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

geotechnics

HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-03	Sample No.	SM027-TB05-1416
Lab ID	97178-03.016	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	56.0	56.0	23	49.7	91.8	0.0245	**83.8**
5		53.5	23	47.2	87.2	0.0159	**79.6**
19		46.5	23	40.2	74.3	0.0088	**67.8**
30		43.0	23	36.7	67.8	0.0072	**61.9**
60		38.5	22.2	32.2	59.5	0.0053	**54.3**
250		30.0	22.7	23.7	43.8	0.0028	**40.0**
1440		22.5	23.5	16.2	29.9	0.0012	**27.3**

Soil Specimen Data		Corrections	
Tare No.	878	K - Factor	0.01297
Tare + Dry Material (gm)	160.63	a - Factor	0.99
Weight of Tare (gm)	102.03	Composite Correction	6.29
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	91.26
Weight of Dry Material (gm)	53.6		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/20/97 Checked By JTO Date 8/27/97

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

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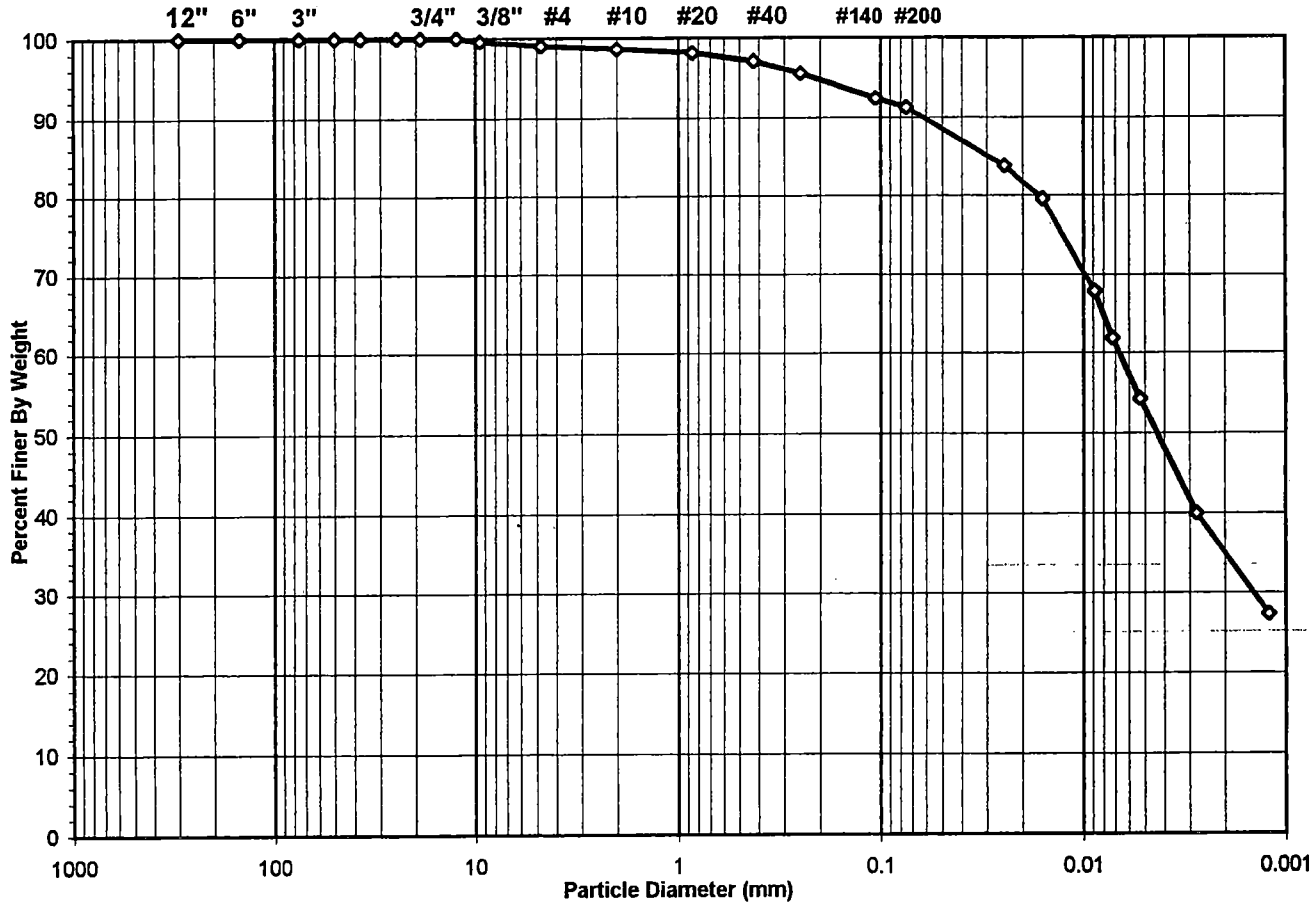
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-03	Sample No.	SM027-TB05-1416
Lab ID	97178-03.016	Soil Color	BROWN

	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*	1.36	**0.00**
2	98.64	*Sand*	10.08	**10.22**
0.075	91.26	*Silt*	53.57	**54.31**
0.05	88.56	*Clay*	34.99	**35.47**
0.002	34.99			

USDA Classification ***SILTY CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY***

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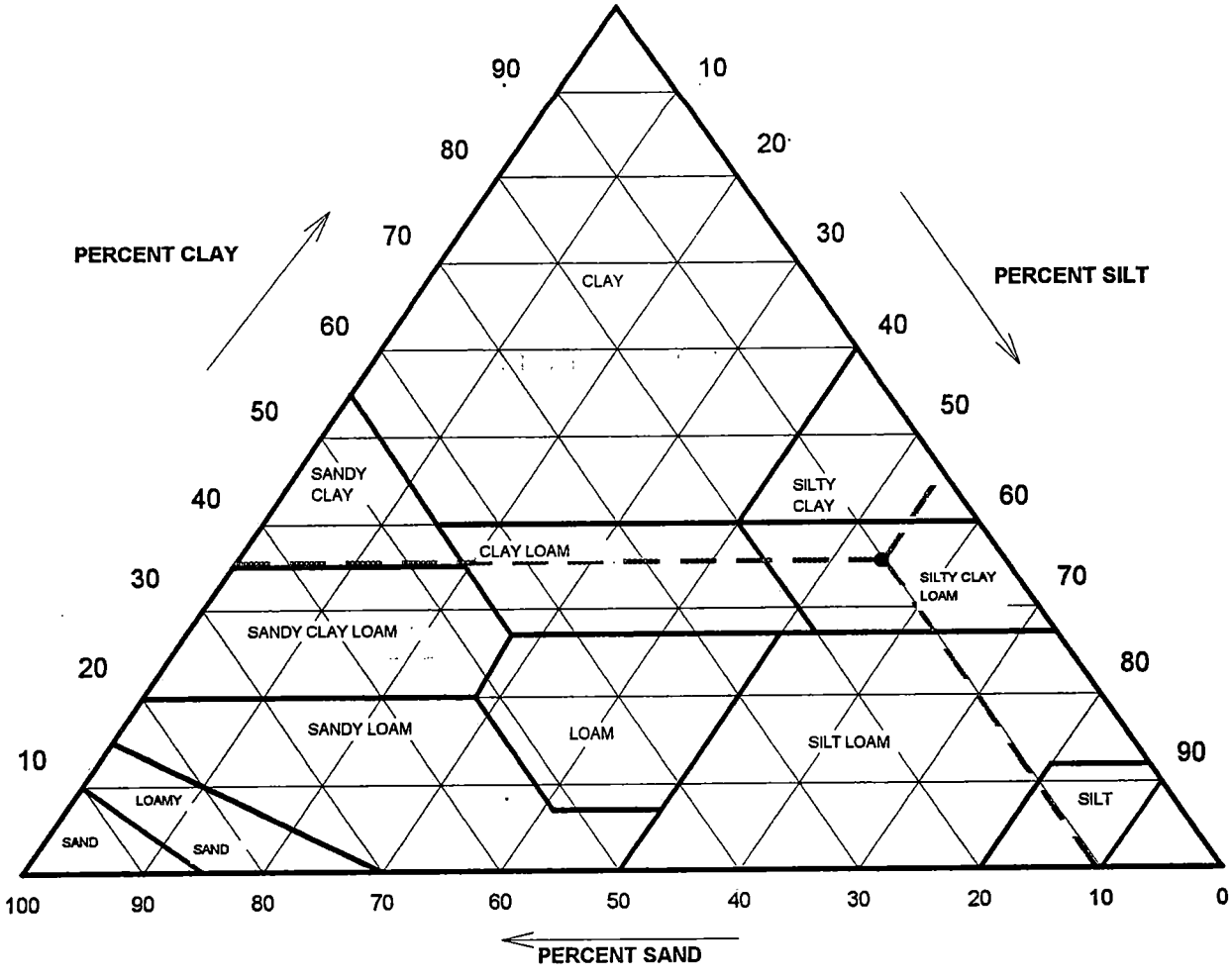
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-03	Sample No.	SM027-TB05-1416
Lab ID	97178-03.016	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	10.22
Silt	54.31
Clay	35.47
USDA Classification	***SILTY CLAY LOAM***

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PERMEABILITY TEST

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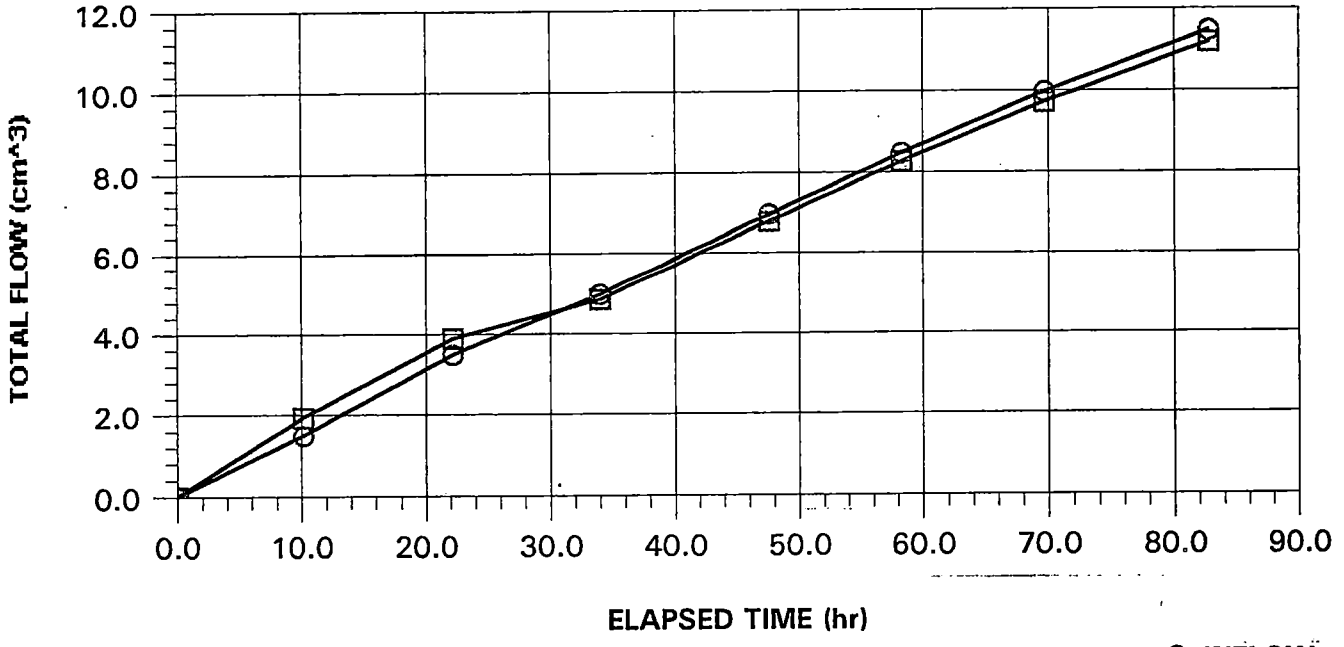
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	15.5-15.8
Project No.	97178-03	Sample No.	SM027-TB05-1416

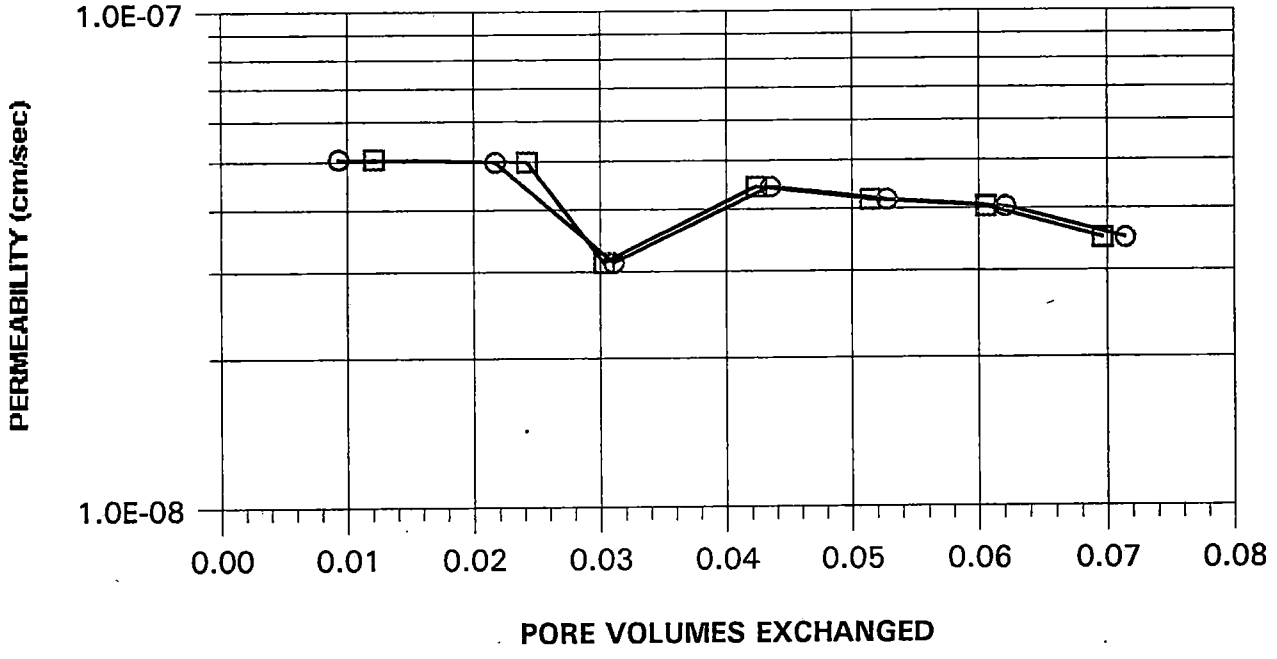
AVERAGE PERMEABILITY = 4.0E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.0E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



⊖ INFLOW
⊟ OUTFLOW

PORE VOLUMES EXCHANGED vs. PERMEABILITY



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PERMEABILITY TEST

geotechnics

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Client	ICF KAISER	Tested By	JCM	Date	08-18-97
Client Project	BAYER 51249	Checked By	JMO	Date	8-29-97
Project No.	97178-03				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	15.5-15.8	Sample Condition	UNDISTURBED		
Sample No.	SM027-TB05-1416				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	439	730
Wt. Tare & WS(gm.)	307.00	436.10
Wt. Tare & DS(gm.)	263.34	362.11
Wt. Water(gm.)	43.66	73.99
Wt. Tare(gm.)	99.52	86.57
Wt. DS(gm.)	163.82	275.54
Moisture Content(%)	26.7	26.9

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1037.60	NA
Wt. Of Tube(gms.)	276.53	NA
Wt. Of WS.(gms.)	761.07	762.3
Length 1 (in.)	3.630	3.664
Length 2 (in.)	3.649	3.676
Length 3 (in.)	3.618	3.664
Top Diameter (in.)	2.884	2.850
Middle Diameter (in.)	2.878	2.850
Bottom Diameter (in.)	2.873	2.847
Average Length (in)	3.63	3.67
Average Area (in^2)	6.51	6.37
Sample Volume(cc.)	387.31	383.18
Unit Wet Wt.(gms/cc)	1.97	1.99
Unit Wet Wt.(pcf.)	122.6	124.1
Unit Dry Wt.(pcf.)	96.8	97.9
Unit Dry Wt.(gms/cc)	1.55	1.57
Void Ratio,e	0.74	0.72
Porosity, n	0.43	0.42
Pore Volume(cm^3)	164.7	160.6

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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	8-29-97
Project No.	97178-03				
Boring No.	NA				
Depth(ft.)	15.5-15.8				
Sample No.	SM027-TB05-1416				
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	9.32
Sample Diameter (cm.)	7.24
Sample Area (cm.^2), A	41.13
Inflow Burette Area, (cm.^2), a-in	4.50
Outflow Burette Area, (cm.^2), a-out	4.37
B Parameter	99%

AVERAGE PERMEABILITY = 4.0E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.0E-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	21	5	0.0	0.0	0.0	197.0	0	23.0	NA
08-19-97	7	15	10.2	1.5	1.9	196.2	0	23.0	5.1E-08
08-19-97	19	15	22.2	3.5	3.9	195.4	0	22.5	5.0E-08
08-20-97	7	5	34.0	5.0	4.9	194.8	0	23.0	3.1E-08
08-20-97	20	40	47.6	7.0	6.8	193.9	0	22.5	4.4E-08
08-21-97	7	25	58.3	8.5	8.3	193.2	0	23.0	4.2E-08
08-21-97	18	45	69.7	10.0	9.7	192.6	0	22.3	4.0E-08
08-22-97	7	50	82.8	11.5	11.2	191.9	0	22.5	3.5E-08

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SHELBY TUBE UNIT WEIGHT

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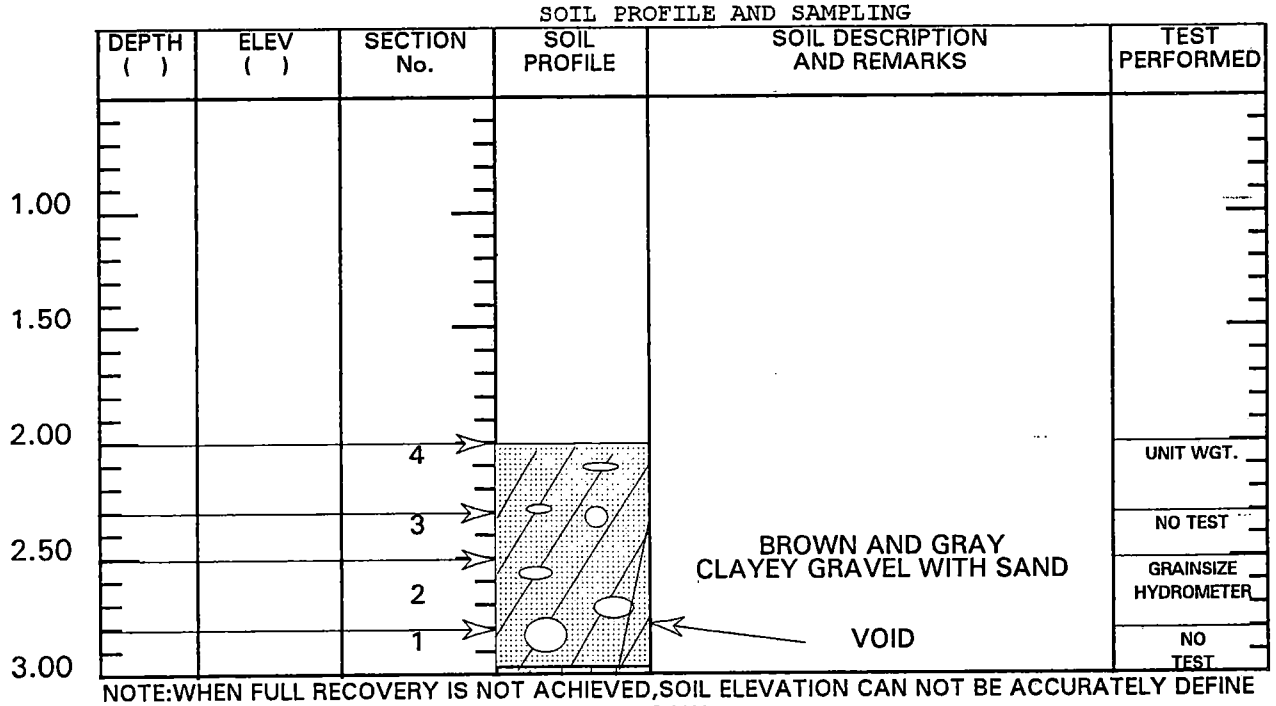
Client	ICF KAISER	Tested By	BL 8-13-97
Client Project	BAYER 51249	Checked By	JMO 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.25
Depth Pushed	1.0-3.0		
Shelby Tube No.	SM028-TB01-0103		

SOIL PROFILE AND SAMPLING



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				1720	
Wt. Tare & WS(gm.)				238.90	
Wt. Tare & DS(gm.)				220.65	
Wt. Tare(gm.)				81.87	
Moisture Content(%)				13.2	

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1093.00
Wt. Of Tube(gms.)	270.76
Wt. Of WS.(gms.)	822.24
Length 1 (in.)	6.669
Length 2 (in.)	6.659
Length 3 (in.)	6.654
Top Diameter (in.)	2.857
Middle Diameter (in.)	2.885
Bottom Diameter (in.)	2.869
Sample Volume (cc)	706.27
Moisture Content(%)	13.15
Unit Wet Wt.(gms/cc)	1.16
Unit Wet Wt.(pcf.)	72.6
Unit Dry Wt.(pcf.)	64.2
Unit Dry Wt.(gms/cc)	1.03

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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.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	**BROWN GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1314	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	689.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	644.00	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	100.57	Weight of Tare (gm)	NA
Weight of Water (gm)	45.30	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	543.43	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**8.3**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	543.43
Dry Weight - 3/4" Sample (gm)	316.49	Weight of minus #200 material (gm)	118.93
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	424.50
Dry Weight + 3/4" Sample (gm)	108.01		
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	78.31	14.41	14.41	85.59	**85.59**
3/4"	19.0	29.70	5.47	19.88	80.12	**80.12**
1/2"	12.5	41.71	7.68	27.55	72.45	**72.45**
3/8"	9.50	28.92	5.32	32.87	67.13	**67.13**
#4	4.75	73.87	13.59	46.47	53.53	**53.53**
#10	2.00	78.49	14.44	60.91	39.09	**39.09**
#20	0.85	42.23	7.77	68.68	31.32	**31.32**
#40	0.425	19.27	3.55	72.23	27.77	**27.77**
#60	0.250	11.59	2.13	74.36	25.64	**25.64**
#140	0.106	14.93	2.75	77.11	22.89	**22.89**
#200	0.075	5.48	1.01	78.11	21.89	**21.89**
Pan	-	118.93	21.89	100.00	-	-

Tested By BL Date 8/13/97 Checked By JHO Date 8/22/97

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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.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	**BROWN GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	35.0	36.5	24.4	30.9	79.4	0.0290	**17.4**
5		32.0	24.4	26.4	67.8	0.0190	**14.8**
15		26.0	24.4	20.4	52.4	0.0114	**11.5**
30		23.0	24.4	17.4	44.7	0.0082	**9.8**
77		19.0	23	13.4	34.4	0.0053	**7.5**
281		16.0	22.3	10.4	26.7	0.0028	**5.8**
1440		11.0	23.7	5.4	13.9	0.0013	**3.0**

Soil Specimen Data		Corrections	
Tare No.	724	K - Factor	0.01276
Tare + Dry Material (gm)	152.45	a - Factor	0.99
Weight of Tare (gm)	108.92	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	21.89
Weight of Dry Material (gm)	38.53		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JHO Date 8/22/97

