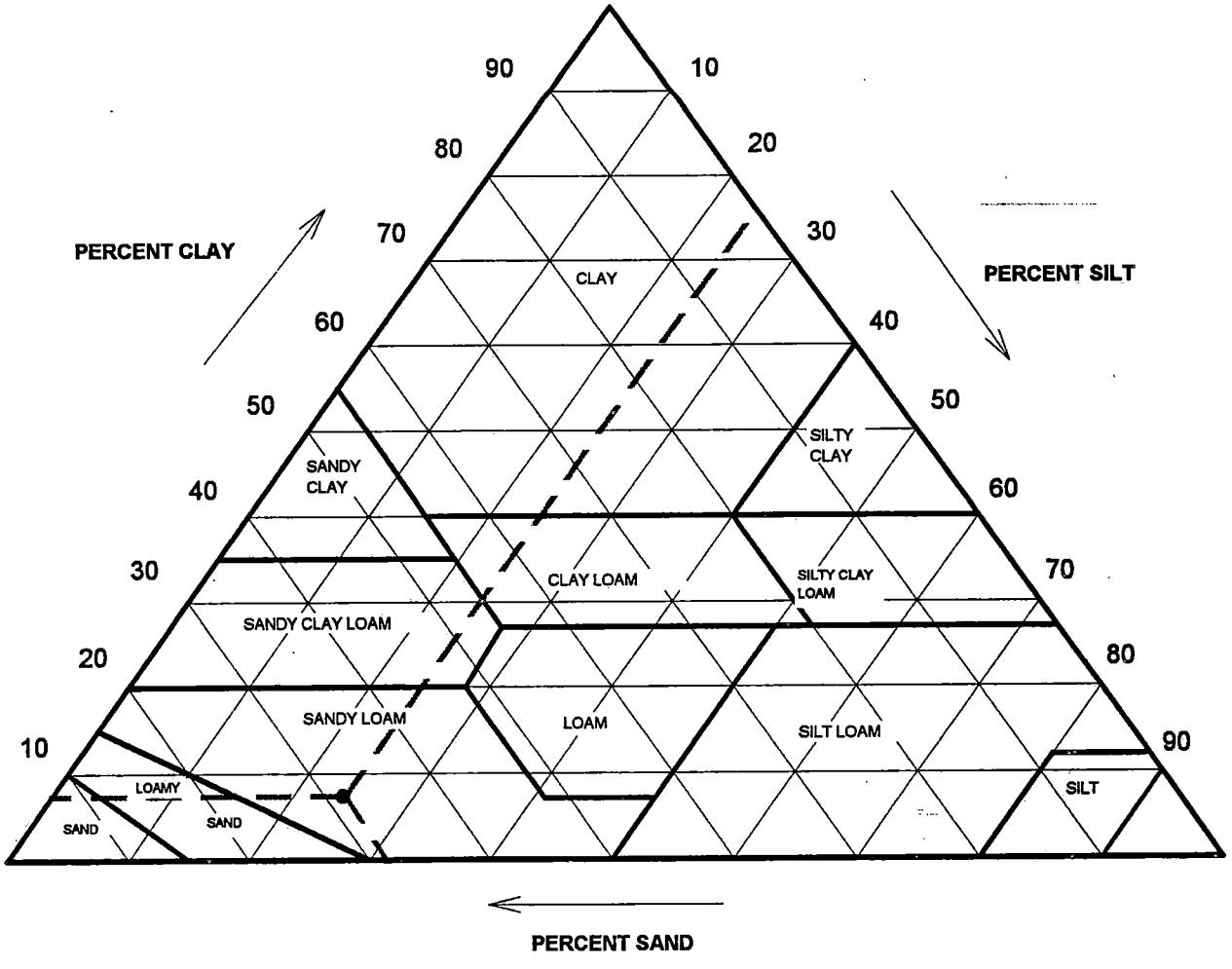
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM008-TB01-0002.5
Lab ID	97178-01.021	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	68.48
Silt	24.20
Clay	7.32
USDA Classification	***SANDY LOAM***

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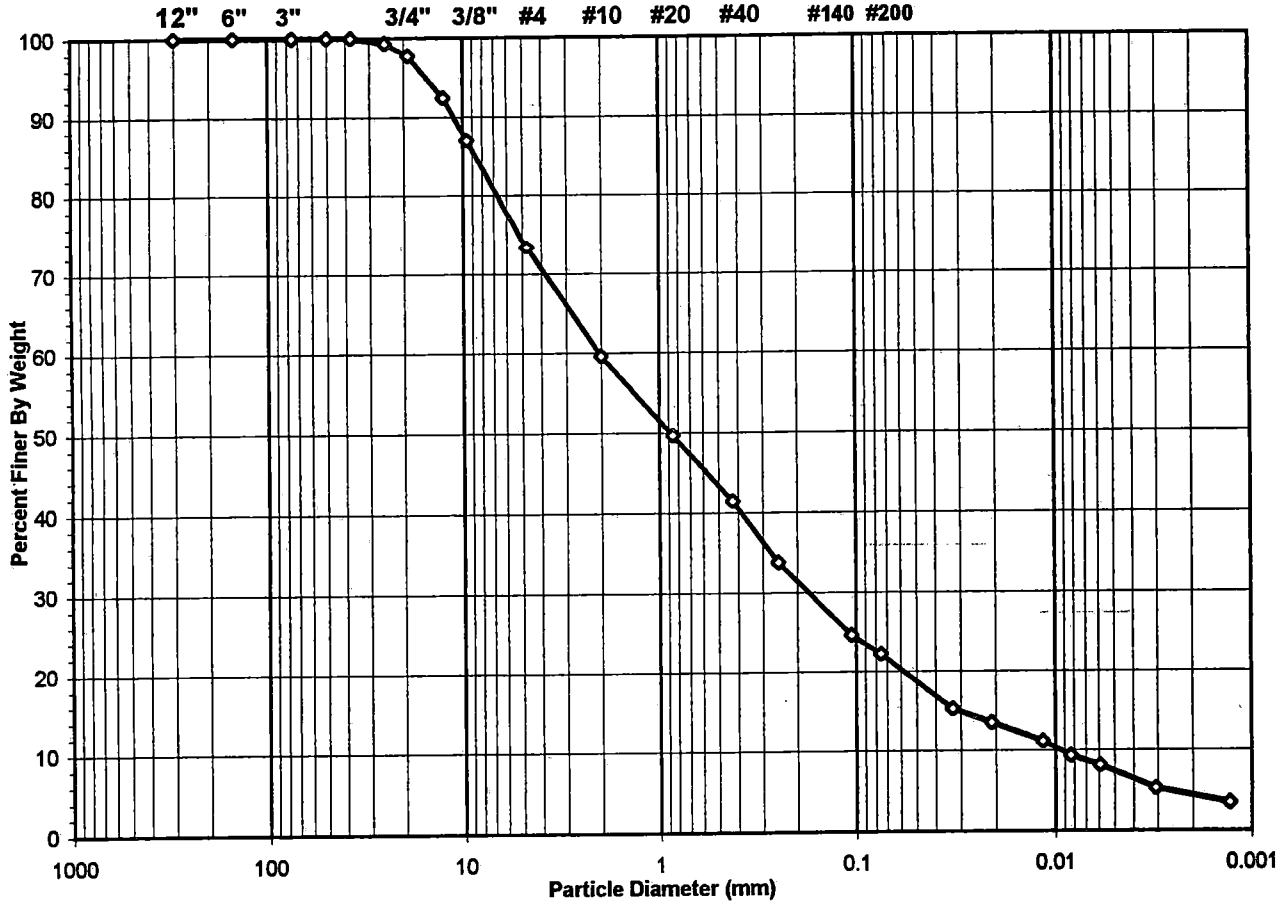
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM008-TB01-0002.5
Lab ID	97178-01.021	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	40.40	**0.00**
2	59.60	*Sand*	40.81	**68.48**
0.075	22.17	*Silt*	14.42	**24.20**
0.05	18.79	*Clay*	4.36	**7.32**
0.002	4.36			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND WITH GRAVEL***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM008-TB01-0002.5
Lab ID	97178-01.021	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	18.0	18.5	24.5	12.9	68.9	0.0328	**15.3**
5		17.0	24.5	11.4	60.9	0.0210	**13.5**
17		15.0	24.5	9.4	50.3	0.0115	**11.1**
33		13.5	24.5	7.9	42.3	0.0083	**9.4**
66		12.5	23.4	6.9	37.0	0.0059	**8.2**
250		10.0	22.7	4.4	23.7	0.0031	**5.2**
1440		8.5	24.7	2.9	15.7	0.0013	**3.5**

Soil Specimen Data		**Corrections**	
Tare No.	1624	K - Factor	0.01275
Tare + Dry Material (gm)	124.6	a - Factor	0.99
Weight of Tare (gm)	101	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	22.17
Weight of Dry Material (gm)	18.6		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/17/97 Checked By LB Date 7-22-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM008-TB01-0002.5
Lab ID	97178-01.021	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1668	Tare No.	2018
Wgt.Tare + Wet Specimen (gm)	1487.60	Wgt.Tare + Wet Specimen (gm)	105.56
Wgt.Tare + Dry Specimen (gm)	1404.80	Wgt.Tare + Dry Specimen (gm)	103.94
Weight of Tare (gm)	100.00	Weight of Tare (gm)	8.41
Weight of Water (gm)	82.80	Weight of Water (gm)	1.62
Weight of Dry Soil (gm)	1304.80	Weight of Dry Soil (gm)	95.53
Moisture Content (%)	**6.3**	**Moisture Content (%)**	**1.7**

Wet Weight -3/4" Sample (gm)	4663	Weight of the Dry Specimen (gm)	1304.80
Dry Weight - 3/4" Sample (gm)	4384.8	Weight of minus #200 material (gm)	295.66
Wet Weight +3/4" Sample (gm)	97.24	Weight of plus #200 material (gm)	1009.14
Dry Weight + 3/4" Sample (gm)	95.62		
Total Dry Weight Sample (gm)	4480.4	**J - Factor (Percent Finer than 3/4")**	**0.9783**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	27.20		0.61	0.61	99.39	**99.39**
3/4"	19	70.04		1.56	2.17	97.83	**97.83**
1/2"	12.5	71.19		5.46	5.46	94.54	**92.49**
3/8"	9.5	73.06		5.60	11.06	88.94	**87.01**
#4	4.75	182.04		13.95	25.01	74.99	**73.37**
#10	2	183.60		14.07	39.08	60.92	**59.60**
#20	0.85	132.05	(**)	10.12	49.20	50.80	**49.70**
#40	0.425	109.90		8.42	57.62	42.38	**41.46**
#60	0.25	101.77		7.80	65.42	34.58	**33.83**
#140	0.106	122.67		9.40	74.82	25.18	**24.63**
#200	0.075	32.86		2.52	77.34	22.66	**22.17**
Pan	-	295.66		22.66	100.00	-	-

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Specimen*

Tested By BS Date 7/15/97 Checked By LB Date 7-22-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-28-97
Client Project	BAYER 51249	Checked By	JMO 9-5-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.10
Depth Pushed	5.0-7.0		
Shelby Tube No.	SM007-TB04-0507		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
5.00					
5.50					
6.00					
		3			NO TEST
6.50				BLACK TAR LIKE SUBSTANCE SOME GRANULAR SOME BIG MASS	
		2			NO TEST
		1			NO TEST
7.00					

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number					
Wt. Tare & WS(gm.)					
Wt. Tare & DS(gm.)					
Wt. Tare(gm.)					
Moisture Content(%)					

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	
Wt. Of Tube(gms.)	
Wt. Of WS.(gms.)	
Length 1 (in.)	
Length 2 (in.)	
Length 3 (in.)	
Top Diameter (in.)	
Middle Diameter (in.)	
Bottom Diameter (in.)	
Sample Volume (cc)	
Moisture Content(%)	
Unit Wet Wt.(gms/cc)	
Unit Wet Wt.(pcf.)	
Unit Dry Wt.(pcf.)	
Unit Dry Wt.(gms/cc)	

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	4.5-4.8				
Sample No.	SM007-TB04-0305				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.69
Sample Diameter (cm.)	7.26
Sample Area (cm.^2), A	41.34
Inflow Burette Area, (cm.^2), a-in	4.41
Outflow Burette Area, (cm.^2), a-out	4.69
B Parameter	96%

AVERAGE PERMEABILITY = 2.2E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 2.2E-09 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-28-97	15	35	0.0	0.0	0.0	195.4	0	23.0	NA
07-28-97	20	45	5.2	8.8	8.4	191.6	0	23.0	5.2E-07
07-29-97	7	25	15.8	20.5	19.0	186.7	0	23.0	3.4E-07
07-29-97	18	50	27.3	30.8	29.5	182.1	0	22.5	3.0E-07
07-30-97	7	15	39.7	41.0	38.5	177.9	0	23.5	2.6E-07
07-30-97	20	0	52.4	49.3	46.4	174.3	0	23.0	2.2E-07
07-31-97	7	10	63.6	56.2	53.3	171.3	0	23.0	2.2E-07
07-31-97	20	20	76.8	63.5	60.1	168.2	0	22.5	1.9E-07

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-28-97
Client Project	BAYER 51249	Checked By	LB	Date	8-13-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	4.5-4.8	Sample Condition	UNDISTURBED		
Sample No.	SM007-TB04-0305				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1499	1696
Wt. Tare & WS(gm.)	230.40	563.50
Wt. Tare & DS(gm.)	208.80	501.70
Wt. Water(gm.)	21.60	61.80
Wt. Tare(gm.)	38.99	83.34
Wt. DS(gm.)	169.81	418.36
Moisture Content(%)	12.7	14.8

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1133.90	NA
Wt. Of Tube(gms.)	289.07	NA
Wt. Of WS.(gms.)	844.83	860.2
Length 1 (in.)	3.747	3.862
Length 2 (in.)	3.762	3.785
Length 3 (in.)	3.735	3.799
Top Diameter (in.)	2.876	2.848
Middle Diameter (in.)	2.869	2.860
Bottom Diameter (in.)	2.880	2.861
Average Length (in)	3.75	3.82
Average Area (in^2)	6.49	6.41
Sample Volume(cc.)	398.72	400.63
Unit Wet Wt.(gms/cc)	2.12	2.15
Unit Wet Wt.(pcf.)	132.2	134.0
Unit Dry Wt.(pcf.)	117.3	116.7
Unit Dry Wt.(gms/cc)	1.88	1.87
Void Ratio,e	0.44	0.44
Porosity, n	0.30	0.31
Pore Volume(cm^3)	121.1	123.0

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PERMEABILITY TEST

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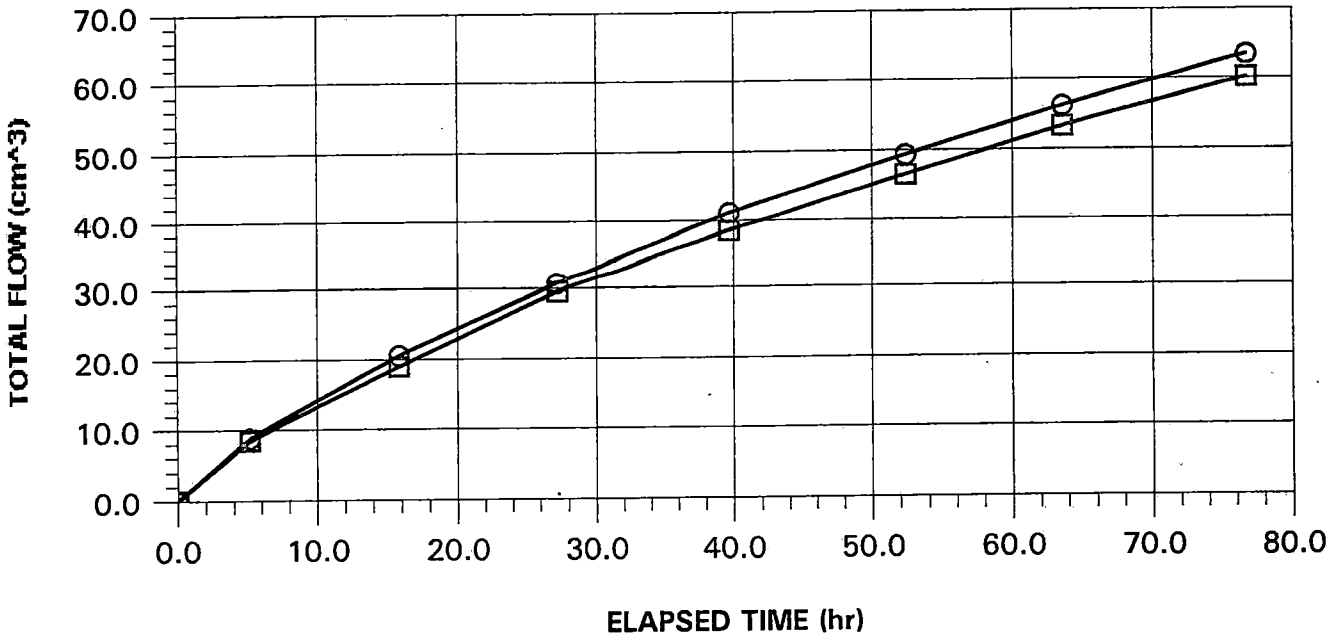
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.5-4.8
Project No.	97178-02	Sample No.	SM007-TB04-0305

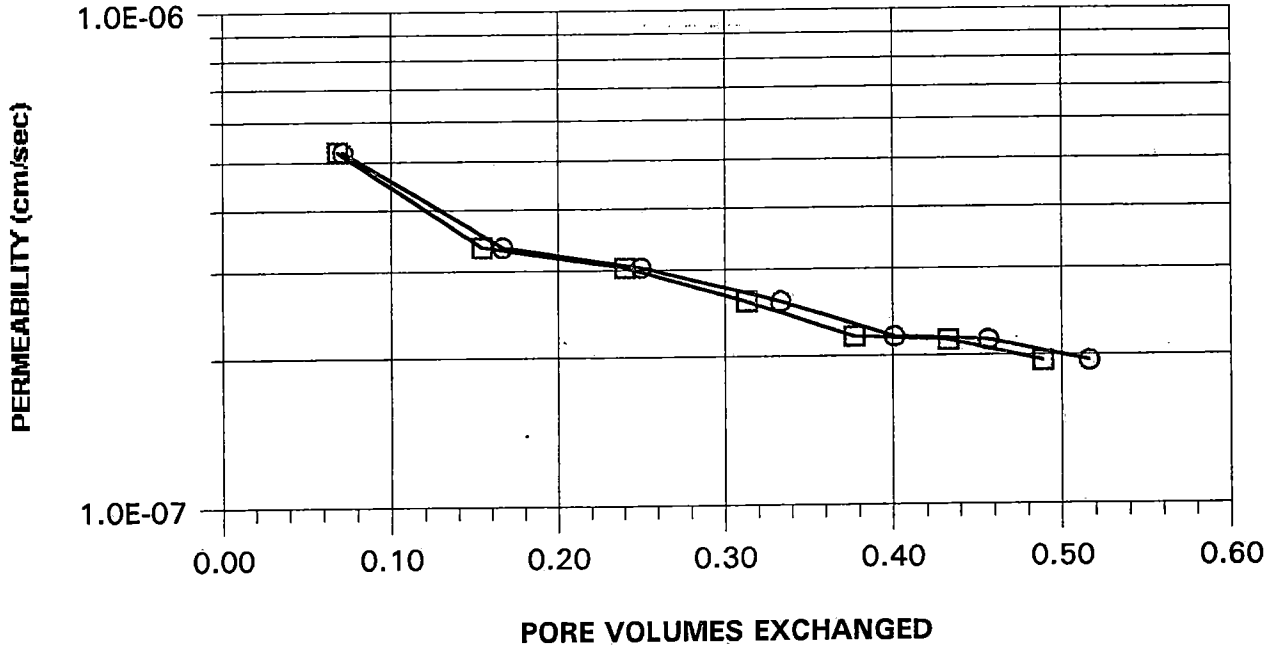
AVERAGE PERMEABILITY = 2.2E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 2.2E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



INFLOW
OUTFLOW

PORE VOLUMES EXCHANGED vs. PERMEABILITY



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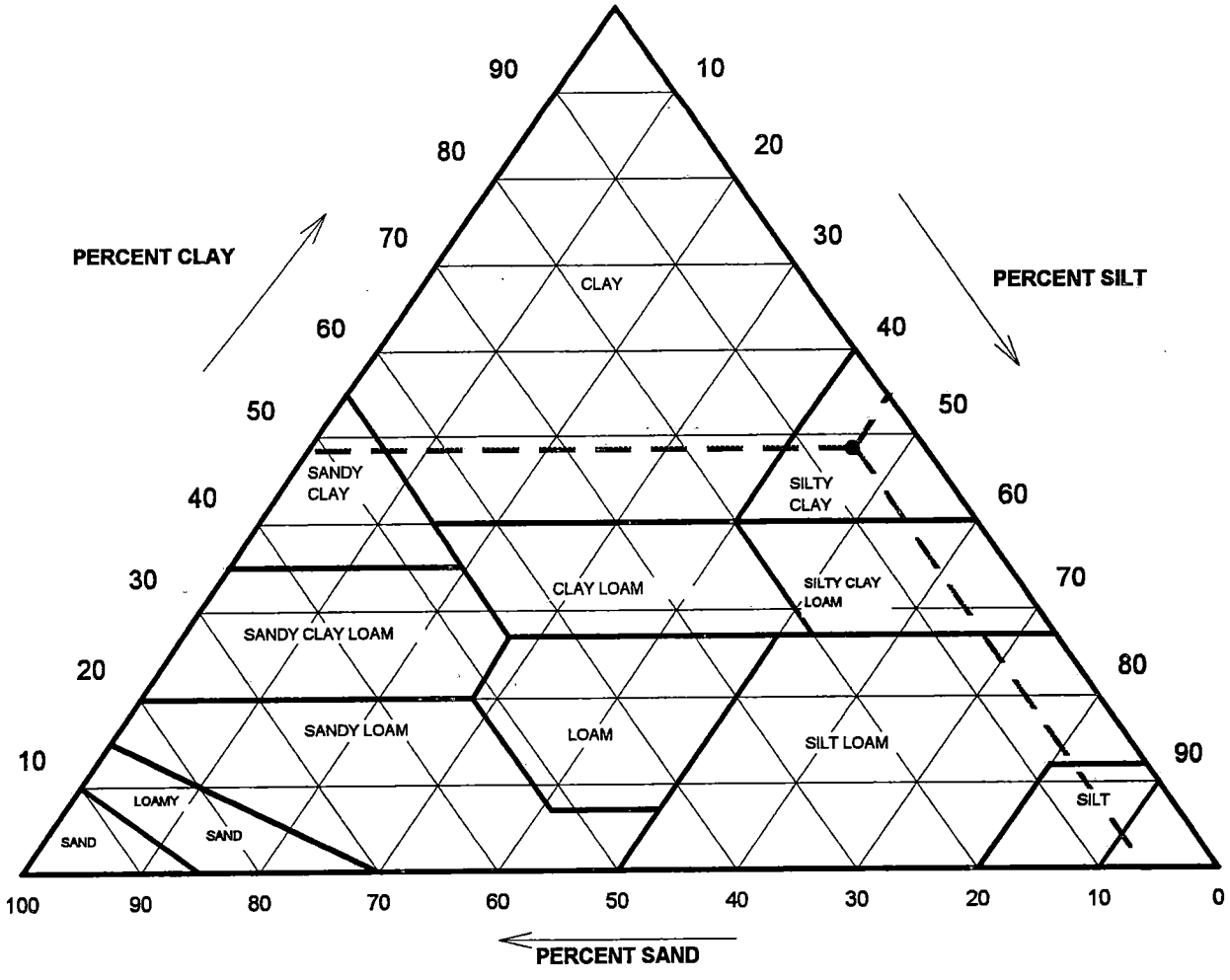
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM007-TB04-0305
Lab ID	97178-02.001	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	6.05
Silt	45.61
Clay	48.33
USDA Classification	***SILTY CLAY***

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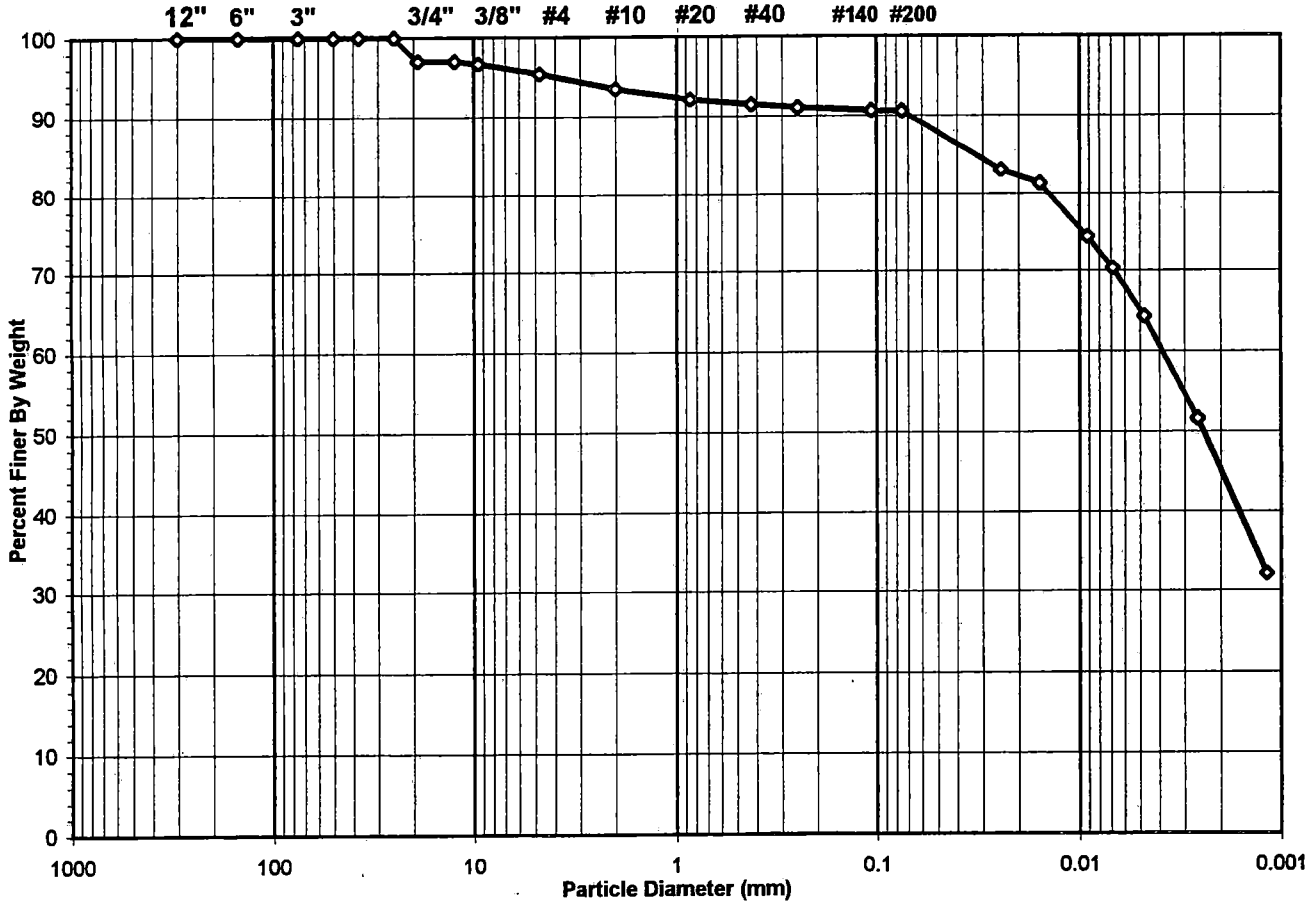
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM007-TB04-0305
Lab ID	97178-02.001	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	6.55	**0.00**
2	93.45	*Sand*	5.66	**6.05**
0.075	90.53	*Silt*	42.63	**45.61**
0.05	87.80	*Clay*	45.17	**48.33**
0.002	45.17			

USDA Classification ***SILTY CLAY***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM007-TB04-0305
Lab ID	97178-02.001	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	53.5	54.5	24.5	48.9	91.7	0.0245	**83.0**
5		53.5	24.5	47.9	89.8	0.0156	**81.3**
16		49.5	24.5	43.9	82.3	0.0091	**74.5**
30		47.0	24.5	41.4	77.6	0.0068	**70.3**
66		43.5	23.6	37.9	71.1	0.0048	**64.3**
250		36.0	22.7	30.4	57.0	0.0026	**51.6**
1440		24.5	23.5	18.9	35.5	0.0012	**32.1**