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

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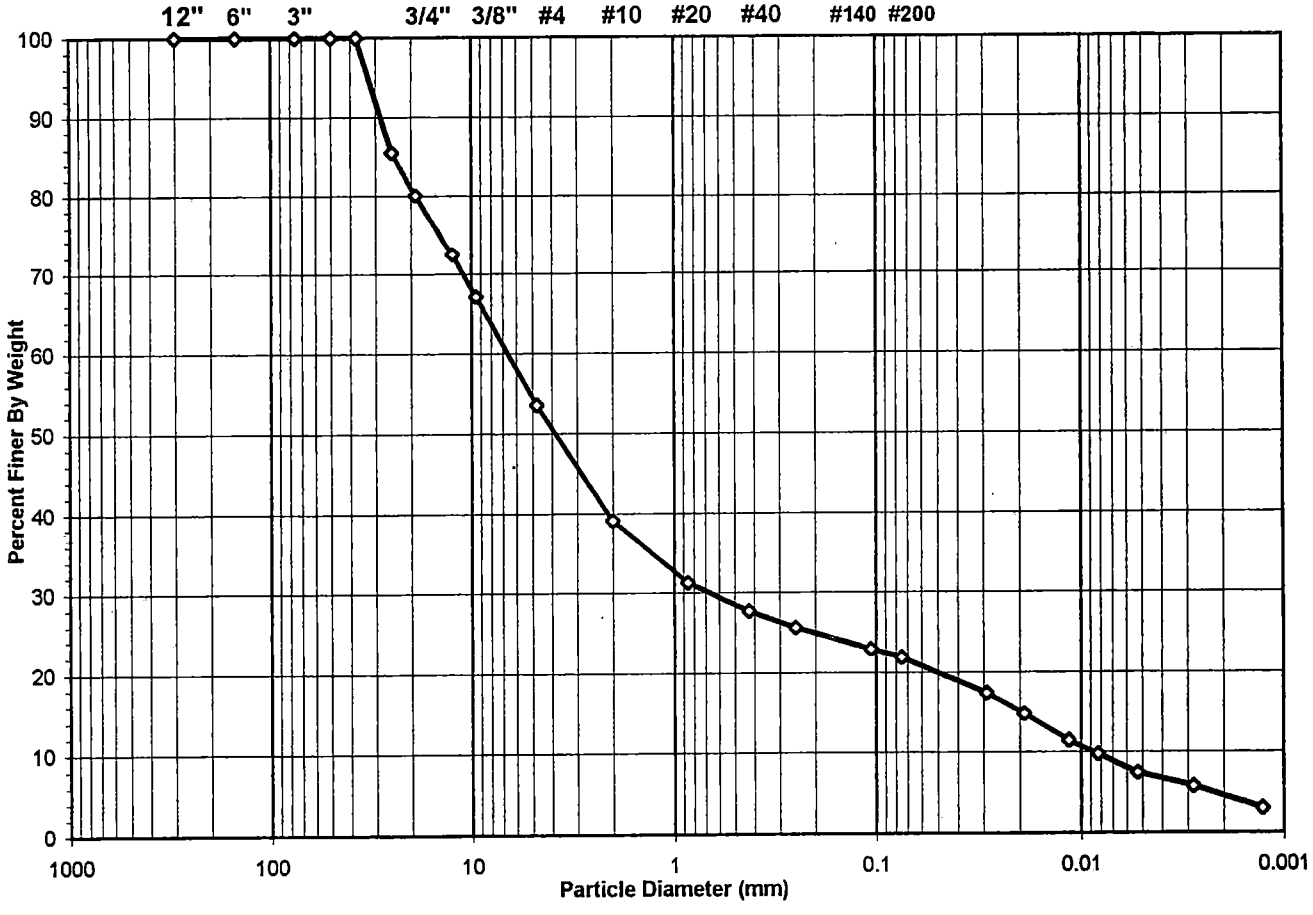
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	**BROWN GRAY**

	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*	60.91	**0.00**
2	39.09	*Sand*	19.13	**48.93**
0.075	21.89	*Silt*	15.33	**39.23**
0.05	19.96	*Clay*	4.63	**11.84**
0.002	4.63			

USDA Classification ***LOAM***

USCS Symbol ***gc, ASSUMED***

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

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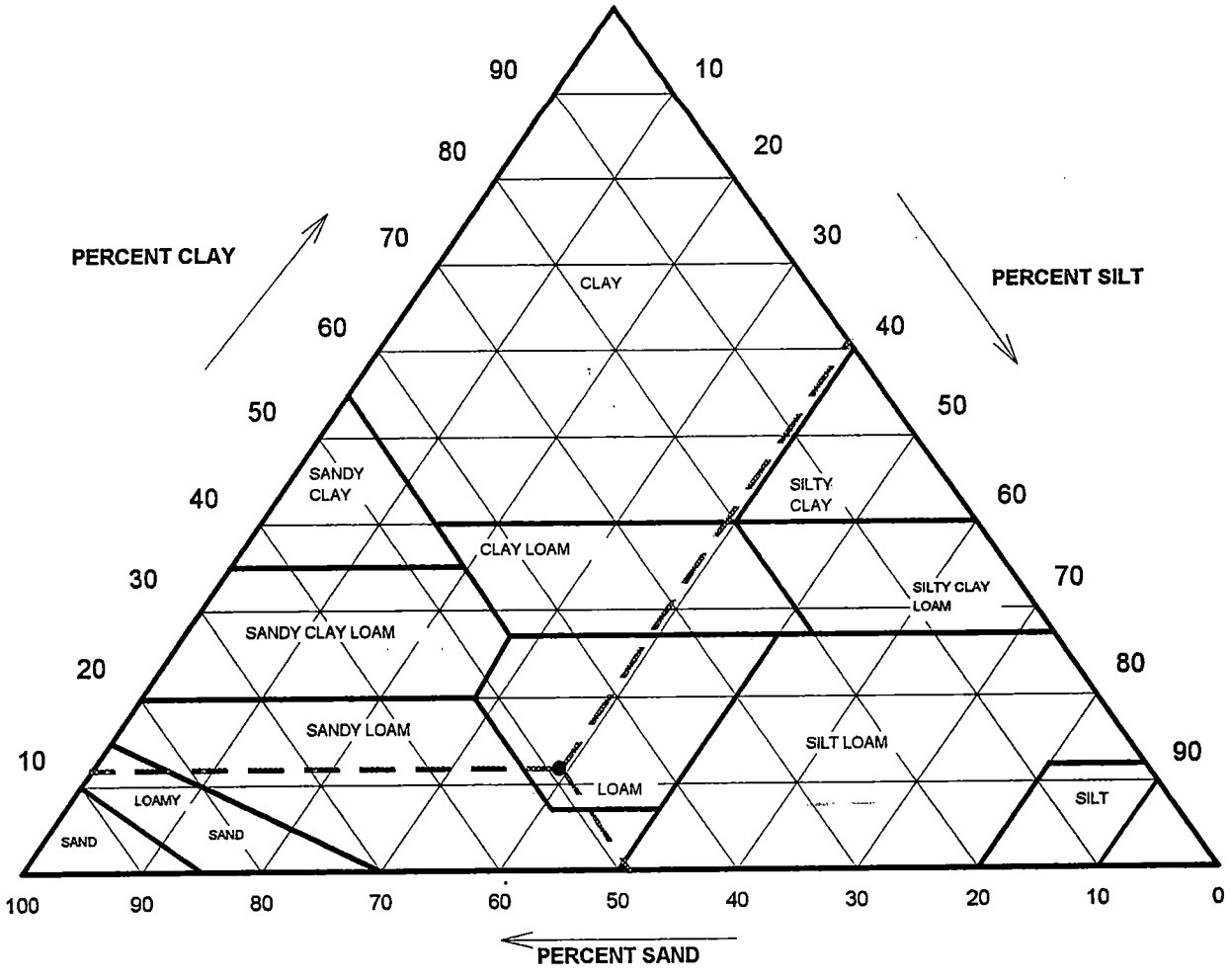
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	BROWN GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	48.93
Silt	39.23
Clay	11.84
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-13-97
Client Project	BAYER 51249	Checked By	JMO 8/28/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.20
Depth Pushed	4.0-6.0		
Shelby Tube No.	SM028-TB02-0406		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
4.00					
4.50					
5.00					
5.50		2		GRAYISH BROWN SANDY LEAN CLAY	UNIT WGT. WC. GRAINSIZE HYDROMETER
6.00		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		728			
Wt. Tare & WS(gm.)		189.93			
Wt. Tare & DS(gm.)		174.07			
Wt. Tare(gm.)		86.66			
Moisture Content(%)		18.1			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1069.90
Wt. Of Tube(gms.)	271.32
Wt. Of WS.(gms.)	798.58
Length 1 (in.)	3.712
Length 2 (in.)	3.713
Length 3 (in.)	3.692
Top Diameter (in.)	2.888
Middle Diameter (in.)	2.872
Bottom Diameter (in.)	2.879
Sample Volume (cc)	395.50
Moisture Content(%)	18.14
Unit Wet Wt.(gms/cc)	2.02
Unit Wet Wt.(pcf.)	126.0
Unit Dry Wt.(pcf.)	106.6
Unit Dry Wt.(gms/cc)	1.71

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)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	**GRAYISH BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	841	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	702.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	602.80	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	92.79	Weight of Tare (gm)	NA
Weight of Water (gm)	99.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	510.01	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)	510.01
Dry Weight - 3/4" Sample (gm)	203.48	Weight of minus #200 material (gm)	306.53
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	203.48
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	7.76	1.52	1.52	98.48	**98.48**
#4	4.75	23.12	4.53	6.05	93.95	**93.95**
#10	2.00	33.26	6.52	12.58	87.42	**87.42**
#20	0.85	27.83	5.46	18.03	81.97	**81.97**
#40	0.425	23.41	4.59	22.62	77.38	**77.38**
#60	0.250	27.44	5.38	28.00	72.00	**72.00**
#140	0.106	44.51	8.73	36.73	63.27	**63.27**
#200	0.075	16.15	3.17	39.90	60.10	**60.10**
Pan	-	306.53	60.10	100.00	-	-

Tested By BL Date 8/13/97 Checked By JMO Date 8/22/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	**GRAYISH BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	35.0	36.0	24.4	30.4	81.9	0.0291	**49.2**
5		33.0	24.4	27.4	73.8	0.0188	**44.4**
15		29.5	24.4	23.9	64.4	0.0112	**38.7**
30		27.5	24.4	21.9	59.0	0.0080	**35.5**
74		25.0	23	19.4	52.3	0.0052	**31.4**
278		21.0	22.3	15.4	41.5	0.0027	**24.9**
1440		16.0	23.7	10.4	28.0	0.0012	**16.8**

Soil Specimen Data		Corrections	
Tare No.	1640	K - Factor	0.01276
Tare + Dry Material (gm)	143.03	a - Factor	0.99
Weight of Tare (gm)	101.28	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	60.10
Weight of Dry Material (gm)	36.75		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMD Date 8/22/97

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

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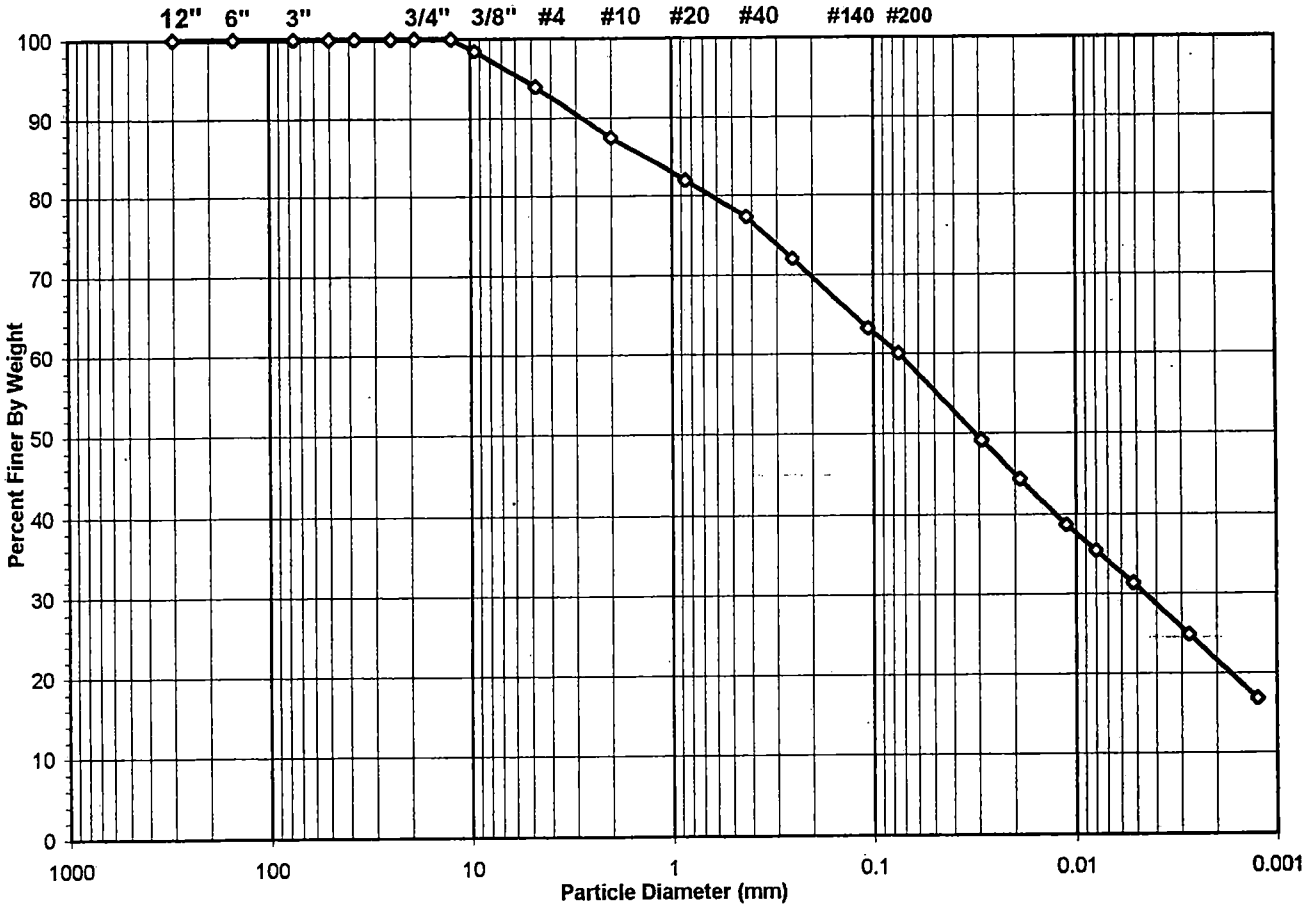
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	**GRAYISH BROWN**

	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*	12.58	**0.00**
2	87.42	*Sand*	31.98	**36.58**
0.075	60.10	*Silt*	33.75	**38.60**
0.05	55.44	*Clay*	21.70	**24.82**
0.002	21.70			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY***

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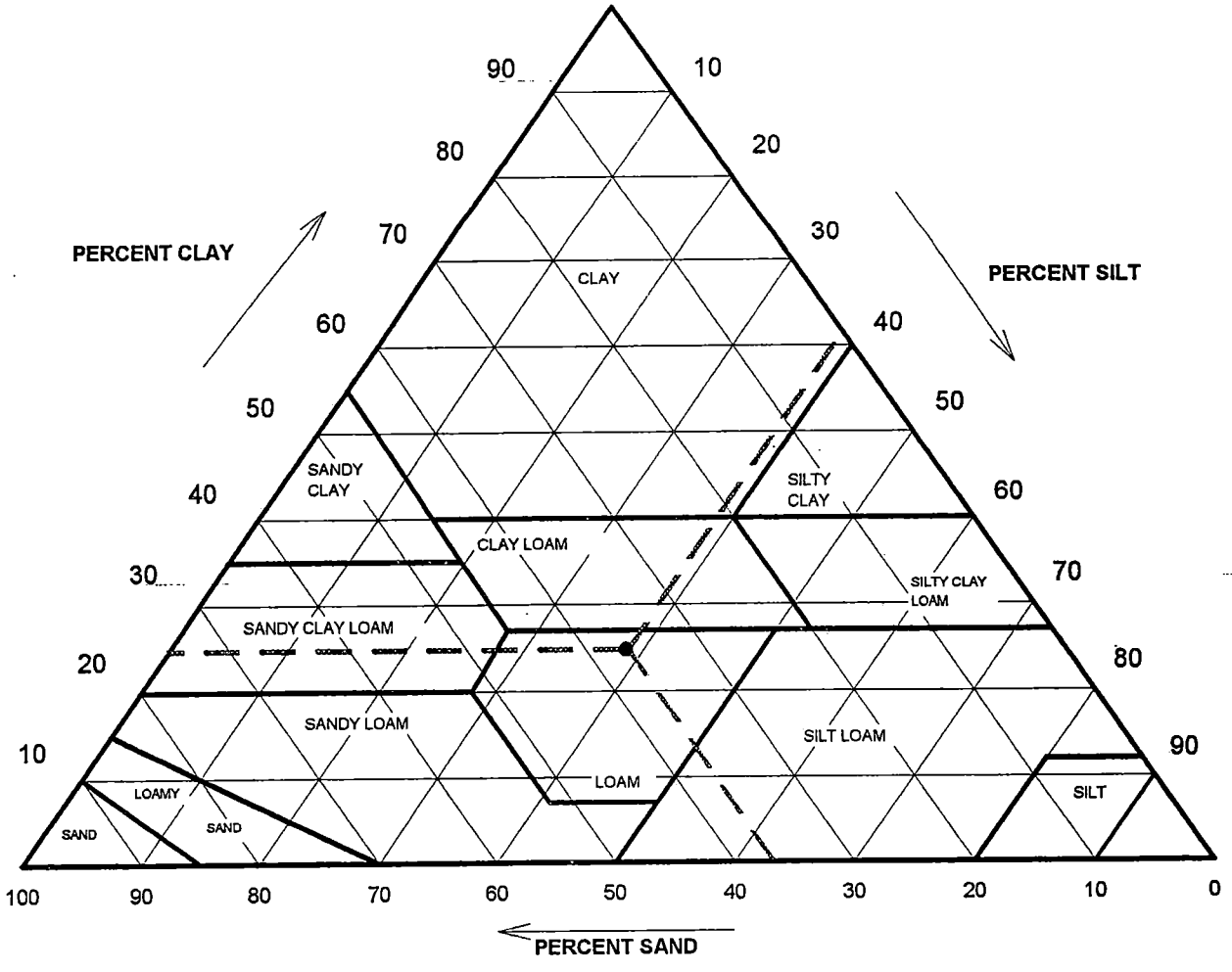
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	GRAYISH BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	36.58
Silt	38.60
Clay	24.82
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-13-97
Client Project	BAYER 51249	Checked By	JMO 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	0.70
Depth Pushed	2.0-4.0		
Shelby Tube No.	SM029-TB01-0204		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
2.00					
2.50					
3.00					
3.50		2		BROWN POORLY GRADED GRAVEL WITH SILT AND SAND	UNIT WGT. WC. GRAIN SIZE HYDROMETER NO TEST
		1			
4.00					

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		1631			
Wt. Tare & WS(gm.)		758.30			
Wt. Tare & DS(gm.)		685.50			
Wt. Tare(gm.)		96.72			
Moisture Content(%)		12.4			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	970.00
Wt. Of Tube(gms.)	307.10
Wt. Of WS.(gms.)	662.90
Length 1 (in.)	3.695
Length 2 (in.)	3.708
Length 3 (in.)	3.684
Top Diameter (in.)	2.885
Middle Diameter (in.)	2.851
Bottom Diameter (in.)	2.874
Sample Volume (cc)	391.78
Moisture Content(%)	12.36
Unit Wet Wt.(gms/cc)	1.69
Unit Wet Wt.(pcf.)	105.6
Unit Dry Wt.(pcf.)	94.0
Unit Dry Wt.(gms/cc)	1.51

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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)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1631	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	758.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	685.50	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	96.72	Weight of Tare (gm)	NA
Weight of Water (gm)	72.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	588.78	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**12.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	588.78
Dry Weight - 3/4" Sample (gm)	547.69	Weight of minus #200 material (gm)	31.44
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	557.34
Dry Weight + 3/4" Sample (gm)	9.65		
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	9.65	1.64	1.64	98.36	**98.36**
1/2"	12.5	95.01	16.14	17.78	82.22	**82.22**
3/8"	9.50	110.30	18.73	36.51	63.49	**63.49**
#4	4.75	137.35	23.33	59.84	40.16	**40.16**
#10	2.00	93.17	15.82	75.66	24.34	**24.34**
#20	0.85	46.11	7.83	83.49	16.51	**16.51**
#40	0.425	23.48	3.99	87.48	12.52	**12.52**
#60	0.250	15.20	2.58	90.06	9.94	**9.94**
#140	0.106	21.37	3.63	93.69	6.31	**6.31**
#200	0.075	5.70	0.97	94.66	5.34	**5.34**
Pan	-	31.44	5.34	100.00	-	-

Tested By BL Date 8/13/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	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	18.5	19.0	24.7	13.5	87.0	0.0327	**4.6**
5		17.0	24.7	11.5	74.1	0.0209	**4.0**
15		14.0	24.7	8.5	54.9	0.0123	**2.9**
30		13.0	24.7	7.5	48.4	0.0087	**2.6**
60		11.0	23.8	5.5	35.6	0.0063	**1.9**
250		9.0	23.1	3.5	22.8	0.0031	**1.2**
1440		9.0	24	3.5	22.8	0.0013	**1.2**

Soil Specimen Data		**Corrections**	
Tare No.	1341	K - Factor	0.01272
Tare + Dry Material (gm)	120.08	a - Factor	0.99
Weight of Tare (gm)	99.66	Composite Correction	5.45
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	5.34
Weight of Dry Material (gm)	15.42		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/19/97 Checked By JMO Date 8/27/97

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

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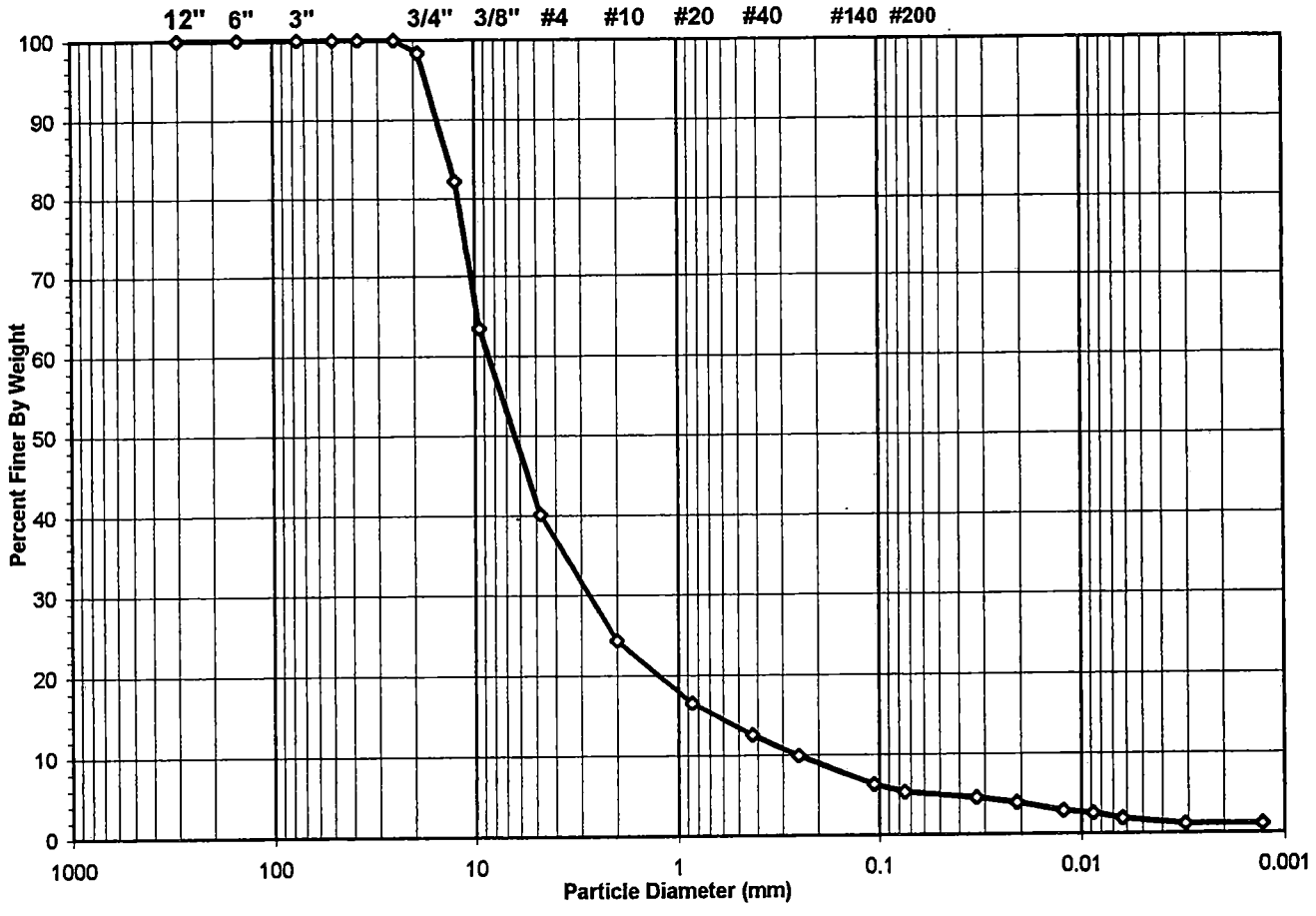
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	Soil Color	BROWN