Soil Specimen Data		Corrections	
Tare No.	684	K - Factor	0.01275
Tare + Dry Material (gm)	162.05	a - Factor	0.99
Weight of Tare (gm)	104.19	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	90.53
Weight of Dry Material (gm)	52.86		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 8/1/97 Checked By LB Date 8-7-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.0-4.5
Project No.	97178-02	Sample No.	SM007-TB04-0305
Lab ID	97178-02.001	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	K1	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	772.60	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	658.70	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	73.98	Weight of Tare (gm)	NA
Weight of Water (gm)	113.90	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	584.72	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**19.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	584.72
Dry Weight - 3/4" Sample (gm)	38.06	Weight of minus #200 material (gm)	529.32
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	55.40
Dry Weight + 3/4" Sample (gm)	17.34		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	17.34	2.97	2.97	97.03	**97.03**
1/2"	12.5	0.00	0.00	2.97	97.03	**97.03**
3/8"	9.50	1.94	0.33	3.30	96.70	**96.70**
#4	4.75	7.68	1.31	4.61	95.39	**95.39**
#10	2.00	11.31	1.93	6.55	93.45	**93.45**
#20	0.85	8.05	1.38	7.92	92.08	**92.08**
#40	0.425	4.05	0.69	8.61	91.39	**91.39**
#60	0.250	2.08	0.36	8.97	91.03	**91.03**
#140	0.106	2.26	0.39	9.36	90.64	**90.64**
#200	0.075	0.69	0.12	9.47	90.53	**90.53**
Pan	-	529.32	90.53	100.00	-	-

Tested By JCM Date 7/28/97 Checked By LB Date 8-7-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-28-97
Client Project	BAYER 51249	Checked By	JMC 8/22/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.05
Depth Pushed	3-5		
Shelby Tube No.	SM007-TB04-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					GRAIN SIZE HYDROMETER
		3		BROWN LEAN CLAY	
4.50					PERMEABILITY
		2			
		1			WATER CONTENT
5.00					

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1499		K1		
Wt. Tare & WS(gm.)	230.40		772.60		
Wt. Tare & DS(gm.)	208.80		658.70		
Wt. Tare(gm.)	38.99		73.98		
Moisture Content(%)	12.7		19.5		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1133.90	1717.50
Wt. Of Tube(gms.)	289.07	456.20
Wt. Of WS.(gms.)	844.83	1261.30
Length 1 (in.)	3.747	5.918
Length 2 (in.)	3.762	5.906
Length 3 (in.)	3.735	5.924
Top Diameter (in.)	2.876	2.870
Middle Diameter (in.)	2.869	2.869
Bottom Diameter (in.)	2.880	2.869
Sample Volume (cc)	398.72	626.88
Moisture Content(%)	12.72	19.48
Unit Wet Wt.(gms/cc)	2.12	2.01
Unit Wet Wt.(pcf.)	132.2	125.6
Unit Dry Wt.(pcf.)	117.3	105.1
Unit Dry Wt.(gms/cc)	1.88	1.68

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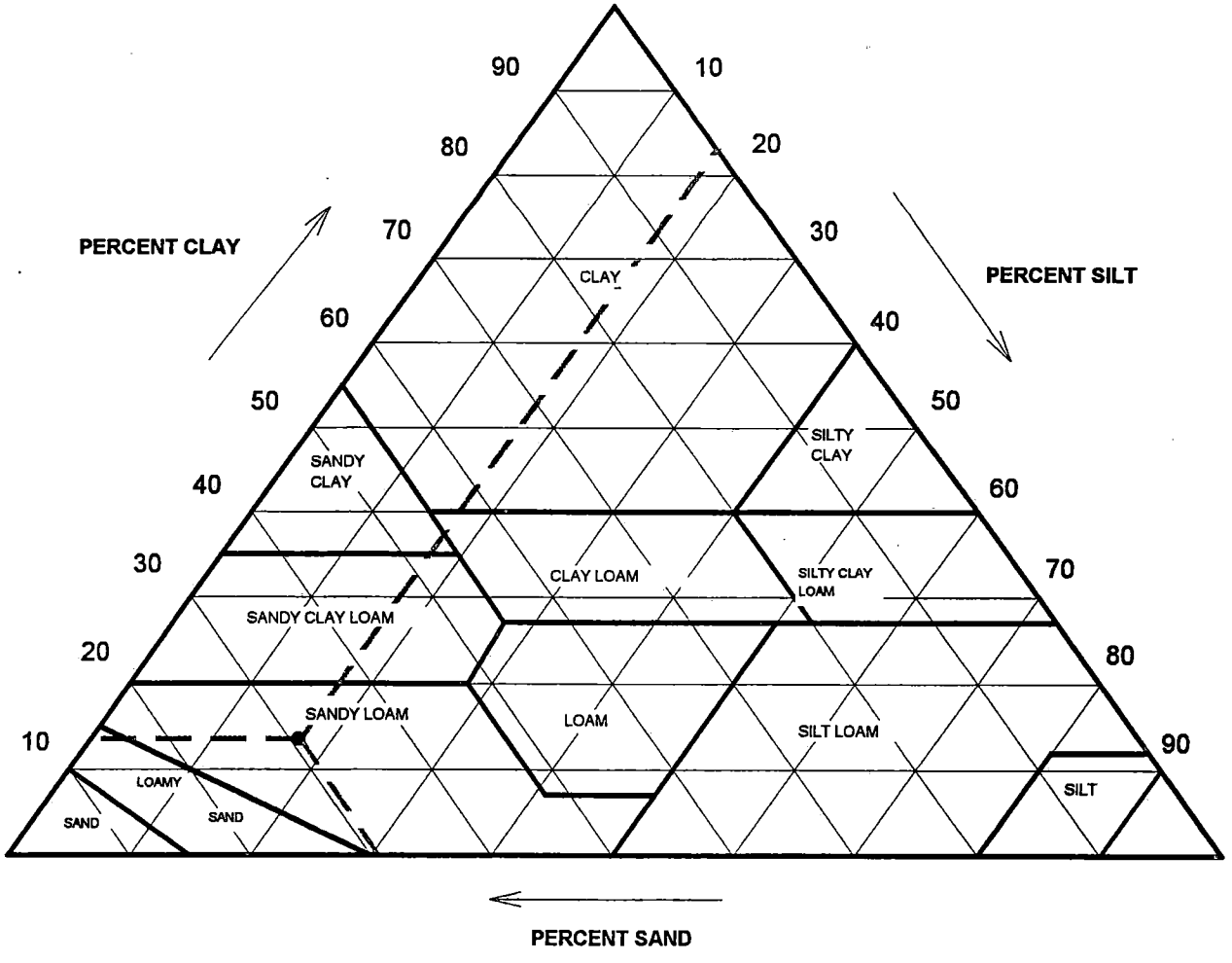
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0.5-2.5
Project No.	97178-01	Sample No.	SM007-TB01-0002.5
Lab ID	97178-01.020	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	69.25
Silt	17.19
Clay	13.56
USDA Classification	***SANDY LOAM***

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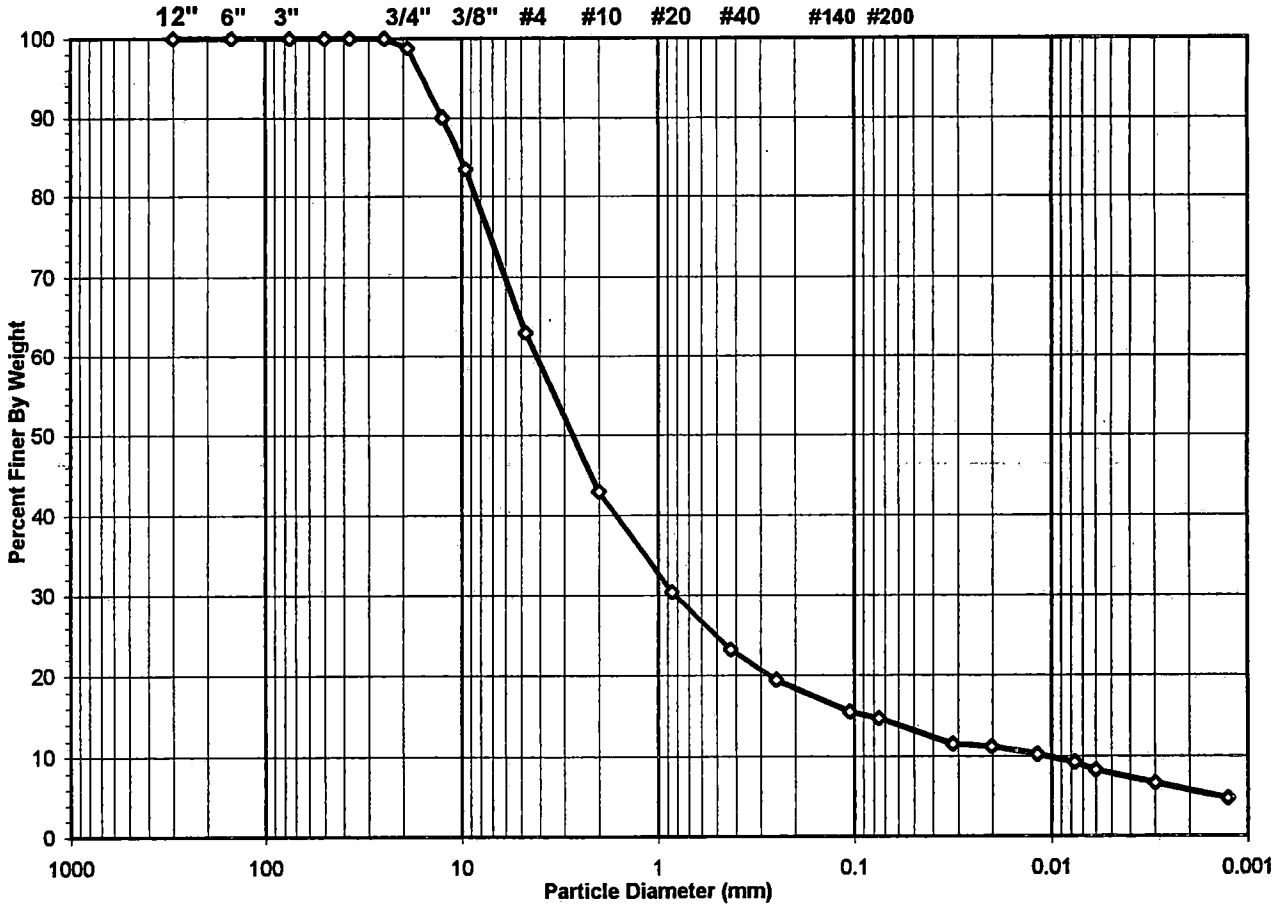
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0.5-2.5
Project No.	97178-01	Sample No.	SM007-TB01-0002.5
Lab ID	97178-01.020	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	57.06	**0.00**
2	42.94	*Sand*	29.73	**69.25**
0.075	14.69	*Silt*	7.38	**17.19**
0.05	13.20	*Clay*	5.82	**13.56**
0.002	5.82			

USDA Classification	***SANDY LOAM***
USCS Symbol	***sc, ASSUMED***
USCS Classification	***CLAYEY SAND WITH GRAVEL***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0.5-2.5
Project No.	97178-01	Sample No.	SM007-TB01-0002.5
Lab ID	97178-01.020	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	23.0	23.5	24.5	17.9	78.6	0.0318	**11.5**
5		23.0	24.5	17.4	76.4	0.0202	**11.2**
15		21.5	24.5	15.9	69.9	0.0118	**10.3**
36		20.0	24.5	14.4	63.3	0.0077	**9.3**
60		18.5	23.4	12.9	56.7	0.0060	**8.3**
250		16.0	22.7	10.4	45.8	0.0030	**6.7**
1440		13.0	24.7	7.4	32.6	0.0013	**4.8**

Soil Specimen Data		Corrections	
Tare No.	11	K - Factor	0.01275
Tare + Dry Material (gm)	128.8	a - Factor	0.99
Weight of Tare (gm)	101.2	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	14.69
Weight of Dry Material (gm)	22.6		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/17/97 Checked By LB Date 7-22-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0.5-2.5
Project No.	97178-01	Sample No.	SM007-TB01-0002.5
Lab ID	97178-01.020	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1640	Tare No.	1985
Wgt.Tare + Wet Specimen (gm)	1539.70	Wgt.Tare + Wet Specimen (gm)	69.89
Wgt.Tare + Dry Specimen (gm)	1489.00	Wgt.Tare + Dry Specimen (gm)	69.39
Weight of Tare (gm)	101.22	Weight of Tare (gm)	8.34
Weight of Water (gm)	50.70	Weight of Water (gm)	0.50
Weight of Dry Soil (gm)	1387.78	Weight of Dry Soil (gm)	61.05
Moisture Content (%)	**3.7**	**Moisture Content (%)**	**0.8**

Wet Weight -3/4" Sample (gm)	5101	Weight of the Dry Specimen (gm)	1387.78
Dry Weight - 3/4" Sample (gm)	4921.2	Weight of minus #200 material (gm)	206.35
Wet Weight +3/4" Sample (gm)	61.57	Weight of plus #200 material (gm)	1181.43
Dry Weight + 3/4" Sample (gm)	61.07		
Total Dry Weight Sample (gm)	4982.3	**J - Factor (Percent Finer than 3/4")**	**0.9876**

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)		Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00		0.00	0.00	100.00	**100.00**
6"	150	0.00		0.00	0.00	100.00	**100.00**
3"	75	0.00		0.00	0.00	100.00	**100.00**
2"	50	0.00	(*)	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00		0.00	0.00	100.00	**100.00**
1"	25	0.00		0.00	0.00	100.00	**100.00**
3/4"	19	61.57		1.24	1.24	98.76	**98.76**
1/2"	12.5	124.07		8.94	8.94	91.06	**89.93**
3/8"	9.5	91.53		6.60	15.54	84.46	**83.42**
#4	4.75	287.10		20.69	36.22	63.78	**62.99**
#10	2	281.76		20.30	56.53	43.47	**42.94**
#20	0.85	175.99	(**)	12.68	69.21	30.79	**30.41**
#40	0.425	101.07		7.28	76.49	23.51	**23.22**
#60	0.25	52.91		3.81	80.30	19.70	**19.45**
#140	0.106	54.91		3.96	84.26	15.74	**15.55**
#200	0.075	12.09		0.87	85.13	14.87	**14.69**
Pan	-	206.35		14.87	100.00	-	-

Notes : *(*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample*
*(**) The - 3/4" sieve analysis is based on the Weight of the Dry Specimen*

Tested By BS Date 7/15/97 Checked By LB Date 7-22-97

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-19-97
Client Project	BAYER 51249	Checked By	LB	Date	7-29-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	16.5-16.8				
Sample No.	SM006-TB02-1517				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)		Final Sample Dimensions	
Top Cap (psi)	32.0	Sample Length (cm.), L	9.64
Bottom Cap (psi)	34.0	Sample Diameter (cm.)	7.27
Cell (psi)	35.0	Sample Area (cm.^2), A	41.48
Total Pressure Head (cm)	140.6	Inflow Burette Area, (cm.^2), a-in	4.80
		Outflow Burette Area, (cm.^2), a-out	4.76
		B Parameter	100%

AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

DATE	TIME		ELAPSED TIME (t)	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD (h)	FLOW 0 FLOW 1 STOP	TEMP	INCREMENTAL PERMEABILITY @ 20°C
mon-dy-yr	hr	min	hr	cm^3	cm^3	cm		°C	cm/sec
07-19-97	13	50	0.0	0.0	0.0	164.2	0	23.0	NA
07-20-97	8	20	18.5	6.9	6.3	161.5	0	22.0	1.4E-07
07-21-97	9	0	43.2	14.9	13.7	158.3	0	22.5	1.2E-07
07-21-97	20	25	54.6	18.1	16.8	156.9	0	23.0	1.1E-07
07-22-97	7	5	65.3	21.3	20.0	155.6	0	23.0	1.1E-07
07-22-97	22	5	80.3	26.6	25.2	153.4	0	23.0	1.4E-07
07-23-97	9	45	91.9	31.4	29.5	151.5	0	23.4	1.5E-07
07-23-97	18	0	100.2	34.1	32.6	150.3	0	23.0	1.4E-07
07-24-97	7	10	113.3	38.9	37.3	148.3	0	23.5	1.4E-07

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-19-97
Client Project	BAYER 51249	Checked By	LB	Date	7-29-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.70 MEASURED		
Depth(ft.)	16.5-16.8	Sample Condition	UNDISTURBED		
Sample No.	SM006-TB02-1517				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1696	1700
Wt. Tare & WS(gm.)	278.89	533.60
Wt. Tare & DS(gm.)	241.20	469.00
Wt. Water(gm.)	37.69	64.60
Wt. Tare(gm.)	83.43	79.71
Wt. DS(gm.)	157.77	389.29
Moisture Content(%)	23.9	16.6

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1135.80	NA
Wt. Of Tube(gms.)	279.18	NA
Wt. Of WS.(gms.)	856.62	806.2
Length 1 (in.)	3.697	3.825
Length 2 (in.)	3.686	3.778
Length 3 (in.)	3.671	3.783
Top Diameter (in.)	2.880	2.859
Middle Diameter (in.)	2.867	2.860
Bottom Diameter (in.)	2.881	2.864
Average Length (in)	3.68	3.80
Average Area (in^2)	6.50	6.43
Sample Volume(cc.)	392.25	399.83
Unit Wet Wt.(gms/cc)	2.18	2.02
Unit Wet Wt.(pcf.)	136.3	125.8
Unit Dry Wt.(pcf.)	110.0	107.9
Unit Dry Wt.(gms/cc)	1.76	1.73
Void Ratio,e	0.53	0.56
Porosity, n	0.35	0.36
Pore Volume(cm^3)	136.2	143.7

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PERMEABILITY TEST

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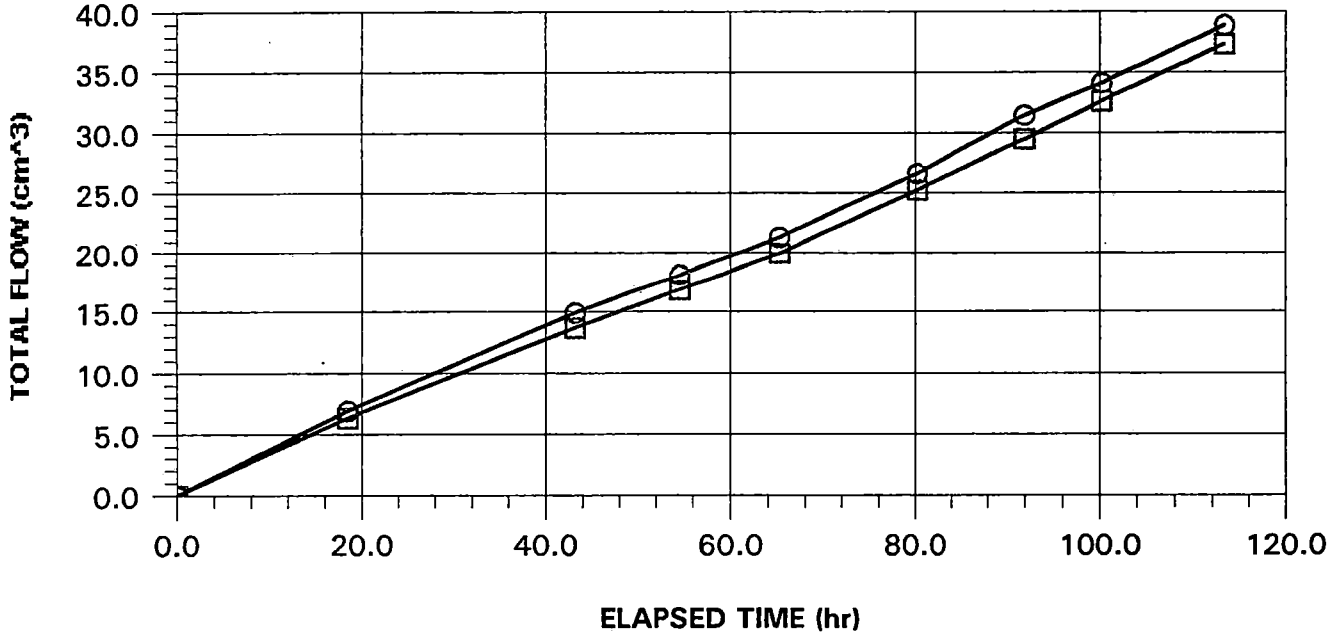
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	16.5-16.8
Project No.	97178-01	Sample No.	SM006-TB02-1517

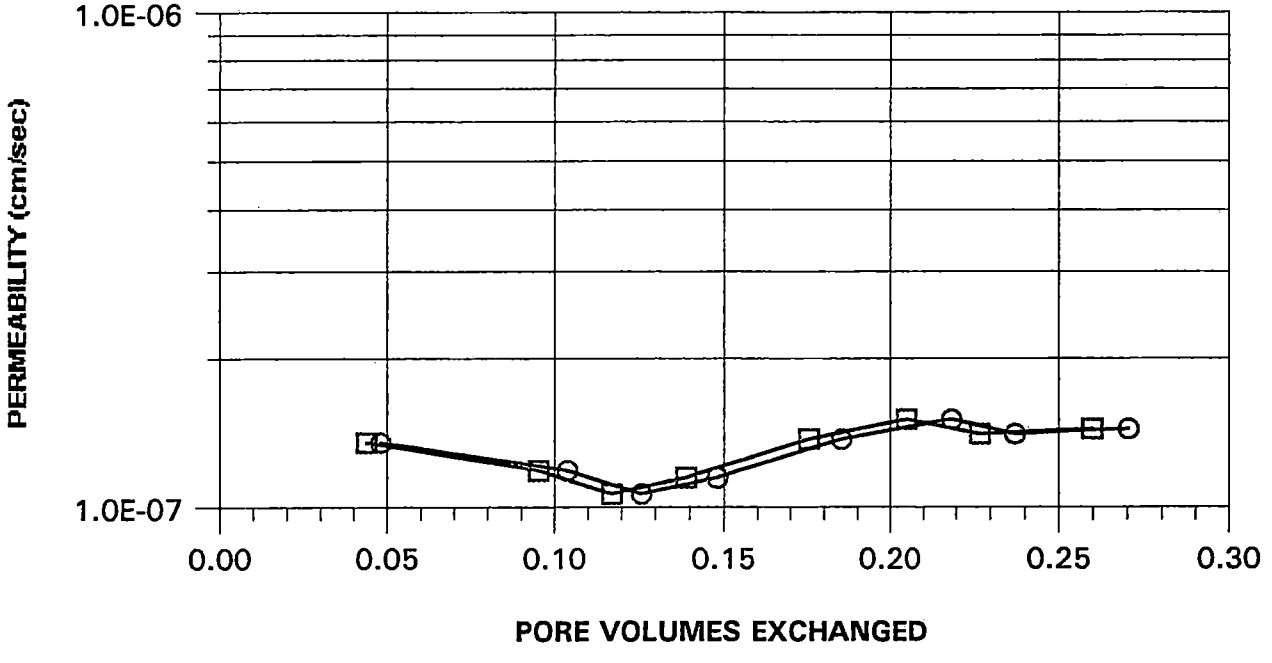
AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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DCN: CT-S5
DATE: 11/13/96
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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16-16.5
Project No.	97178-01	Sample No.	SM006-TB02-1517
Lab ID	97178-01.018	Visual Description	**BROWN CLAY** (Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	I	J
Weight of Pycnometer + Soil + Water (gm)	749.5	735.8
Temperature, T (°Celcius)	26.1	26.4
Weight of Pycnometer + Water (gm)	681.38	683.37
Tare Number	1618	678
Weight of Tare + Dry Soil (gm)	208.3	188.6
Weight of Tare (gm)	100.27	105.07
Weight of Dry Soil (gm)	108.03	83.53
Specific Gravity of Soil @ T	2.707	2.686
Specific Gravity of Water @ T	0.9968	0.9967
Conversion Factor for Temperature T	0.9986	0.9985
Specific Gravity @ 20° Celcius	2.711	2.690

Average Specific Gravity @ 20° Celcius	2.70

Tested By DB *Date* 7/23/97 *Checked By* LB *Date* 7-24-97

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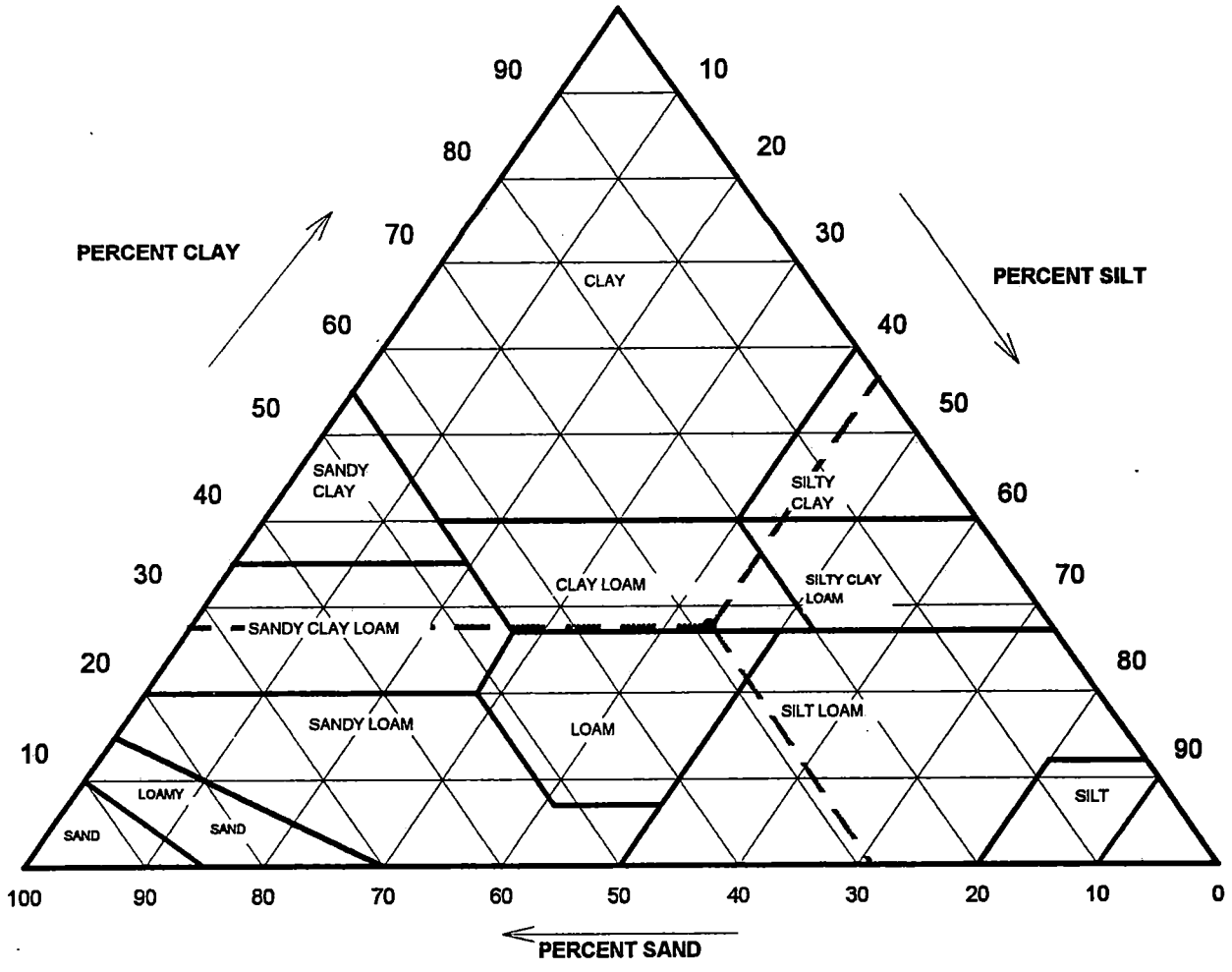
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.0-16.5
Project No.	97178-01	Sample No.	SM006-TB02-1517
Lab ID	97178-01.018	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	28.63
Silt	43.77
Clay	27.60
USDA Classification	***CLAY LOAM***

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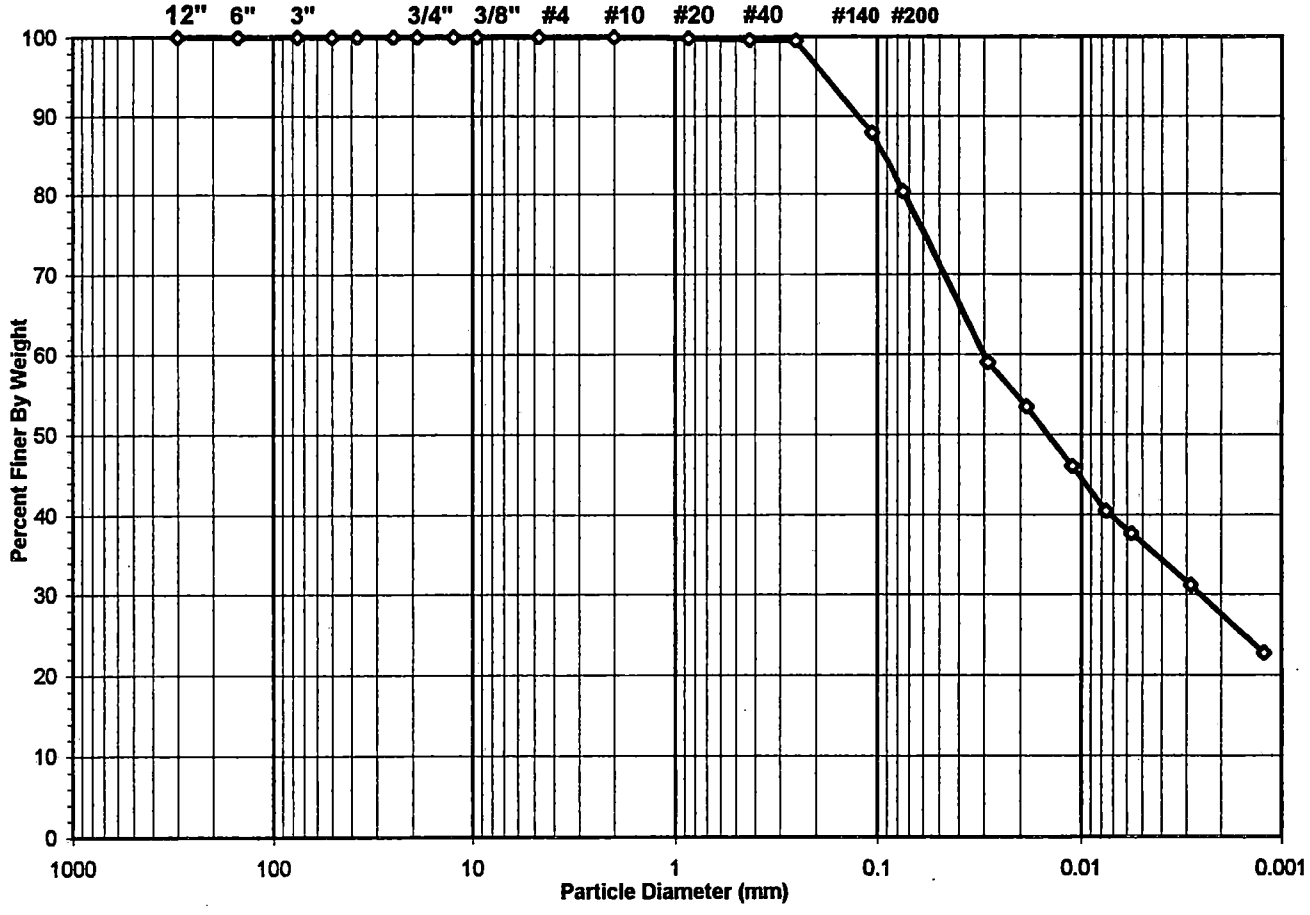
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.0-16.5
Project No.	97178-01	Sample No.	SM006-TB02-1517
Lab ID	97178-01.018	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	0.00	**0.00**
2	100.00	*Sand*	28.63	**28.63**
0.075	80.32	*Silt*	43.77	**43.77**
0.05	71.37	*Clay*	27.59	**27.60**
0.002	27.59			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY WITH SAND***

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DATE: 11/12/96
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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.0-16.5
Project No.	97178-01	Sample No.	SM006-TB02-1517
Lab ID	97178-01.018	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	36.0	37.0	25	31.7	73.6	0.0287	**59.1**
5		34.0	25	28.7	66.6	0.0186	**53.5**
15		30.0	25	24.7	57.3	0.0110	**46.0**
33		27.0	25	21.7	50.4	0.0076	**40.4**
60		25.5	24.1	20.2	46.9	0.0057	**37.6**
250		22.0	23.6	16.7	38.7	0.0029	**31.1**
1440		17.5	24.9	12.2	28.3	0.0012	**22.7**

Soil Specimen Data		Corrections	
Tare No.	1005	K - Factor	0.01268
Tare + Dry Material (gm)	154.11	a - Factor	0.99
Weight of Tare (gm)	106.46	Composite Correction	5.31
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	80.32
Weight of Dry Material (gm)	42.65		
		Specific Gravity	2.7 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/21/97 Checked By LB Date 7-31-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.0-16.5
Project No.	97178-01	Sample No.	SM006-TB02-1517
Lab ID	97178-01.018	Soil Color	BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1743	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	827.60	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	719.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.81	Weight of Tare (gm)	NA
Weight of Water (gm)	108.00	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	635.79	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**17.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	635.79
Dry Weight - 3/4" Sample (gm)	125.14	Weight of minus #200 material (gm)	510.65
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	125.14
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100.00
6"	150	0.00	0.00	0.00	100.00	100.00
3"	75	0.00	0.00	0.00	100.00	100.00
2"	50	0.00	0.00	0.00	100.00	100.00
1 1/2"	37.5	0.00	0.00	0.00	100.00	100.00
1"	25.0	0.00	0.00	0.00	100.00	100.00
3/4"	19.0	0.00	0.00	0.00	100.00	100.00
1/2"	12.5	0.00	0.00	0.00	100.00	100.00
3/8"	9.50	0.00	0.00	0.00	100.00	100.00
#4	4.75	0.00	0.00	0.00	100.00	100.00
#10	2.00	0.02	0.00	0.00	100.00	100.00
#20	0.85	1.19	0.19	0.19	99.81	99.81
#40	0.425	1.42	0.22	0.41	99.59	99.59
#60	0.250	0.55	0.09	0.50	99.50	99.50
#140	0.106	74.38	11.70	12.20	87.80	87.80
#200	0.075	47.58	7.48	19.68	80.32	80.32
Pan	-	510.65	80.32	100.00	-	-

Tested By JCM Date 7/19/97 Checked By LB Date 7-31-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-19-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	2.40
Depth Pushed	15.0-17.0		
Shelby Tube No.	SM006-TB02-1517		

SOIL PROFILE AND SAMPLING

	DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
15.00						
15.50						
16.00						GRAINSIZE HYDROMETER
16.50			3		BROWN LEAN CLAY WITH SAND	SP.GR. UNIT WGT WC.
			2			PERMEABILITY
17.00			1			WC

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1696		1743		
Wt. Tare & WS(gm.)	278.99		827.60		
Wt. Tare & DS(gm.)	241.20		719.60		
Wt. Tare(gm.)	83.43		83.81		
Moisture Content(%)	24.0		17.0		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1135.80	1830.10
Wt. Of Tube(gms.)	279.18	453.00
Wt. Of WS.(gms.)	856.62	1377.10
Length 1 (in.)	3.697	6.006
Length 2 (in.)	3.686	6.007
Length 3 (in.)	3.671	6.011
Top Diameter (in.)	2.880	2.885
Middle Diameter (in.)	2.867	2.878
Bottom Diameter (in.)	2.881	2.868
Sample Volume (cc)	392.25	640.03
Moisture Content(%)	23.95	16.99
Unit Wet Wt.(gms/cc)	2.18	2.15
Unit Wet Wt.(pcf.)	136.3	134.3
Unit Dry Wt.(pcf.)	109.9	114.8
Unit Dry Wt.(gms/cc)	1.76	1.84

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-19-97
Client Project	BAYER 51249	Checked By	LG	Date	8-11-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	6.6-6.9				
Sample No.	SM006-TB02-0507				
Visual Description	BROWN CLAY & ROCK FRAGMENTS TRACE OF ROOTS				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.58
Sample Diameter (cm.)	7.24
Sample Area (cm.^2), A	41.15
Inflow Burette Area, (cm.^2), a-in	4.81
Outflow Burette Area, (cm.^2), a-out	4.76
B Parameter	97%

AVERAGE PERMEABILITY = 1.1E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.1E-09 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-22-97	22	5	0.0	0.0	0.0	197.6	0	23.0	NA
07-23-97	9	45	11.7	4.9	5.9	195.4	0	23.4	1.4E-07
07-23-97	18	0	19.9	8.8	9.3	193.8	0	23.0	1.4E-07
07-24-97	7	10	33.1	13.7	13.7	191.9	0	23.5	1.1E-07
07-24-97	18	50	44.8	18.1	18.5	189.9	0	23.0	1.3E-07
07-25-97	7	10	57.1	22.5	22.4	188.2	0	23.5	1.1E-07
07-25-97	19	0	68.9	26.9	27.3	186.3	0	23.0	1.3E-07
07-26-97	7	15	81.2	30.8	31.2	184.6	0	24.0	1.0E-07

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-19-97
Client Project	BAYER 51249	Checked By	LS	Date	8-11-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.70 MEASURED		
Depth(ft.)	6.6-6.9	Sample Condition	UNDISTURBED		
Sample No.	SM006-TB02-0507				

Visual Description BROWN CLAY & ROCK FRAGMENTS TRACE OF ROOTS

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1704	1744
Wt. Tare & WS(gm.)	335.40	482.90
Wt. Tare & DS(gm.)	301.10	421.30
Wt. Water(gm.)	34.30	61.60
Wt. Tare(gm.)	84.34	83.67
Wt. DS(gm.)	216.76	337.63
Moisture Content(%)	15.8	18.2

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1089.50	NA
Wt. Of Tube(gms.)	278.37	NA
Wt. Of WS.(gms.)	811.13	828.1
Length 1 (in.)	3.665	3.762
Length 2 (in.)	3.657	3.773
Length 3 (in.)	3.368	3.779
Top Diameter (in.)	2.876	2.850
Middle Diameter (in.)	2.884	2.854
Bottom Diameter (in.)	2.873	2.845
Average Length (in)	3.56	3.77
Average Area (in^2)	6.50	6.38
Sample Volume(cc.)	379.77	394.16
Unit Wet Wt.(gms/cc)	2.14	2.10
Unit Wet Wt.(pcf.)	133.3	131.1
Unit Dry Wt.(pcf.)	115.1	110.9
Unit Dry Wt.(gms/cc)	1.84	1.78
Void Ratio,e	0.46	0.52
Porosity, n	0.32	0.34
Pore Volume(cm^3)	120.4	134.8

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PERMEABILITY TEST

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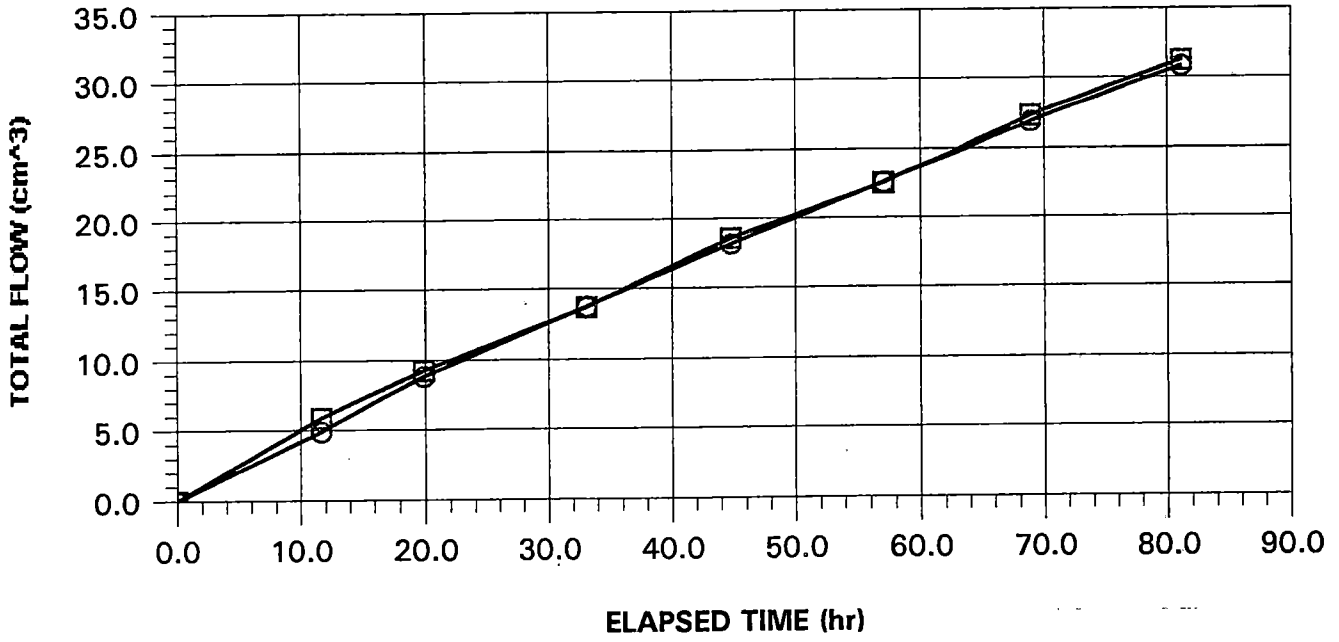
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	6.6-6.9
Project No.	97178-01	Sample No.	SM006-TB02-0507

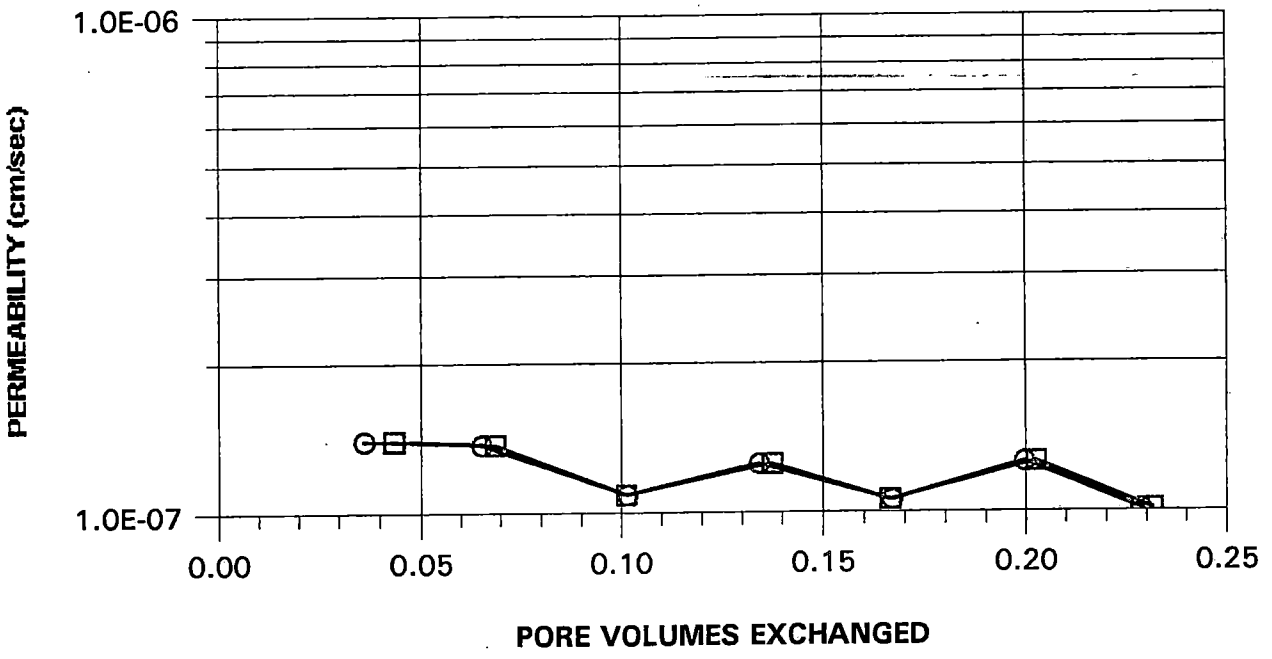
AVERAGE PERMEABILITY = 1.1E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.1E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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DCN: CT-S5
DATE: 11/13/96
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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.1-6.6
Project No.	97178-01	Sample No.	SM006-TB02-0507
Lab ID	97178-01.019	Visual Description	**BROWN CLAY** (MInus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	I	J
Weight of Pycnometer + Soil + Water (gm)	720.1	739.3
Temperature, T (°Celcius)	26.1	25.9
Weight of Pycnometer + Water (gm)	681.38	683.44
Tare Number	1221	1326
Weight of Tare + Dry Soil (gm)	164.09	190.06
Weight of Tare (gm)	102.4	101.58
Weight of Dry Soil (gm)	61.69	88.48
Specific Gravity of Soil @ T	2.685	2.713
Specific Gravity of Water @ T	0.9968	0.9968
Conversion Factor for Temperature T	0.9986	0.9986
Specific Gravity @ 20° Celcius	2.689	2.717

Average Specific Gravity @ 20° Celcius	2.70

Tested By JCM *Date* 7/19/97 *Checked By* LB *Date* 7-24-97

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DATE: 11/12/96
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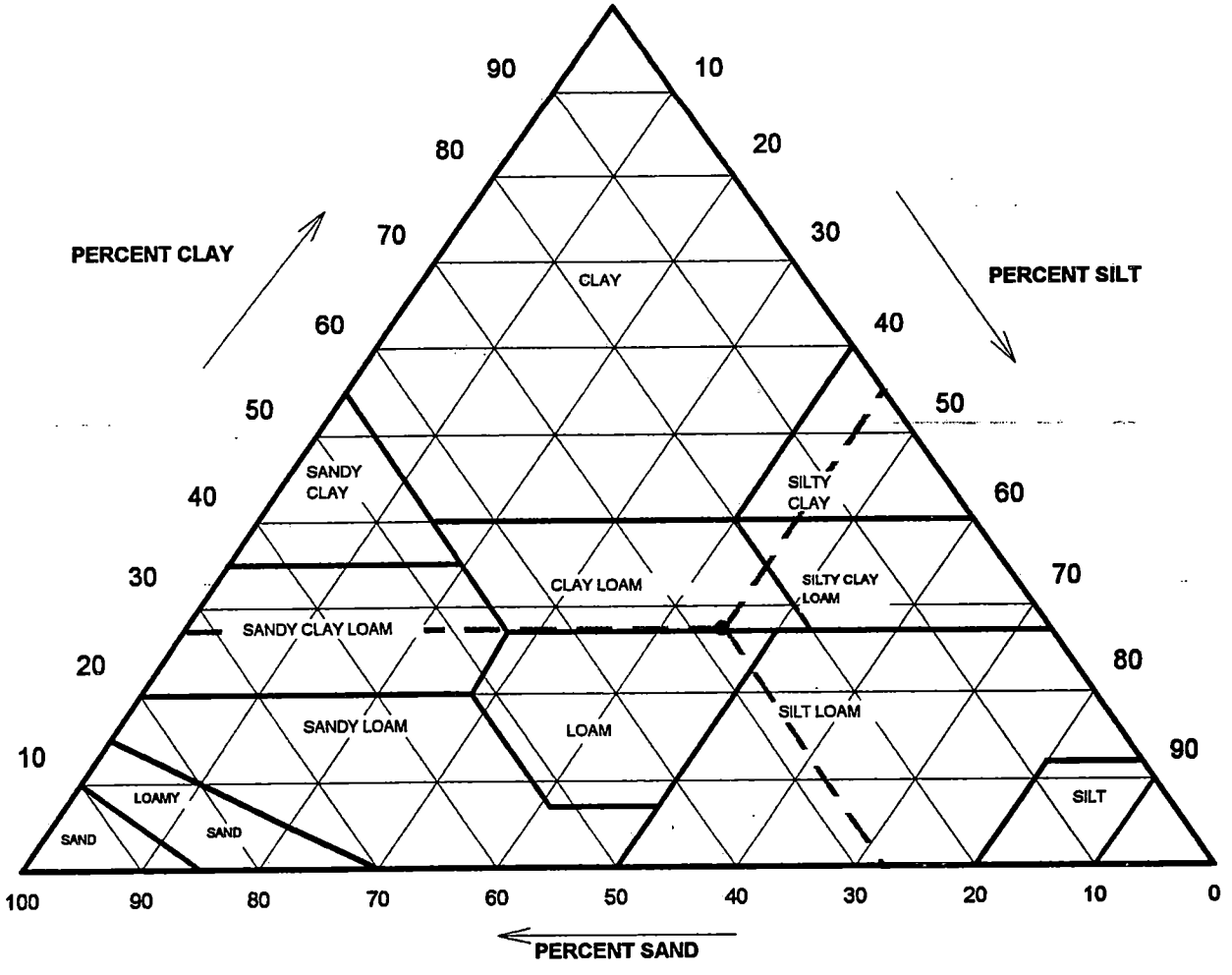
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.1-6.6
Project No.	97178-01	Sample No.	SM006-TB02-0507
Lab ID	97178-01.019	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	27.44
Silt	45.25
Clay	27.30
USDA Classification	***CLAY LOAM***

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DATE: 11/12/96
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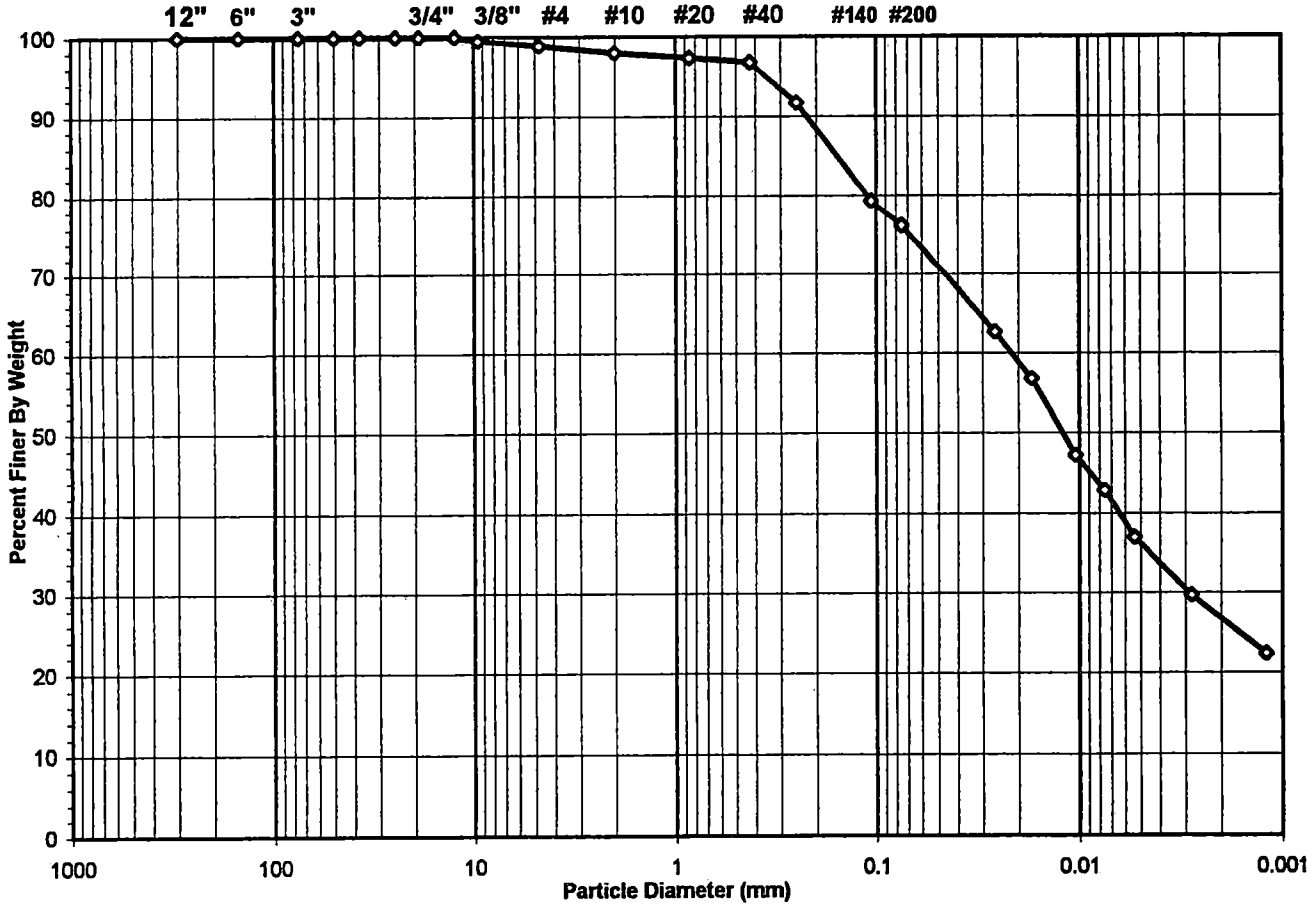
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.1-6.6
Project No.	97178-01	Sample No.	SM006-TB02-0507
Lab ID	97178-01.019	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	2.01	**0.00**
2	97.99	*Sand*	26.89	**27.44**
0.075	76.31	*Silt*	44.34	**45.25**
0.05	71.10	*Clay*	26.76	**27.30**
0.002	26.76			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY WITH SAND***

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DCN: DS-S3A
DATE: 11/12/96
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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.1-6.6
Project No.	97178-01	Sample No.	SM006-TB02-0507
Lab ID	97178-01.019	Soil Color	BROWN

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	46.5	48.0	25	42.7	82.2	0.0260	**62.7**
5		44.0	25	38.7	74.5	0.0171	**56.8**
15		37.5	25	32.2	62.0	0.0104	**47.3**
30		34.5	25	29.2	56.2	0.0075	**42.9**
63		30.5	24.1	25.2	48.5	0.0054	**37.0**
250		25.5	23.6	20.2	38.9	0.0028	**29.7**
1440		20.5	24.9	15.2	29.2	0.0012	**22.3**

Soil Specimen Data		Corrections	
Tare No.	1682	K - Factor	0.01268
Tare + Dry Material (gm)	164.61	a - Factor	0.99
Weight of Tare (gm)	108.17	Composite Correction	5.31
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	76.31
Weight of Dry Material (gm)	51.44		
		Specific Gravity	2.7 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/21/97 Checked By LB Date 7-31-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.1-6.6
Project No.	97178-01	Sample No.	SM006-TB02-0507
Lab ID	97178-01.019	Soil Color	BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	781	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	812.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	674.20	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	85.38	Weight of Tare (gm)	NA
Weight of Water (gm)	137.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	588.82	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**23.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	588.82
Dry Weight - 3/4" Sample (gm)	139.48	Weight of minus #200 material (gm)	449.34
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	139.48
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100.00
6"	150	0.00	0.00	0.00	100.00	100.00
3"	75	0.00	0.00	0.00	100.00	100.00
2"	50	0.00	0.00	0.00	100.00	100.00
1 1/2"	37.5	0.00	0.00	0.00	100.00	100.00
1"	25.0	0.00	0.00	0.00	100.00	100.00
3/4"	19.0	0.00	0.00	0.00	100.00	100.00
1/2"	12.5	0.00	0.00	0.00	100.00	100.00
3/8"	9.50	3.02	0.51	0.51	99.49	99.49
#4	4.75	3.63	0.62	1.13	98.87	98.87
#10	2.00	5.17	0.88	2.01	97.99	97.99
#20	0.85	4.02	0.68	2.69	97.31	97.31
#40	0.425	3.25	0.55	3.24	96.76	96.76
#60	0.250	29.91	5.08	8.32	91.68	91.68
#140	0.106	72.66	12.34	20.66	79.34	79.34
#200	0.075	17.82	3.03	23.69	76.31	76.31
Pan	-	449.34	76.31	100.00	-	-

Tested By JCM Date 7/19/97 Checked By LB Date 7-31-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-19-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	1.85
Depth Pushed	5.0-7.0		
Shelby Tube No.	SM006-TB02-0507		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
5.00					
5.50					
6.00				BROWN CLAYEY FINE SAND	
		3		BROWN LEAN CLAY WITH SAND	GRAINSIZE HYDROMETER UNIT WGT WC. SP.GR.
6.50		2			PERMEABILITY
7.00		1			WC.