	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*	75.66	**0.00**
2	24.34	*Sand*	19.34	**79.45**
0.075	5.34	*Silt*	3.78	**15.55**
0.05	5.00	*Clay*	1.22	**5.00**
0.002	1.22			

USDA Classification	***LOAMY SAND***	**D60 =**	**8.564**			
USCS Symbol	***gp-gm, ASSUMED***	**D30 =**	**2.725**	**CC =**	**3.43**	
USCS Classification	***POORLY GRADED GRAVEL WITH SILT AND SAND***	**D10 =**	**0.253**	**CU =**	**33.82**	

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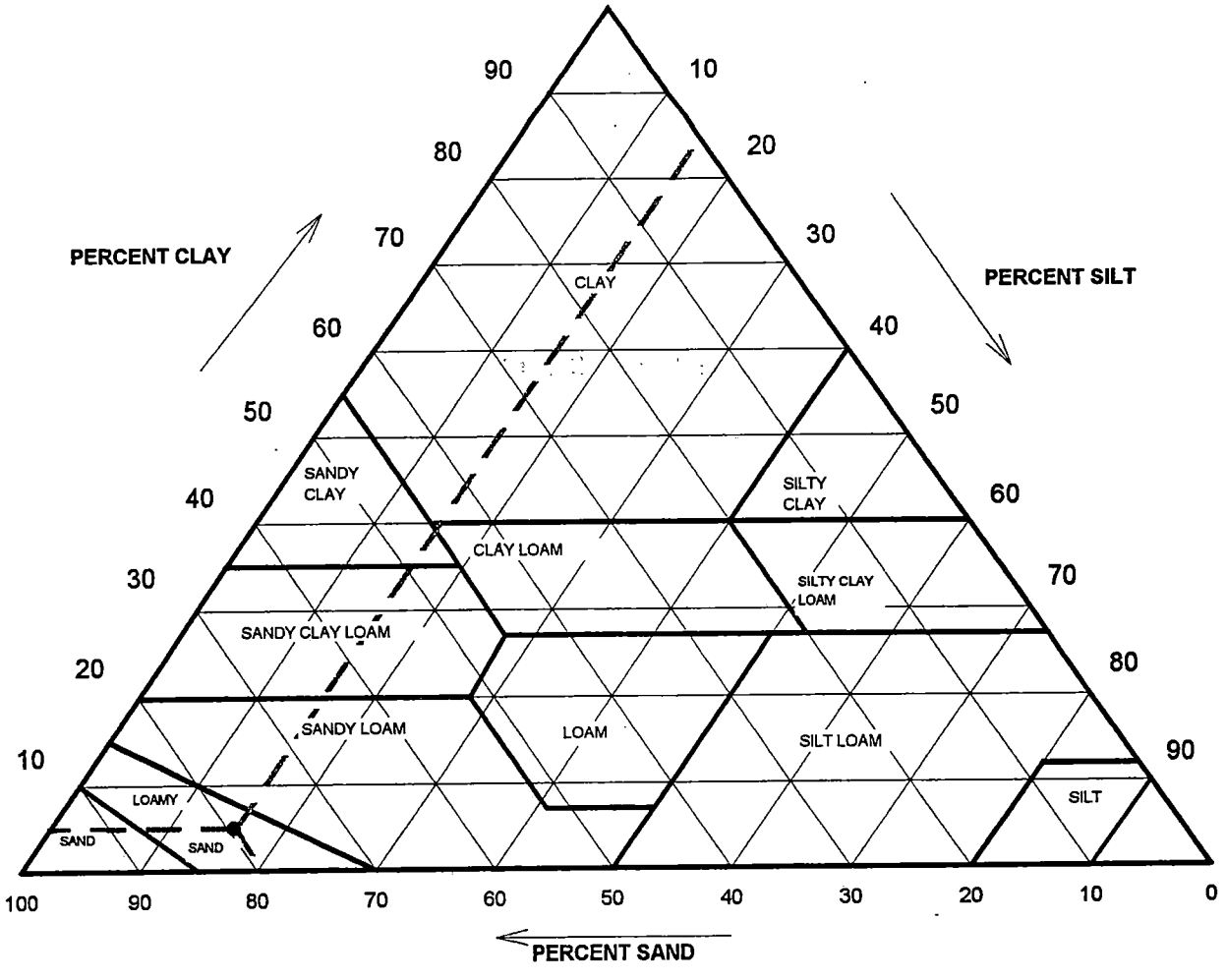
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	79.45
Silt	15.55
Clay	5.00
USDA Classification	***LOAMY SAND***

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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)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1089	Tare No.	1720
Wgt.Tare + Wet Specimen (gm)	1279.50	Wgt.Tare + Wet Specimen (gm)	270.72
Wgt.Tare + Dry Specimen (gm)	1151.30	Wgt.Tare + Dry Specimen (gm)	267.20
Weight of Tare (gm)	105.78	Weight of Tare (gm)	81.87
Weight of Water (gm)	128.20	Weight of Water (gm)	3.52
Weight of Dry Soil (gm)	1045.52	Weight of Dry Soil (gm)	185.33
Moisture Content (%)	**12.3**	**Moisture Content (%)**	**1.9**

Wet Weight -3/4" Sample (gm)	4614	Weight of the Dry Specimen (gm)	1045.52
Dry Weight - 3/4" Sample (gm)	4110.0	Weight of minus #200 material (gm)	606.33
Wet Weight +3/4" Sample (gm)	188.98	Weight of plus #200 material (gm)	439.19
Dry Weight + 3/4" Sample (gm)	185.46		
Total Dry Weight Sample (gm)	4295.5	**J - Factor (Percent Finer than 3/4")**	**0.9560**

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	122.63		2.85	2.85	97.15	**97.15**
3/4"	19	66.35		1.54	4.40	95.60	**95.60**
1/2"	12.5	93.68		8.96	8.96	91.04	**87.03**
3/8"	9.5	30.13		2.88	11.84	88.16	**84.28**
#4	4.75	81.41		7.79	19.63	80.37	**76.84**
#10	2	73.78		7.06	26.69	73.31	**70.09**
#20	0.85	46.21	(**)	4.42	31.11	68.89	**65.86**
#40	0.425	26.43		2.53	33.63	66.37	**63.45**
#60	0.25	20.97		2.01	35.64	64.36	**61.53**
#140	0.106	47.89		4.58	40.22	59.78	**57.15**
#200	0.075	18.69		1.79	42.01	57.99	**55.44**
Pan	-	606.33		57.99	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 JP Date 9/5/97 Checked By JCM Date 9-8-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	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	44.5	45.0	24.5	39.4	86.2	0.01275	0.0269	**47.8**
5		42.5	24.5	36.9	80.7	0.01275	0.0174	**44.7**
15		38.0	24.5	32.4	70.9	0.01275	0.0104	**39.3**
30		35.0	24.5	29.4	64.3	0.01275	0.0076	**35.7**
63		32.0	24.1	26.4	57.8	0.01281	0.0054	**32.0**
266		27.0	23.5	21.4	46.8	0.01290	0.0027	**26.0**
1440		22.0	23.4	16.4	35.9	0.01291	0.0012	**19.9**

Soil Specimen Data		Other Corrections	
Tare No.	1013		
Tare + Dry Material (gm)	153.16	a - Factor	0.99
Weight of Tare (gm)	102.83	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	55.44
Weight of Dry Material (gm)	45.33		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 9/6/97 Checked By JCM Date 9-8-97

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

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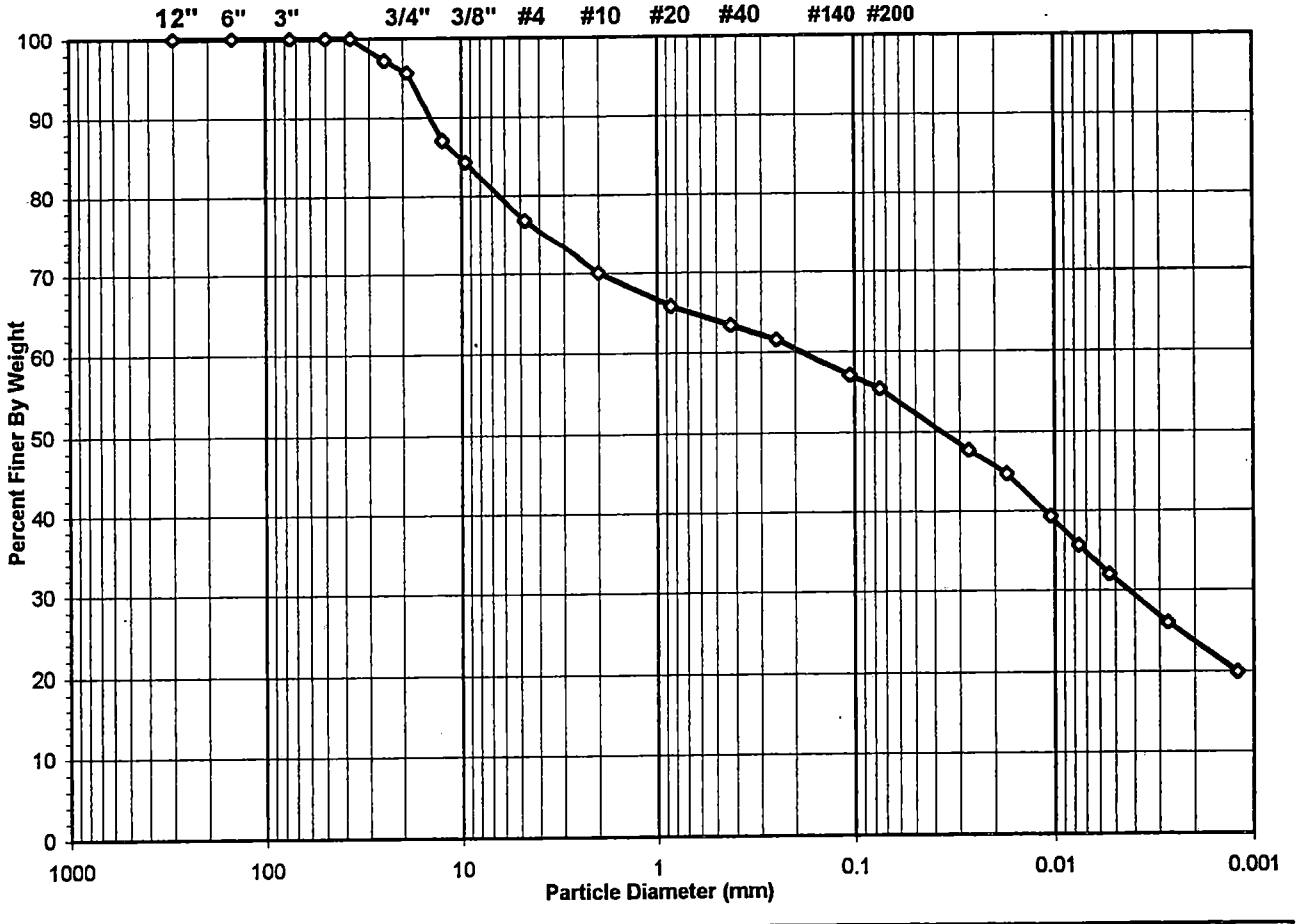
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	Soil Color	BROWN

	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*	29.91	**0.00**
2	70.09	*Sand*	17.69	**25.23**
0.075	55.44	*Silt*	28.74	**41.01**
0.05	52.40	*Clay*	23.66	**33.76**
0.002	23.66			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

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

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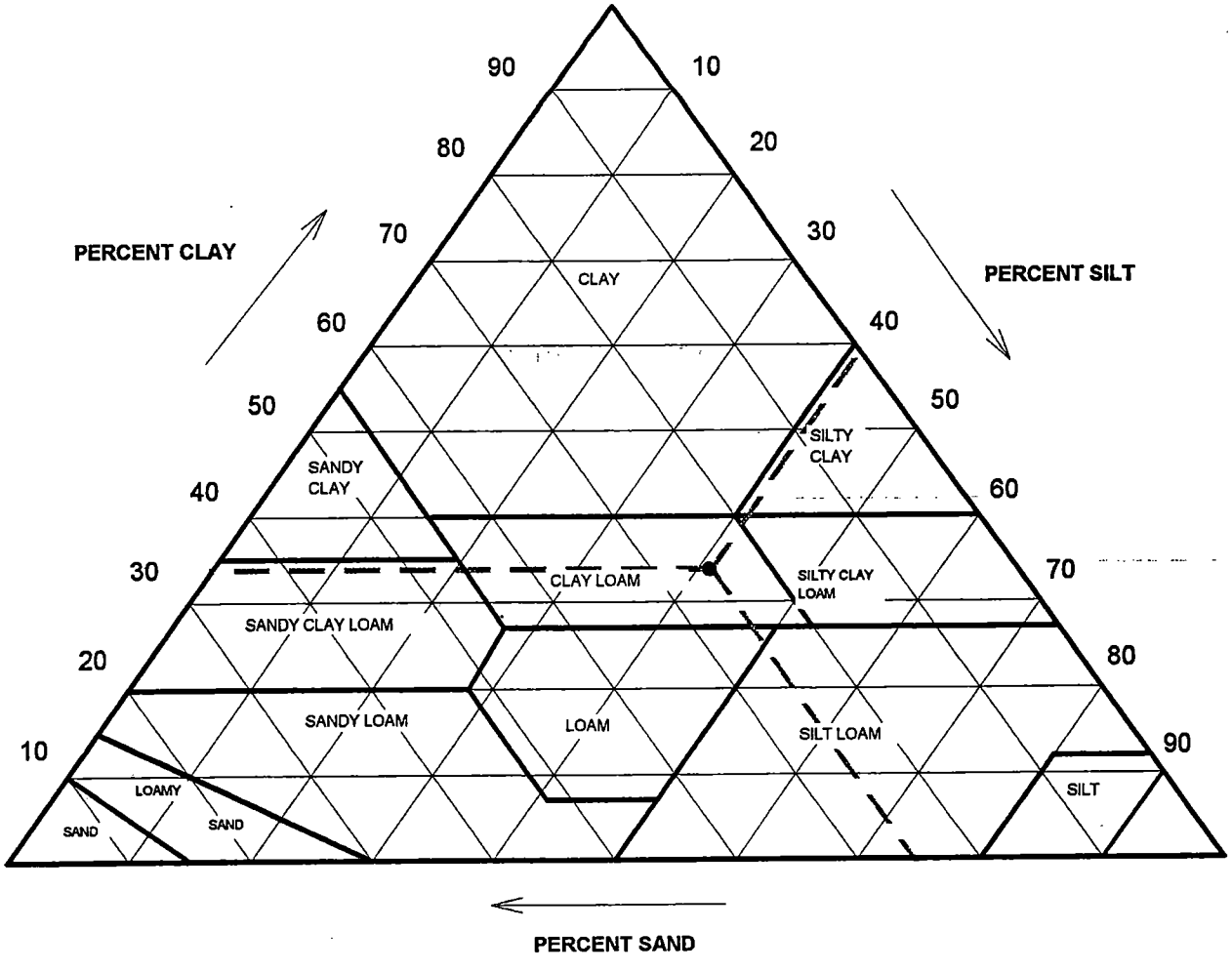
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	25.23
Silt	41.01
Clay	33.76
USDA Classification	***CLAY LOAM***

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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.	97178-02		
Boring No.	NA	Tube Recovery	0.80
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM029-TB02-0305		

SOIL PROFILE AND SAMPLING

	DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00						
3.50						
4.00					UNABLE TO GET DENSITY OR PERMEABILITY	
4.50					BROWN SANDY SILT	WC GRAIN SIZE HYDROMETER
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	1125				
Wt. Tare & WS(gm.)	504.50				
Wt. Tare & DS(gm.)	459.70				
Wt. Tare(gm.)	84.12				
Moisture Content(%)	11.9				

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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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1125	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	504.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	459.70	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	84.12	Weight of Tare (gm)	NA
Weight of Water (gm)	44.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	375.58	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**11.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	375.58
Dry Weight - 3/4" Sample (gm)	165.14	Weight of minus #200 material (gm)	210.44
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	165.14
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	1.90	0.51	0.51	99.49	**99.49**
3/8"	9.50	2.28	0.61	1.11	98.89	**98.89**
#4	4.75	4.62	1.23	2.34	97.66	**97.66**
#10	2.00	6.95	1.85	4.19	95.81	**95.81**
#20	0.85	3.95	1.05	5.25	94.75	**94.75**
#40	0.425	4.10	1.09	6.34	93.66	**93.66**
#60	0.250	12.03	3.20	9.54	90.46	**90.46**
#140	0.106	87.99	23.43	32.97	67.03	**67.03**
#200	0.075	41.32	11.00	43.97	56.03	**56.03**
Pan	-	210.44	56.03	100.00	-	-

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

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	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	29.0	29.0	24.2	23.3	68.6	0.0307	**38.4**
5		26.0	24.2	20.3	59.7	0.0198	**33.5**
15		23.0	24.2	17.3	50.9	0.0117	**28.5**
30		21.0	24.2	15.3	45.0	0.0084	**25.2**
60		19.5	23.5	13.8	40.6	0.0060	**22.8**
281		16.5	22.6	10.8	31.8	0.0028	**17.8**
1440		13.0	22.4	7.3	21.5	0.0013	**12.0**

Soil Specimen Data		Corrections	
Tare No.	4062	K - Factor	0.01279
Tare + Dry Material (gm)	144.68	a - Factor	0.99
Weight of Tare (gm)	106.04	Composite Correction	5.70
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	56.03
Weight of Dry Material (gm)	33.64		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/18/97 Checked By Jam Date 8-28-97

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

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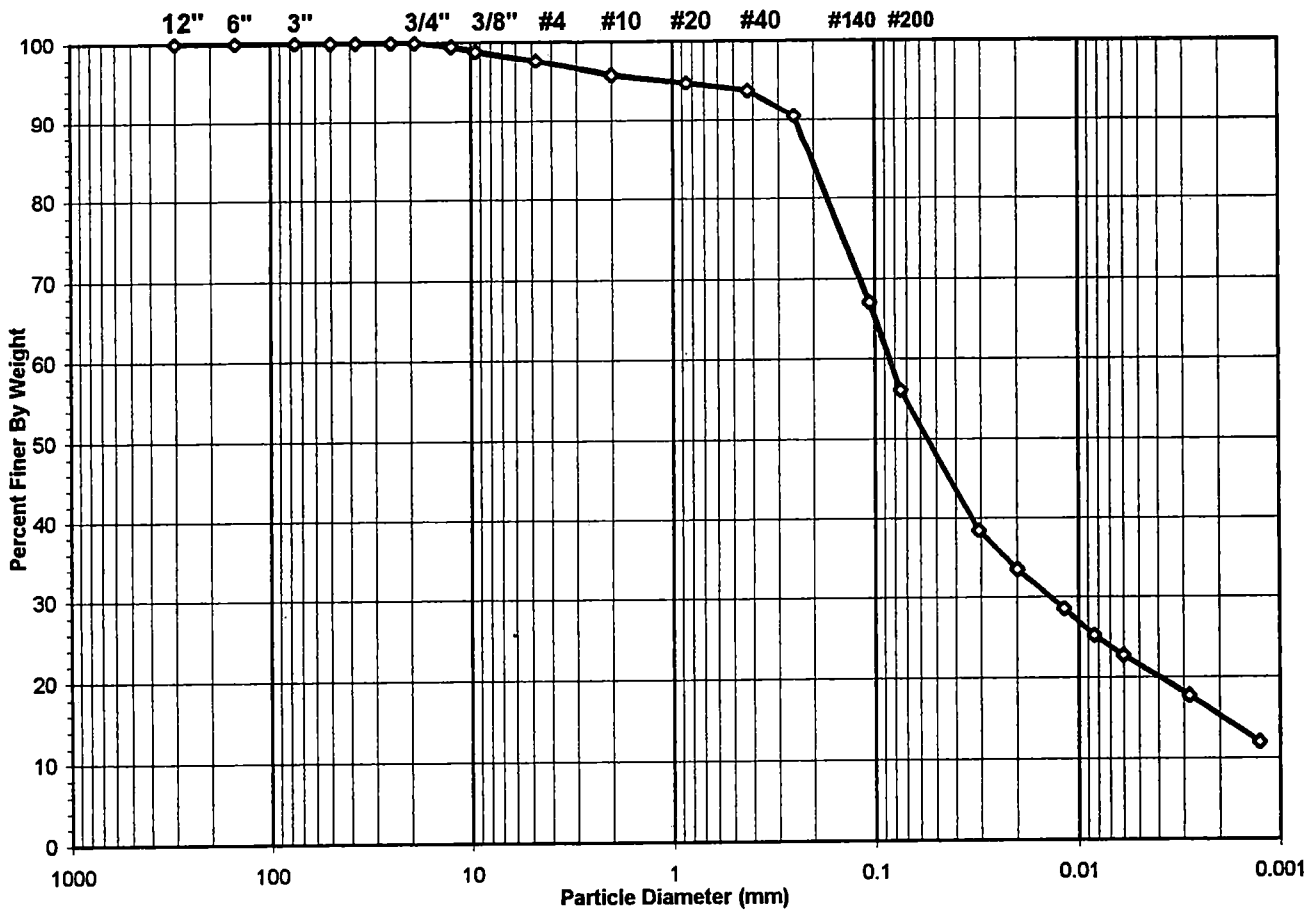
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	Soil Color	BROWN

	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*	4.19	**0.00**
2	95.81	*Sand*	47.78	**49.87**
0.075	56.03	*Silt*	32.69	**34.12**
0.05	48.03	*Clay*	15.34	**16.01**
0.002	15.34			