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1704		781		
Wt. Tare & WS(gm.)	335.40		812.00		
Wt. Tare & DS(gm.)	301.10		674.20		
Wt. Tare(gm.)	84.34		85.38		
Moisture Content(%)	15.8		23.4		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1089.50	1712.00
Wt. Of Tube(gms.)	278.37	444.60
Wt. Of WS.(gms.)	811.13	1267.40
Length 1 (in.)	3.665	5.880
Length 2 (in.)	3.657	5.849
Length 3 (in.)	3.677	5.860
Top Diameter (in.)	2.876	2.879
Middle Diameter (in.)	2.884	2.876
Bottom Diameter (in.)	2.873	2.876
Sample Volume (cc)	390.75	624.58
Moisture Content(%)	15.82	23.40
Unit Wet Wt.(gms/cc)	2.08	2.03
Unit Wet Wt.(pcf.)	129.5	126.6
Unit Dry Wt.(pcf.)	111.8	102.6
Unit Dry Wt.(gms/cc)	1.79	1.64

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-17-97
Client Project	BAYER 51249	Checked By	LB	Date	7-25-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	4.6-4.9				
Sample No.	SM006-TB02-0305				
Visual Description	BROWN SANDY CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	8.73
Sample Diameter (cm.)	7.21
Sample Area (cm.^2), A	40.80
Inflow Burette Area, (cm.^2), a-in	4.81
Outflow Burette Area, (cm.^2), a-out	4.76
B Parameter	96%

AVERAGE PERMEABILITY = 4.3E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.3E-09 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-17-97	20	45	0.0	0.0	0.0	190.0	0	22.5	NA
07-18-97	6	55	10.2	23.5	22.9	180.3	0	23.0	6.8E-07
07-18-97	18	5	21.3	44.5	42.9	171.7	0	22.5	5.8E-07
07-19-97	7	45	35.0	66.0	63.9	162.9	1	22.8	5.2E-07
07-19-97	7	50	35.0	66.0	63.9	199.8	0	22.8	NA
07-19-97	13	50	41.0	75.8	74.1	195.6	0	23.0	4.7E-07
07-20-97	8	20	59.5	103.2	100.5	184.3	0	22.0	4.3E-07
07-21-97	9	0	84.2	135.5	133.1	170.8	0	22.5	4.2E-07
07-21-97	20	25	95.6	149.2	146.3	165.1	0	23.0	3.9E-07

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-17-97
Client Project	BAYER 51249	Checked By	LB	Date	7-25-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.65 MEASURED		
Depth(ft.)	4.6-4.9	Sample Condition	UNDISTURBED		
Sample No.	SM006-TB02-0305				

Visual Description BROWN SANDY CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1911	1699
Wt. Tare & WS(gm.)	287.47	491.00
Wt. Tare & DS(gm.)	255.42	430.20
Wt. Water(gm.)	32.05	60.80
Wt. Tare(gm.)	43.95	83.76
Wt. DS(gm.)	211.47	346.44
Moisture Content(%)	15.2	17.5

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	980.90	NA
Wt. Of Tube(gms.)	265.31	NA
Wt. Of WS.(gms.)	715.59	730.5
Length 1 (in.)	3.518	3.431
Length 2 (in.)	3.494	3.416
Length 3 (in.)	3.511	3.460
Top Diameter (in.)	2.872	2.826
Middle Diameter (in.)	2.867	2.840
Bottom Diameter (in.)	2.872	2.847
Average Length (in)	3.51	3.44
Average Area (in^2)	6.47	6.32
Sample Volume(cc.)	371.94	356.06
Unit Wet Wt.(gms/cc)	1.92	2.05
Unit Wet Wt.(pcf.)	120.1	128.0
Unit Dry Wt.(pcf.)	104.3	108.9
Unit Dry Wt.(gms/cc)	1.67	1.75
Void Ratio,e	0.59	0.52
Porosity, n	0.37	0.34
Pore Volume(cm^3)	137.4	121.6

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PERMEABILITY TEST

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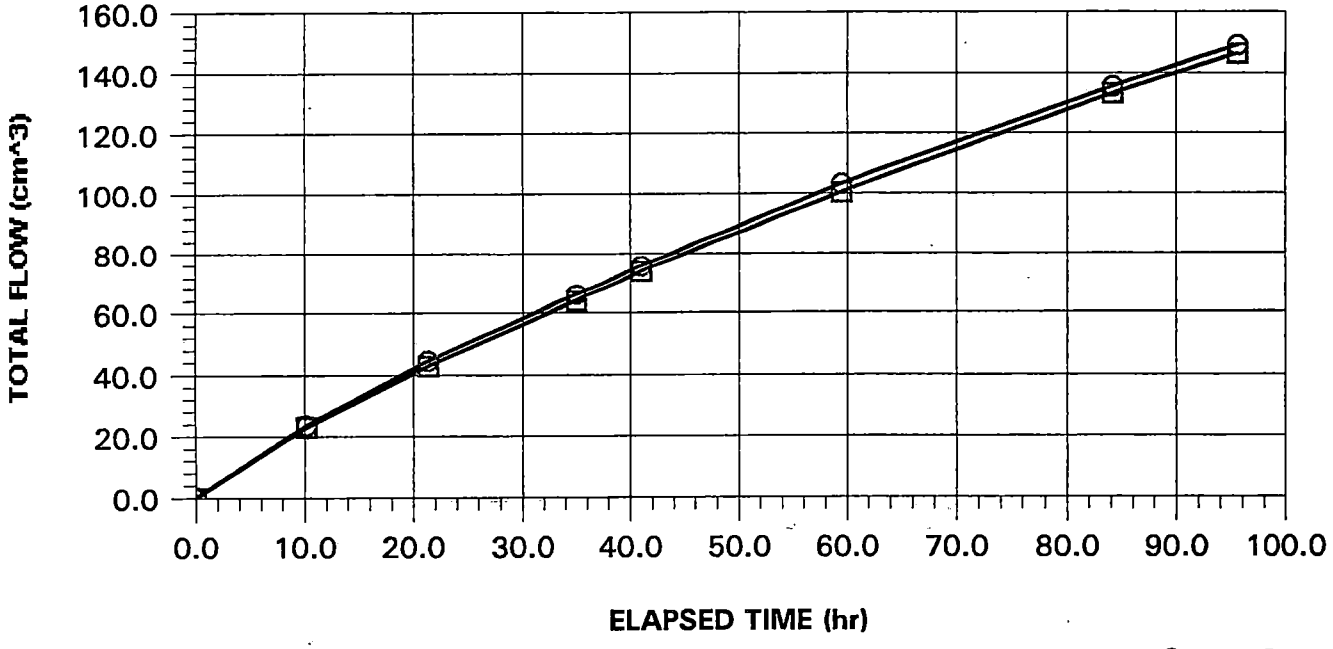
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.6-4.9
Project No.	97178-01	Sample No.	SM006-TB02-0305

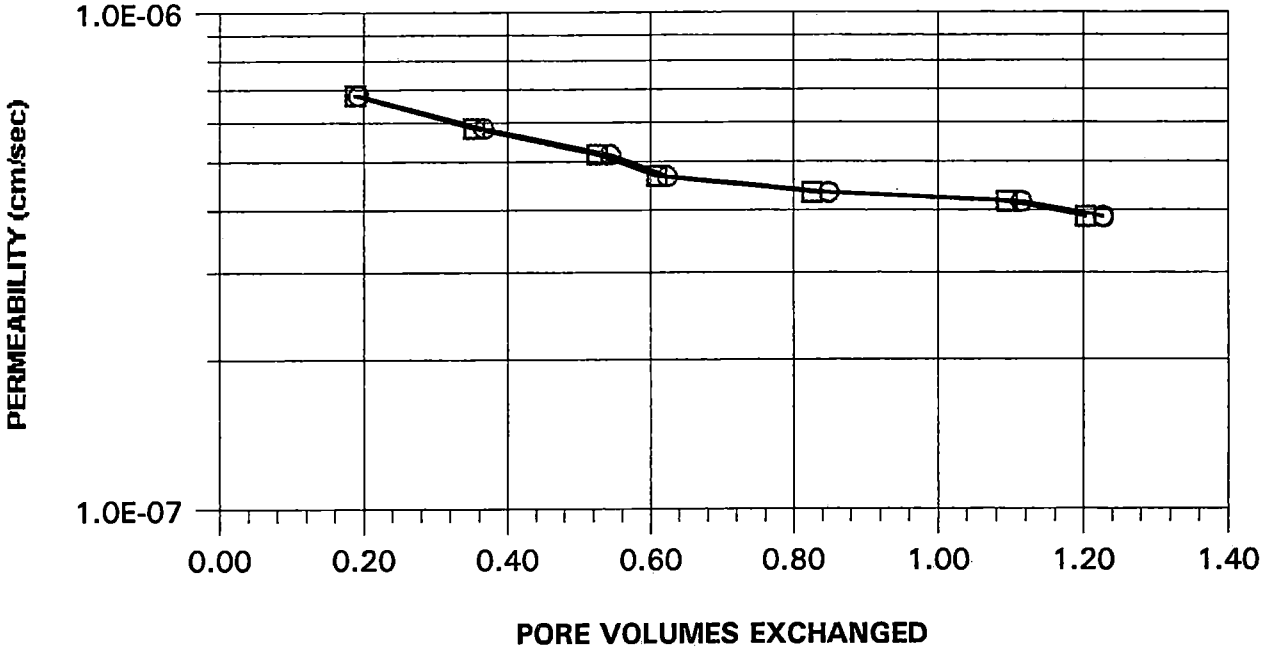
AVERAGE PERMEABILITY = 4.3E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.3E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

⊖ INFLOW
⊟ OUTFLOW



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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.6
Project No.	97178-01	Sample No.	SM006-TB02-0305
Lab ID	97178-01.017	Visual Description	**BROWN CLAY**
			(Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	I	J
Weight of Pycnometer + Soil + Water (gm)	702.5	711.1
Temperature, T (°Celcius)	26.8	26.7
Weight of Pycnometer + Water (gm)	681.29	683.33
Tare Number	680	1341
Weight of Tare + Dry Soil (gm)	138.9	144.44
Weight of Tare (gm)	104.57	100.08
Weight of Dry Soil (gm)	34.33	44.36
Specific Gravity of Soil @ T	2.617	2.674
Specific Gravity of Water @ T	0.9966	0.9966
Conversion Factor for Temperature T	0.9984	0.9984
Specific Gravity @ 20° Celcius	2.621	2.678

Average Specific Gravity @ 20° Celcius	2.65

Tested By DB *Date* 7/23/97 *Checked By* LB *Date* 7-24-97

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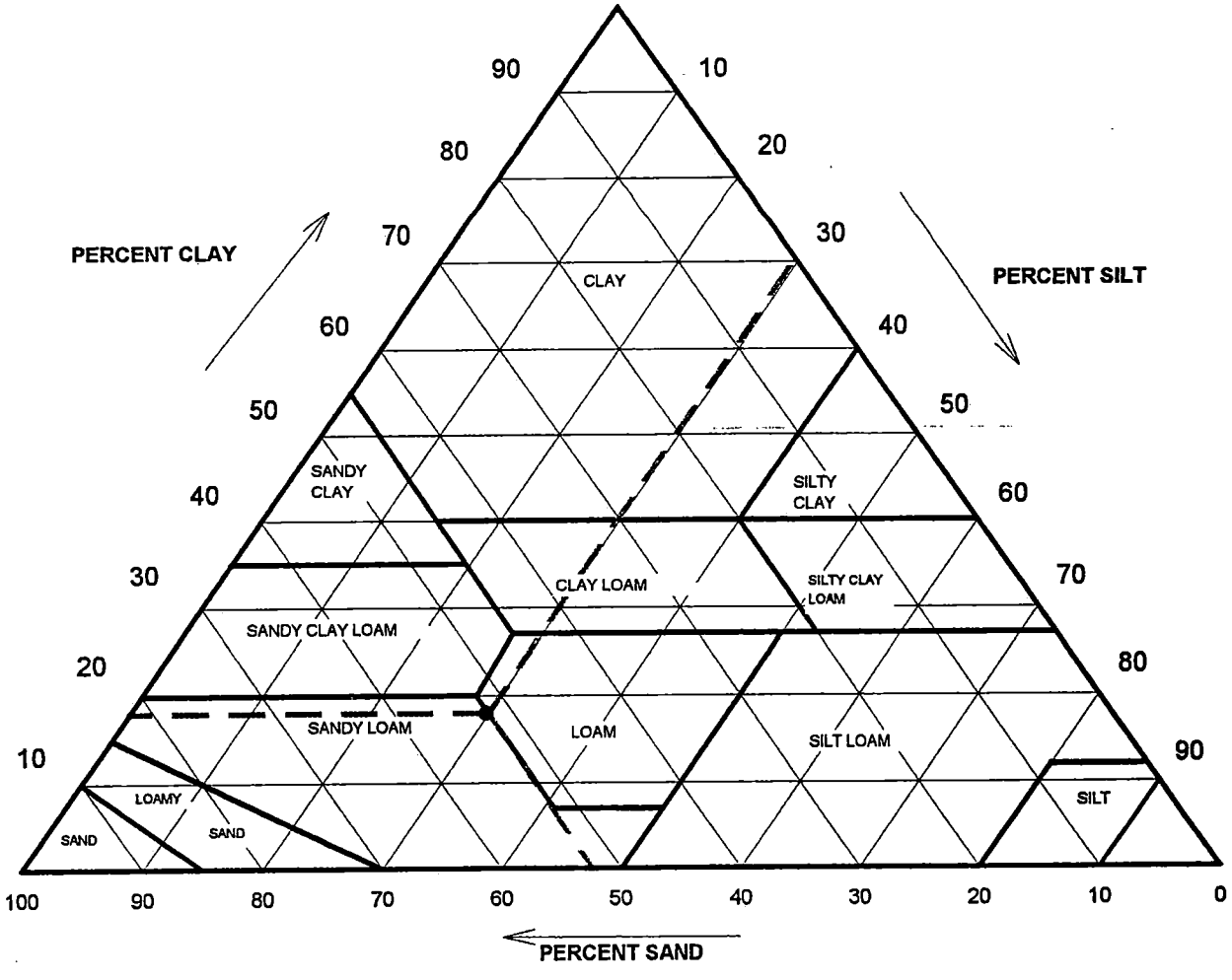
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.6
Project No.	97178-01	Sample No.	SM006-TB02-0305
Lab ID	97178-01.017	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	52.22
Silt	29.77
Clay	18.01
USDA Classification	***SANDY LOAM***

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.6
Project No.	97178-01	Sample No.	SM006-TB02-0305
Lab ID	97178-01.017	Soil Color	BROWN

	SIEVE ANALYSIS			HYDROMETER	
USCS	gravel	sand		silt and clay fraction	
USDA	gravel	sand		silt	clay

Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	5.48	**0.00**
2	94.52	*Sand*	49.36	**52.22**
0.075	48.37	*Silt*	28.14	**29.77**
0.05	45.16	*Clay*	17.02	**18.01**
0.002	17.02			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.6
Project No.	97178-01	Sample No.	SM006-TB02-0305
Lab ID	97178-01.017	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	28.5	28.5	23.4	22.4	85.9	0.0316	**41.5**
6		25.5	23.4	19.4	74.4	0.0186	**36.0**
15		23.5	23.4	17.4	66.7	0.0119	**32.3**
31		21.5	23.4	15.4	59.0	0.0084	**28.6**
60		20.0	22.7	13.9	53.3	0.0061	**25.8**
250		17.0	22.5	10.9	41.8	0.0030	**20.2**
1440		13.5	25	7.4	28.4	0.0013	**13.7**

Soil Specimen Data		Corrections	
Tare No.	1340	K - Factor	0.01311
Tare + Dry Material (gm)	133.95	a - Factor	1
Weight of Tare (gm)	102.85	Composite Correction	6.09
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	48.37
Weight of Dry Material (gm)	26.1		
		Specific Gravity	2.65 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/17/97 Checked By LB Date 7-31-97

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.2-4.6
Project No.	97178-01	Sample No.	SM006-TB02-0305
Lab ID	97178-01.017	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	673	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	656.70	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	572.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	73.05	Weight of Tare (gm)	NA
Weight of Water (gm)	84.10	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	499.55	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**16.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	499.55
Dry Weight - 3/4" Sample (gm)	257.91	Weight of minus #200 material (gm)	241.64
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	257.91
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	3.40	0.68	0.68	99.32	**99.32**
3/8"	9.50	5.75	1.15	1.83	98.17	**98.17**
#4	4.75	8.33	1.67	3.50	96.50	**96.50**
#10	2.00	9.89	1.98	5.48	94.52	**94.52**
#20	0.85	6.79	1.36	6.84	93.16	**93.16**
#40	0.425	5.80	1.16	8.00	92.00	**92.00**
#60	0.250	76.84	15.38	23.38	76.62	**76.62**
#140	0.106	125.55	25.13	48.51	51.49	**51.49**
#200	0.075	15.56	3.11	51.63	48.37	**48.37**
Pan	-	241.64	48.37	100.00	-	-

Tested By JCM Date 7/17/97 Checked By LB Date 7-31-97

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-17-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	0.90
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM006-TB02-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					
4.50		3		BROWN CLAYEY SAND	GRAINSIZE HYDROMETER LIMITS SP.GR.
		2			PERMEABILITY
5.00		1			WC.

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1911		673		
Wt. Tare & WS(gm.)	287.47		656.70		
Wt. Tare & DS(gm.)	255.42		572.60		
Wt. Tare(gm.)	43.95		73.05		
Moisture Content(%)	15.2		16.8		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	980.90	1356.80
Wt. Of Tube(gms.)	265.31	362.22
Wt. Of WS.(gms.)	715.59	994.58
Length 1 (in.)	3.518	4.822
Length 2 (in.)	3.494	4.868
Length 3 (in.)	3.511	4.853
Top Diameter (in.)	2.872	2.879
Middle Diameter (in.)	2.867	2.874
Bottom Diameter (in.)	2.872	2.857
Sample Volume (cc)	371.94	513.91
Moisture Content(%)	15.16	16.84
Unit Wet Wt.(gms/cc)	1.92	1.94
Unit Wet Wt.(pcf.)	120.1	120.8
Unit Dry Wt.(pcf.)	104.3	103.4
Unit Dry Wt.(gms/cc)	1.67	1.66

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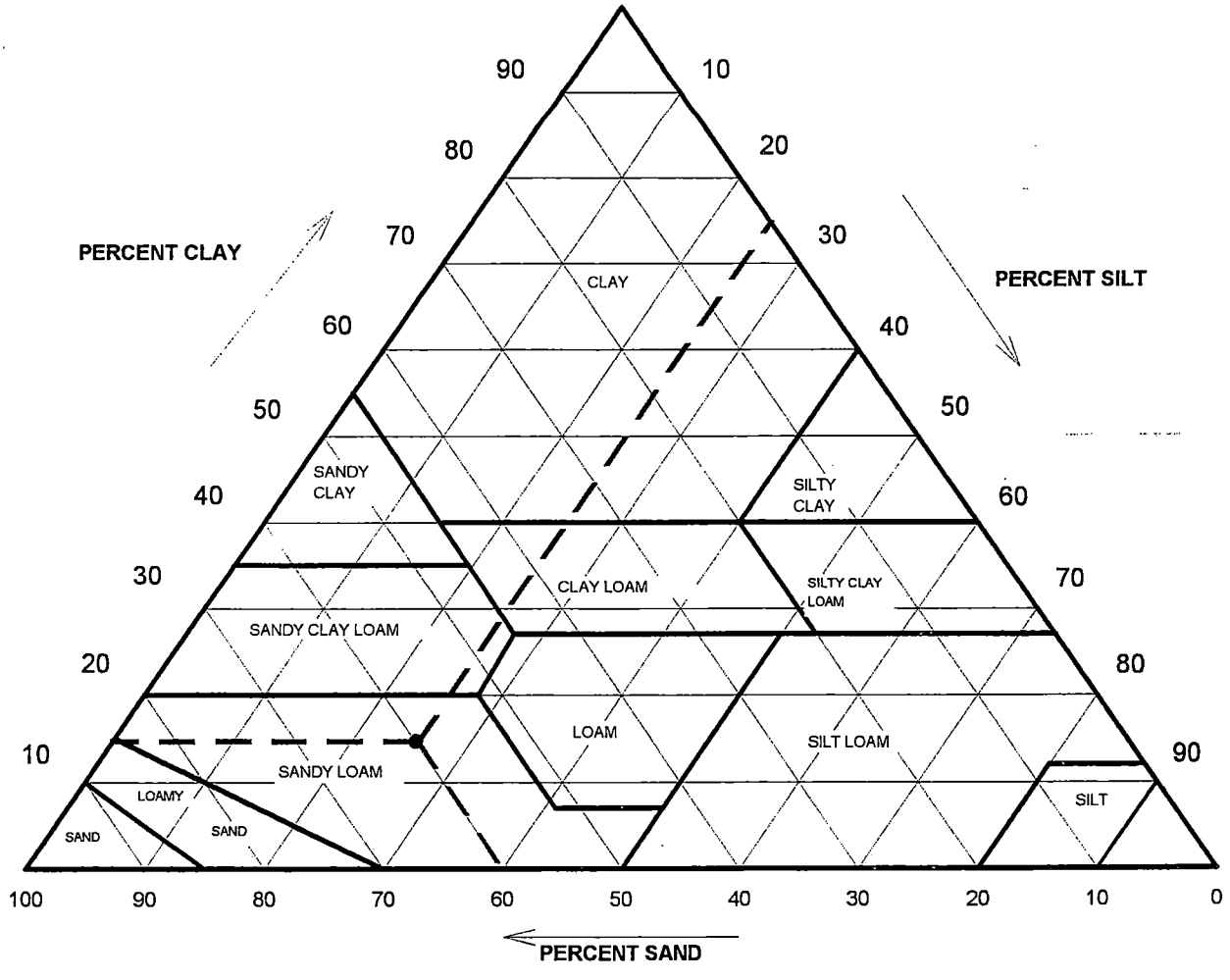
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-01	Sample No.	SM006-TB02-0002.5
Lab ID	97178-01.016	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	59.90
Silt	25.40
Clay	14.70
USDA Classification	***SANDY LOAM***

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DCN: DS-S3A
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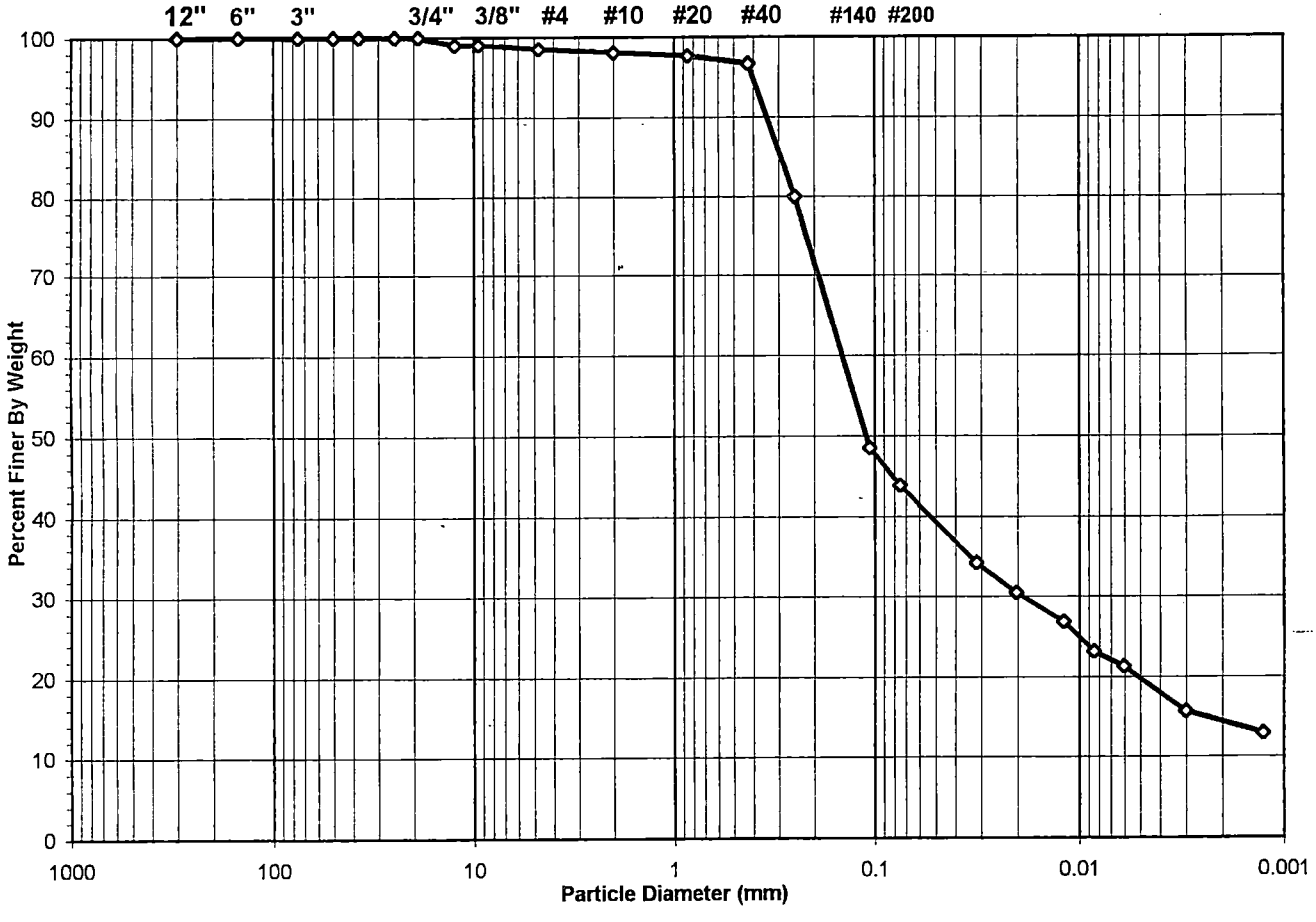
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-01	Sample No.	SM006-TB02-0002.5
Lab ID	97178-01.016	Soil Color	**BROWN**

	SIEVE ANALYSIS		*HYDROMETER*	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	1.97	**0.00**
2	98.03	*Sand*	58.72	**59.90**
0.075	43.82	*Silt*	24.90	**25.40**
0.05	39.31	*Clay*	14.41	**14.70**
0.002	14.41			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND***

A:\[S19.XLS]Sheet1

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-01	Sample No.	SM006-TB02-0002.5
Lab ID	97178-01.016	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	22.5	24.0	24.6	18.5	78.1	0.0317	**34.2**
5		22.0	24.6	16.5	69.7	0.0203	**30.5**
15		20.0	24.6	14.5	61.2	0.0119	**26.8**
30		18.0	24.6	12.5	52.8	0.0085	**23.1**
60		17.0	23.7	11.5	48.6	0.0060	**21.3**
250		14.0	23.6	8.5	35.9	0.0030	**15.7**
1440		12.5	23.7	7.0	29.6	0.0013	**13.0**

Soil Specimen Data		Corrections	
Tare No.	1063	K - Factor	0.01273
Tare + Dry Material (gm)	131.97	a - Factor	0.99
Weight of Tare (gm)	103.53	Composite Correction	5.50
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	43.82
Weight of Dry Material (gm)	23.44		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/28/97 Checked By LB Date 8-4-97

A:\[S19.XLS]Sheet1

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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.2-2.5 SEC. 1
Project No.	97178-01	Sample No.	SM006-TB02-0002.5
Lab ID	97178-01.016	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1315	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	635.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	571.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	107.21	Weight of Tare (gm)	NA
Weight of Water (gm)	63.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	464.09	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**13.7**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	464.09
Dry Weight - 3/4" Sample (gm)	260.72	Weight of minus #200 material (gm)	203.37
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	260.72
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	4.38	0.94	0.94	99.06	**99.06**
3/8"	9.50	0.00	0.00	0.94	99.06	**99.06**
#4	4.75	2.29	0.49	1.44	98.56	**98.56**
#10	2.00	2.46	0.53	1.97	98.03	**98.03**
#20	0.85	1.86	0.40	2.37	97.63	**97.63**
#40	0.425	4.25	0.92	3.28	96.72	**96.72**
#60	0.250	77.42	16.68	19.97	80.03	**80.03**
#140	0.106	145.96	31.45	51.42	48.58	**48.58**
#200	0.075	22.10	4.76	56.18	43.82	**43.82**
Pan	-	203.37	43.82	100.00	-	-

Tested By TO Date 7/28/97 Checked By LB Date 8-4-97

A:\[S19.XLS]Sheet1

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 7-28-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	1.70
Depth Pushed	0-2.5		
Shelby Tube No.	SM006-TB02-0002.5		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
0.50					
1.00					
1.50		4			UNIT WGT. WC.
		3			NO TEST
2.00				BROWN CLAYEY SAND	
		2			NO TEST
		1			GRAINSIZE HYDROMETER
2.50					

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number				673	
Wt. Tare & WS(gm.)				526.40	
Wt. Tare & DS(gm.)				480.10	
Wt. Tare(gm.)				73.05	
Moisture Content(%)				11.4	

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1018.30
Wt. Of Tube(gms.)	256.66
Wt. Of WS.(gms.)	761.64
Length 1 (in.)	3.695
Length 2 (in.)	3.728
Length 3 (in.)	3.695
Top Diameter (in.)	2.896
Middle Diameter (in.)	2.894
Bottom Diameter (in.)	2.883
Sample Volume (cc)	398.65
Moisture Content(%)	11.37
Unit Wet Wt.(gms/cc)	1.91
Unit Wet Wt.(pcf.)	119.2
Unit Dry Wt.(pcf.)	107.0
Unit Dry Wt.(gms/cc)	1.72

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-17-97
Client Project	BAYER 51249	Checked By	LB	Date	7-29-97
Project No.	97178-01				
Boring No.	NA				
Depth(ft.)	23.5-23.8				
Sample No.	SM005-TB05-2224				
Visual Description	BROWN SANDY CLAYEY SILT				

Pressure Heads (Constant)	
Top Cap (psi)	27.5
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.33
Sample Diameter (cm.)	7.21
Sample Area (cm.^2), A	40.88
Inflow Burette Area, (cm.^2), a-in	4.46
Outflow Burette Area, (cm.^2), a-out	4.63
B Parameter	96%

AVERAGE PERMEABILITY = 3.3E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.3E-08 m/sec @ 20°C

DATE mon-dy-yr	TIME hr	TIME min	ELAPSED TIME (t) hr	TOTAL INFLOW cm^3	TOTAL OUTFLOW cm^3	TOTAL HEAD (h) cm	FLOW 0 FLOW 1 STOP	TEMP °C	INCREMENTAL PERMEABILITY @ 20°C cm/sec
07-17-97	20	45	0.0	0.0	0.0	183.8	0	22.5	NA
07-18-97	6	55	10.2	67.2	66.3	154.5	1	23.0	2.3E-06
07-18-97	7	0	10.2	67.2	66.3	198.3	0	23.0	NA
07-18-97	18	5	21.3	157.6	155.1	158.8	1	22.5	2.7E-06
07-19-97	9	35	21.3	157.6	155.1	197.8	0	22.8	NA
07-19-97	10	20	22.0	165.7	163.3	194.2	0	22.8	3.3E-06
07-19-97	12	15	23.9	184.5	181.6	186.1	0	22.8	3.0E-06
07-19-97	13	0	24.7	191.2	188.3	183.1	0	22.8	2.9E-06
07-19-97	13	50	25.5	198.4	195.5	179.9	1	23.0	2.8E-06
07-22-97	16	35	25.5	198.4	195.5	196.9	0	23.0	NA
07-22-97	18	40	27.6	225.7	222.9	184.8	0	23.0	4.1E-06
07-22-97	22	5	31.0	260.6	257.0	169.6	0	23.0	3.4E-06

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	07-17-97
Client Project	BAYER 51249	Checked By	LB	Date	7-29-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.68 MEASURED		
Depth(ft.)	23.5-23.8	Sample Condition	UNDISTURBED		
Sample No.	SM005-TB05-2224				

Visual Description BROWN SANDY CLAYEY SILT

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	977	677
Wt. Tare & WS(gm.)	253.63	444.20
Wt. Tare & DS(gm.)	222.32	379.15
Wt. Water(gm.)	31.31	65.05
Wt. Tare(gm.)	46.41	74.57
Wt. DS(gm.)	175.91	304.58
Moisture Content(%)	17.8	21.4

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1042.80	NA
Wt. Of Tube(gms.)	282.39	NA
Wt. Of WS.(gms.)	760.41	783.4
Length 1 (in.)	3.671	3.671
Length 2 (in.)	3.680	3.670
Length 3 (in.)	3.685	3.673
Top Diameter (in.)	2.877	2.837
Middle Diameter (in.)	2.871	2.840
Bottom Diameter (in.)	2.867	2.844
Average Length (in)	3.68	3.67
Average Area (in^2)	6.48	6.34
Sample Volume(cc.)	390.44	381.20
Unit Wet Wt.(gms/cc)	1.95	2.06
Unit Wet Wt.(pcf.)	121.5	128.2
Unit Dry Wt.(pcf.)	103.2	105.7
Unit Dry Wt.(gms/cc)	1.65	1.69
Void Ratio,e	0.62	0.58
Porosity, n	0.38	0.37
Pore Volume(cm^3)	149.6	140.3

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PERMEABILITY TEST

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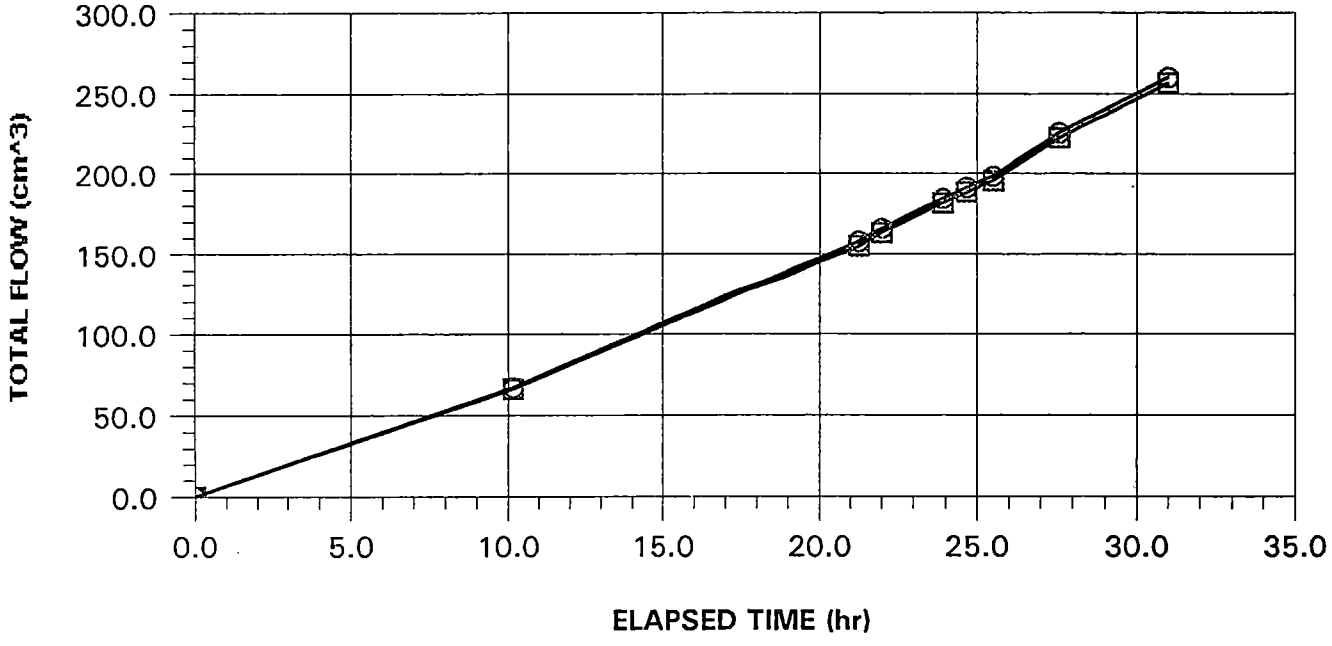
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	23.5-23.8
Project No.	97178-01	Sample No.	SM005-TB05-2224

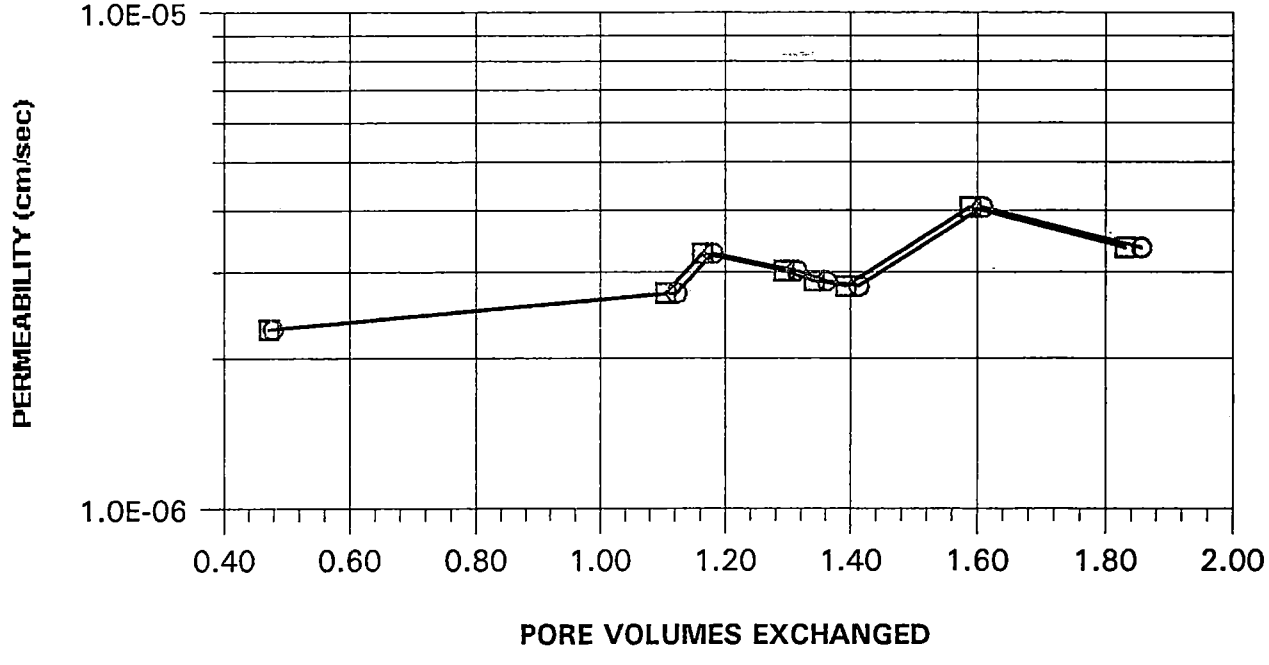
AVERAGE PERMEABILITY = 3.3E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.3E-08 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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DCN: CT-S5
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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	23-23.5
Project No.	97178-01	Sample No.	SM005-TB05-2224
Lab ID	97178-01.015	Visual Description	**BROWN CLAY** (Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	I	J
Weight of Pycnometer + Soil + Water (gm)	703.2	726.6
Temperature, T (°Celcius)	28.2	28.3
Weight of Pycnometer + Water (gm)	681.09	683.10
Tare Number	875	1666
Weight of Tare + Dry Soil (gm)	142.59	169.39
Weight of Tare (gm)	107.22	100.18
Weight of Dry Soil (gm)	35.37	69.21
Specific Gravity of Soil @ T	2.667	2.691
Specific Gravity of Water @ T	0.9962	0.9962
Conversion Factor for Temperature T	0.9980	0.9979
Specific Gravity @ 20° Celcius	2.672	2.697

Average Specific Gravity @ 20° Celcius	2.68

Tested By DB *Date* 7/23/97 *Checked By* LB *Date* 7-24-97

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DCN: CT-S4
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ATTERBERG LIMIT

ASTM D 4318-96 (SOP - S4)

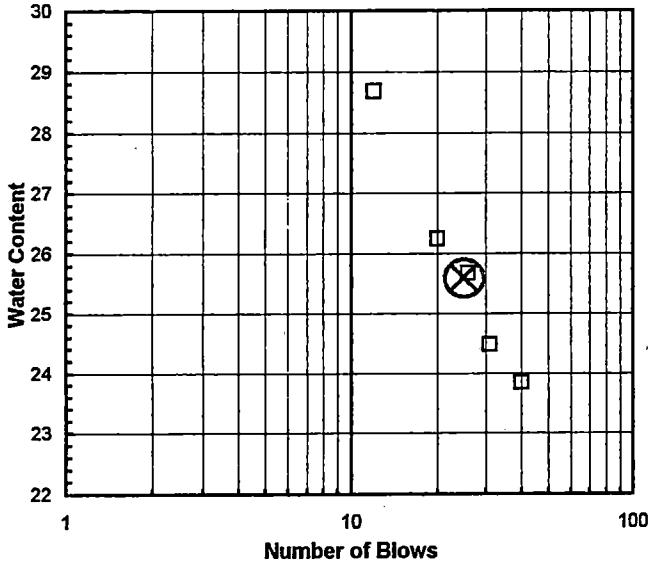
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	23-23.5
Project No.	97178-01	Sample No.	SM005-TB05-2224
Lab ID	97178-01.015	Soil Description	**BROWN SILTY CLAY** (Minus No. 40 sieve material, Airdried)

Liquid Limit Test	**1**	**2**	**3**	**4**	**5**	
Tare Number	1881	2036	2040	2045	2057	MULTIPOINT
Wt. of Tare & WS (gm)	38.77	37.92	35.48	39.94	40.36	
Wt. of Tare & DS (gm)	34.28	33.82	31.38	35.59	35.69	
Wt. of Tare (gm)	15.45	17.07	15.41	19.02	19.41	
Wt. of Water (gm)	4.49	4.1	4.1	4.35	4.67	
Wt. of DS (gm)	18.83	16.75	15.97	16.57	16.28	
Moisture Content (%)	**23.8**	**24.5**	**25.7**	**26.3**	**28.7**	
Number of Blows	**40**	**31**	**26**	**20**	**12**	

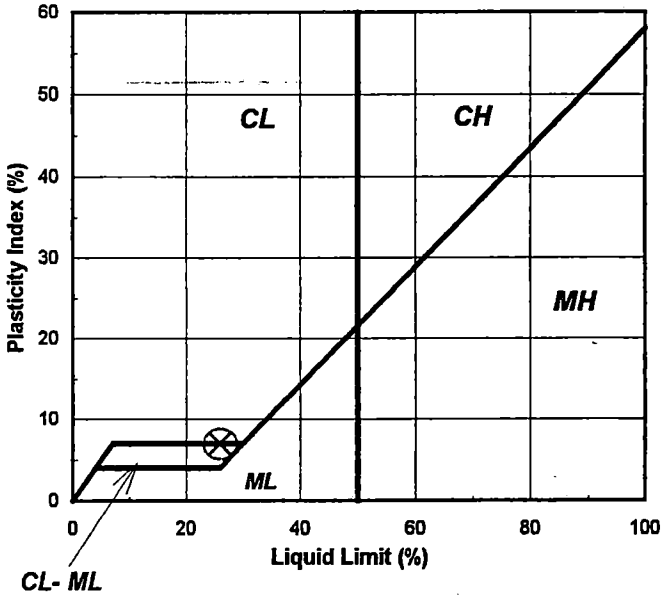
Plastic Limit Test	**1**	**2**	**3**
Tare Number	2058	2062	2219
Wt. of Tare & WS (gm)	23.71	25.2	25.27
Wt. of Tare & DS (gm)	22.68	24.23	24.19
Wt. of Tare (gm)	17.48	19.03	18.38
Wt. of Water (gm)	1.03	0.97	1.08
Wt. of DS (gm)	5.2	5.2	5.81
Moisture Content (%)	**19.8**	**18.7**	**18.6**

Test Results	
Liquid Limit (%)	**26**
Plastic Limit (%)	**19**
Plasticity Index (%)	**7**
USCS Symbol	**CL-ML**

Flow Curve



Plasticity Chart



Tested By BS *Date* 7/24/97 *Checked By* LB *Date* 7-29-97

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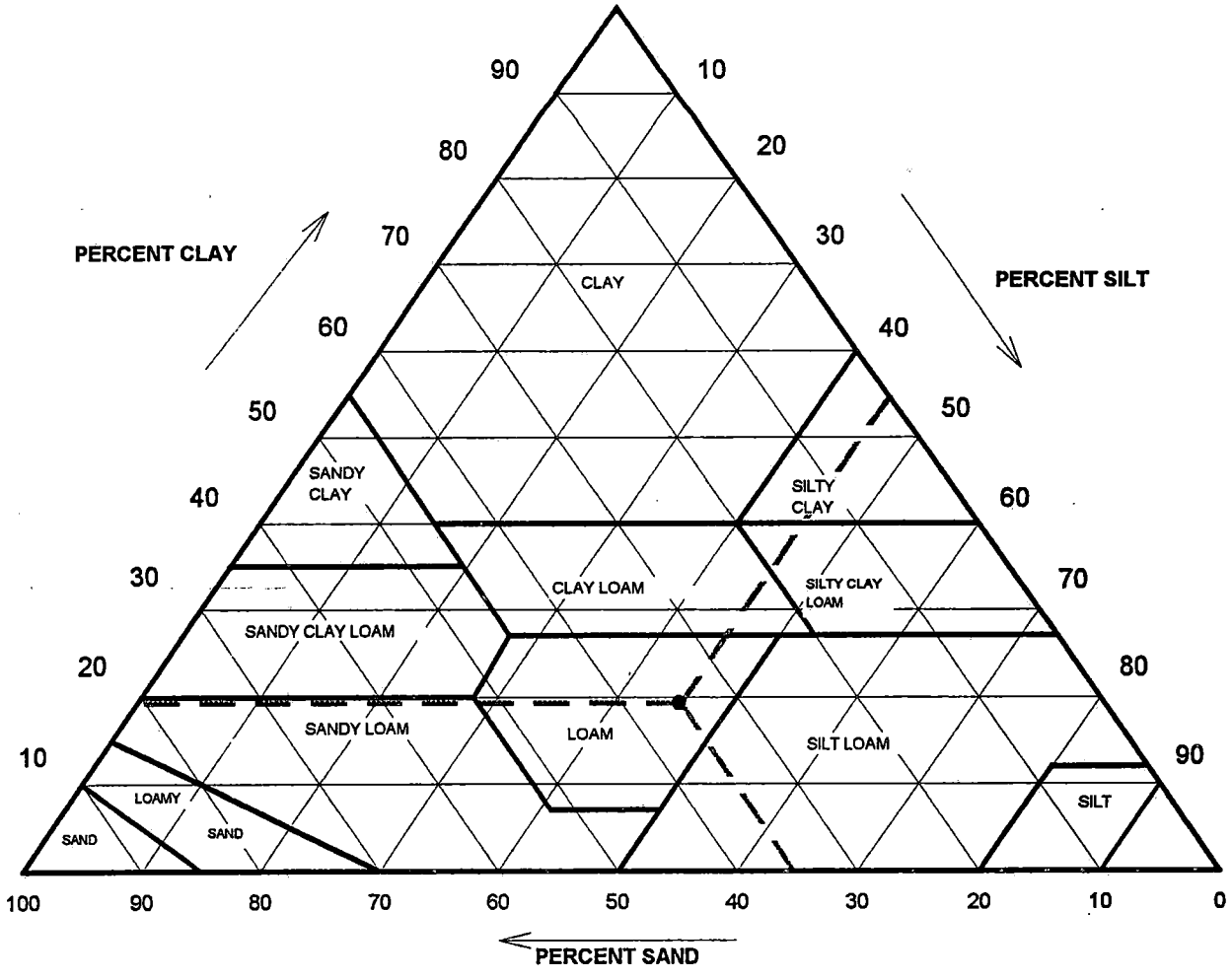
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	23.0-23.5
Project No.	97178-01	Sample No.	SM005-TB05-2224
Lab ID	97178-01.015	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	35.16
Silt	45.50
Clay	19.34
USDA Classification	***LOAM***

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SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

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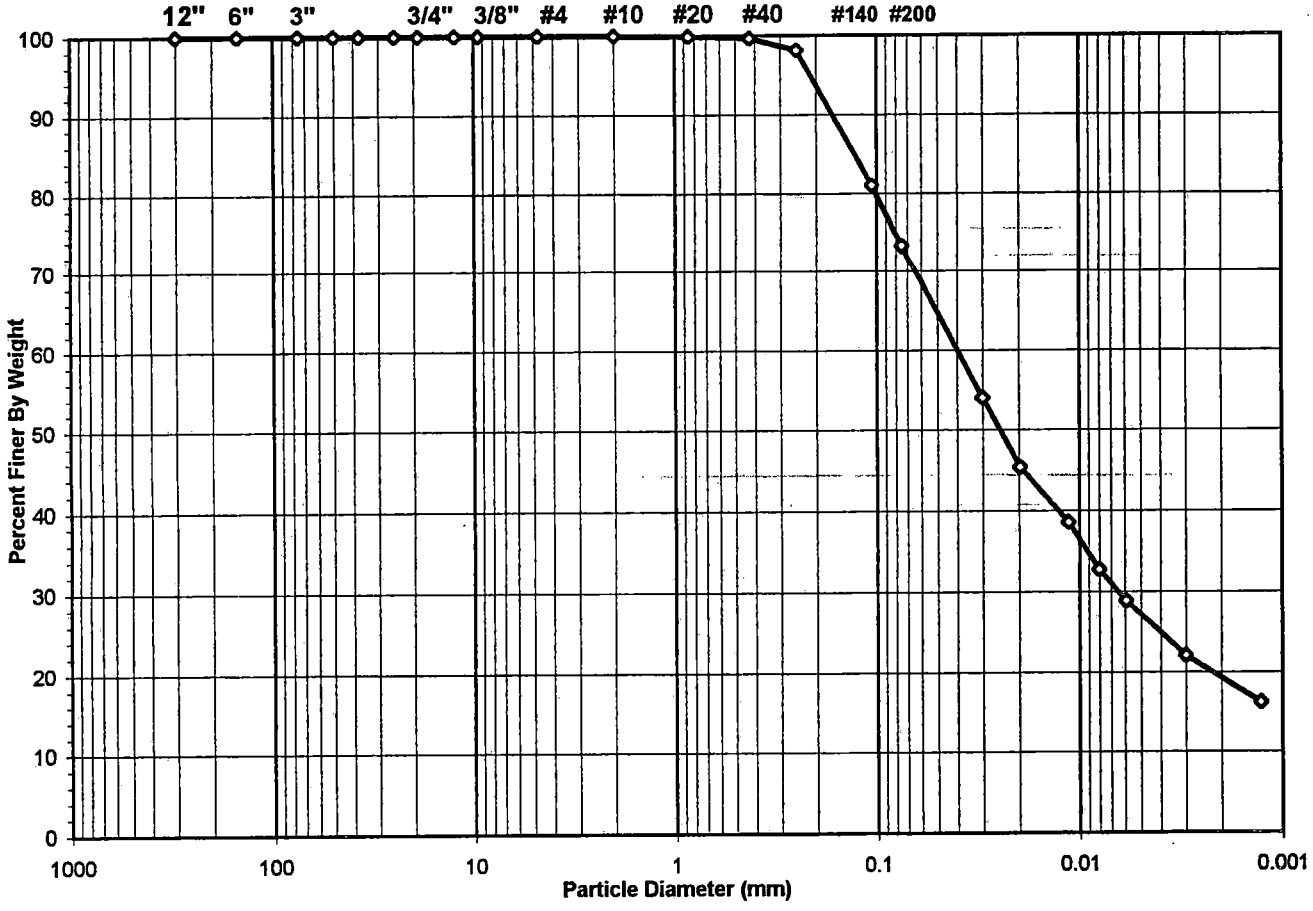
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	23.0-23.5
Project No.	97178-01	Sample No.	SM005-TB05-2224
Lab ID	97178-01.015	Soil Color	BROWN

	SIEVE ANALYSIS		HYDROMETER	
USCS	gravel	sand	silt and clay fraction	
USDA	gravel	sand	silt	clay



Sieve Size (mm)	Percent Finer	Components	Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
100	100.00	*Gravel*	0.03	**0.00**
2	99.97	*Sand*	35.15	**35.16**
0.075	73.39	*Silt*	45.49	**45.50**
0.05	64.82	*Clay*	19.34	**19.34**
0.002	19.34			

USDA Classification ***LOAM***

USCS Symbol ***CL-ML, TESTED***

USCS Classification ***SILTY CLAY WITH SAND***

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	23.0-23.5
Project No.	97178-01	Sample No.	SM005-TB05-2224
Lab ID	97178-01.015	Soil Color	**BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	33.5	34.0	23.4	27.9	73.7	0.0301	**54.1**
5		29.5	23.4	23.4	61.8	0.0197	**45.4**
16		26.0	23.4	19.9	52.6	0.0113	**38.6**
33		23.0	23.4	16.9	44.6	0.0080	**32.8**
62		21.0	22.7	14.9	39.4	0.0059	**28.9**
250		17.5	22.5	11.4	30.1	0.0030	**22.1**
1440		14.5	25	8.4	22.2	0.0013	**16.3**

Soil Specimen Data		Corrections	
Tare No.	1633	K - Factor	0.01299
Tare + Dry Material (gm)	142.51	a - Factor	0.994
Weight of Tare (gm)	99.86	Composite Correction	6.09
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	73.39
Weight of Dry Material (gm)	37.65		
		Specific Gravity	2.68 MEASURED

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 7/17/97 Checked By LB Date 7-31-97

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DCN: DS-S3A
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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	23.0-23.5
Project No.	97178-01	Sample No.	SM005-TB05-2224
Lab ID	97178-01.015	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1729	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	796.20	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	683.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	81.88	Weight of Tare (gm)	NA
Weight of Water (gm)	112.90	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	601.42	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**18.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	601.42
Dry Weight - 3/4" Sample (gm)	160.02	Weight of minus #200 material (gm)	441.40
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	160.02
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.19	0.03	0.03	99.97	**99.97**
#20	0.85	0.51	0.08	0.12	99.88	**99.88**
#40	0.425	1.41	0.23	0.35	99.65	**99.65**
#60	0.250	9.24	1.54	1.89	98.11	**98.11**
#140	0.106	102.49	17.04	18.93	81.07	**81.07**
#200	0.075	46.18	7.68	26.61	73.39	**73.39**
Pan	-	441.40	73.39	100.00	-	-

Tested By JCM Date 7/17/97 Checked By LB Date 7-31-97

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C:\WINGZ\QA\SHELBY.WKZ

SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 7-17-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	2.10
Depth Pushed	22.0-22.4		
Shelby Tube No.	SM005-TB05-2224		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
22.00					
22.50					
23.00					GRAINSIZE HYDROMETER LIMITS SP.GR. UNIT WGT WC.
23.50		3 2		BROWN SILTY CLAY WITH SAND	PERMEABILITY
24.00		1			WC

NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	977		1729		
Wt. Tare & WS(gm.)	253.63		796.20		
Wt. Tare & DS(gm.)	222.32		683.30		
Wt. Tare(gm.)	46.41		81.88		
Moisture Content(%)	17.8		18.8		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1042.80	1760.20
Wt. Of Tube(gms.)	282.39	461.90
Wt. Of WS.(gms.)	760.41	1298.30
Length 1 (in.)	3.671	6.026
Length 2 (in.)	3.680	6.021
Length 3 (in.)	3.685	6.006
Top Diameter (in.)	2.877	2.878
Middle Diameter (in.)	2.871	2.882
Bottom Diameter (in.)	2.867	2.882
Sample Volume (cc)	390.44	642.70
Moisture Content(%)	17.80	18.77
Unit Wet Wt.(gms/cc)	1.95	2.02
Unit Wet Wt.(pcf.)	121.5	126.1
Unit Dry Wt.(pcf.)	103.2	106.1
Unit Dry Wt.(gms/cc)	1.65	1.70

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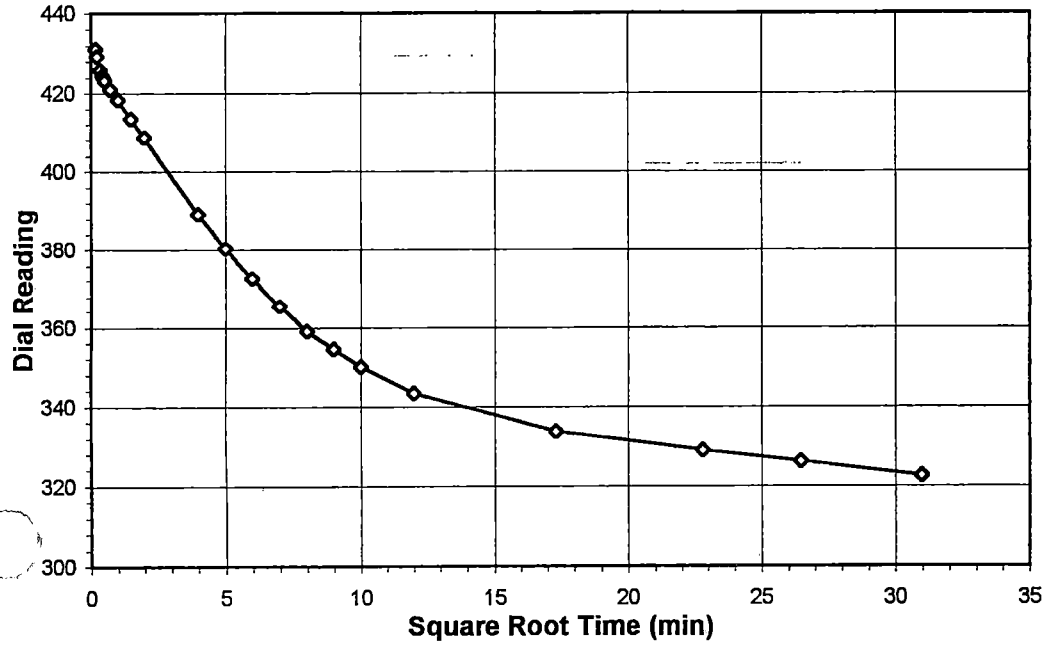
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

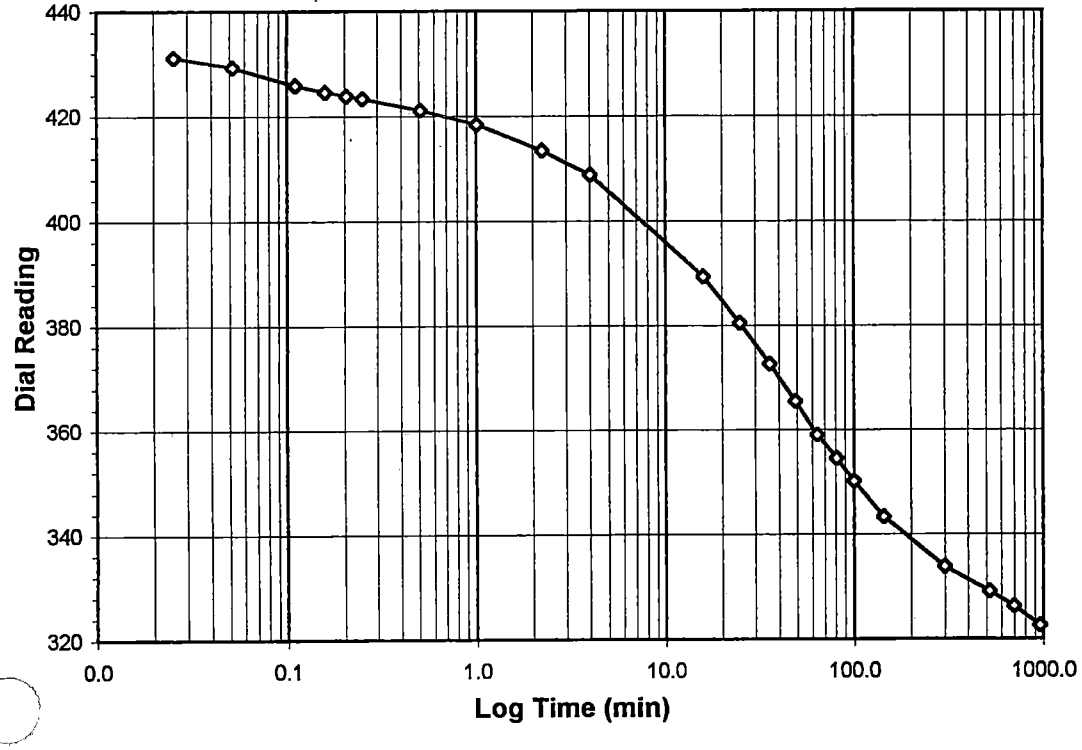
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1-0.25**
Final Reading	**(div)**	**322.6**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/28/97
Start Time		12:56:18