USDA Classification ***LOAM***

USCS Symbol ***ml, ASSUMED***

USCS Classification ***SANDY SILT***

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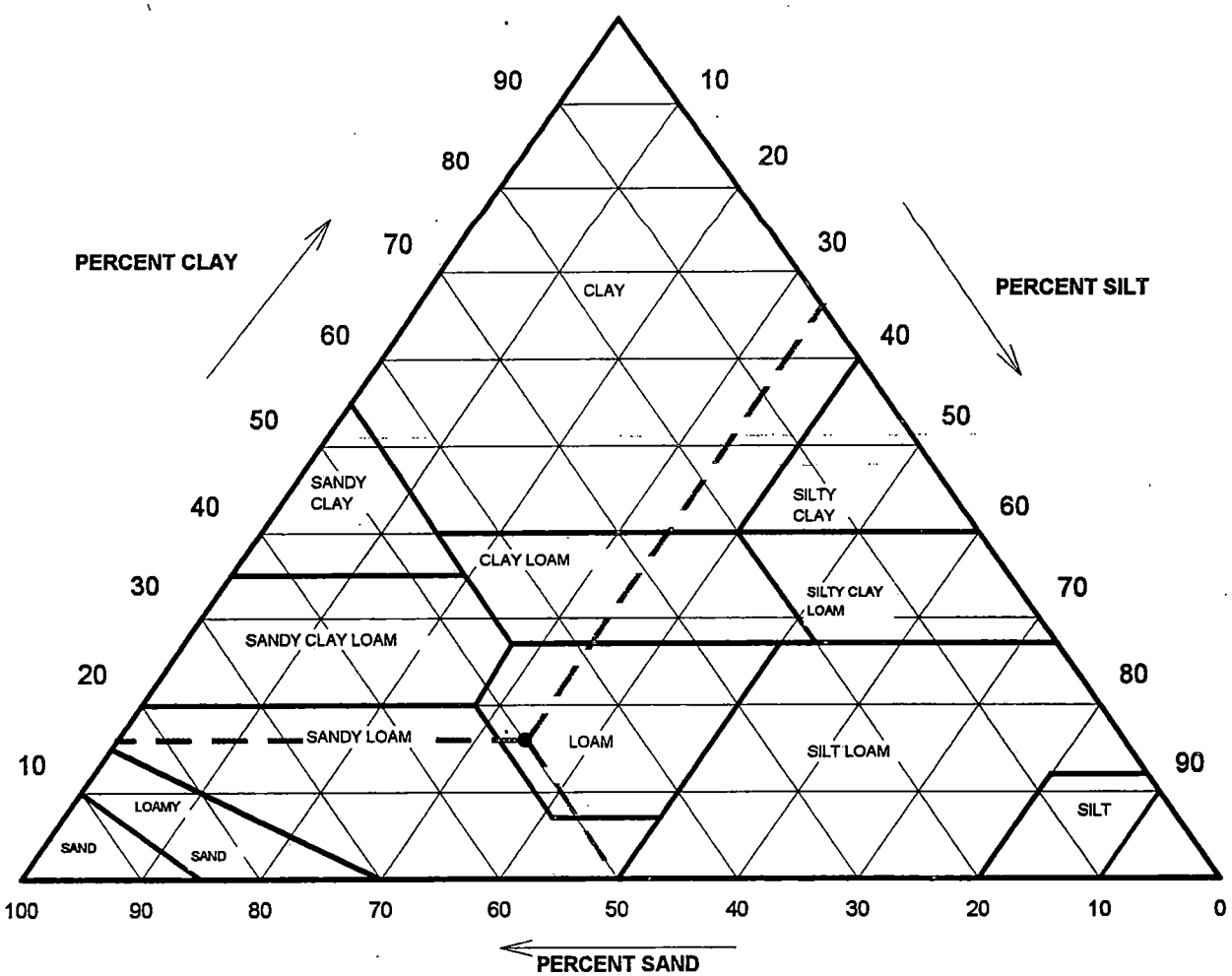
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	49.87
Silt	34.12
Clay	16.01
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 8-15-97
Client Project	BAYER 51249	Checked By	JMO 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	14.0-16.0		
Shelby Tube No.	SM029-TB02-1416		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
14.00					
14.50					
15.00					
		3			GRAIN SIZE HYDROMETER UNIT WGT. WC
15.50		2		BROWN CLAYEY SAND	PERMEABILITY
16.00		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	1806		1694		
Wt. Tare & WS(gm.)	264.97		565.80		
Wt. Tare & DS(gm.)	239.05		511.30		
Wt. Tare(gm.)	40.16		83.95		
Moisture Content(%)	13.0		12.8		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	961.80	1341.40
Wt. Of Tube(gms.)	279.09	377.46
Wt. Of WS.(gms.)	682.71	963.94
Length 1 (in.)	3.593	4.877
Length 2 (in.)	3.598	4.876
Length 3 (in.)	3.561	4.877
Top Diameter (in.)	2.847	2.859
Middle Diameter (in.)	2.877	2.869
Bottom Diameter (in.)	2.877	2.866
Sample Volume (cc)	379.15	515.07
Moisture Content(%)	13.03	12.75
Unit Wet Wt.(gms/cc)	1.80	1.87
Unit Wet Wt.(pcf.)	112.4	116.8
Unit Dry Wt.(pcf.)	99.4	103.6
Unit Dry Wt.(gms/cc)	1.59	1.66

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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)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1694	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	565.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	511.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.95	Weight of Tare (gm)	NA
Weight of Water (gm)	54.50	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	427.35	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**12.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	427.35
Dry Weight - 3/4" Sample (gm)	303.89	Weight of minus #200 material (gm)	123.46
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	303.89
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	0.04	0.01	0.01	99.99	**99.99**
#10	2.00	3.14	0.73	0.74	99.26	**99.26**
#20	0.85	4.74	1.11	1.85	98.15	**98.15**
#40	0.425	35.25	8.25	10.10	89.90	**89.90**
#60	0.250	156.00	36.50	46.61	53.39	**53.39**
#140	0.106	90.63	21.21	67.81	32.19	**32.19**
#200	0.075	14.09	3.30	71.11	28.89	**28.89**
Pan	-	123.46	28.89	100.00	-	-

Tested By JCM Date 8/15/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	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	24.0	25.0	24.2	19.3	71.1	0.0316	**20.5**
5		23.0	24.2	17.3	63.7	0.0202	**18.4**
15		20.0	24.2	14.3	52.7	0.0119	**15.2**
32		18.5	24.2	12.8	47.1	0.0082	**13.6**
60		17.5	23.5	11.8	43.5	0.0061	**12.6**
250		15.0	23.2	9.3	34.3	0.0030	**9.9**
1440		13.0	23.9	7.3	26.9	0.0013	**7.8**

Soil Specimen Data		Corrections	
Tare No.	891	K - Factor	0.01279
Tare + Dry Material (gm)	136.98	a - Factor	0.99
Weight of Tare (gm)	105.1	Composite Correction	5.70
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	28.89
Weight of Dry Material (gm)	26.88		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/16/97 Checked By JMO Date 8/27/97

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

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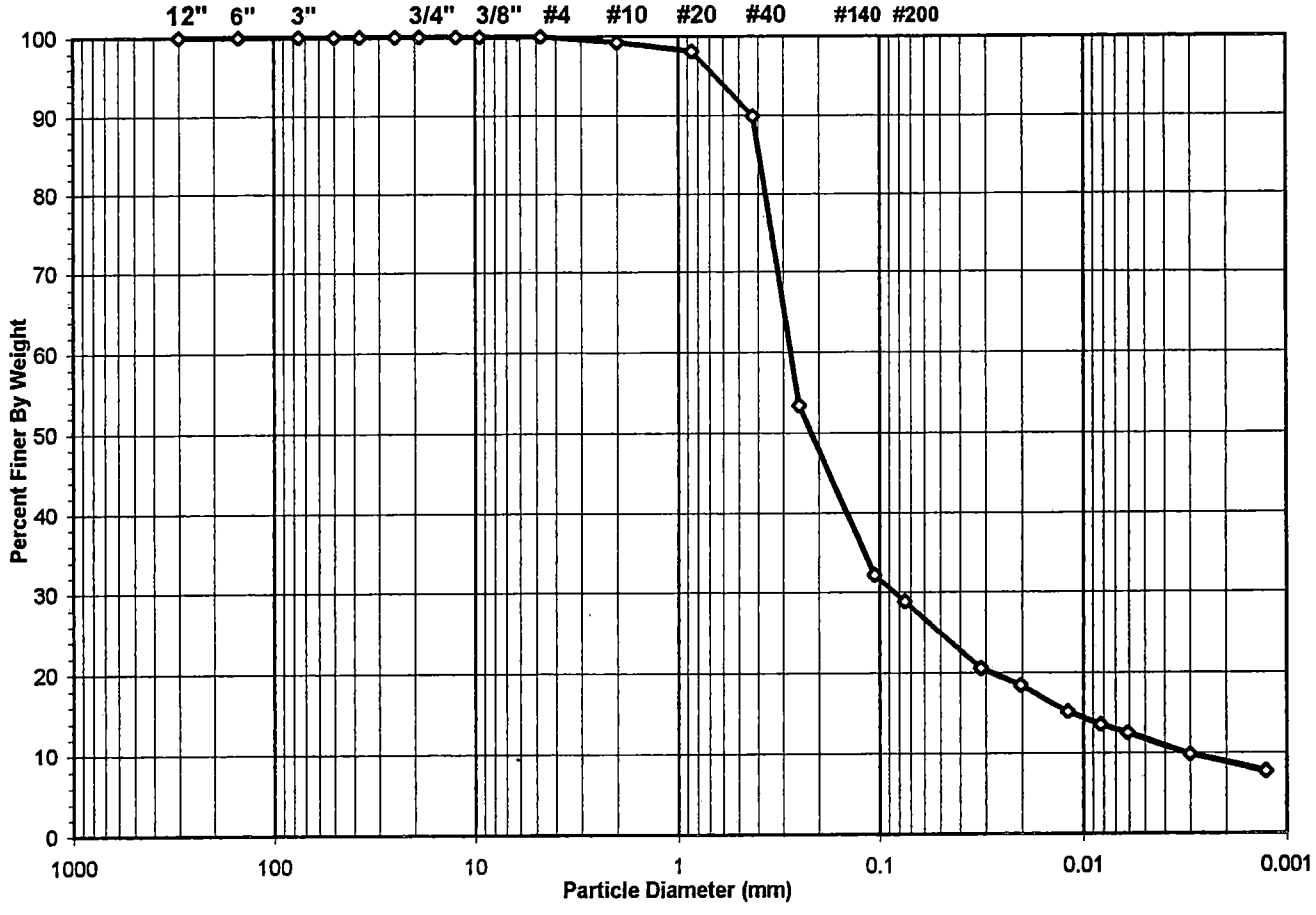
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	Soil Color	BROWN

	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*	0.74	**0.00**
2	99.26	*Sand*	74.28	**74.84**
0.075	28.89	*Silt*	16.08	**16.20**
0.05	24.97	*Clay*	8.89	**8.96**
0.002	8.89			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND***

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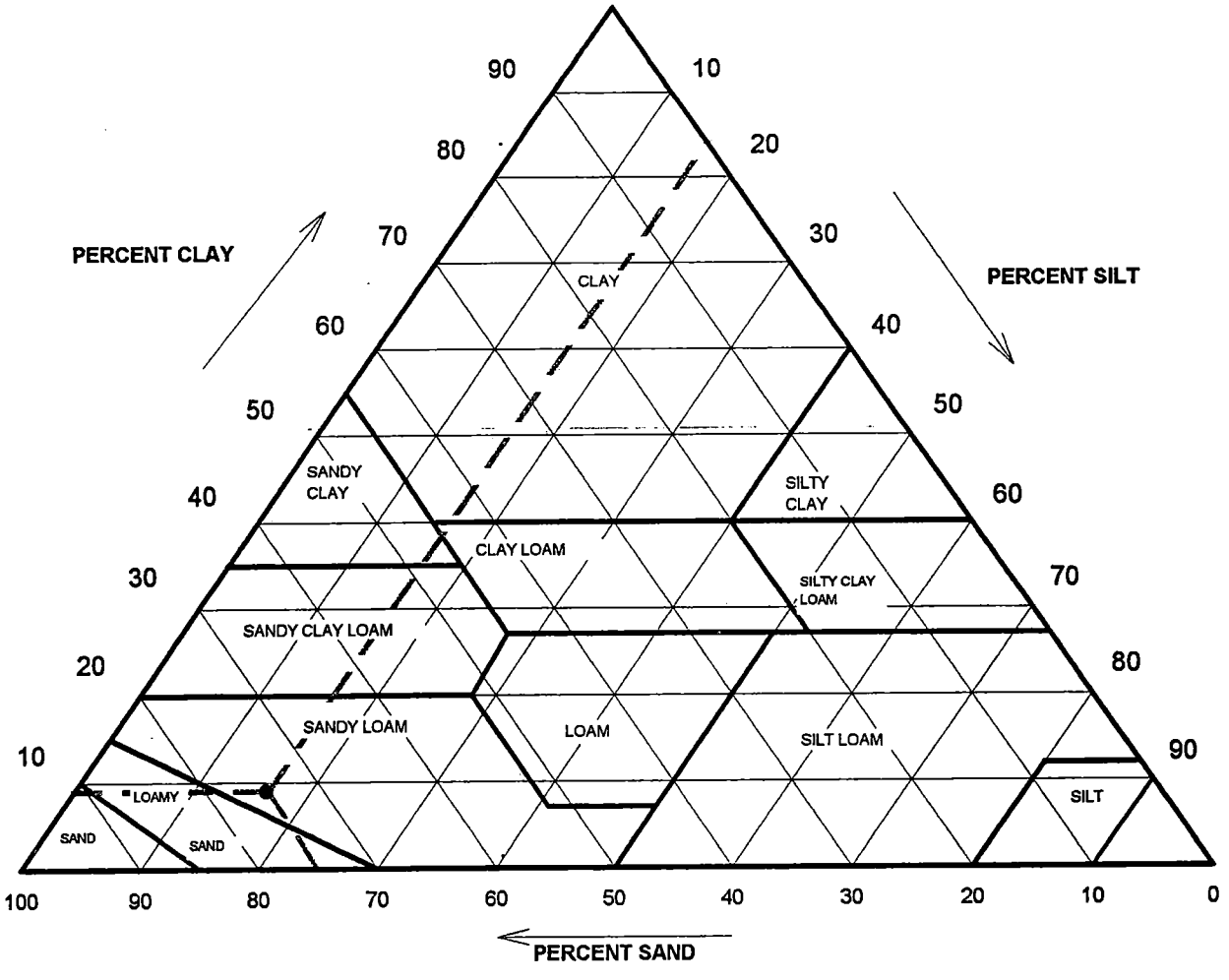
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	74.84
Silt	16.20
Clay	8.96
USDA Classification	***SANDY LOAM***

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PERMEABILITY TEST

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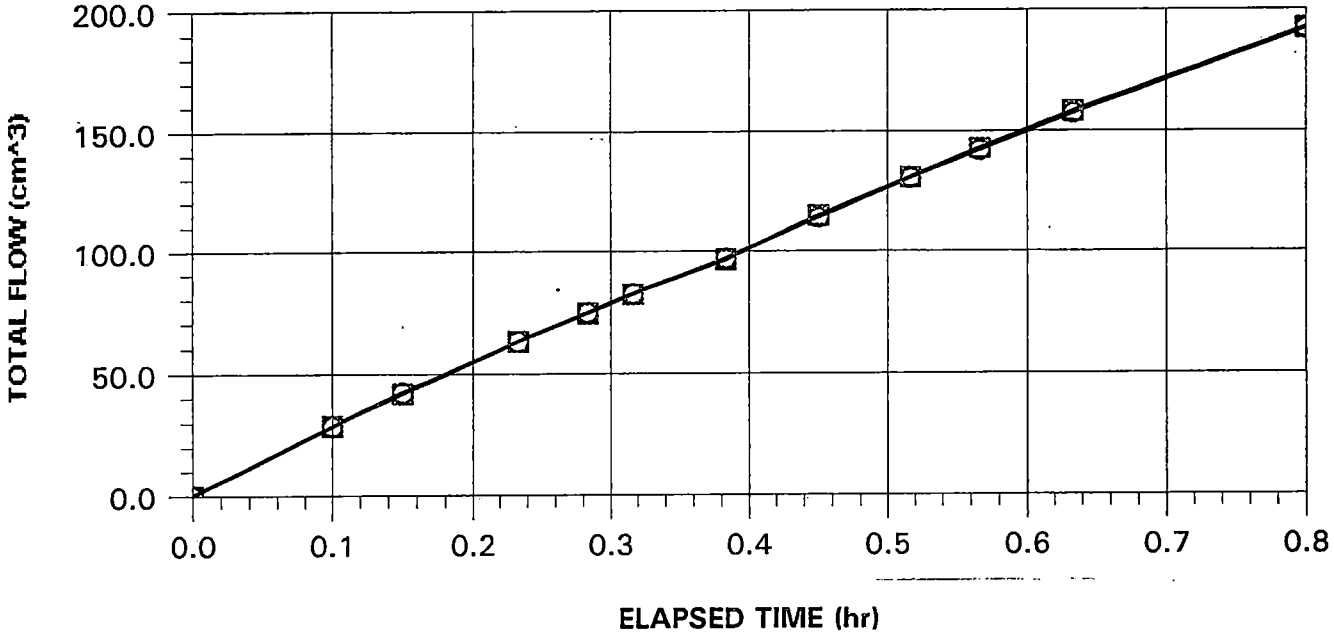
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	15.5-15.8
Project No.	97178-02	Sample No.	SM029-TB02-1416

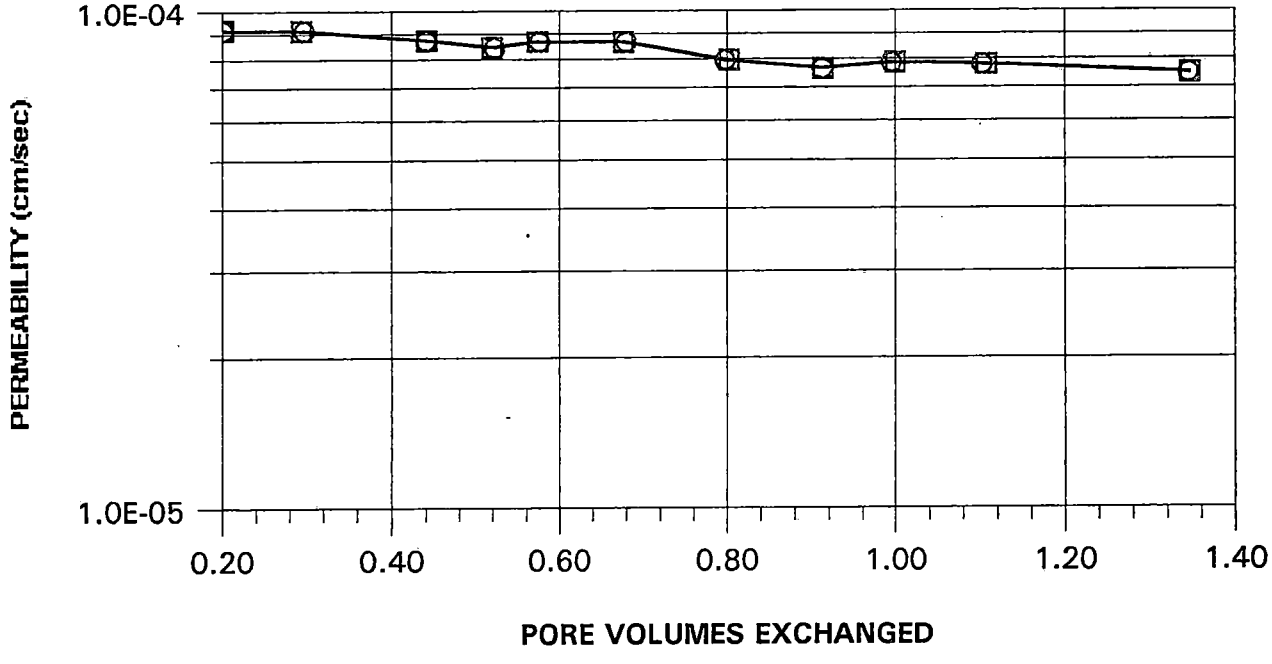
AVERAGE PERMEABILITY = 7.7E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.7E-07 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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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)	4.5-4.8
Project No.	97178-03	Sample No.	SM027-TB05-0305
Lab ID	97178-03.013	Soil Color	**GRAY & BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1613	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	711.40	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	585.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	99.23	Weight of Tare (gm)	NA
Weight of Water (gm)	125.50	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	486.67	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**25.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	486.67
Dry Weight - 3/4" Sample (gm)	122.17	Weight of minus #200 material (gm)	307.46
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	179.21
Dry Weight + 3/4" Sample (gm)	57.04		
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	37.18	7.64	7.64	92.36	**92.36**
3/4"	19.0	19.86	4.08	11.72	88.28	**88.28**
1/2"	12.5	12.20	2.51	14.23	85.77	**85.77**
3/8"	9.50	10.63	2.18	16.41	83.59	**83.59**
#4	4.75	11.54	2.37	18.78	81.22	**81.22**
#10	2.00	12.23	2.51	21.30	78.70	**78.70**
#20	0.85	8.54	1.75	23.05	76.95	**76.95**
#40	0.425	8.24	1.69	24.74	75.26	**75.26**
#60	0.250	16.36	3.36	28.11	71.89	**71.89**
#140	0.106	30.69	6.31	34.41	65.59	**65.59**
#200	0.075	11.74	2.41	36.82	63.18	**63.18**
Pan	-	307.46	63.18	100.00	-	-

Tested By BL Date 8/18/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-03	Sample No.	SM027-TB05-0305
Lab ID	97178-03.013	Soil Color	**GRAY & BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	38.5	39.5	23	33.2	85.5	0.0287	**54.0**
5		37.0	23	30.7	79.0	0.0186	**49.9**
15		33.5	23	27.2	70.0	0.0110	**44.2**
32		30.0	23	23.7	61.0	0.0077	**38.6**
60		27.5	22.2	21.2	54.6	0.0058	**34.5**
250		23.0	22.7	16.7	43.0	0.0029	**27.2**
1440		18.5	23.5	12.2	31.4	0.0012	**19.9**

Soil Specimen Data		**Corrections**	
Tare No.	681	K - Factor	0.01297
Tare + Dry Material (gm)	143.01	a - Factor	0.99
Weight of Tare (gm)	99.54	Composite Correction	6.29
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	63.18
Weight of Dry Material (gm)	38.47		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/20/97 Checked By JMO Date 8/27/97

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

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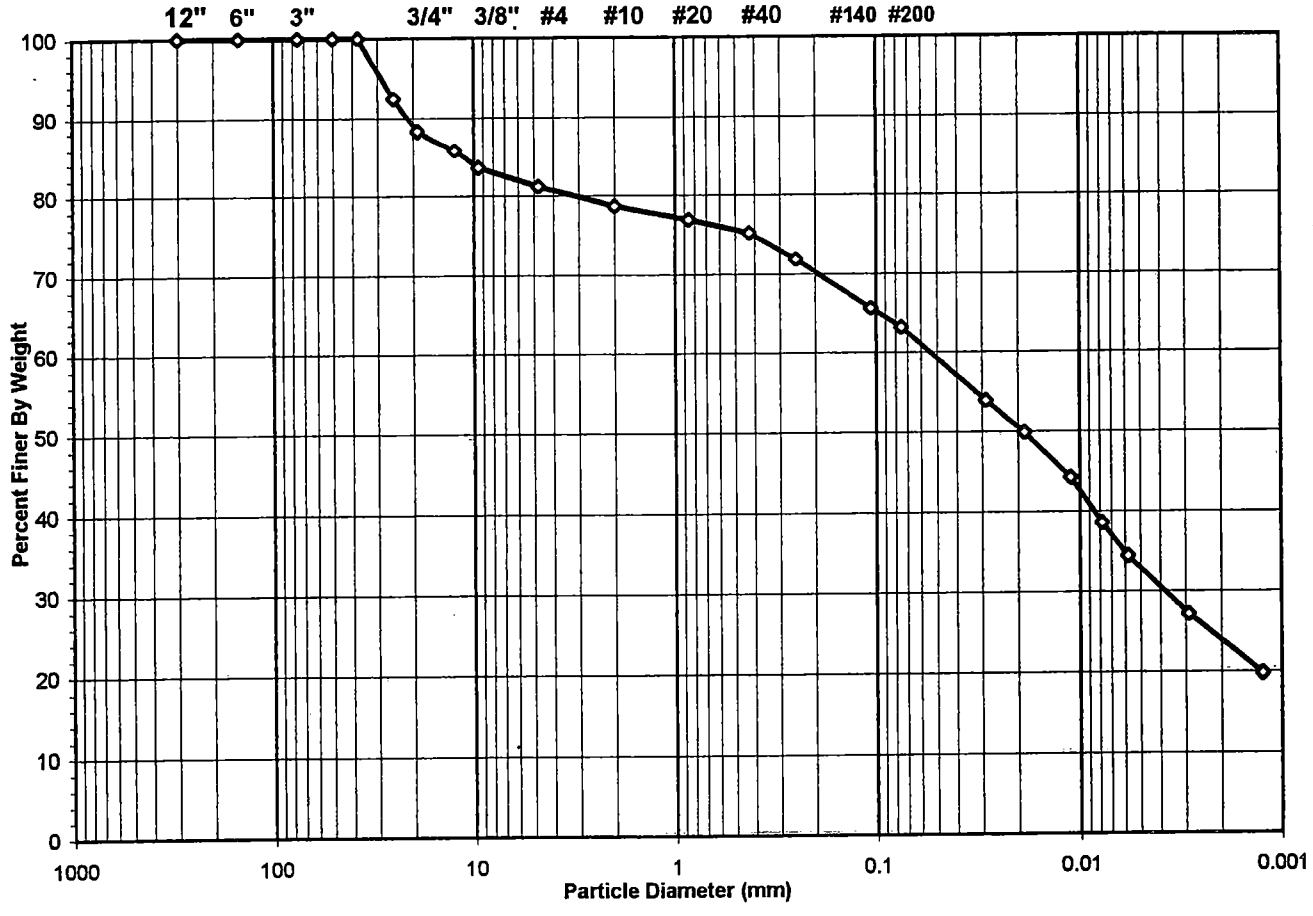
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-03	Sample No.	SM027-TB05-0305
Lab ID	97178-03.013	Soil Color	**GRAY & BROWN**

	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*	21.30	**0.00**
2	78.70	*Sand*	19.41	**24.66**
0.075	63.18	*Silt*	35.34	**44.91**
0.05	59.30	*Clay*	23.95	**30.43**
0.002	23.95			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

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

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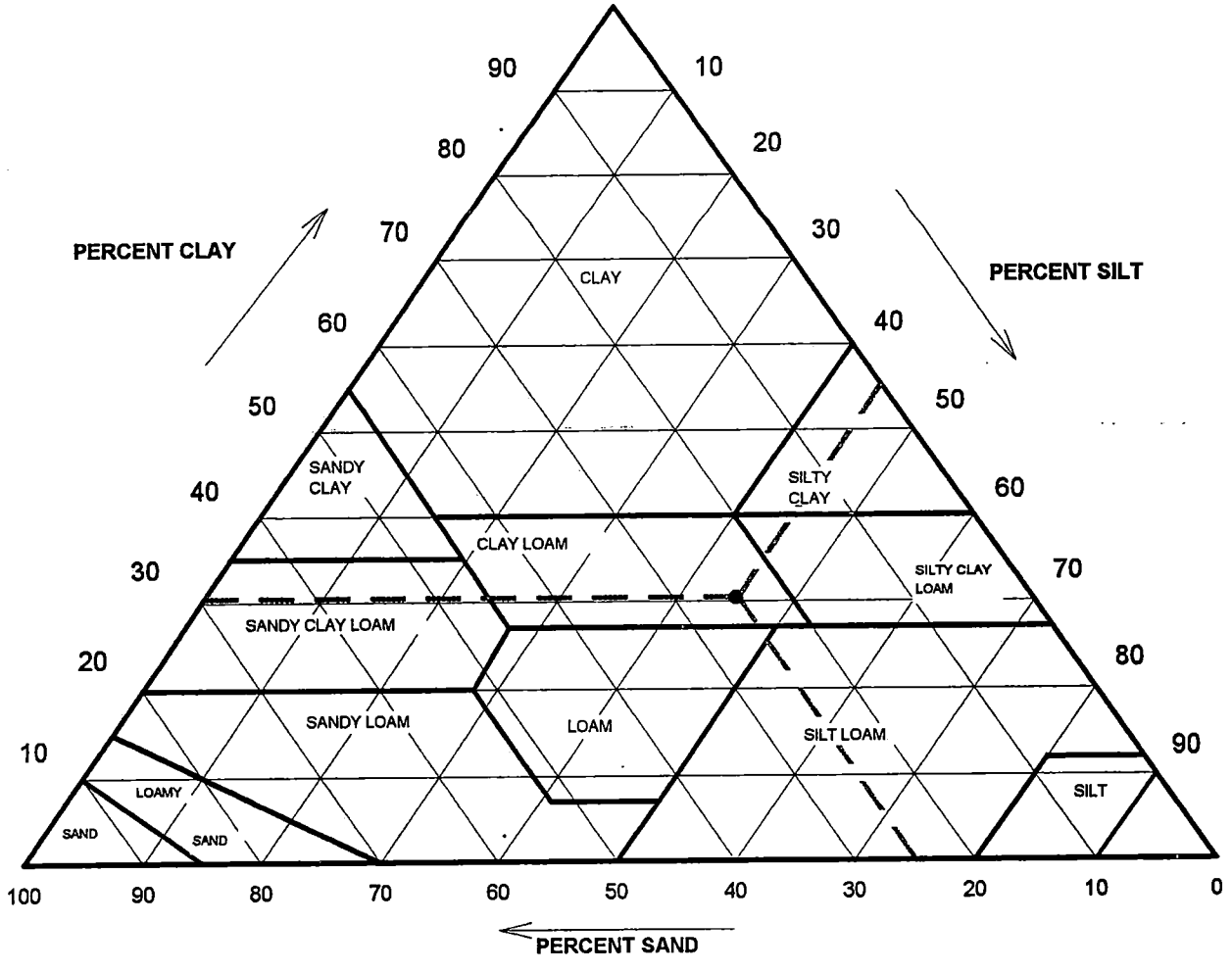
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-03	Sample No.	SM027-TB05-0305
Lab ID	97178-03.013	Soil Color	GRAY & BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	24.66
Silt	44.91
Clay	30.43
USDA Classification	***CLAY LOAM***

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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 9-3-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	1.60
Depth Pushed	4.0-6.0		
Shelby Tube No.	SM027-TB05-0406		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
4.00					
4.50					
5.00					
		3			GRAIN SIZE HYDROMETER UNIT WGT. WC
5.50		2		BROWN LEAN CLAY	PERMEABILITY
		1			WATER CONTENT
6.00					

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	1393		K13		
Wt. Tare & WS(gm.)	266.12		592.50		
Wt. Tare & DS(gm.)	233.79		492.10		
Wt. Tare(gm.)	50.49		74.43		
Moisture Content(%)	17.6		24.0		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1038.90	1354.70
Wt. Of Tube(gms.)	283.95	370.30
Wt. Of WS.(gms.)	754.95	984.40
Length 1 (in.)	3.706	4.831
Length 2 (in.)	3.692	4.820
Length 3 (in.)	3.681	4.809
Top Diameter (in.)	2.878	2.887
Middle Diameter (in.)	2.852	2.862
Bottom Diameter (in.)	2.872	2.876
Sample Volume (cc)	390.77	512.76
Moisture Content(%)	17.64	24.04
Unit Wet Wt.(gms/cc)	1.93	1.92
Unit Wet Wt.(pcf.)	120.6	119.8
Unit Dry Wt.(pcf.)	102.5	96.6
Unit Dry Wt.(gms/cc)	1.64	1.55

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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)	5.1-5.5
Project No.	97178-03	Sample No.	SM027-TB05-0406
Lab ID	97178-03.014	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	K13	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	592.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	492.10	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	74.43	Weight of Tare (gm)	NA
Weight of Water (gm)	100.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	417.67	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)	417.67
Dry Weight - 3/4" Sample (gm)	57.07	Weight of minus #200 material (gm)	360.60
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	57.07
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	0.23	0.06	0.06	99.94	**99.94**
#10	2.00	0.31	0.07	0.13	99.87	**99.87**
#20	0.85	0.60	0.14	0.27	99.73	**99.73**
#40	0.425	2.95	0.71	0.98	99.02	**99.02**
#60	0.250	12.67	3.03	4.01	95.99	**95.99**
#140	0.106	29.21	6.99	11.01	88.99	**88.99**
#200	0.075	11.10	2.66	13.66	86.34	**86.34**
Pan	-	360.60	86.34	100.00	-	-

Tested By JCM Date 8/18/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.1-5.5
Project No.	97178-03	Sample No.	SM027-TB05-0406
Lab ID	97178-03.014	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	47.0	23	40.7	83.6	0.0269	**72.2**
5		43.5	23	37.2	76.4	0.0176	**66.0**
15		37.5	23	31.2	64.1	0.0107	**55.3**
30		35.0	23	28.7	59.0	0.0077	**50.9**
60		32.0	22.2	25.7	52.8	0.0056	**45.6**
250		25.0	22.7	18.7	38.4	0.0029	**33.2**
1440		19.5	23.5	13.2	27.1	0.0012	**23.4**

Soil Specimen Data		Corrections	
Tare No.	1913	K - Factor	0.01297
Tare + Dry Material (gm)	157.74	a - Factor	0.99
Weight of Tare (gm)	104.52	Composite Correction	6.29
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	86.34
Weight of Dry Material (gm)	48.22		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/20/97 Checked By JMD Date 8/27/97

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

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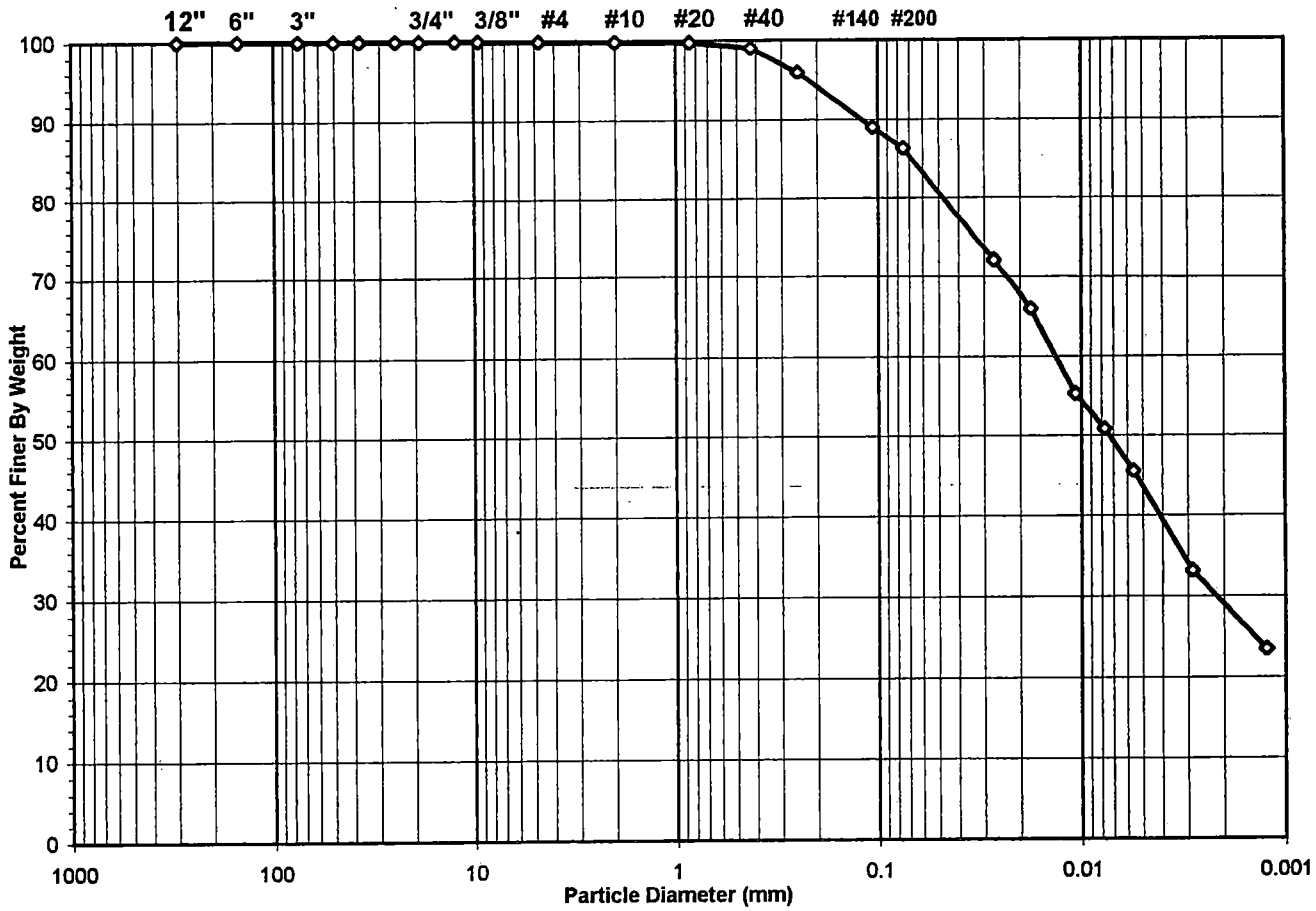
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.1-5.5
Project No.	97178-03	Sample No.	SM027-TB05-0406
Lab ID	97178-03.014	Soil Color	**BROWN**

	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*	0.13	**0.00**
2	99.87	*Sand*	19.13	**19.16**
0.075	86.34	*Silt*	51.74	**51.81**
0.05	80.74	*Clay*	29.00	**29.03**
0.002	29.00			

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

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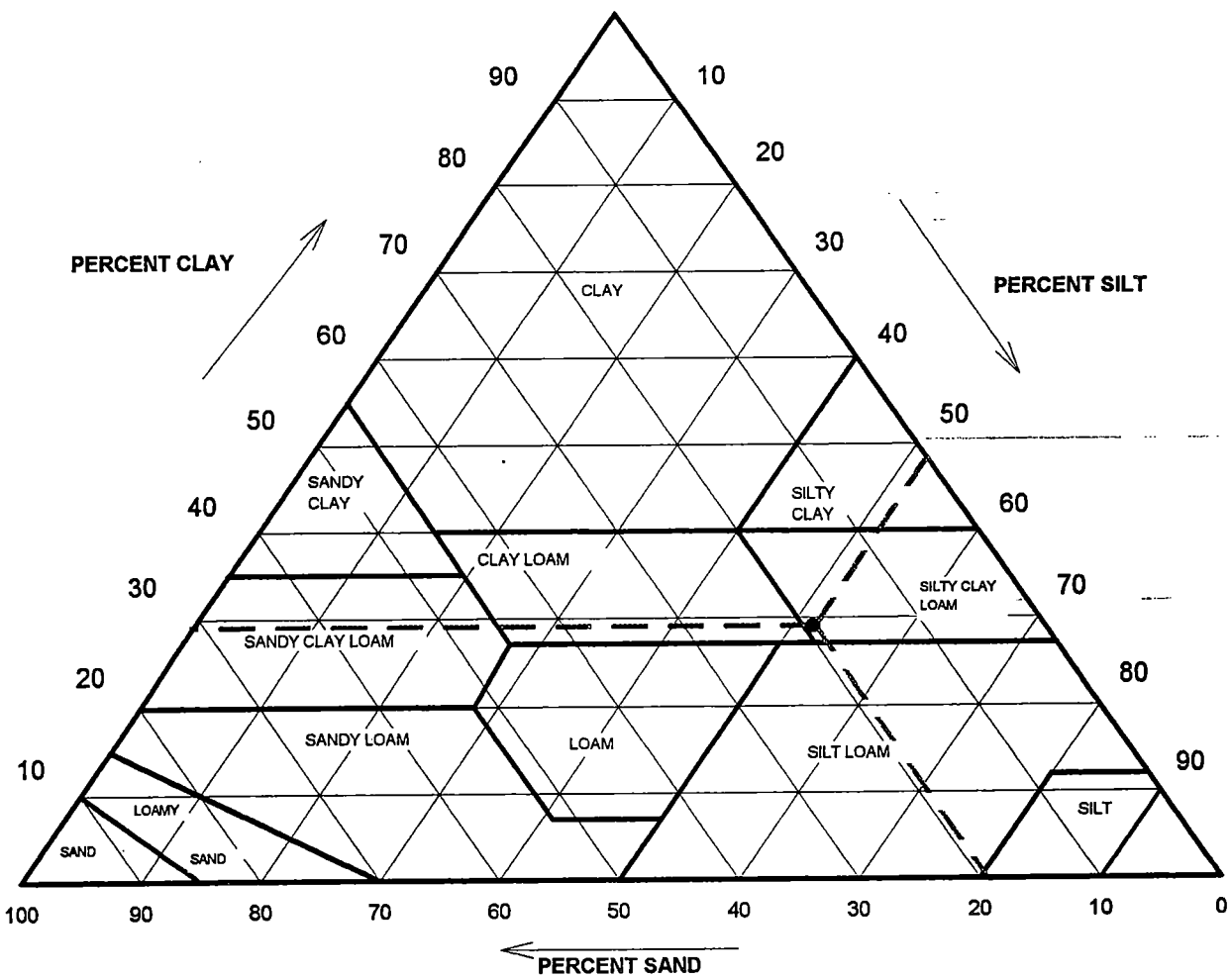
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.1-5.5
Project No.	97178-03	Sample No.	SM027-TB05-0406
Lab ID	97178-03.014	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	19.16
Silt	51.81
Clay	29.03
USDA Classification	***SILTY CLAY LOAM***

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PERMEABILITY TEST

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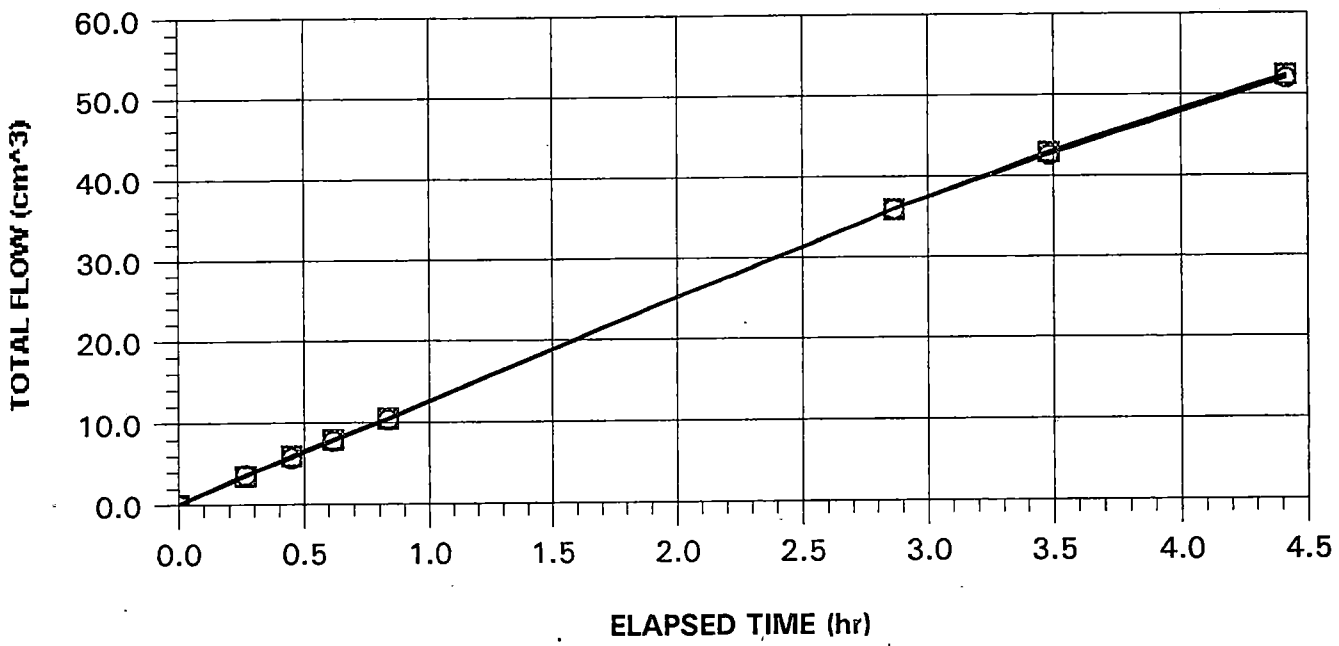
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	5.5-5.8
Project No.	97178-03	Sample No.	SM027-TB05-0406

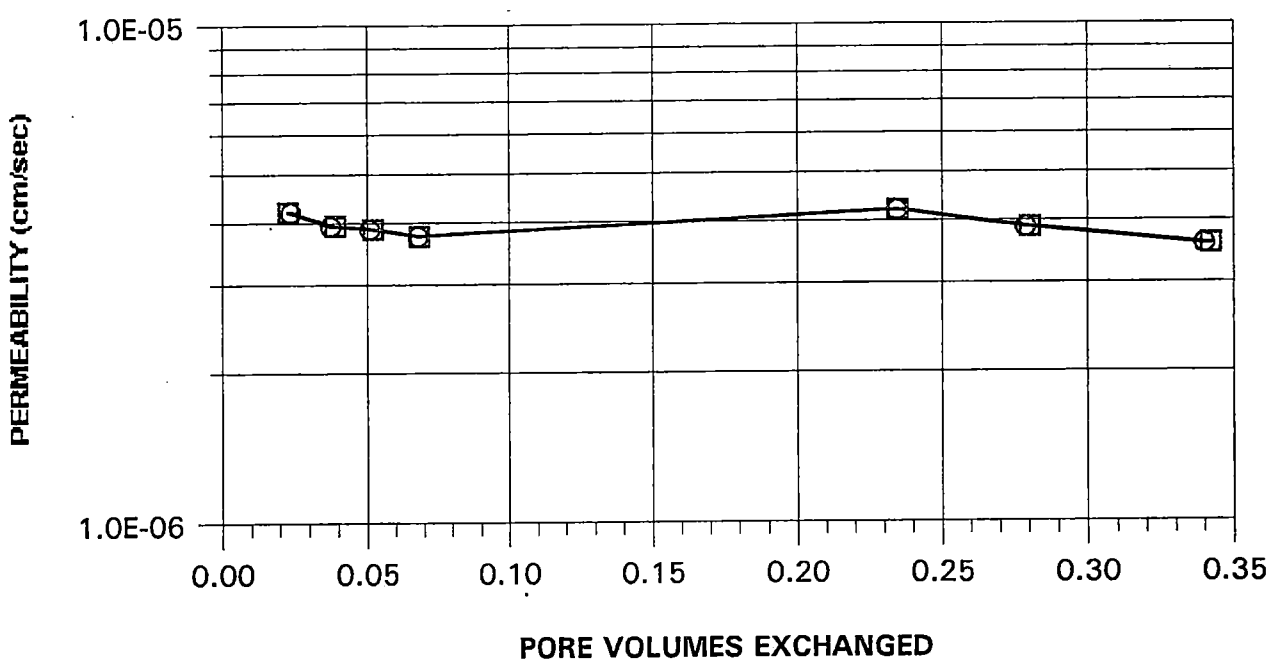
AVERAGE PERMEABILITY = 3.8E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.8E-08 m/sec @ 20°C

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	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.)	5.5-5.8	Sample Condition	UNDISTURBED		
Sample No.	SM027-TB05-0406				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1393	1719
Wt. Tare & WS(gm.)	266.12	524.80
Wt. Tare & DS(gm.)	233.79	431.40
Wt. Water(gm.)	32.33	93.40
Wt. Tare(gm.)	50.49	84.83
Wt. DS(gm.)	183.30	346.57
Moisture Content(%)	17.6	26.9

UNIT WEIGHT

Wt. Tube & WS.(gms.)	1038.90	NA
Wt. Of Tube(gms.)	283.95	NA
Wt. Of WS.(gms.)	754.95	814.7
Length 1 (in.)	3.706	3.751
Length 2 (in.)	3.692	3.744
Length 3 (in.)	3.681	3.775
Top Diameter (in.)	2.878	2.844
Middle Diameter (in.)	2.852	2.828
Bottom Diameter (in.)	2.872	2.856
Average Length (in)	3.69	3.76
Average Area (in^2)	6.46	6.35
Sample Volume(cc.)	390.77	390.70
Unit Wet Wt.(gms/cc)	1.93	2.09
Unit Wet Wt.(pcf.)	120.6	130.1
Unit Dry Wt.(pcf.)	102.5	102.5
Unit Dry Wt.(gms/cc)	1.64	1.64
Void Ratio,e	0.64	0.64
Porosity, n	0.39	0.39
Pore Volume(cm^3)	153.1	153.0

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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	JLO	Date	8-27-97
Project No.	97178-03				
Boring No.	NA				
Depth(ft.)	5.5-5.8				
Sample No.	SM027-TB05-0406				
Visual Description	BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	92.5
Bottom Cap (psi)	95.0
Cell (psi)	100.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.54
Sample Diameter (cm.)	7.22
Sample Area (cm.^2), A	40.95
Inflow Burette Area, (cm.^2), a-in	4.52
Outflow Burette Area, (cm.^2), a-out	4.48
B Parameter	100%