Elapsed Time (min)	Dial Reading (div)
Initial	**435.4**
0.03	431.23
0.05	429.36
0.11	425.90
0.16	424.60
0.21	423.88
0.25	423.35
0.51	421.08
1.01	418.34
2.25	413.41
4.01	408.79
16.01	389.27
25.01	380.44
36.01	372.69
49.00	365.47
64.00	359.04
81.01	354.47
100.01	350.17
144.00	343.38
300.00	333.80
520.00	329.05
700.01	326.23
960.01	322.58



Tested By AG *Date* 7/28/97 *Checked By* TM *Date* 8-6-97

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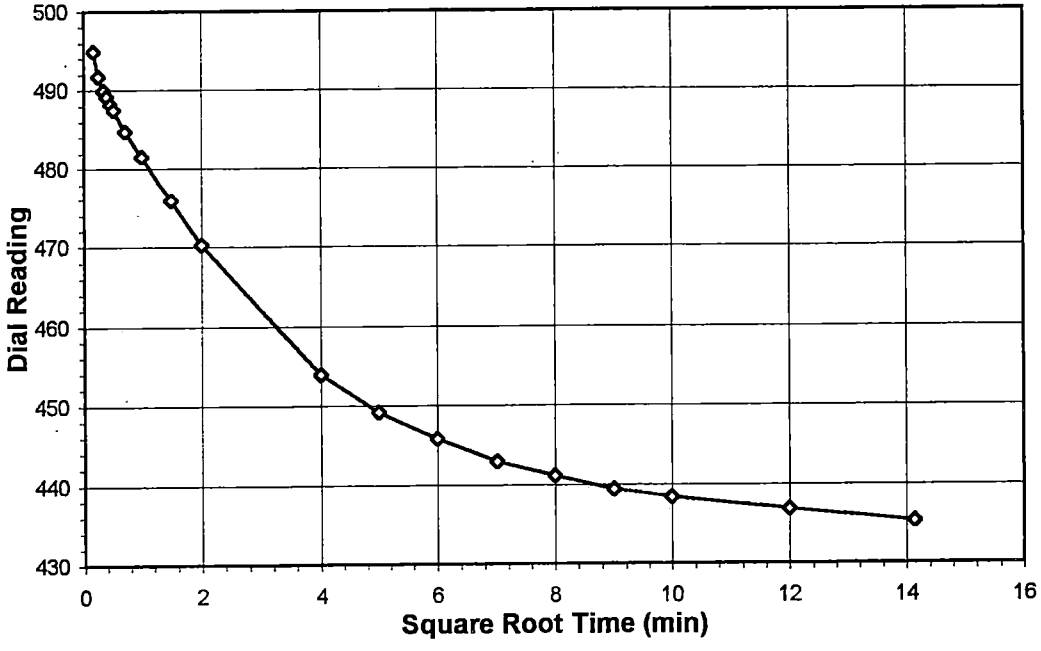
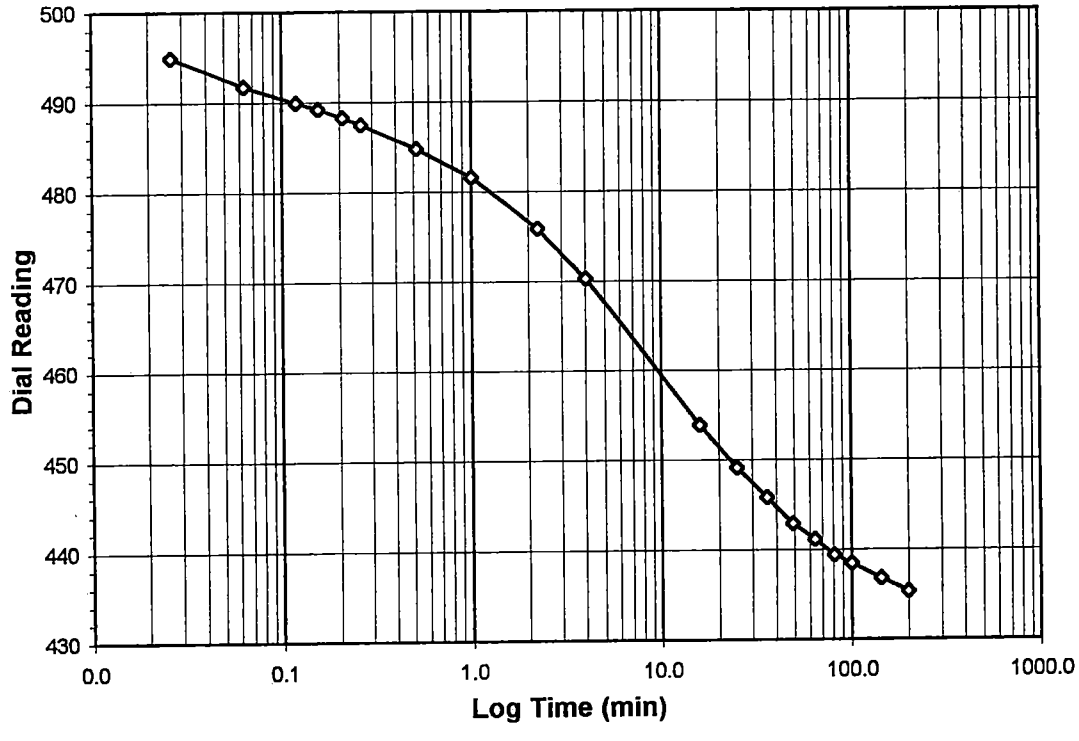
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





Test Load	**(tsf)**	**4-1**
Final Reading	**(div)**	**435.4**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/28/97
Start Time		9:29:54

Elapsed Time (min)	Dial Reading (div)
Initial	**510.2**
0.03	494.94
0.06	491.76
0.12	489.95
0.15	489.
0.21	488.24
0.26	487.47
0.52	484.80
1.00	481.57
2.25	475.86
4.01	470.31
16.01	453.93
25.01	449.15
36.01	445.79
49.01	442.91
64.00	441.15
81.00	439.41
100.00	438.45
144.02	436.84
200.00	435.35

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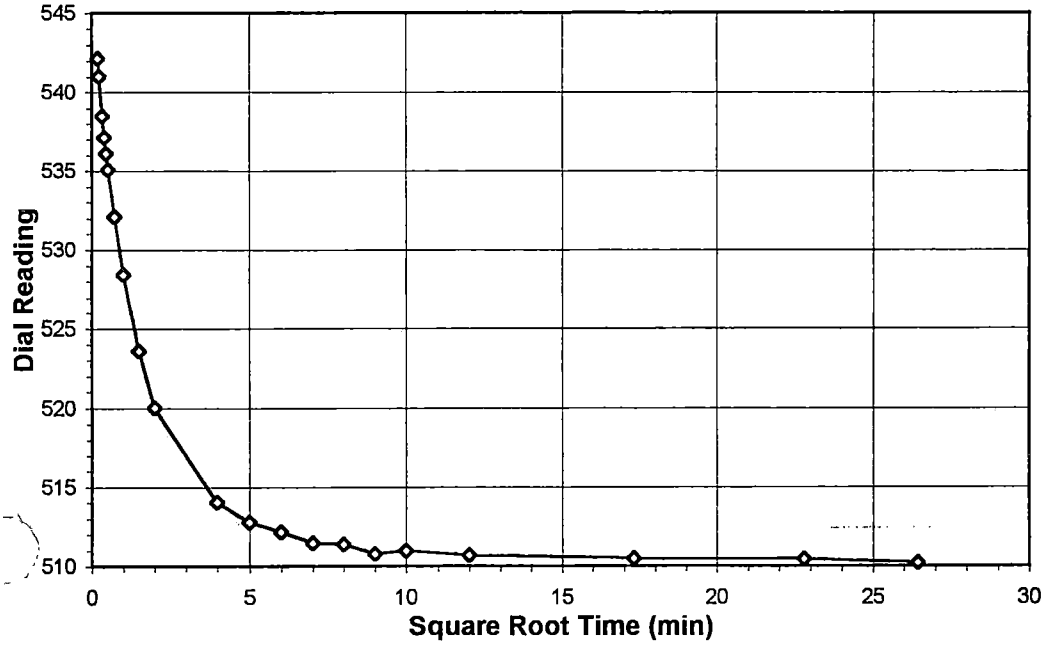
ASTM D 2435-90 (SOP-S24A)

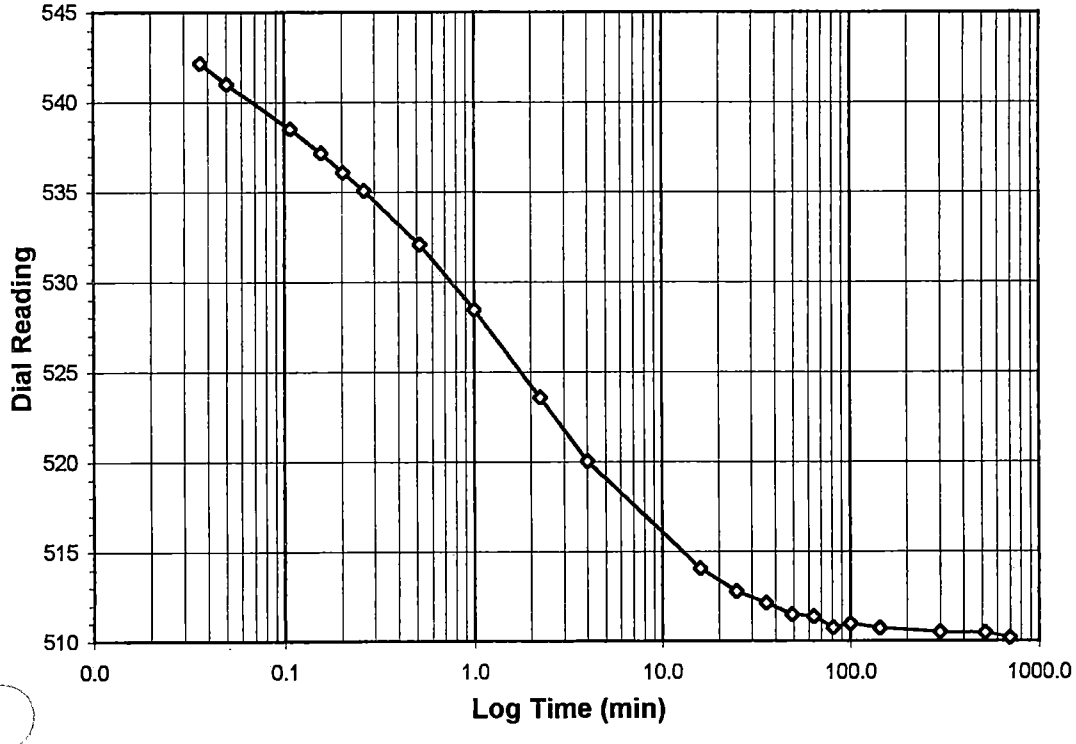
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**16-4**
Final Reading	**(div)**	**510.2**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/25/97
Start Time		16:37:49

Elapsed Time (min)	Dial Reading (div)
Initial	**571.6**
0.04	542.19
0.05	541.02
0.11	538.51
0.16	537.16
0.20	536.10
0.26	535.08
0.52	532.09
1.01	528.45
2.25	523.59
4.01	520.05
16.00	514.07
25.01	512.79
36.01	512.15
49.01	511.49
64.01	511.39
81.01	510.76
100.01	510.99
144.01	510.71
300.01	510.51
520.01	510.47
700.01	510.19



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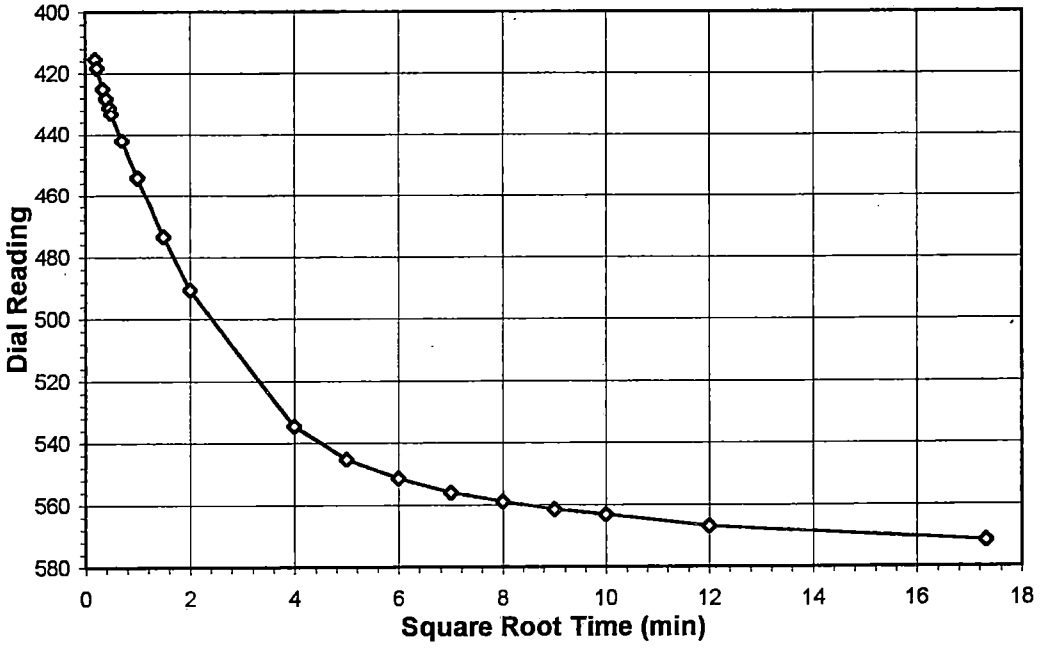
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

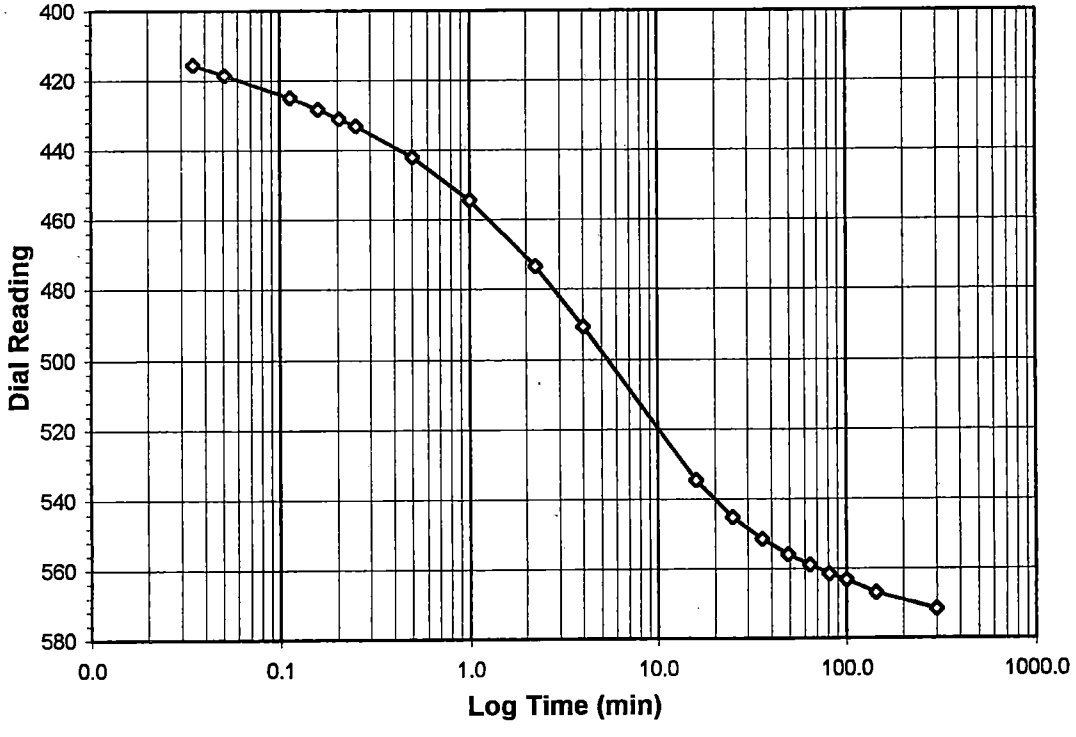
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**8-16**
Final Reading	**(div)**	**571.6**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/25/97
Start Time		10:19:17

Elapsed Time (min)	Dial Reading (div)
Initial	**354.6**
0.03	415.43
0.05	418.39
0.11	424.96
0.16	428.[illegible]
0.21	431.07
0.25	433.21
0.50	442.20
1.00	454.36
2.25	473.43
4.00	490.56
16.01	534.60
25.00	545.24
36.01	551.42
49.01	555.99
64.01	558.87
81.00	561.47
100.00	563.21
144.00	566.95
300.00	571.61



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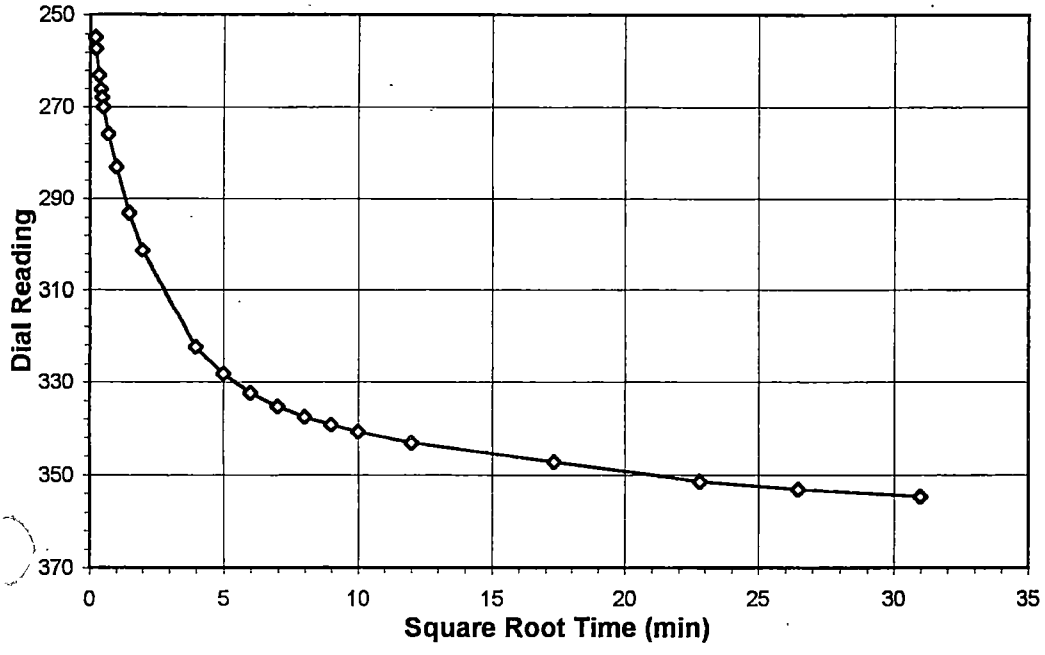
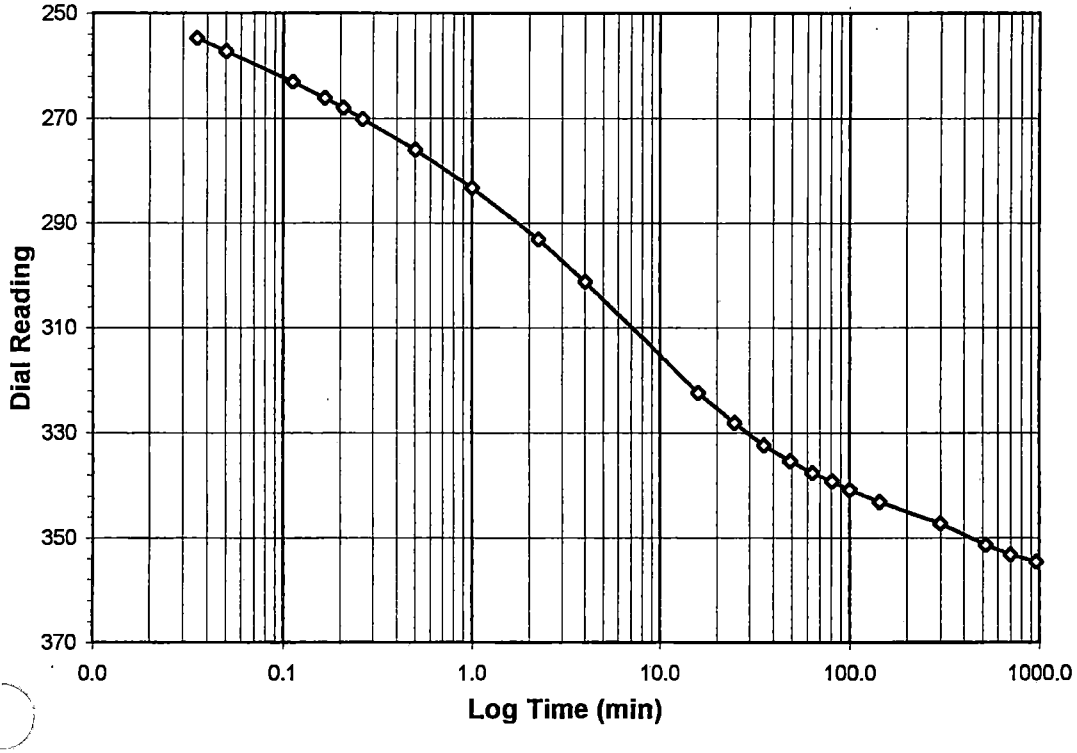
ASTM D 2435-90 (SOP-S24A)

Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





Test Load	**(tsf)**	**4-8**
Final Reading	**(div)**	**354.6**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/24/97
Start Time		14:46:30

Elapsed Time (min)	Dial Reading (div)
Initial	**203.0**
0.04	254.78
0.05	257.19
0.11	262.99
0.17	266.09
0.21	267.98
0.26	270.07
0.50	275.96
1.00	283.11
2.25	293.06
4.01	301.24
16.01	322.37
25.01	328.20
36.01	332.35
49.00	335.34
64.00	337.64
81.01	339.23
100.01	340.81
144.01	343.18
300.00	347.27
520.00	351.43
700.01	353.19
960.00	354.63

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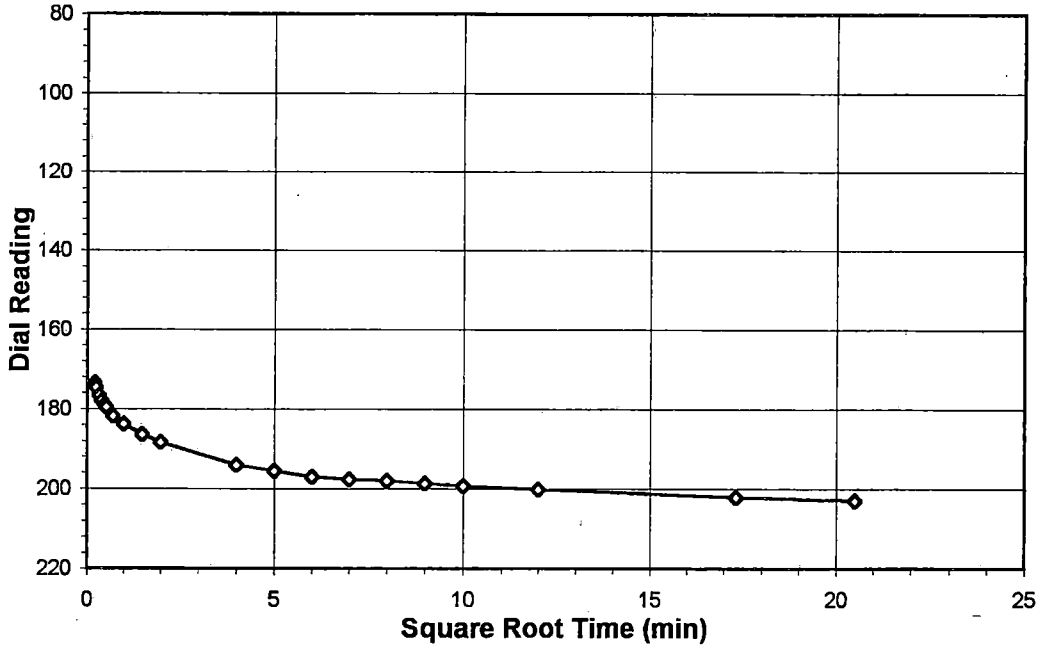
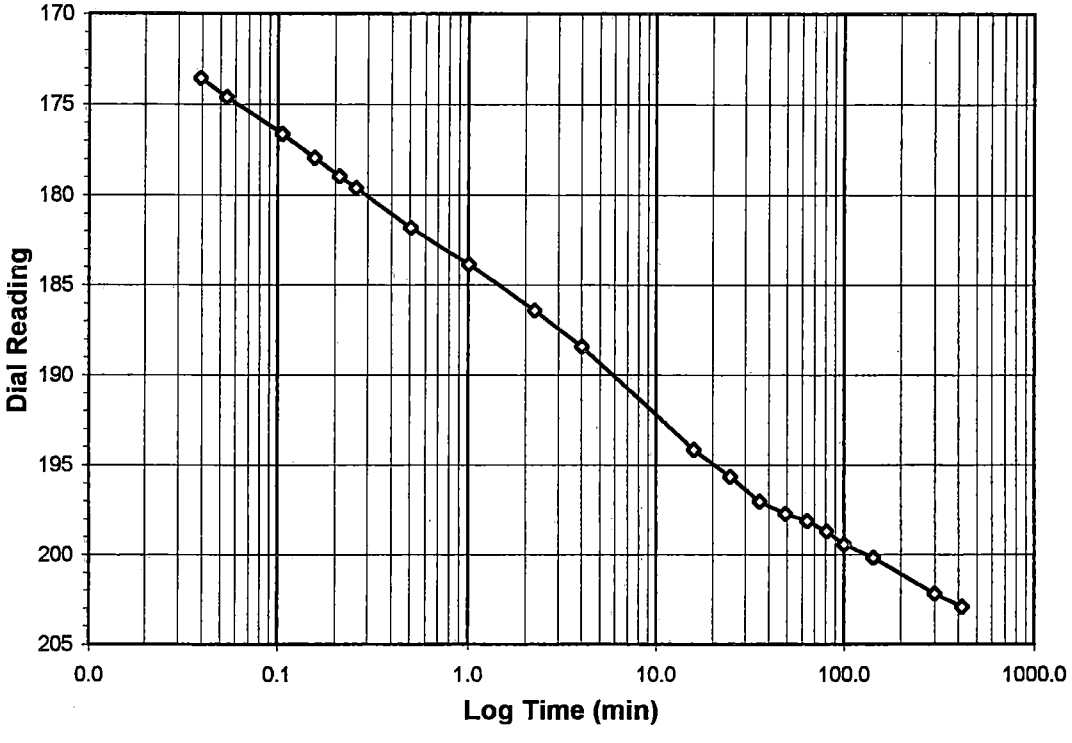
ASTM D 2435-90 (SOP-S24A)

Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





Test Load	**(tsf)**	**2-4**
Final Reading	**(div)**	**203.0**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/24/97
Start Time		7:44:23

Elapsed Time (min)	Dial Reading (div)
Initial	**149.9**
0.04	173.55
0.05	174.60
0.11	176.64
0.16	177.[illegible]
0.21	178.93
0.26	179.59
0.51	181.80
1.01	183.83
2.25	186.40
4.00	188.39
16.02	194.16
25.01	195.64
36.00	197.02
49.00	197.73
64.01	198.11
81.01	198.71
100.00	199.43
144.01	200.18
300.01	202.20
420.00	202.95