AVERAGE PERMEABILITY = 3.8E-06 cm/sec @ 20°C
AVERAGE PERMEABILITY = 3.8E-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
08-21-97	18	3	0.0	0.0	0.0	196.4	0	22.3	NA
08-21-97	18	19	0.3	3.6	3.5	194.8	0	22.3	4.2E-06
08-21-97	18	30	0.4	5.7	6.0	193.8	0	22.3	3.9E-06
08-21-97	18	40	0.6	7.8	8.0	192.9	0	22.3	3.9E-06
08-21-97	18	53	0.8	10.4	10.5	191.8	1	22.3	3.7E-06
08-22-97	14	8	0.8	10.4	10.5	189.4	0	22.2	NA
08-22-97	16	10	2.9	35.9	35.9	178.1	0	22.2	4.2E-06
08-22-97	16	47	3.5	42.7	42.9	175.0	0	22.2	3.9E-06
08-22-97	17	43	4.4	52.0	52.4	170.9	0	22.2	3.6E-06

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SHELBY TUBE UNIT WEIGHT

geotechnics

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	2.00
Depth Pushed	8.0-10.0		
Shelby Tube No.	SM027-TB05-0810		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
8.00					
8.50					
9.00		4			PERMEABILITY
		3		BROWN LEAN CLAY WITH SAND	GRAIN SIZE HYDROMETER WC
9.50		2		VOID	NO TEST
10.00		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			1718		
Wt. Tare & WS(gm.)			535.90		
Wt. Tare & DS(gm.)			451.50		
Wt. Tare(gm.)			82.35		
Moisture Content(%)			22.9		

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1042.90
Wt. Of Tube(gms.)	279.96
Wt. Of WS.(gms.)	762.94
Length 1 (in.)	3.610
Length 2 (in.)	3.622
Length 3 (in.)	3.615
Top Diameter (in.)	2.869
Middle Diameter (in.)	2.884
Bottom Diameter (in.)	2.878
Sample Volume (cc)	385.18
Moisture Content(%)	22.86
Unit Wet Wt.(gms/cc)	1.98
Unit Wet Wt.(pcf.)	123.6
Unit Dry Wt.(pcf.)	100.6
Unit Dry Wt.(gms/cc)	1.61

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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)	9.2-9.5
Project No.	97178-03	Sample No.	SM027-TB05-0810
Lab ID	97178-03.015	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1718	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	535.90	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	451.50	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	82.35	Weight of Tare (gm)	NA
Weight of Water (gm)	84.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	369.15	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**22.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	369.15
Dry Weight - 3/4" Sample (gm)	71.55	Weight of minus #200 material (gm)	297.60
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	71.55
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	1.01	0.27	0.27	99.73	**99.73**
#10	2.00	3.53	0.96	1.23	98.77	**98.77**
#20	0.85	6.63	1.80	3.03	96.97	**96.97**
#40	0.425	11.79	3.19	6.22	93.78	**93.78**
#60	0.250	17.95	4.86	11.08	88.92	**88.92**
#140	0.106	22.72	6.15	17.24	82.76	**82.76**
#200	0.075	7.92	2.15	19.38	80.62	**80.62**
Pan	-	297.60	80.62	100.00	-	-

Tested By JCM Date 8/18/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	9.2-9.5
Project No.	97178-03	Sample No.	SM027-TB05-0810
Lab ID	97178-03.015	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	53.0	53.0	23	46.7	85.7	0.0253	**69.1**
5		49.5	23	43.2	79.3	0.0166	**63.9**
15		44.5	23	38.2	70.1	0.0100	**56.5**
30		41.0	23	34.7	63.7	0.0073	**51.4**
60		37.0	22.2	30.7	56.4	0.0054	**45.4**
250		30.5	22.7	24.2	44.4	0.0028	**35.8**
1440		24.0	23.5	17.7	32.5	0.0012	**26.2**

Soil Specimen Data		Corrections	
Tare No.	1005	K - Factor	0.01297
Tare + Dry Material (gm)	165.08	a - Factor	0.99
Weight of Tare (gm)	106.13	Composite Correction	6.29
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	80.62
Weight of Dry Material (gm)	53.95		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/20/97 Checked By JMO Date 8/27/97

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

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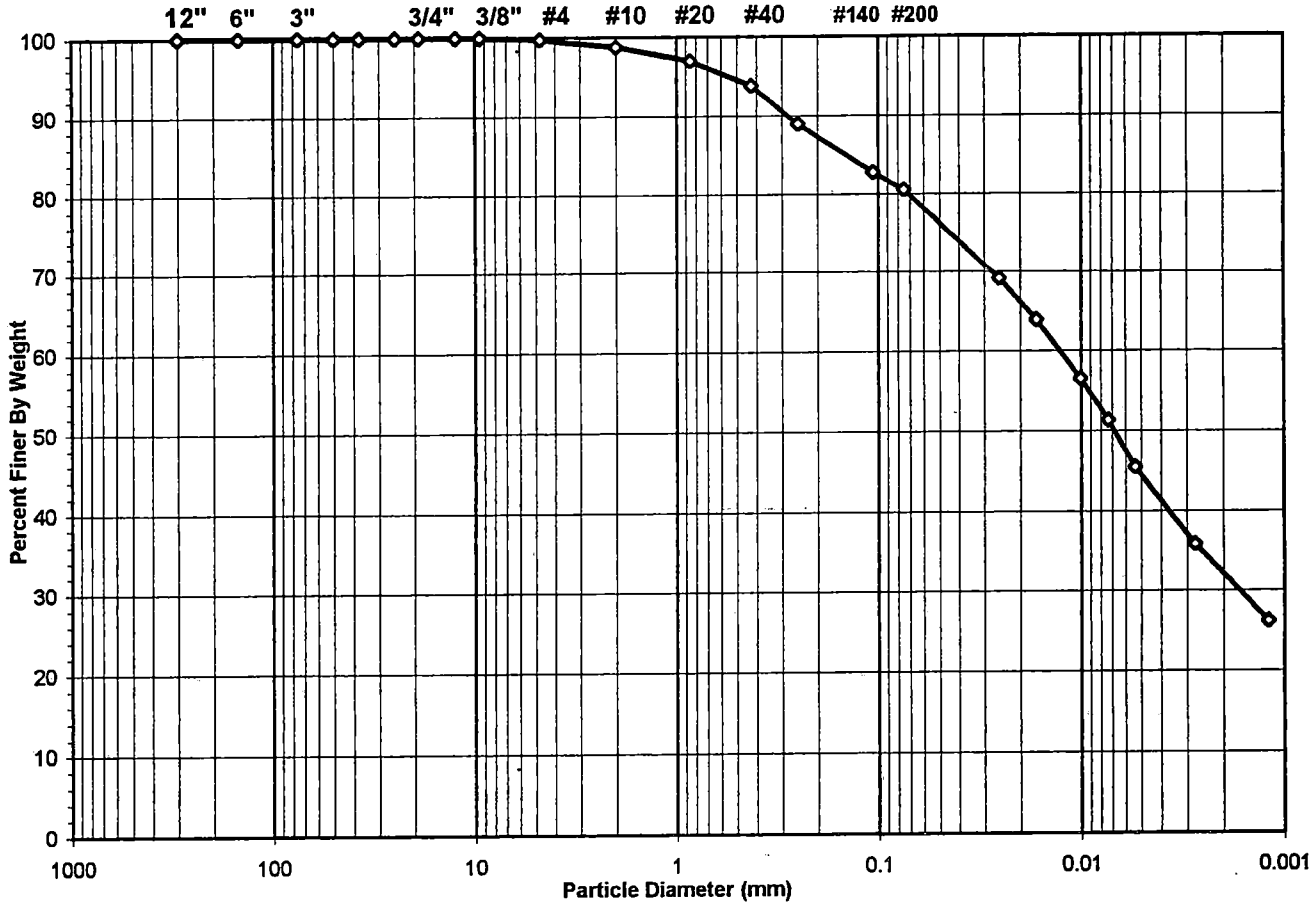
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	9.2-9.5
Project No.	97178-03	Sample No.	SM027-TB05-0810
Lab ID	97178-03.015	Soil Color	**BROWN**

	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*	1.23	**0.00**
2	98.77	*Sand*	22.45	**22.73**
0.075	80.62	*Silt*	44.22	**44.77**
0.05	76.32	*Clay*	32.10	**32.50**
0.002	32.10			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

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

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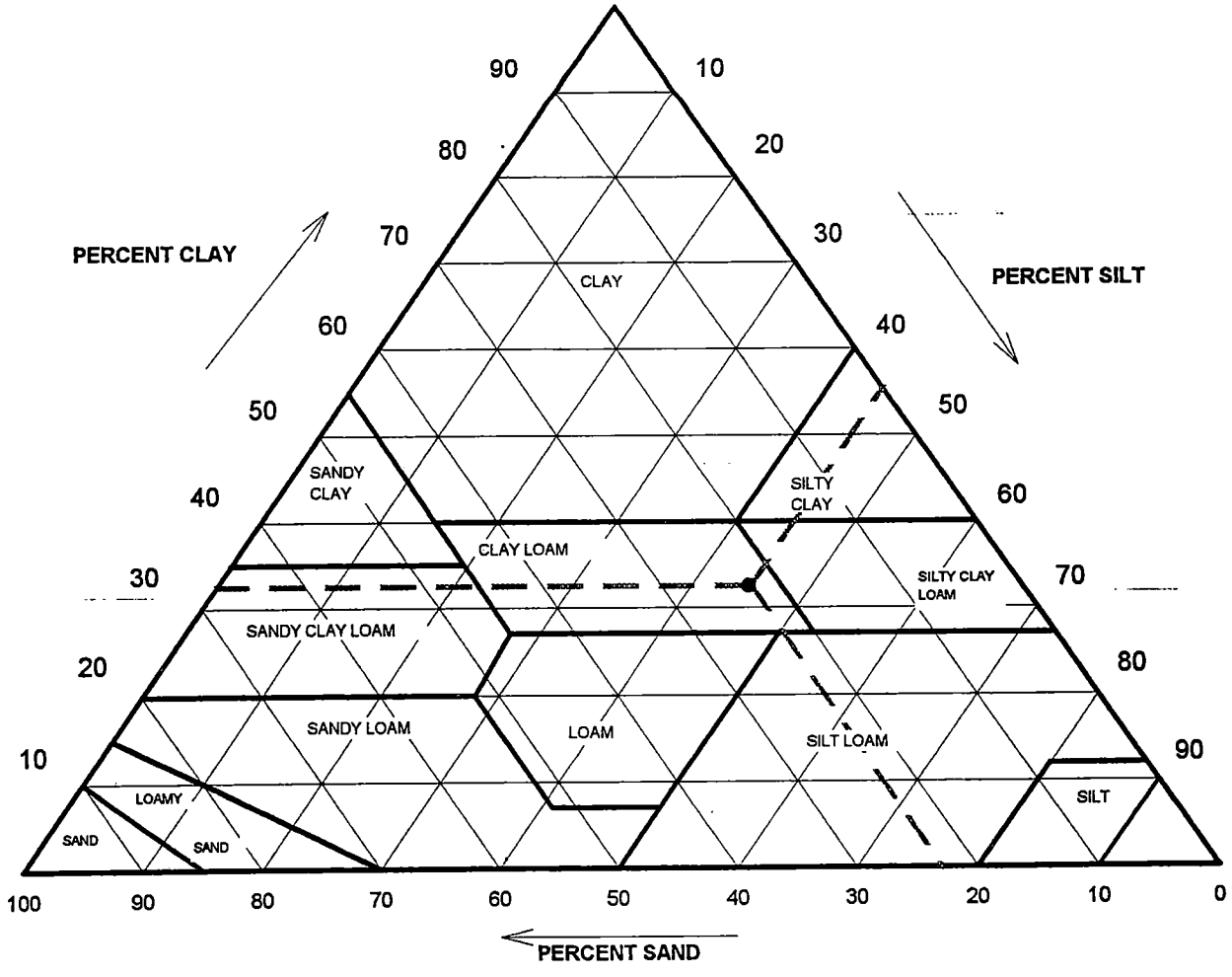
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	9.2-9.5
Project No.	97178-03	Sample No.	SM027-TB05-0810
Lab ID	97178-03.015	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	22.73
Silt	44.77
Clay	32.50
USDA Classification	***CLAY LOAM***

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PERMEABILITY TEST

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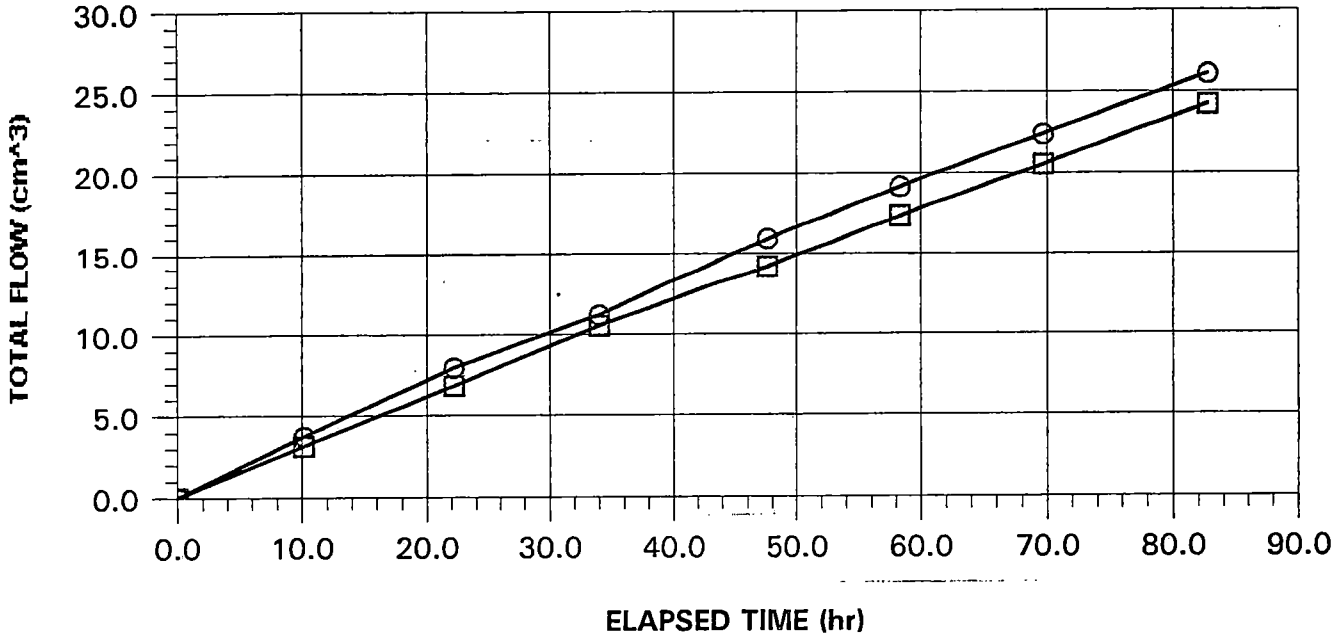
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	8.9-9.3
Project No.	97178-03	Sample No.	SM027-TB05-0810

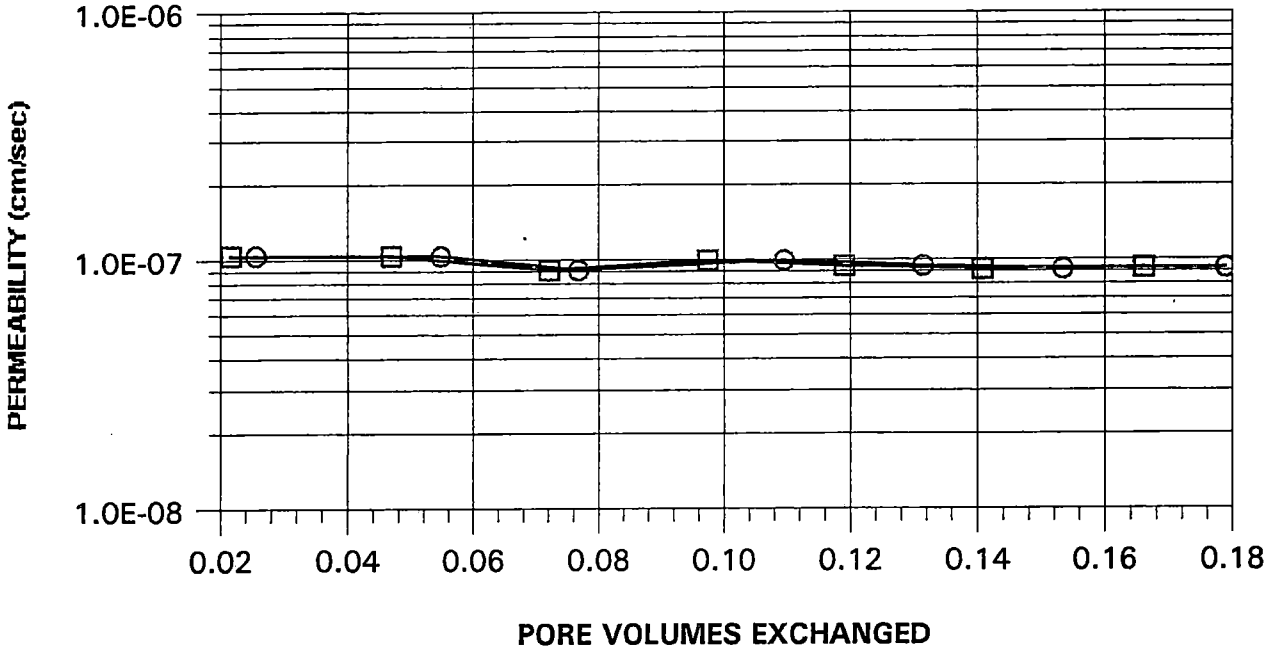
AVERAGE PERMEABILITY = 9.5E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 9.5E-10 m/sec @ 20°C

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	08-18-97
Client Project	BAYER 51249	Checked By	JMO	Date	8-29-97
Project No.	97178-03				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	8.9-9.3	Sample Condition	UNDISTURBED		
Sample No.	SM027-TB05-0810				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1718	1705
Wt. Tare & WS(gm.)	535.90	525.80
Wt. Tare & DS(gm.)	451.50	440.30
Wt. Water(gm.)	84.40	85.50
Wt. Tare(gm.)	82.35	83.50
Wt. DS(gm.)	369.15	356.80
Moisture Content(%)	22.9	24.0

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1042.90	NA
Wt. Of Tube(gms.)	279.96	NA
Wt. Of WS.(gms.)	762.94	769.8
Length 1 (in.)	3.610	3.638
Length 2 (in.)	3.622	3.594
Length 3 (in.)	3.615	3.616
Top Diameter (in.)	2.869	2.855
Middle Diameter (in.)	2.884	2.841
Bottom Diameter (in.)	2.878	2.828
Average Length (in)	3.62	3.62
Average Area (in^2)	6.50	6.34
Sample Volume(cc.)	385.18	375.72
Unit Wet Wt.(gms/cc)	1.98	2.05
Unit Wet Wt.(pcf.)	123.6	127.8
Unit Dry Wt.(pcf.)	100.6	103.1
Unit Dry Wt.(gms/cc)	1.61	1.65
Void Ratio,e	0.67	0.63
Porosity, n	0.40	0.39
Pore Volume(cm^3)	155.2	145.7

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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	8-29-97
Project No.	97178-03				
Boring No.	NA				
Depth(ft.)	8.9-9.3				
Sample No.	SM027-TB05-0810				
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	9.18
Sample Diameter (cm.)	7.22
Sample Area (cm.^2), A	40.91
Inflow Burette Area, (cm.^2), a-in	4.80
Outflow Burette Area, (cm.^2), a-out	4.76
B Parameter	98%

AVERAGE PERMEABILITY = 9.5E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 9.5E-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
08-18-97	21	5	0.0	0.0	0.0	189.1	0	23.0	NA
08-19-97	7	15	10.2	3.7	3.2	187.7	0	23.0	1.0E-07
08-19-97	19	15	22.2	8.0	6.8	186.0	0	22.5	1.0E-07
08-20-97	7	5	34.0	11.2	10.5	184.6	0	23.0	9.1E-08
08-20-97	20	40	47.6	16.0	14.2	182.8	0	22.5	1.0E-07
08-21-97	7	25	58.3	19.2	17.4	181.5	0	23.0	9.4E-08
08-21-97	18	45	69.7	22.4	20.5	180.2	0	22.3	9.1E-08
08-22-97	7	50	82.8	26.1	24.2	178.6	0	22.5	9.3E-08

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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	JMC 9-3-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	2.10
Depth Pushed	14.0-16.0		
Shelby Tube No.	SM027-TB05-1416		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
14.00					
14.50					
15.00					
		3			GRAIN SIZE HYDROMETER UNIT WGT. WC
15.50		2		BROWN LEAN CLAY	PERMEABILITY
		1			WATER CONTENT
16.00					

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	439		1739		
Wt. Tare & WS(gm.)	307.00		685.60		
Wt. Tare & DS(gm.)	263.34		541.90		
Wt. Tare(gm.)	99.52		83.80		
Moisture Content(%)	26.7		31.4		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1037.60	1348.50
Wt. Of Tube(gms.)	276.53	364.37
Wt. Of WS.(gms.)	761.07	984.13
Length 1 (in.)	3.630	4.772
Length 2 (in.)	3.649	4.807
Length 3 (in.)	3.618	4.772
Top Diameter (in.)	2.884	2.886
Middle Diameter (in.)	2.878	2.879
Bottom Diameter (in.)	2.873	2.881
Sample Volume (cc)	387.31	511.38
Moisture Content(%)	26.65	31.37
Unit Wet Wt.(gms/cc)	1.97	1.92
Unit Wet Wt.(pcf.)	122.6	120.1
Unit Dry Wt.(pcf.)	96.8	91.4
Unit Dry Wt.(gms/cc)	1.55	1.46

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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)	15.1-15.5
Project No.	97178-03	Sample No.	SM027-TB05-1416
Lab ID	97178-03.016	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1739	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	685.60	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	541.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.80	Weight of Tare (gm)	NA
Weight of Water (gm)	143.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	458.10	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**31.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	458.10
Dry Weight - 3/4" Sample (gm)	40.05	Weight of minus #200 material (gm)	418.05
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	40.05
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	1.87	0.41	0.41	99.59	**99.59**
#4	4.75	2.52	0.55	0.96	99.04	**99.04**
#10	2.00	1.85	0.40	1.36	98.64	**98.64**
#20	0.85	2.29	0.50	1.86	98.14	**98.14**
#40	0.425	4.77	1.04	2.90	97.10	**97.10**
#60	0.250	7.02	1.53	4.44	95.56	**95.56**
#140	0.106	14.55	3.18	7.61	92.39	**92.39**
#200	0.075	5.18	1.13	8.74	91.26	**91.26**
Pan	-	418.05	91.26	100.00	-	-

Tested By JCM Date 8/18/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-03	Sample No.	SM027-TB05-1416
Lab ID	97178-03.016	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	56.0	56.0	23	49.7	91.8	0.0245	**83.8**
5		53.5	23	47.2	87.2	0.0159	**79.6**
19		46.5	23	40.2	74.3	0.0088	**67.8**
30		43.0	23	36.7	67.8	0.0072	**61.9**
60		38.5	22.2	32.2	59.5	0.0053	**54.3**
250		30.0	22.7	23.7	43.8	0.0028	**40.0**
1440		22.5	23.5	16.2	29.9	0.0012	**27.3**

Soil Specimen Data		Corrections	
Tare No.	878	K - Factor	0.01297
Tare + Dry Material (gm)	160.63	a - Factor	0.99
Weight of Tare (gm)	102.03	Composite Correction	6.29
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	91.26
Weight of Dry Material (gm)	53.6		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/20/97 Checked By JMO Date 8/27/97

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

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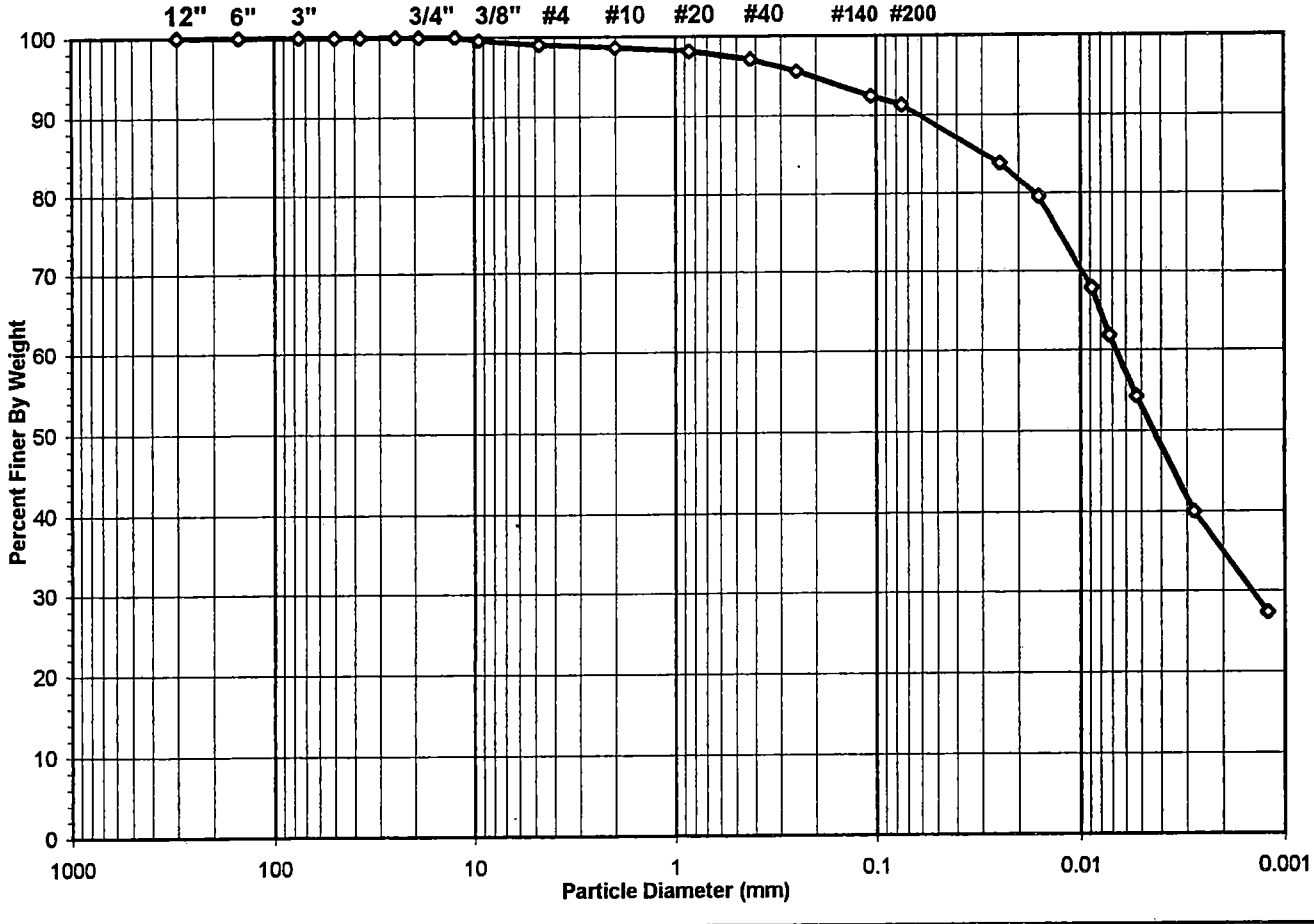
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-03	Sample No.	SM027-TB05-1416
Lab ID	97178-03.016	Soil Color	BROWN

	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*	1.36	**0.00**
2	98.64	*Sand*	10.08	**10.22**
0.075	91.26	*Silt*	53.57	**54.31**
0.05	88.56	*Clay*	34.99	**35.47**
0.002	34.99			

USDA Classification ***SILTY CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY***

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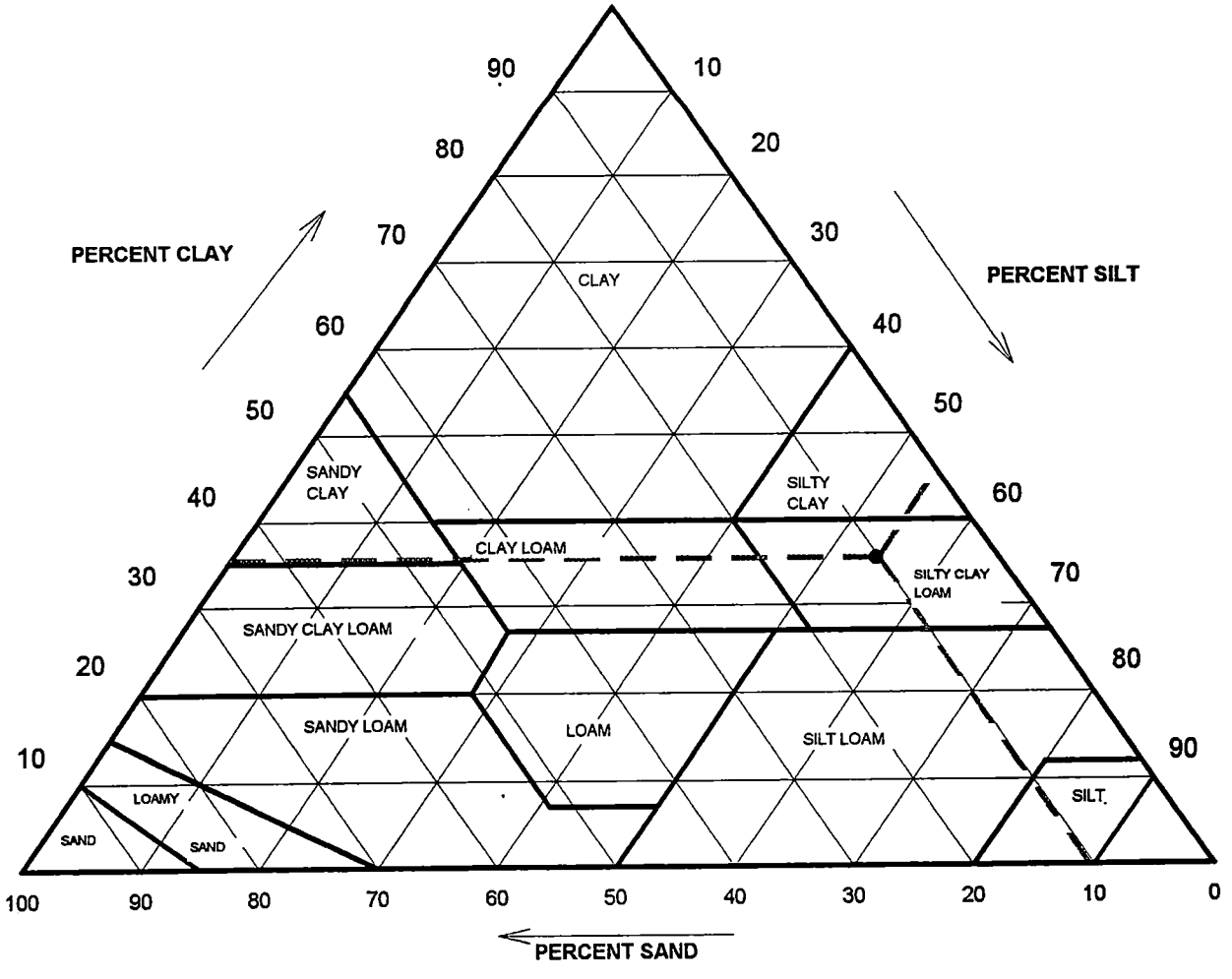
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-03	Sample No.	SM027-TB05-1416
Lab ID	97178-03.016	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	10.22
Silt	54.31
Clay	35.47
USDA Classification	***SILTY CLAY LOAM***

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PERMEABILITY TEST

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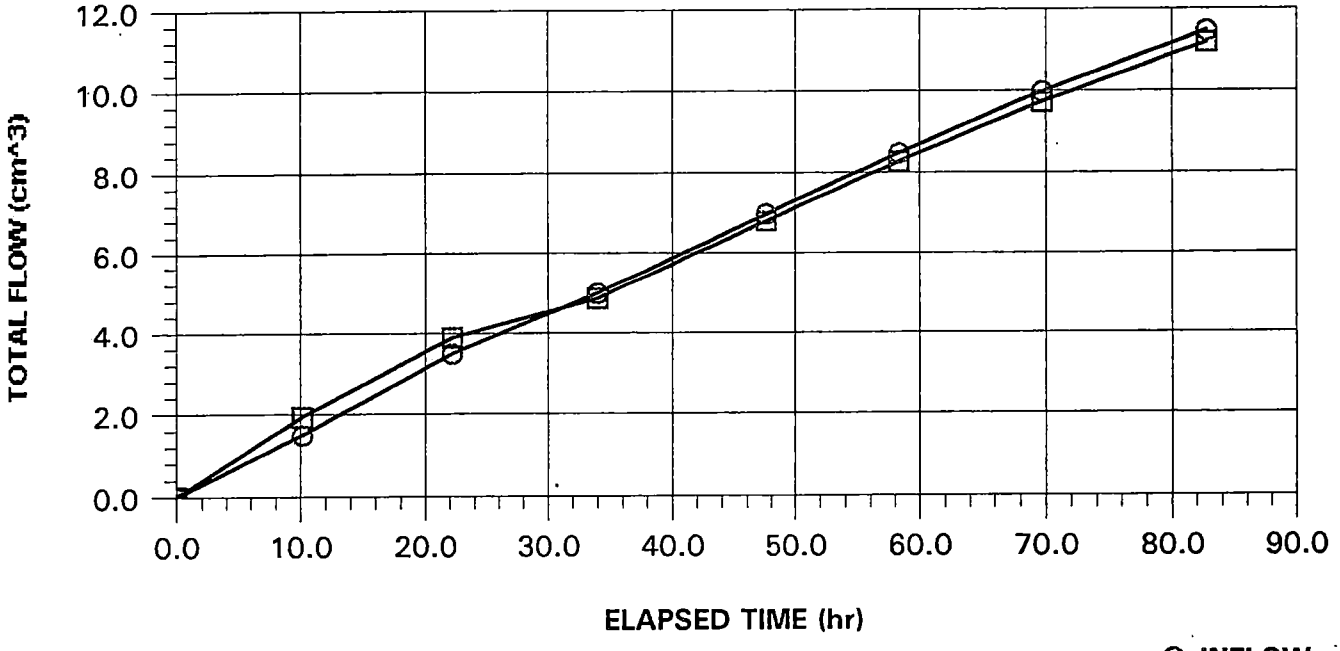
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	15.5-15.8
Project No.	97178-03	Sample No.	SM027-TB05-1416

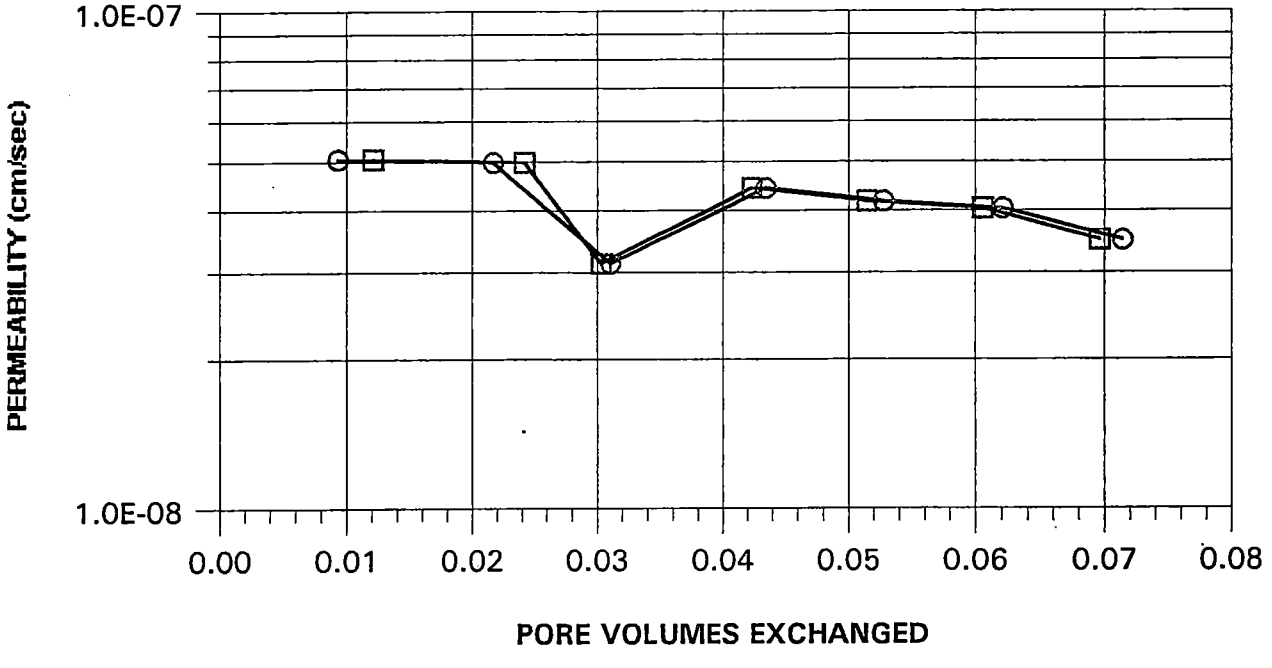
AVERAGE PERMEABILITY = 4.0E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.0E-10 m/sec @ 20°C

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	08-18-97
Client Project	BAYER 51249	Checked By	JMO	Date	8-29-97
Project No.	97178-03				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	15.5-15.8	Sample Condition	UNDISTURBED		
Sample No.	SM027-TB05-1416				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	439	730
Wt. Tare & WS(gm.)	307.00	436.10
Wt. Tare & DS(gm.)	263.34	362.11
Wt. Water(gm.)	43.66	73.99
Wt. Tare(gm.)	99.52	86.57
Wt. DS(gm.)	163.82	275.54
Moisture Content(%)	26.7	26.9

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1037.60	NA
Wt. Of Tube(gms.)	276.53	NA
Wt. Of WS.(gms.)	761.07	762.3
Length 1 (in.)	3.630	3.664
Length 2 (in.)	3.649	3.676
Length 3 (in.)	3.618	3.664
Top Diameter (in.)	2.884	2.850
Middle Diameter (in.)	2.878	2.850
Bottom Diameter (in.)	2.873	2.847
Average Length (in)	3.63	3.67
Average Area (in^2)	6.51	6.37
Sample Volume(cc.)	387.31	383.18
Unit Wet Wt.(gms/cc)	1.97	1.99
Unit Wet Wt.(pcf.)	122.6	124.1
Unit Dry Wt.(pcf.)	96.8	97.9
Unit Dry Wt.(gms/cc)	1.55	1.57
Void Ratio,e	0.74	0.72
Porosity, n	0.43	0.42
Pore Volume(cm^3)	164.7	160.6

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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	8-29-97
Project No.	97178-03				
Boring No.	NA				
Depth(ft.)	15.5-15.8				
Sample No.	SM027-TB05-1416				
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	9.32
Sample Diameter (cm.)	7.24
Sample Area (cm.^2), A	41.13
Inflow Burette Area, (cm.^2), a-in	4.50
Outflow Burette Area, (cm.^2), a-out	4.37
B Parameter	99%

AVERAGE PERMEABILITY = 4.0E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 4.0E-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	21	5	0.0	0.0	0.0	197.0	0	23.0	NA
08-19-97	7	15	10.2	1.5	1.9	196.2	0	23.0	5.1E-08
08-19-97	19	15	22.2	3.5	3.9	195.4	0	22.5	5.0E-08
08-20-97	7	5	34.0	5.0	4.9	194.8	0	23.0	3.1E-08
08-20-97	20	40	47.6	7.0	6.8	193.9	0	22.5	4.4E-08
08-21-97	7	25	58.3	8.5	8.3	193.2	0	23.0	4.2E-08
08-21-97	18	45	69.7	10.0	9.7	192.6	0	22.3	4.0E-08
08-22-97	7	50	82.8	11.5	11.2	191.9	0	22.5	3.5E-08

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SHELBY TUBE UNIT WEIGHT

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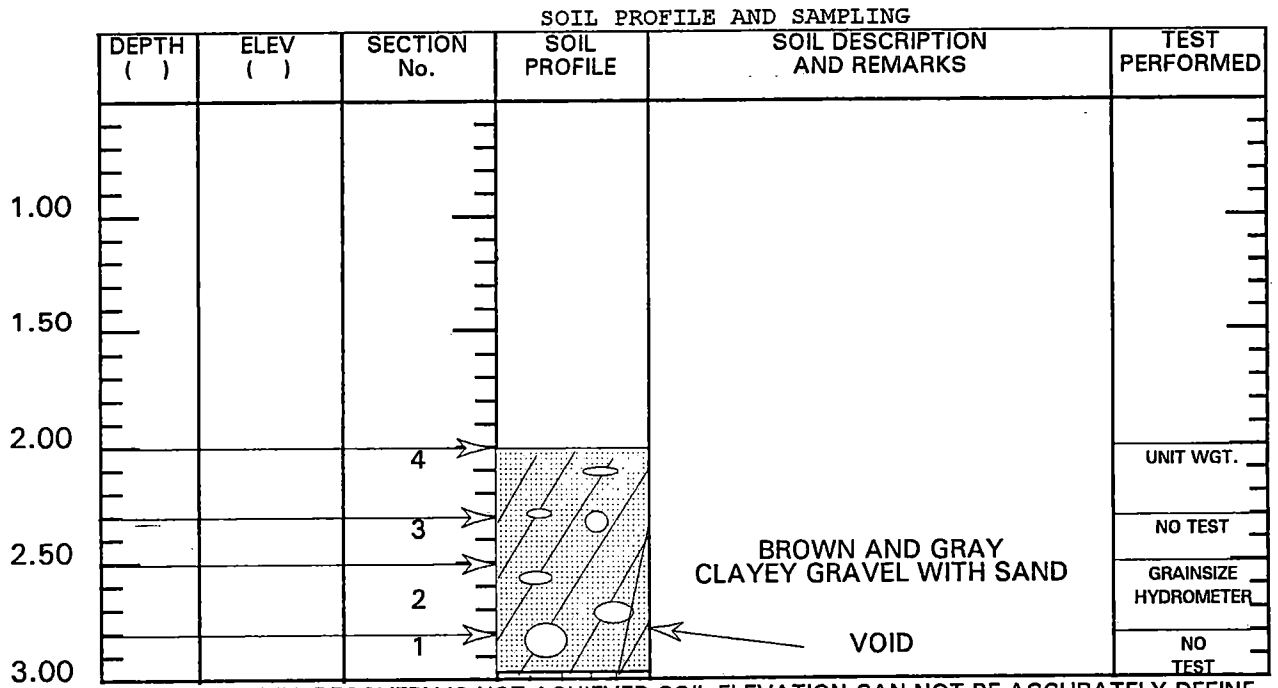
Client	ICF KAISER	Tested By	BL 8-13-97
Client Project	BAYER 51249	Checked By	JMC 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.25
Depth Pushed	1.0-3.0		
Shelby Tube No.	SM028-TB01-0103		

SOIL PROFILE AND SAMPLING



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				1720	
Wt. Tare & WS(gm.)				238.90	
Wt. Tare & DS(gm.)				220.65	
Wt. Tare(gm.)				81.87	
Moisture Content(%)				13.2	

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1093.00
Wt. Of Tube(gms.)	270.76
Wt. Of WS.(gms.)	822.24
Length 1 (in.)	6.669
Length 2 (in.)	6.659
Length 3 (in.)	6.654
Top Diameter (in.)	2.857
Middle Diameter (in.)	2.885
Bottom Diameter (in.)	2.869
Sample Volume (cc)	706.27
Moisture Content(%)	13.15
Unit Wet Wt.(gms/cc)	1.16
Unit Wet Wt.(pcf.)	72.6
Unit Dry Wt.(pcf.)	64.2
Unit Dry Wt.(gms/cc)	1.03

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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.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	**BROWN GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1314	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	689.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	644.00	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	100.57	Weight of Tare (gm)	NA
Weight of Water (gm)	45.30	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	543.43	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**8.3**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	543.43
Dry Weight - 3/4" Sample (gm)	316.49	Weight of minus #200 material (gm)	118.93
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	424.50
Dry Weight + 3/4" Sample (gm)	108.01		
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	78.31	14.41	14.41	85.59	**85.59**
3/4"	19.0	29.70	5.47	19.88	80.12	**80.12**
1/2"	12.5	41.71	7.68	27.55	72.45	**72.45**
3/8"	9.50	28.92	5.32	32.87	67.13	**67.13**
#4	4.75	73.87	13.59	46.47	53.53	**53.53**
#10	2.00	78.49	14.44	60.91	39.09	**39.09**
#20	0.85	42.23	7.77	68.68	31.32	**31.32**
#40	0.425	19.27	3.55	72.23	27.77	**27.77**
#60	0.250	11.59	2.13	74.36	25.64	**25.64**
#140	0.106	14.93	2.75	77.11	22.89	**22.89**
#200	0.075	5.48	1.01	78.11	21.89	**21.89**
Pan	-	118.93	21.89	100.00	-	-

Tested By BL Date 8/13/97 Checked By JMO Date 8/22/97

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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.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	**BROWN GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	35.0	36.5	24.4	30.9	79.4	0.0290	**17.4**
5		32.0	24.4	26.4	67.8	0.0190	**14.8**
15		26.0	24.4	20.4	52.4	0.0114	**11.5**
30		23.0	24.4	17.4	44.7	0.0082	**9.8**
77		19.0	23	13.4	34.4	0.0053	**7.5**
281		16.0	22.3	10.4	26.7	0.0028	**5.8**
1440		11.0	23.7	5.4	13.9	0.0013	**3.0**

Soil Specimen Data		Corrections	
Tare No.	724	K - Factor	0.01276
Tare + Dry Material (gm)	152.45	a - Factor	0.99
Weight of Tare (gm)	108.92	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	21.89
Weight of Dry Material (gm)	38.53		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JHO Date 8/22/97

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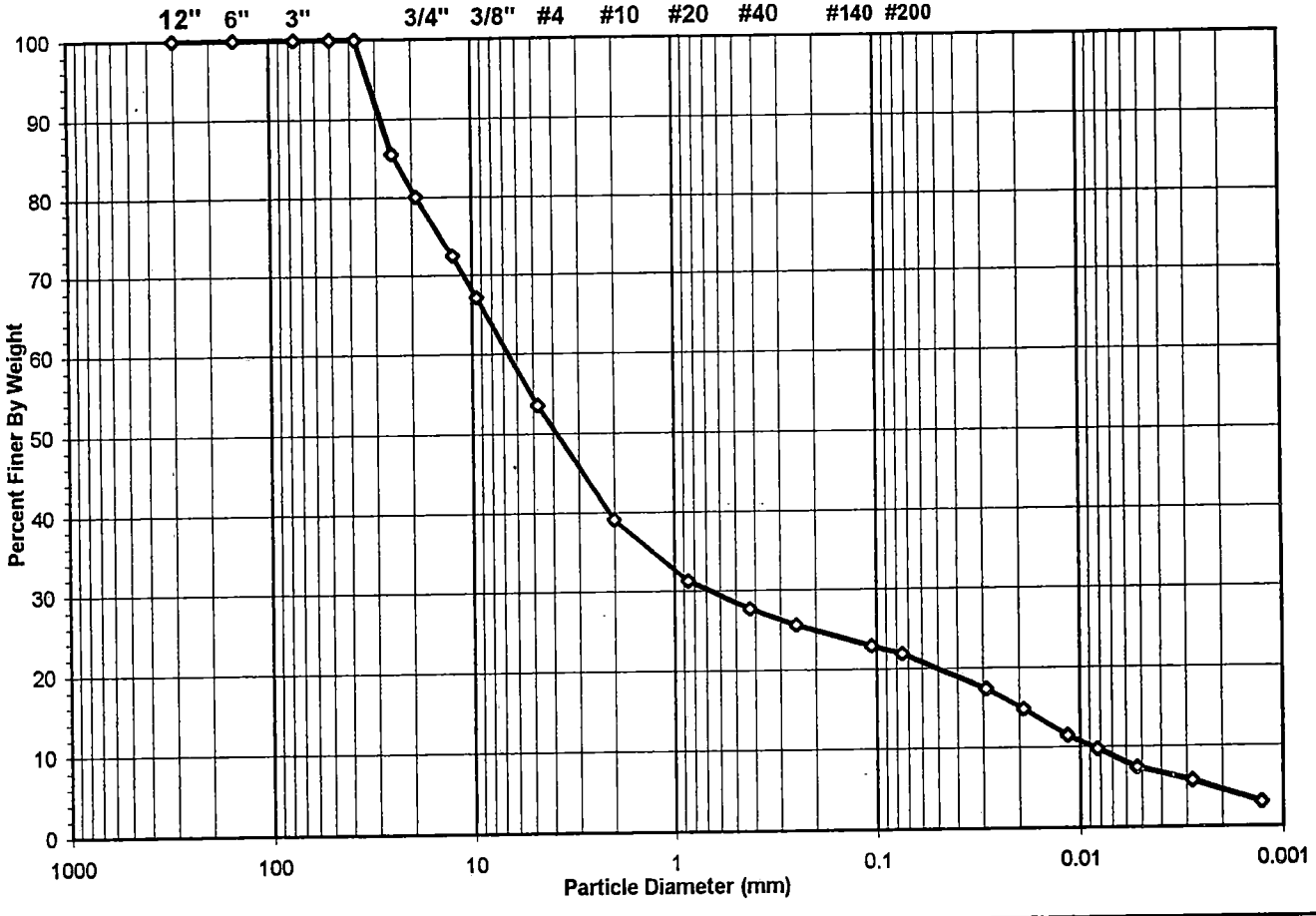
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	**BROWN 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*	60.91	**0.00**
2	39.09	*Sand*	19.13	**48.93**
0.075	21.89	*Silt*	15.33	**39.23**
0.05	19.96	*Clay*	4.63	**11.84**
0.002	4.63			