Tested By AG *Date* 7/24/97 *Checked By* TM *Date* 8-6-97

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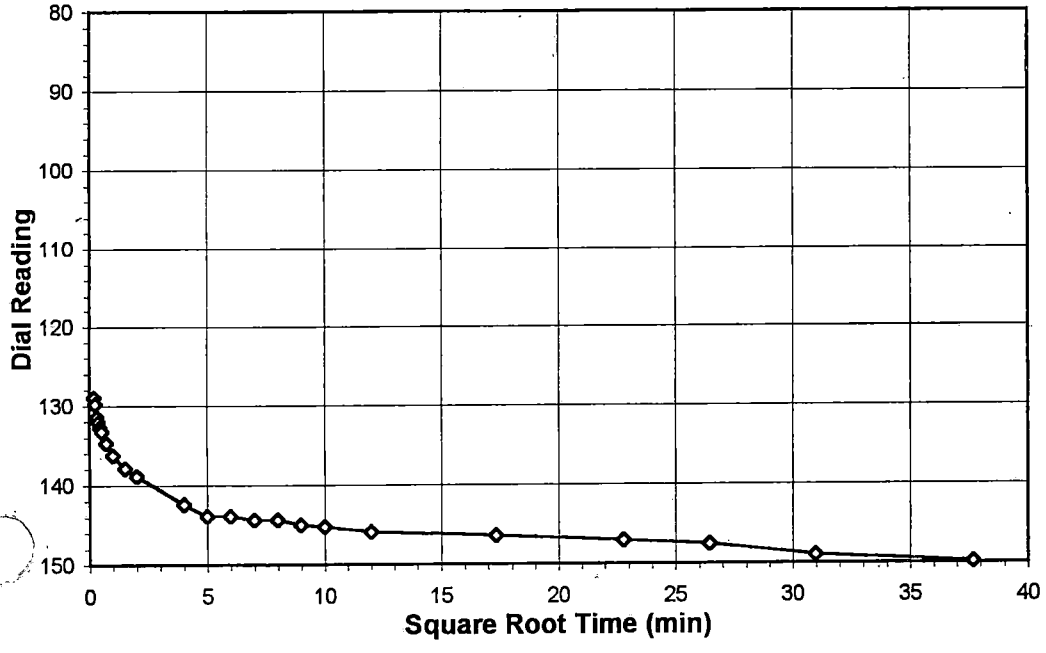
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

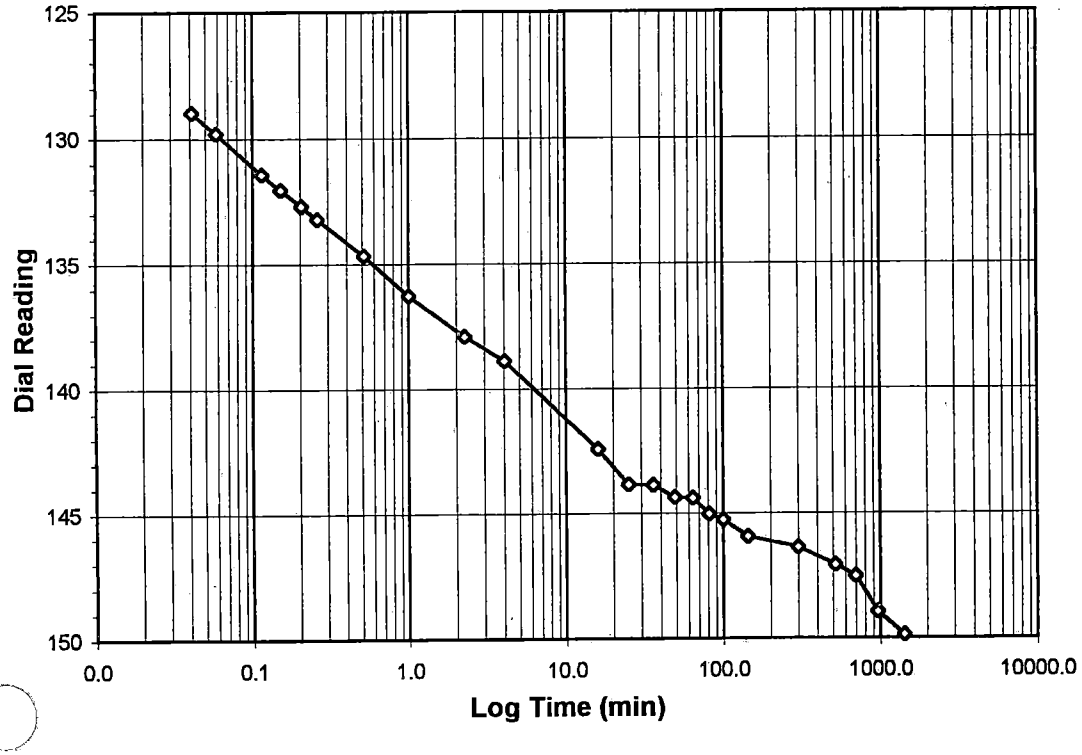
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1-2**
Final Reading	**(div)**	**149.9**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/23/97
Start Time		7:54:22

Elapsed Time (min)	Dial Reading (div)
Initial	**112.0**
0.04	128.96
0.06	129.79
0.11	131.41
0.15	132.05
0.20	132.69
0.26	133.21
0.51	134.66
1.00	136.27
2.25	137.88
4.01	138.87
16.01	142.41
25.00	143.85
36.01	143.87
49.04	144.35
64.01	144.38
81.00	145.03
100.00	145.26
144.01	145.94
300.02	146.37
520.00	147.07
700.01	147.52
960.01	148.94
1420.00	149.87



Tested By AG *Date* 7/23/97 *Checked By* TM *Date* 8-6-97

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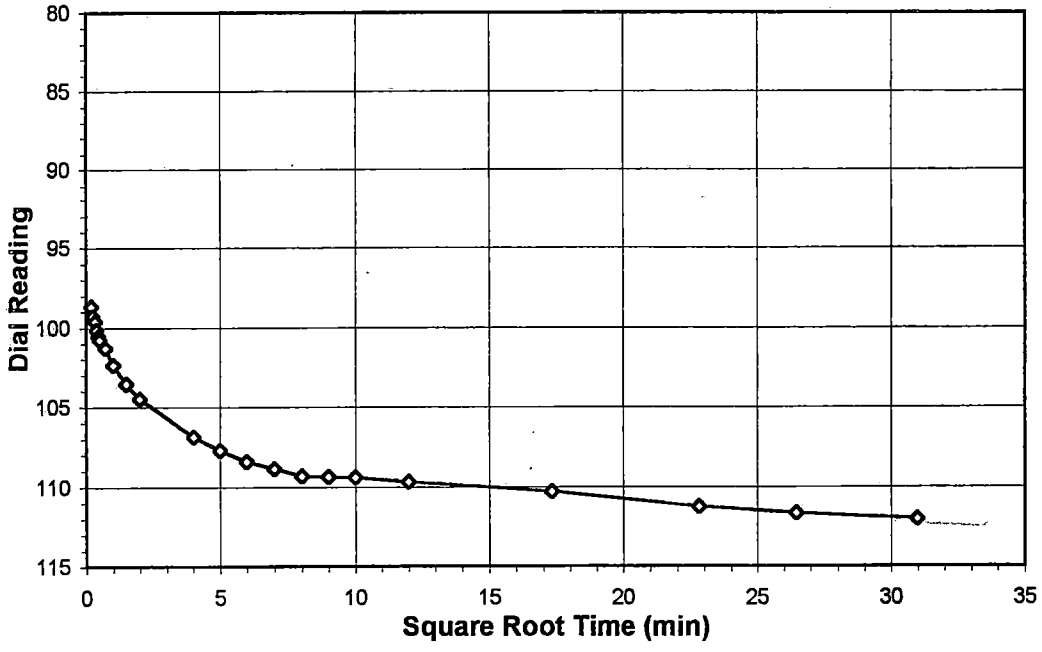
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

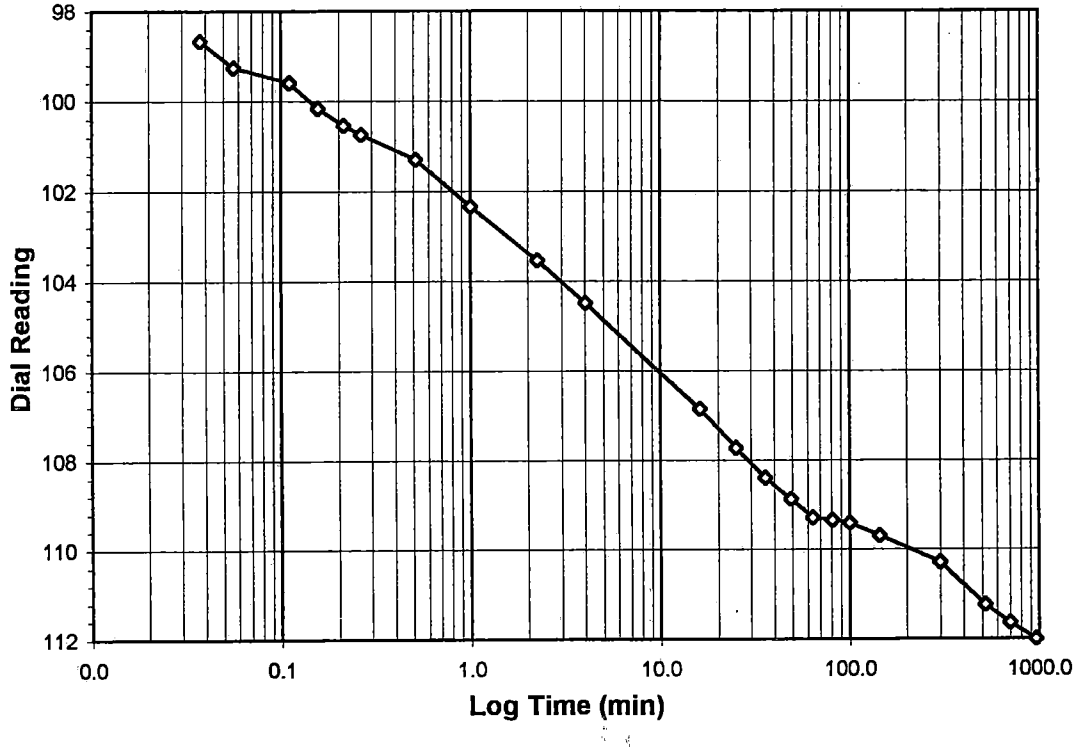
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.5-1**
Final Reading	**(div)**	**112.0**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/22/97
Start Time		9:04:02

Elapsed Time (min)	Dial Reading (div)
Initial	**89.0**
0.04	98.67
0.06	99.26
0.11	99.60
0.16	100.
0.21	100.55
0.26	100.74
0.52	101.29
1.00	102.33
2.26	103.54
4.01	104.50
16.11	106.86
25.01	107.72
36.01	108.39
49.01	108.86
64.00	109.29
81.01	109.35
100.01	109.41
144.01	109.70
300.00	110.30
520.01	111.23
700.00	111.64
960.01	112.00



Tested By AG *Date* 7/22/97 *Checked By* TM *Date* 8-6-97

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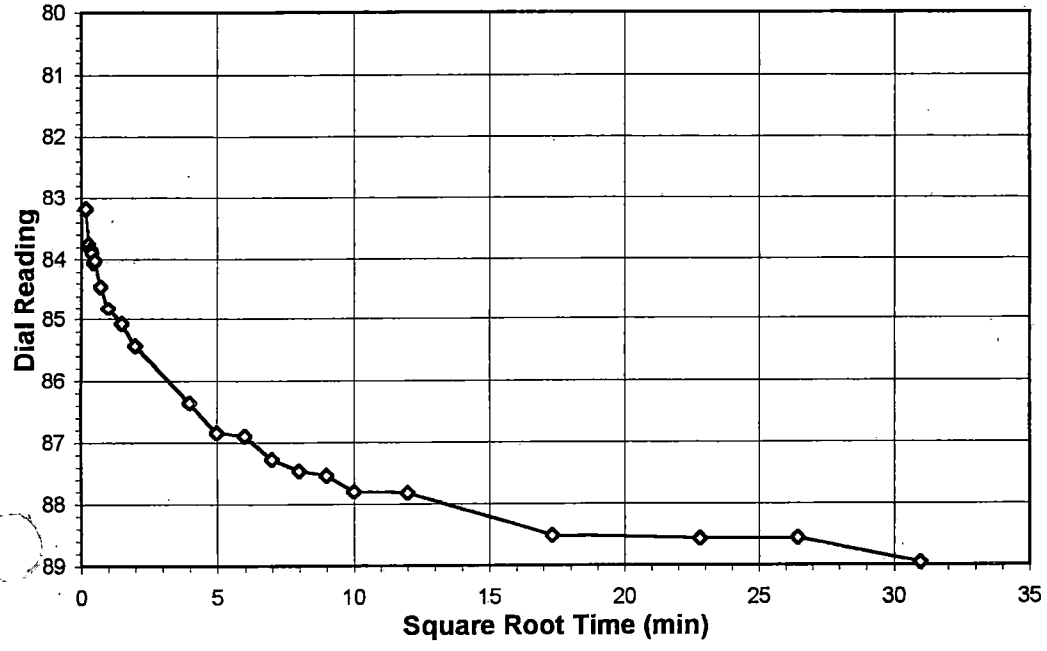
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

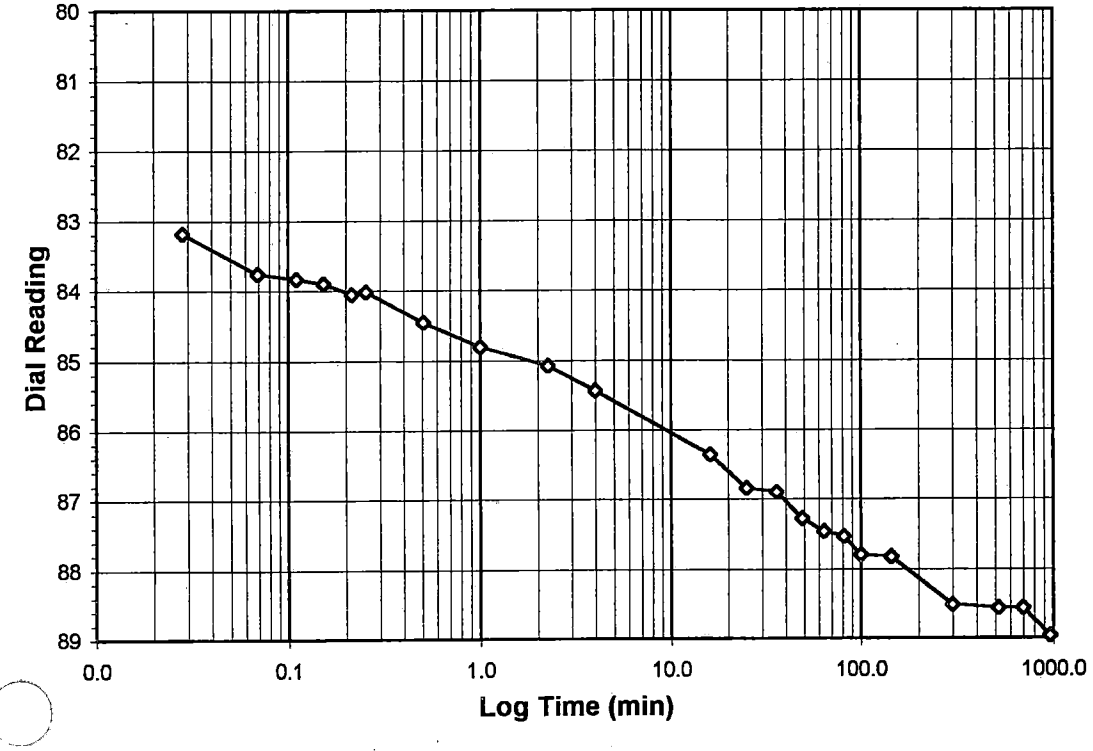
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**89.0**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/21/97
Start Time		8:40:00

Elapsed Time (min)	Dial Reading (div)
Initial	**80.2**
0.03	83.18
0.07	83.75
0.11	83.83
0.15	83.90
0.21	84.05
0.25	84.02
0.51	84.45
1.00	84.81
2.26	85.07
4.00	85.44
16.00	86.35
25.01	86.84
36.00	86.90
49.01	87.28
64.01	87.46
81.01	87.54
100.01	87.80
144.00	87.83
300.00	88.51
520.02	88.57
700.00	88.56
960.01	88.96



Tested By AG *Date* 7/21/97 *Checked By* TM *Date* 8-6-97

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DATE: 7/15/97
REVISION: 1

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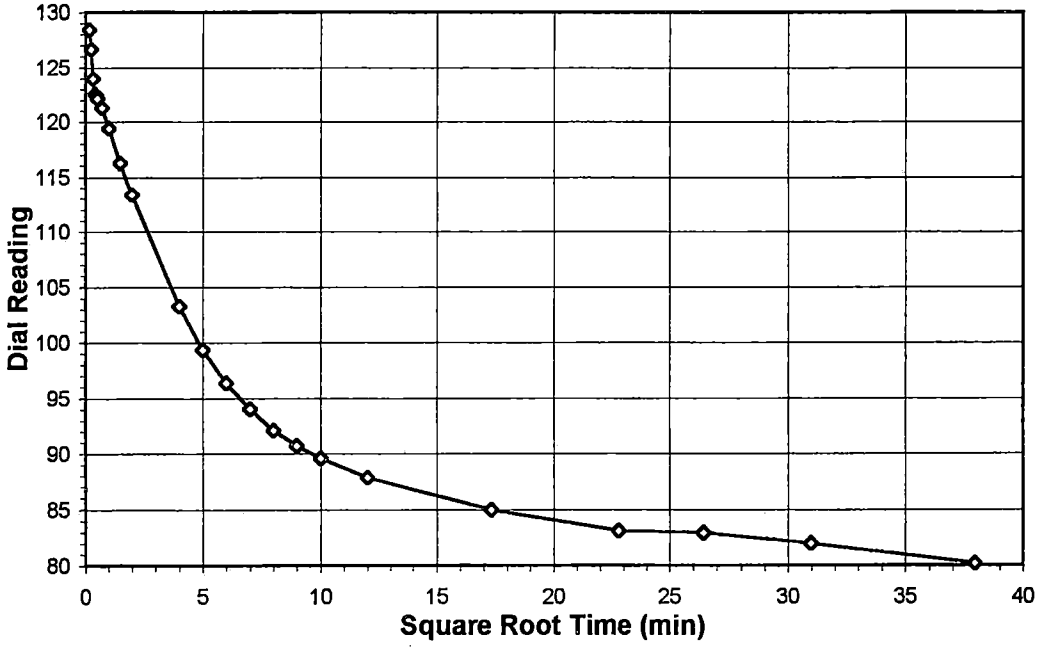
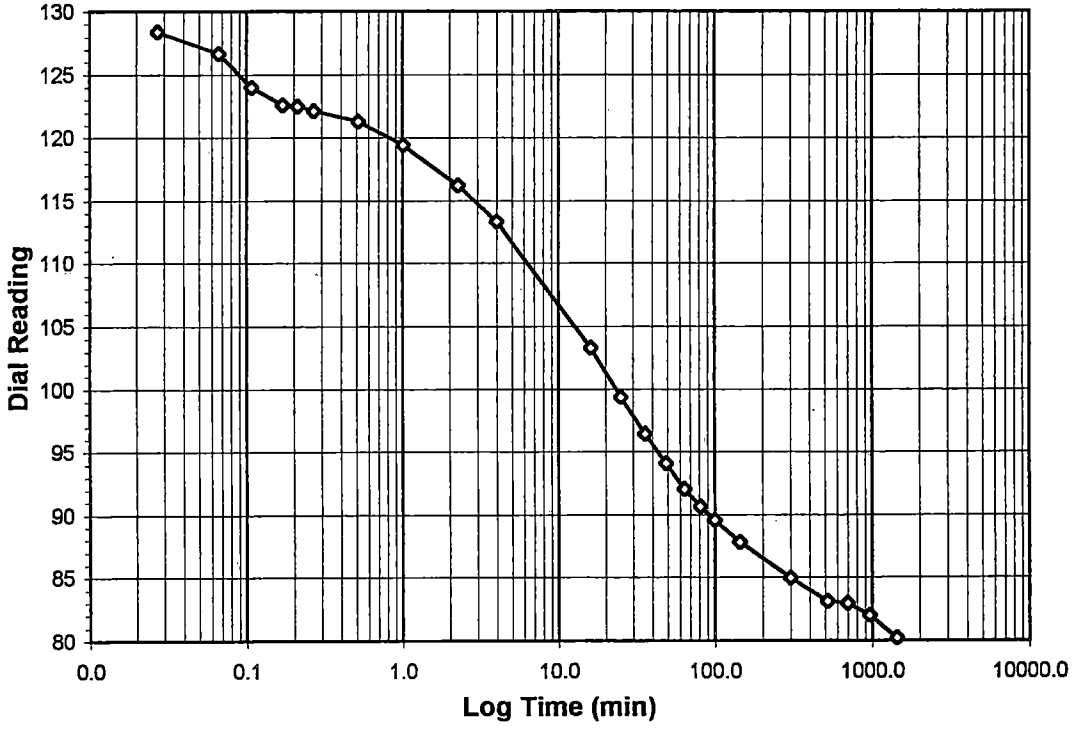
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





Test Load	**(tsf)**	**1-0.25**
Final Reading	**(div)**	**80.2**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/19/97
Start Time		9:11:13

Elapsed Time (min)	Dial Reading (div)
Initial	**142.2**
0.03	128.40
0.07	126.68
0.11	123.98
0.17	122.[illegible]
0.21	122.47
0.27	122.15
0.52	121.29
1.01	119.42
2.26	116.24
4.00	113.35
16.01	103.29
25.02	99.38
36.00	96.40
49.01	94.05
64.01	92.08
81.01	90.67
100.01	89.59
144.01	87.83
300.01	84.98
520.01	83.13
700.00	82.93
960.01	82.00
1440.02	80.20

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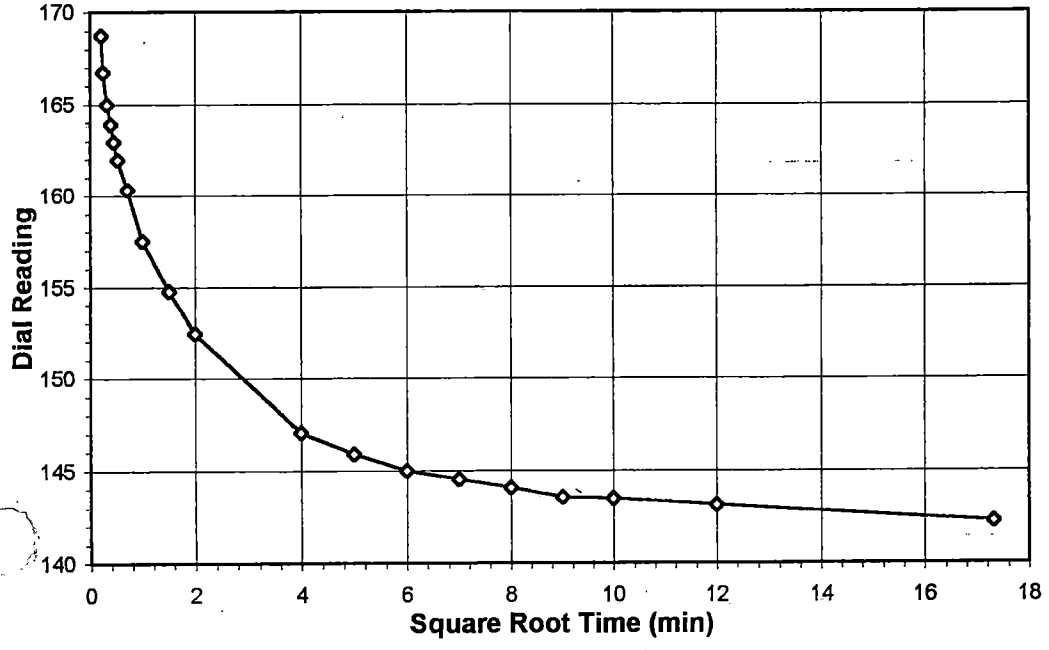
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

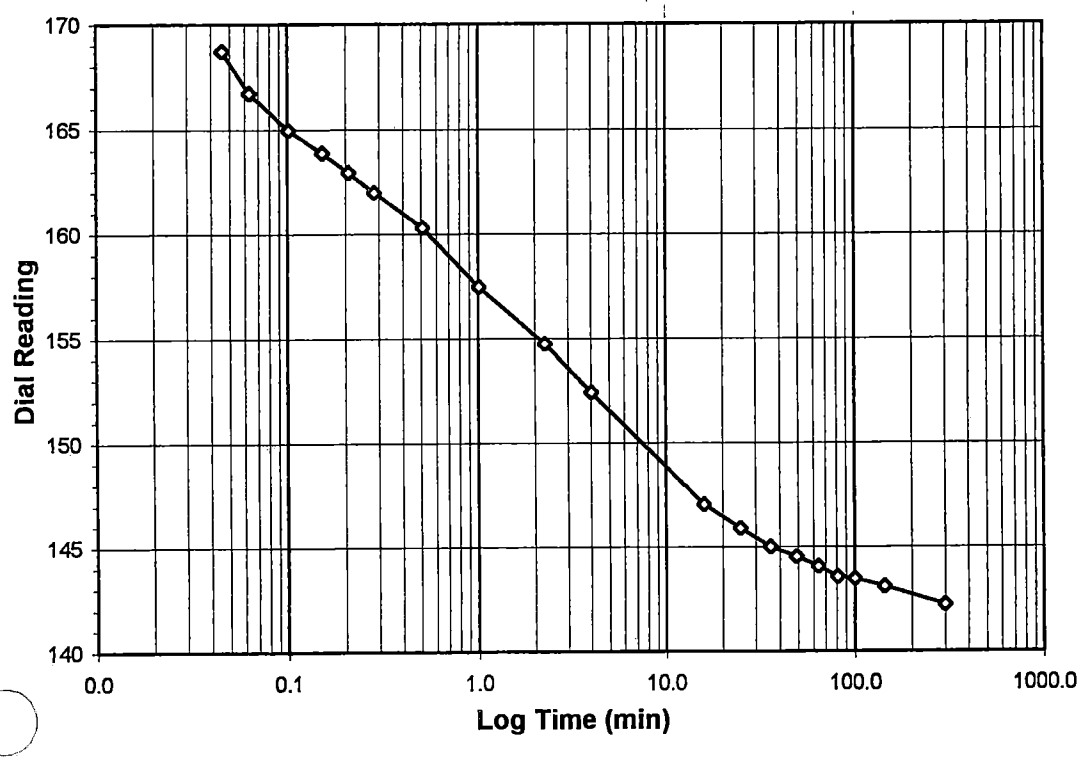
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**4-1**
Final Reading	**(div)**	**142.2**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/18/97
Start Time		12:46:39

Elapsed Time (min)	Dial Reading (div)
Initial	**189.9**
0.05	168.73
0.06	166.74
0.10	164.98
0.15	163.89
0.21	162.95
0.28	161.97
0.51	160.31
1.01	157.50
2.26	154.76
4.01	152.41
16.01	147.04
25.01	145.91
36.01	144.99
49.01	144.54
64.01	144.08
81.00	143.56
100.00	143.47
144.00	143.11
300.00	142.24



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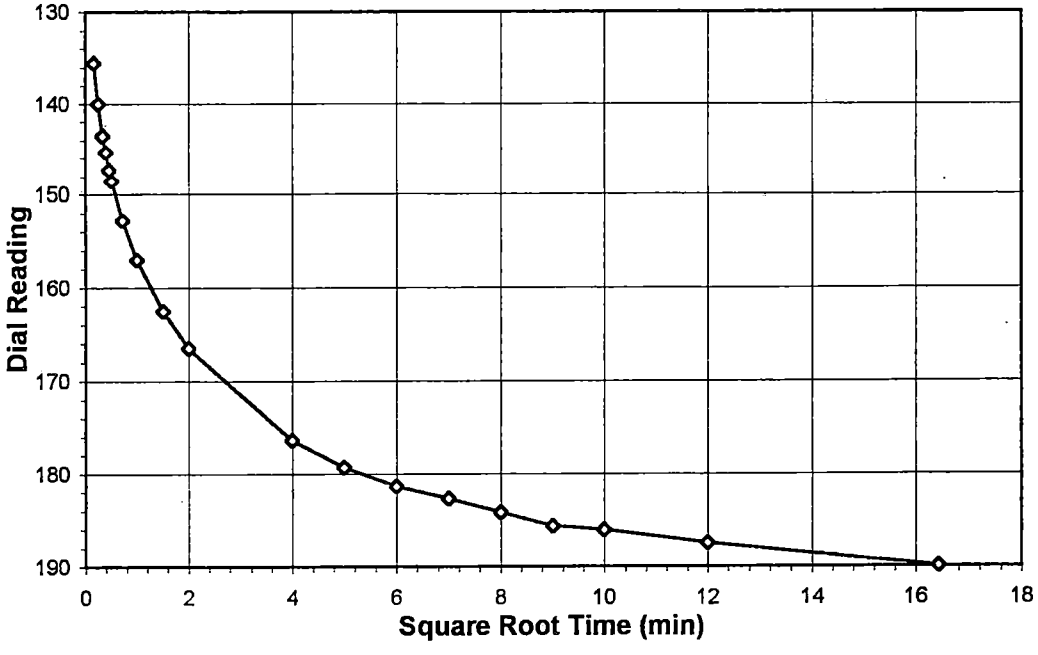
ASTM D 2435-90 (SOP-S24A)

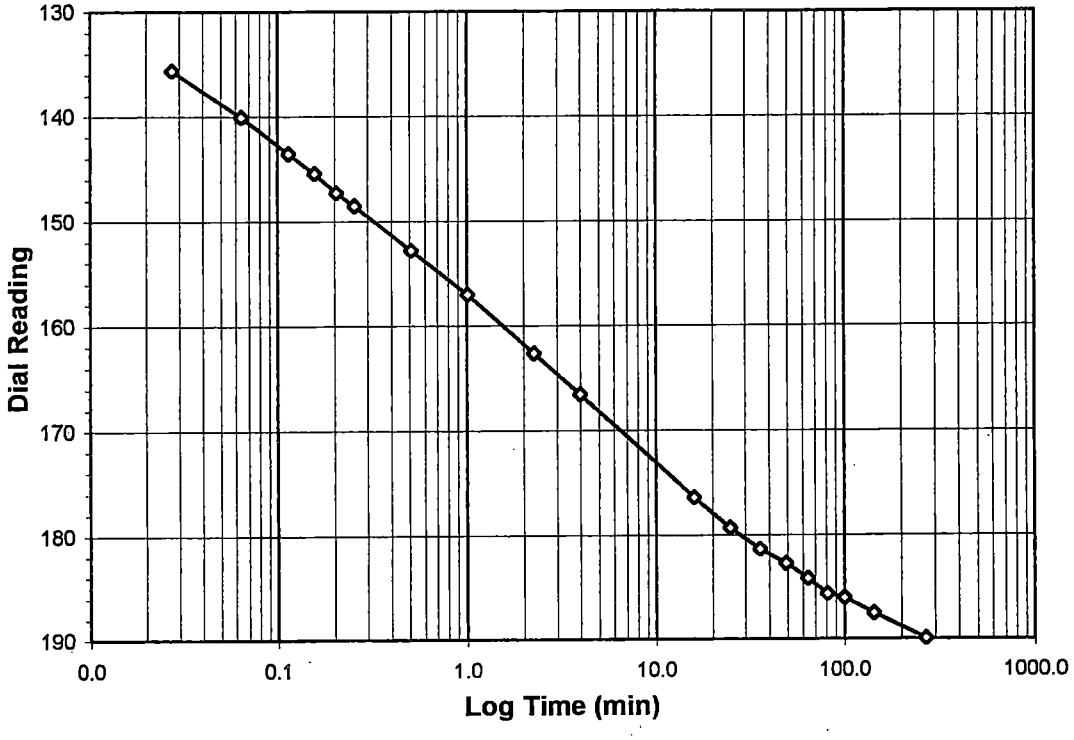
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**2-4**
Final Reading	**(div)**	**189.9**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/18/97
Start Time		8:13:09

Elapsed Time (min)	Dial Reading (div)
Initial	**96.2**
0.03	135.57
0.06	140.06
0.11	143.[illegible]
0.16	145.[illegible]
0.21	147.26
0.26	148.54
0.51	152.81
1.01	157.04
2.26	162.59
4.00	166.51
16.01	176.39
25.01	179.33
36.01	181.39
49.01	182.71
64.01	184.17
81.01	185.66
100.00	186.05
144.01	187.50
270.00	189.93



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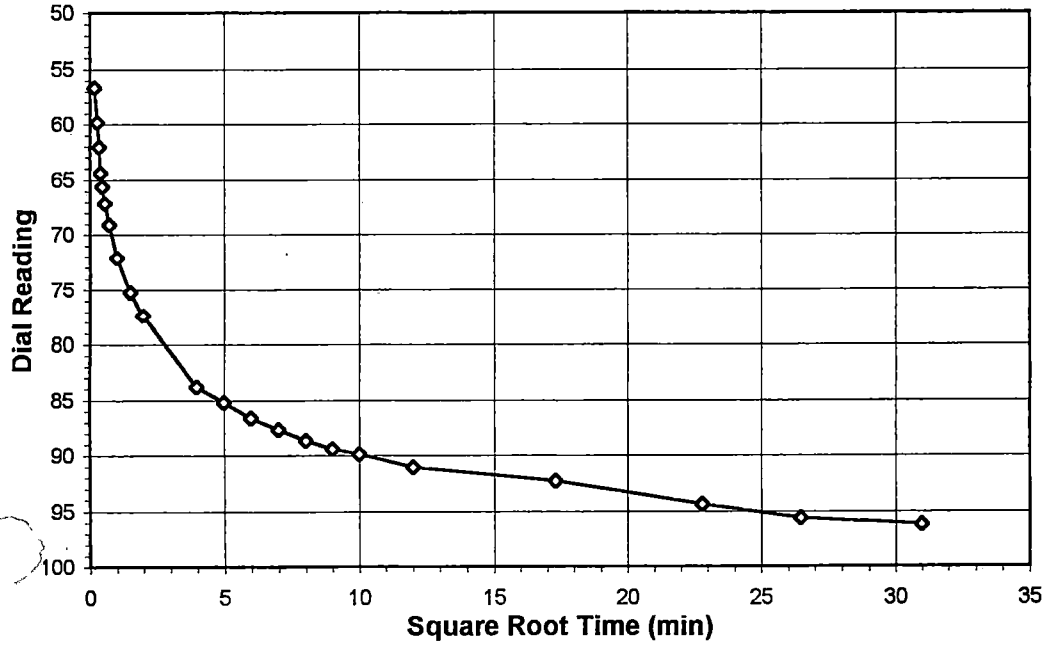
ASTM D 2435-90 (SOP-S24A)

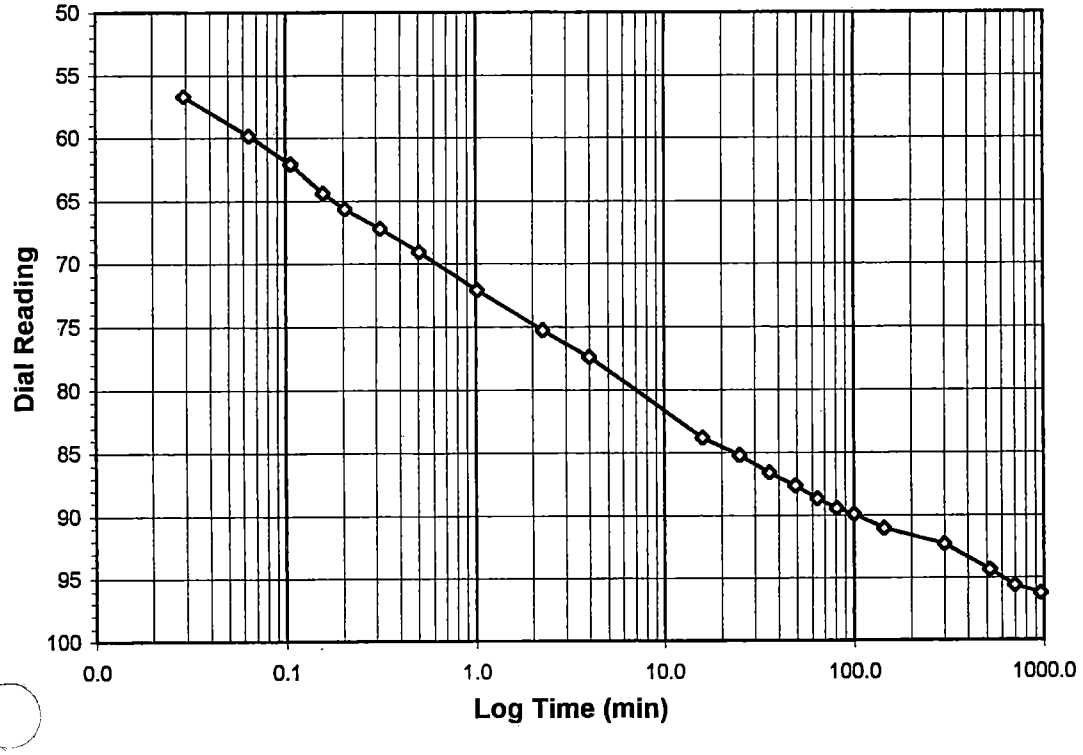
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**1-2**
Final Reading	**(div)**	**96.2**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/17/97
Start Time		13:04:47

Elapsed Time (min)	Dial Reading (div)
Initial	**27.5**
0.03	56.66
0.06	59.83
0.11	62.06
0.16	64.37
0.21	65.62
0.32	67.16
0.51	69.06
1.02	72.13
2.26	75.28
4.00	77.38
16.02	83.82
25.02	85.22
36.01	86.59
49.00	87.65
64.01	88.66
81.01	89.42
100.01	89.89
144.00	91.04
300.00	92.27
520.00	94.38
700.01	95.61
960.01	96.22



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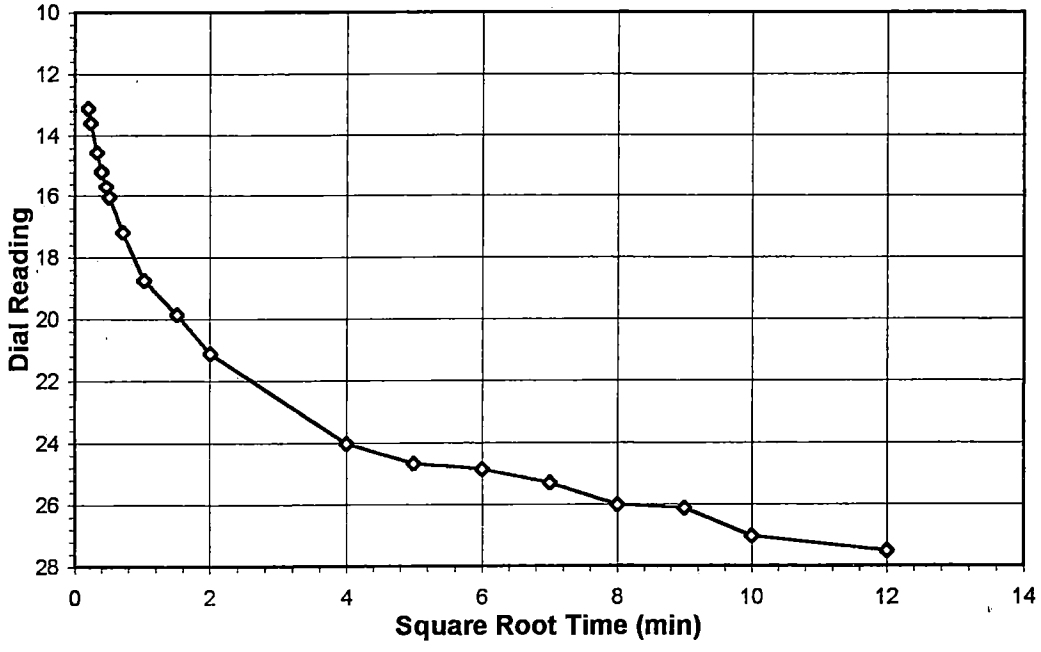
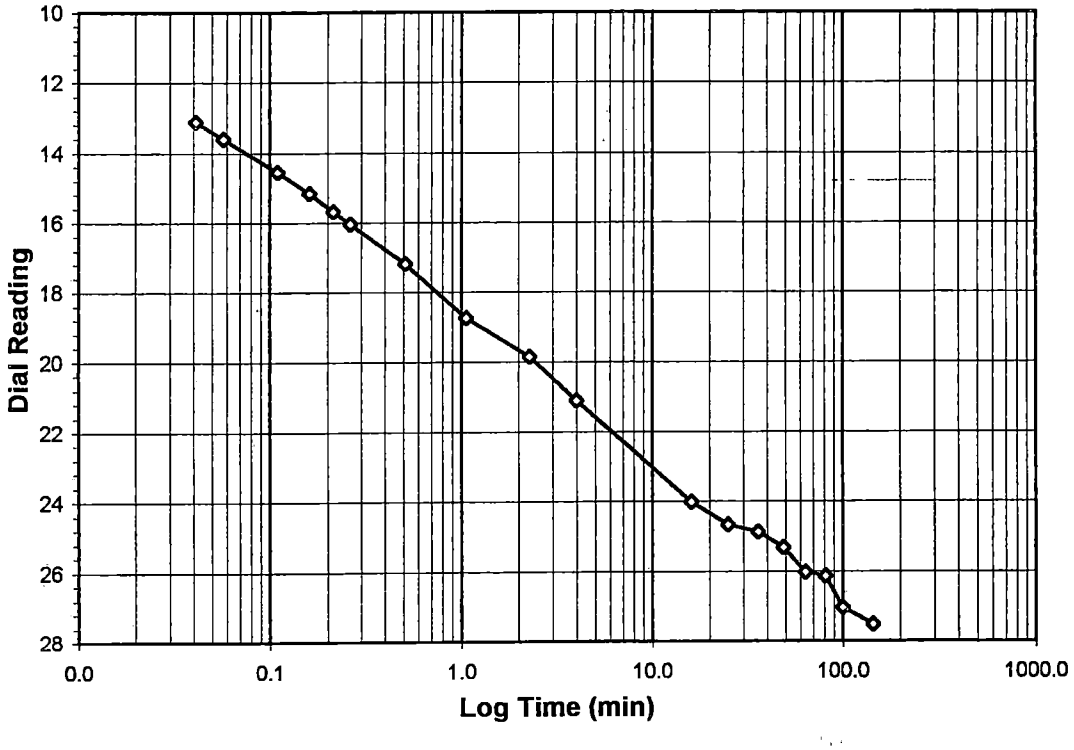
ASTM D 2435-90 (SOP-S24A)

Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED





Test Load	**(tsf)**	**0.5-1**
Final Reading	**(div)**	**27.5**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/17/97
Start Time		8:13:44

Elapsed Time (min)	Dial Reading (div)
Initial	**2.6**
0.04	13.11
0.06	13.59
0.11	14.55
0.16	15.1
0.21	15.67
0.26	16.04
0.51	17.17
1.06	18.73
2.27	19.85
4.01	21.11
16.00	24.02
25.00	24.67
36.01	24.86
49.01	25.31
64.00	26.02
81.00	26.13
100.01	27.04
144.00	27.52

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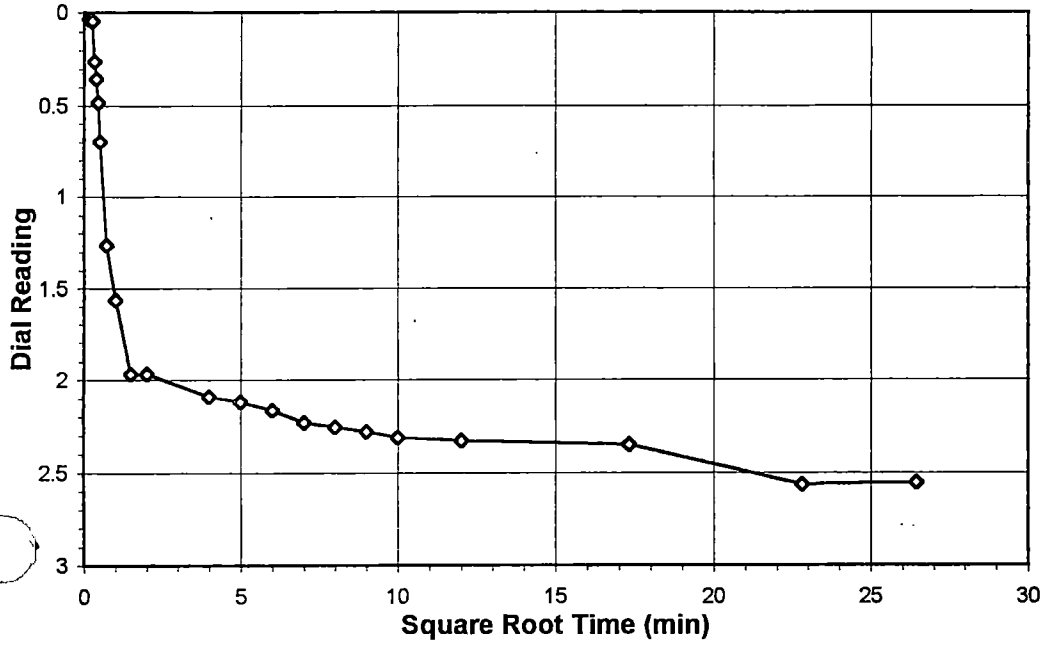
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

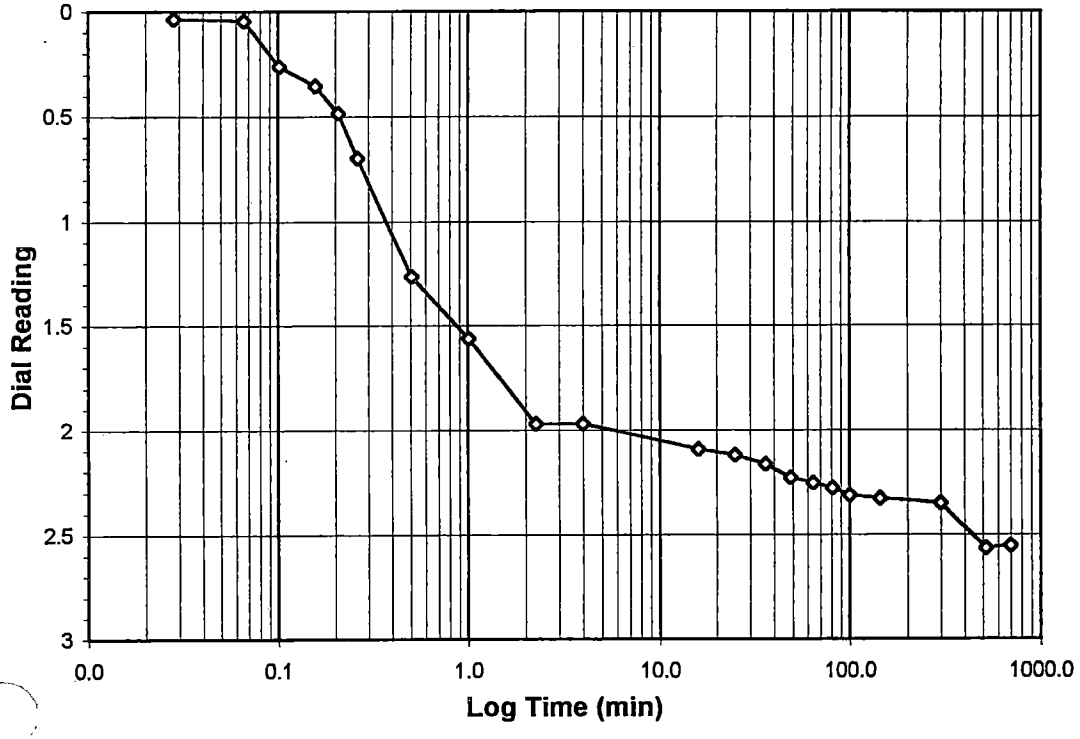
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0.25-0.5**
Final Reading	**(div)**	**2.6**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/16/97
Start Time		14:35:16

Elapsed Time (min)	Dial Reading (div)
Initial	**0.8**
0.03	0.03
0.07	0.05
0.10	0.26
0.16	0.36
0.21	0.49
0.26	0.70
0.51	1.26
1.00	1.56
2.26	1.97
4.01	1.97
16.01	2.09
25.00	2.12
36.01	2.16
49.01	2.23
64.01	2.26
81.00	2.28
100.02	2.31
144.00	2.33
300.01	2.35
520.01	2.57
700.01	2.55



Tested By AG *Date* 7/16/97 *Checked By* TM *Date* 8-6-97

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DATE: 7/15/97
REVISION: 1

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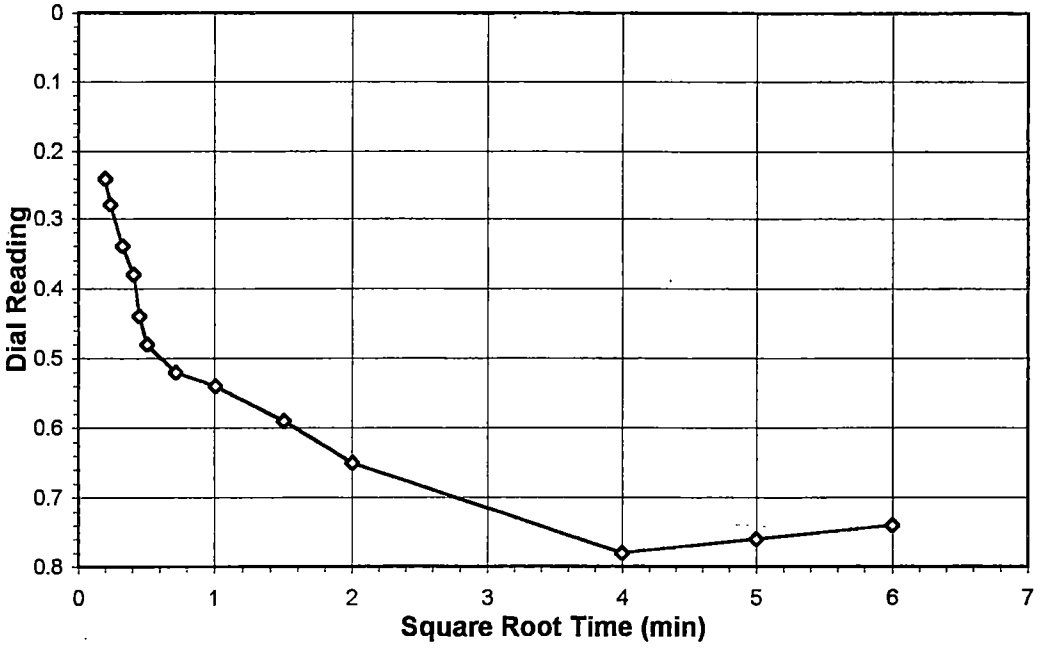
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

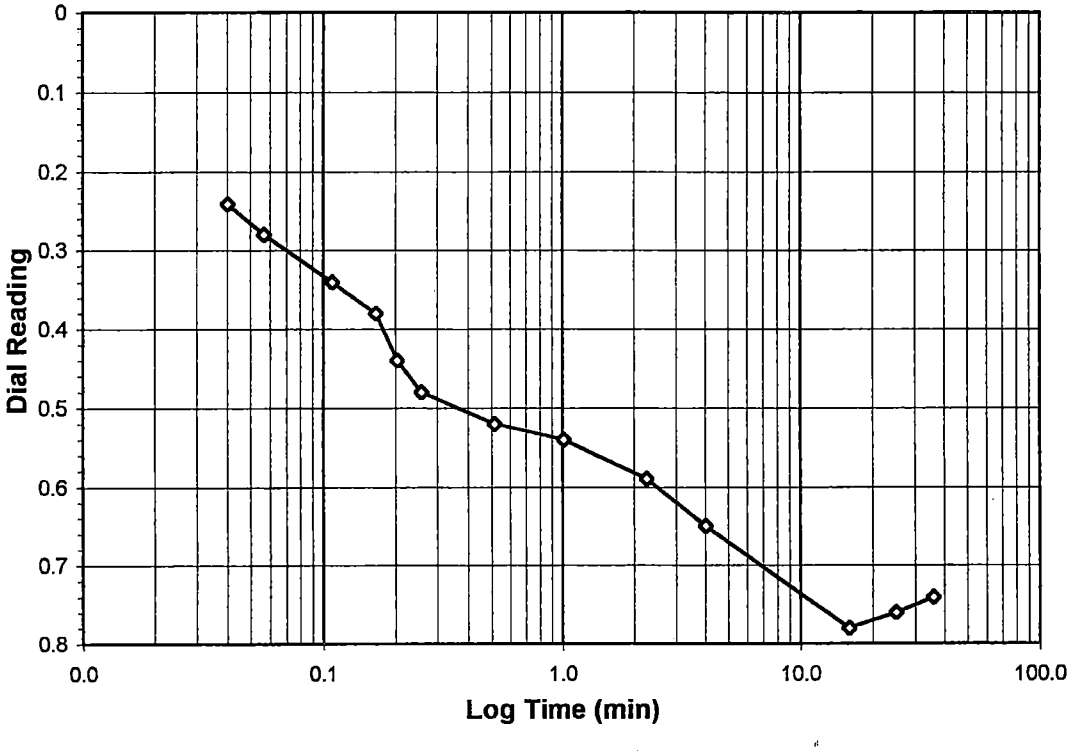
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth (ft)	4.3-4.5
Client Reference No.	97178-01	Sample No.	SM005-TBO5-0305
Project No.	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load	**(tsf)**	**0-0.25**
Final Reading	**(div)**	**0.8**
Consolidometer No.		2
1 Division	(in)	0.0001
Start Date		7/16/97
Start Time		13:50:13

Elapsed Time (min)	Dial Reading (div)
Initial	**0.0**
0.04	0.24
0.06	0.28
0.11	0.34
0.17	0.3
0.20	0.44
0.26	0.48
0.52	0.52
1.01	0.54
2.25	0.59
4.01	0.65
16.01	0.78
25.00	0.76
36.02	0.74



Tested By AG *Date* 7/16/97 *Checked By* TM *Date* 8-6-97

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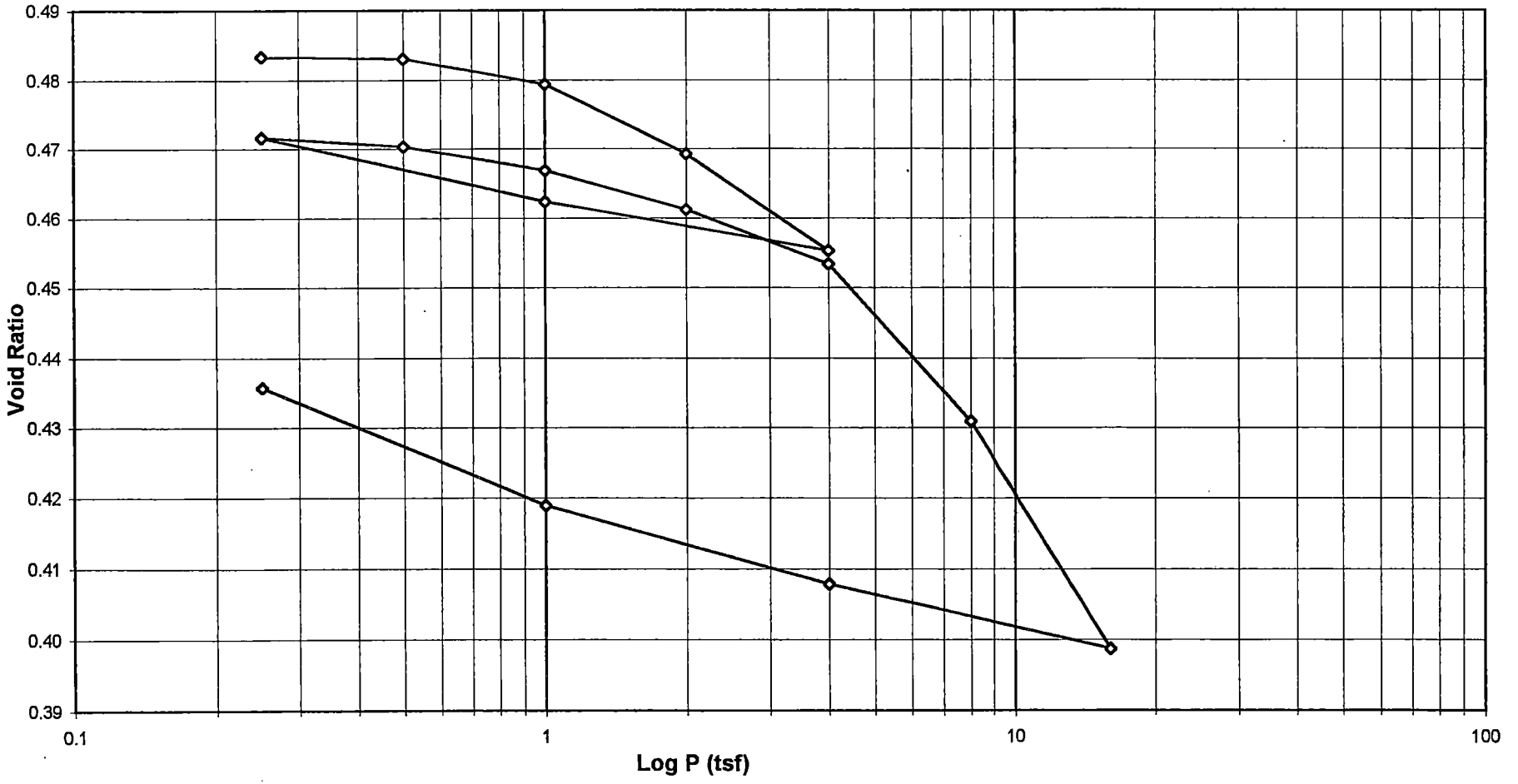
ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-90 (SOP-S24A)

Client	ICF KAISER	Boring	NA
Client Reference	BAYER 51249	Depth (ft)	4.3-4.5
Project No.	97178-01	Sample No.	SM005-TB05-0305
Lab ID	97178-01.014	Visual Description	BROWN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By AG *Date* 7/30/97 *Checked By* LB *Date* 8-6-97

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