USDA Classification ***LOAM***

USCS Symbol ***gc, ASSUMED***

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

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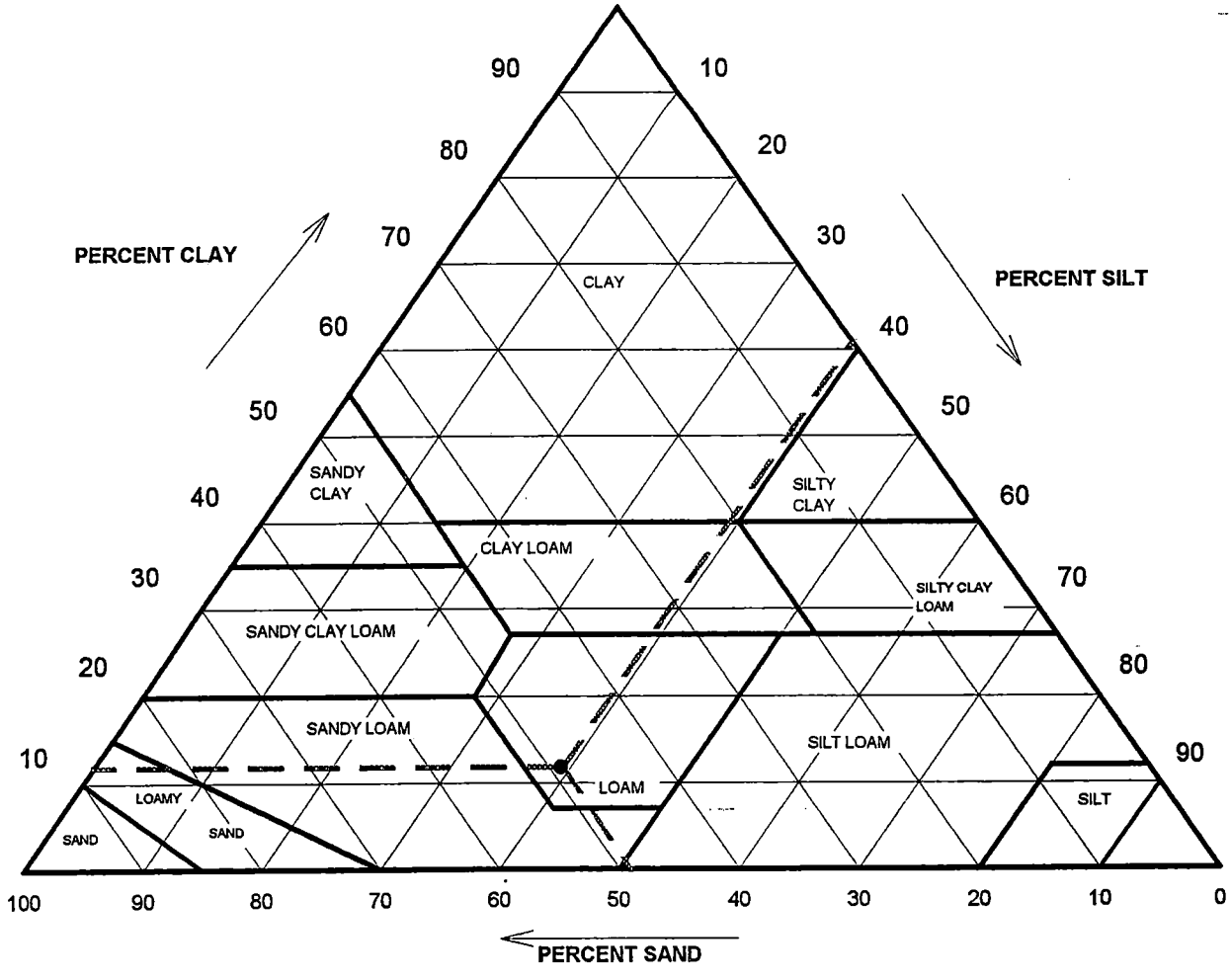
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.5-2.8
Project No.	97178-02	Sample No.	SM028-TB01-0103
Lab ID	97178-02.061	Soil Color	BROWN GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	48.93
Silt	39.23
Clay	11.84
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-13-97
Client Project	BAYER 51249	Checked By	JMO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.20
Depth Pushed	4.0-6.0		
Shelby Tube No.	SM028-TB02-0406		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
4.00					
4.50					
5.00					
5.50		2		GRAYISH BROWN SANDY LEAN CLAY	UNIT WGT. WC. GRAINSIZE HYDROMETER
6.00		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		728			
Wt. Tare & WS(gm.)		189.93			
Wt. Tare & DS(gm.)		174.07			
Wt. Tare(gm.)		86.66			
Moisture Content(%)		18.1			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1069.90
Wt. Of Tube(gms.)	271.32
Wt. Of WS.(gms.)	798.58
Length 1 (in.)	3.712
Length 2 (in.)	3.713
Length 3 (in.)	3.692
Top Diameter (in.)	2.888
Middle Diameter (in.)	2.872
Bottom Diameter (in.)	2.879
Sample Volume (cc)	395.50
Moisture Content(%)	18.14
Unit Wet Wt.(gms/cc)	2.02
Unit Wet Wt.(pcf.)	126.0
Unit Dry Wt.(pcf.)	106.6
Unit Dry Wt.(gms/cc)	1.71

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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)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	**GRAYISH BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	841	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	702.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	602.80	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	92.79	Weight of Tare (gm)	NA
Weight of Water (gm)	99.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	510.01	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)	510.01
Dry Weight - 3/4" Sample (gm)	203.48	Weight of minus #200 material (gm)	306.53
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	203.48
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	7.76	1.52	1.52	98.48	**98.48**
#4	4.75	23.12	4.53	6.05	93.95	**93.95**
#10	2.00	33.26	6.52	12.58	87.42	**87.42**
#20	0.85	27.83	5.46	18.03	81.97	**81.97**
#40	0.425	23.41	4.59	22.62	77.38	**77.38**
#60	0.250	27.44	5.38	28.00	72.00	**72.00**
#140	0.106	44.51	8.73	36.73	63.27	**63.27**
#200	0.075	16.15	3.17	39.90	60.10	**60.10**
Pan	-	306.53	60.10	100.00	-	-

Tested By BL Date 8/13/97 Checked By JMC Date 8/21/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	**GRAYISH BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	35.0	36.0	24.4	30.4	81.9	0.0291	**49.2**
5		33.0	24.4	27.4	73.8	0.0188	**44.4**
15		29.5	24.4	23.9	64.4	0.0112	**38.7**
30		27.5	24.4	21.9	59.0	0.0080	**35.5**
74		25.0	23	19.4	52.3	0.0052	**31.4**
278		21.0	22.3	15.4	41.5	0.0027	**24.9**
1440		16.0	23.7	10.4	28.0	0.0012	**16.8**

Soil Specimen Data		Corrections	
Tare No.	1640	K - Factor	0.01276
Tare + Dry Material (gm)	143.03	a - Factor	0.99
Weight of Tare (gm)	101.28	Composite Correction	5.60
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	60.10
Weight of Dry Material (gm)	36.75		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMD Date 8/22/97

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

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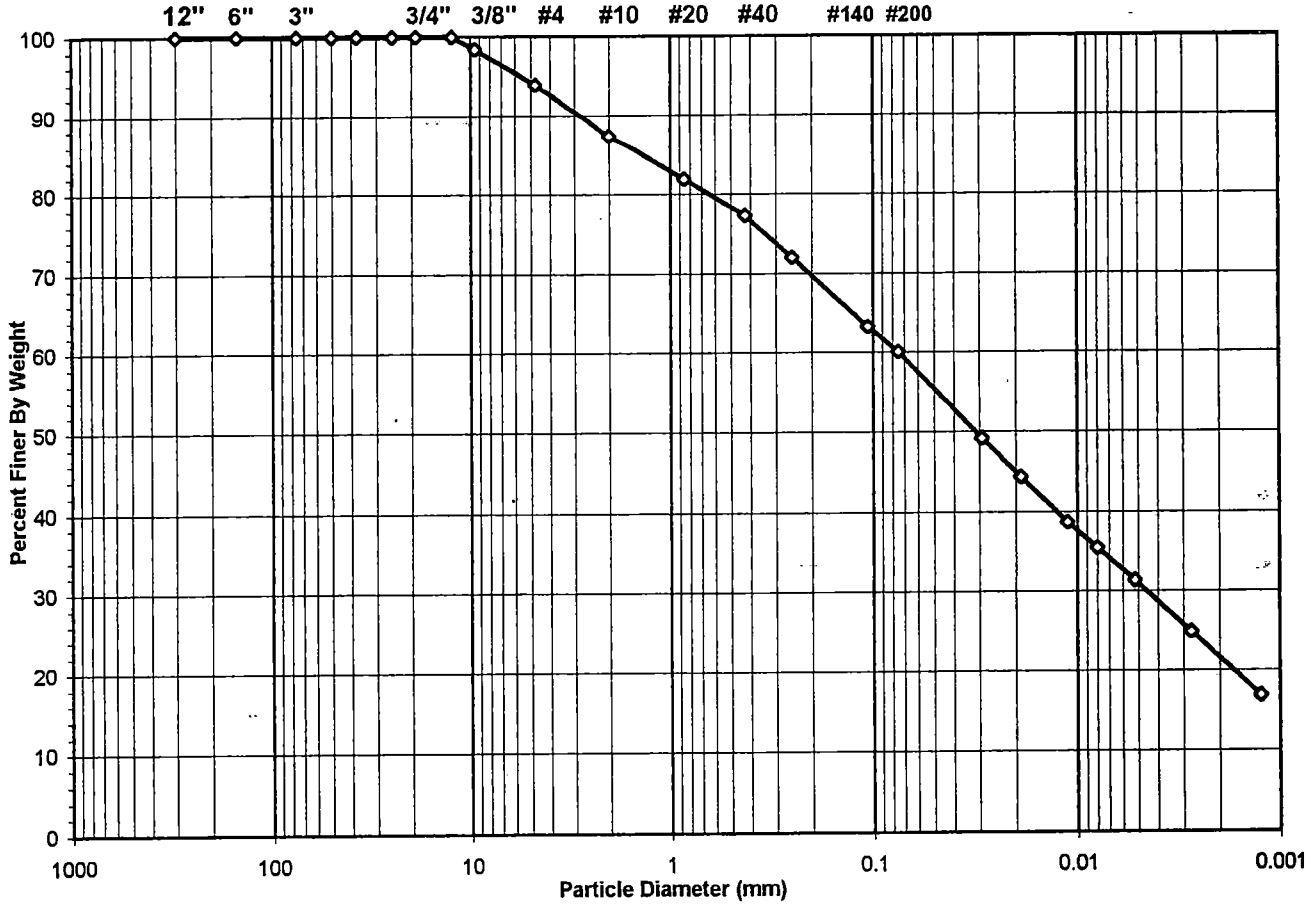
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	**GRAYISH BROWN**

	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*	12.58	**0.00**
2	87.42	*Sand*	31.98	**36.58**
0.075	60.10	*Silt*	33.75	**38.60**
0.05	55.44	*Clay*	21.70	**24.82**
0.002	21.70			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY***

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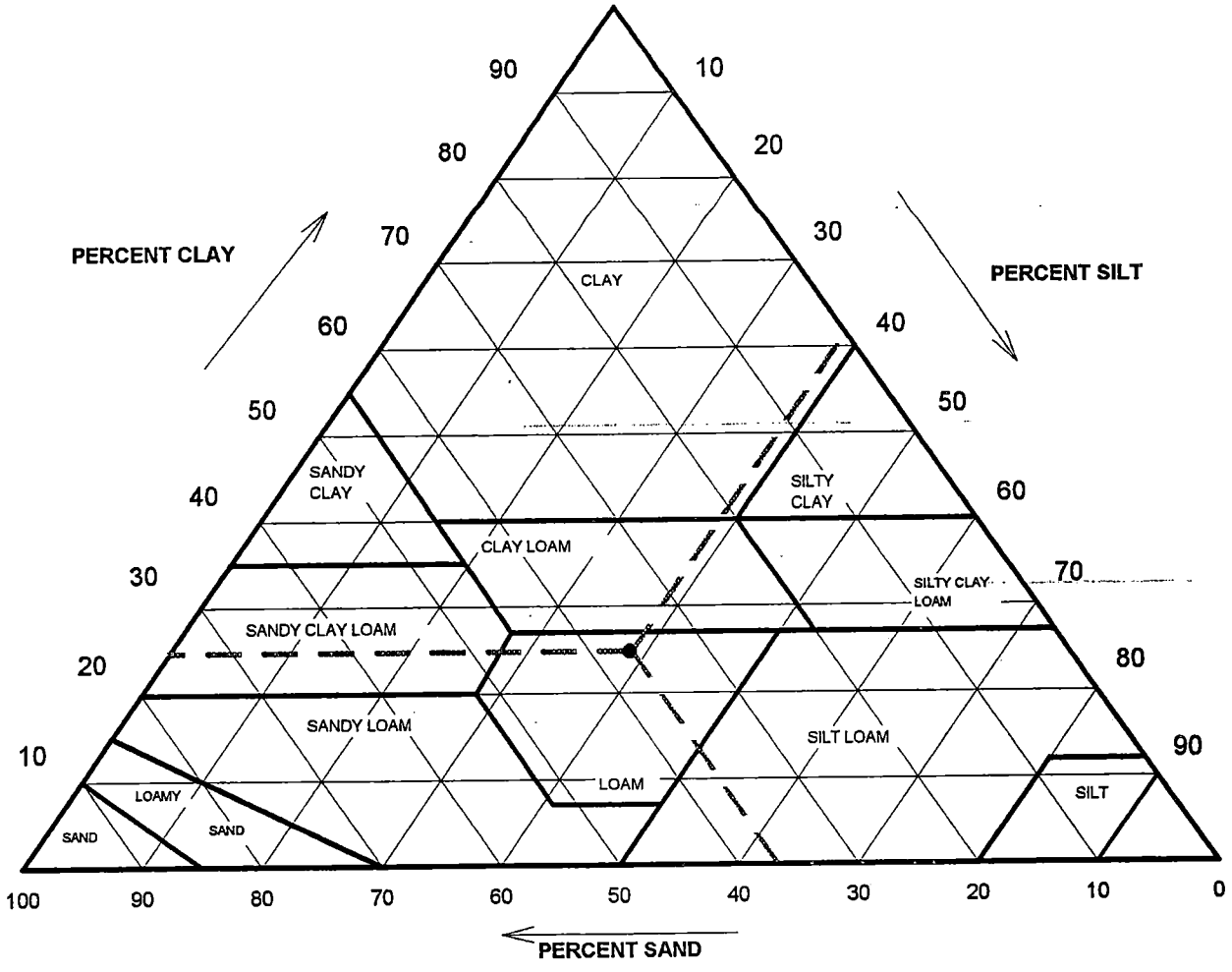
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	5.5-5.8
Project No.	97178-02	Sample No.	SM028-TB02-0406
Lab ID	97178-02.062	Soil Color	GRAYISH BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	36.58
Silt	38.60
Clay	24.82
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-13-97
Client Project	BAYER 51249	Checked By	JMO 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	0.70
Depth Pushed	2.0-4.0		
Shelby Tube No.	SM029-TB01-0204		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
2.00					
2.50					
3.00					
3.50		2		BROWN POORLY GRADED GRAVEL WITH SILT AND SAND	UNIT WGT. WC. GRAIN SIZE HYDROMETER
4.00		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		1631			
Wt. Tare & WS(gm.)		758.30			
Wt. Tare & DS(gm.)		685.50			
Wt. Tare(gm.)		96.72			
Moisture Content(%)		12.4			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	970.00
Wt. Of Tube(gms.)	307.10
Wt. Of WS.(gms.)	662.90
Length 1 (in.)	3.695
Length 2 (in.)	3.708
Length 3 (in.)	3.684
Top Diameter (in.)	2.885
Middle Diameter (in.)	2.851
Bottom Diameter (in.)	2.874
Sample Volume (cc)	391.78
Moisture Content(%)	12.36
Unit Wet Wt.(gms/cc)	1.69
Unit Wet Wt.(pcf.)	105.6
Unit Dry Wt.(pcf.)	94.0
Unit Dry Wt.(gms/cc)	1.51

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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)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1631	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	758.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	685.50	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	96.72	Weight of Tare (gm)	NA
Weight of Water (gm)	72.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	588.78	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**12.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	588.78
Dry Weight - 3/4" Sample (gm)	547.69	Weight of minus #200 material (gm)	31.44
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	557.34
Dry Weight + 3/4" Sample (gm)	9.65		
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	9.65	1.64	1.64	98.36	**98.36**
1/2"	12.5	95.01	16.14	17.78	82.22	**82.22**
3/8"	9.50	110.30	18.73	36.51	63.49	**63.49**
#4	4.75	137.35	23.33	59.84	40.16	**40.16**
#10	2.00	93.17	15.82	75.66	24.34	**24.34**
#20	0.85	46.11	7.83	83.49	16.51	**16.51**
#40	0.425	23.48	3.99	87.48	12.52	**12.52**
#60	0.250	15.20	2.58	90.06	9.94	**9.94**
#140	0.106	21.37	3.63	93.69	6.31	**6.31**
#200	0.075	5.70	0.97	94.66	5.34	**5.34**
Pan	-	31.44	5.34	100.00	-	-

Tested By BL Date 8/13/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	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	18.5	19.0	24.7	13.5	87.0	0.0327	**4.6**
5		17.0	24.7	11.5	74.1	0.0209	**4.0**
15		14.0	24.7	8.5	54.9	0.0123	**2.9**
30		13.0	24.7	7.5	48.4	0.0087	**2.6**
60		11.0	23.8	5.5	35.6	0.0063	**1.9**
250		9.0	23.1	3.5	22.8	0.0031	**1.2**
1440		9.0	24	3.5	22.8	0.0013	**1.2**

Soil Specimen Data		**Corrections**	
Tare No.	1341	K - Factor	0.01272
Tare + Dry Material (gm)	120.08	a - Factor	0.99
Weight of Tare (gm)	99.66	Composite Correction	5.45
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	5.34
Weight of Dry Material (gm)	15.42		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/19/97 Checked By JHO Date 8/27/97

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

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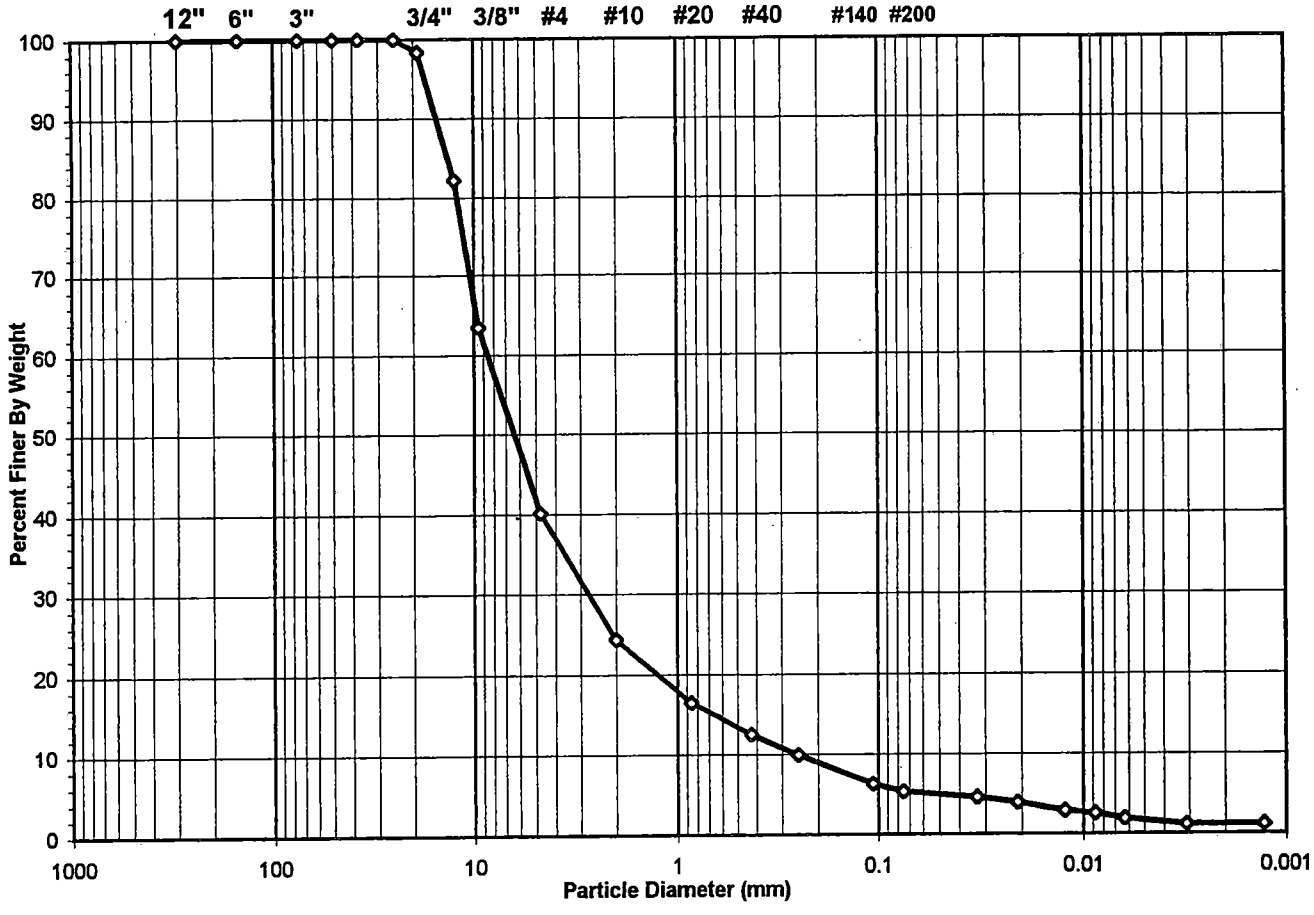
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	Soil Color	BROWN

	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*	75.66	**0.00**
2	24.34	*Sand*	19.34	**79.45**
0.075	5.34	*Silt*	3.78	**15.55**
0.05	5.00	*Clay*	1.22	**5.00**
0.002	1.22			

USDA Classification	***LOAMY SAND***	**D60 =**	**8.564**			
USCS Symbol	***gp-gm, ASSUMED***	**D30 =**	**2.725**	**CC =**	**3.43**	
USCS Classification	***POORLY GRADED GRAVEL WITH SILT AND SAND***	**D10 =**	**0.253**	**CU =**	**33.82**	

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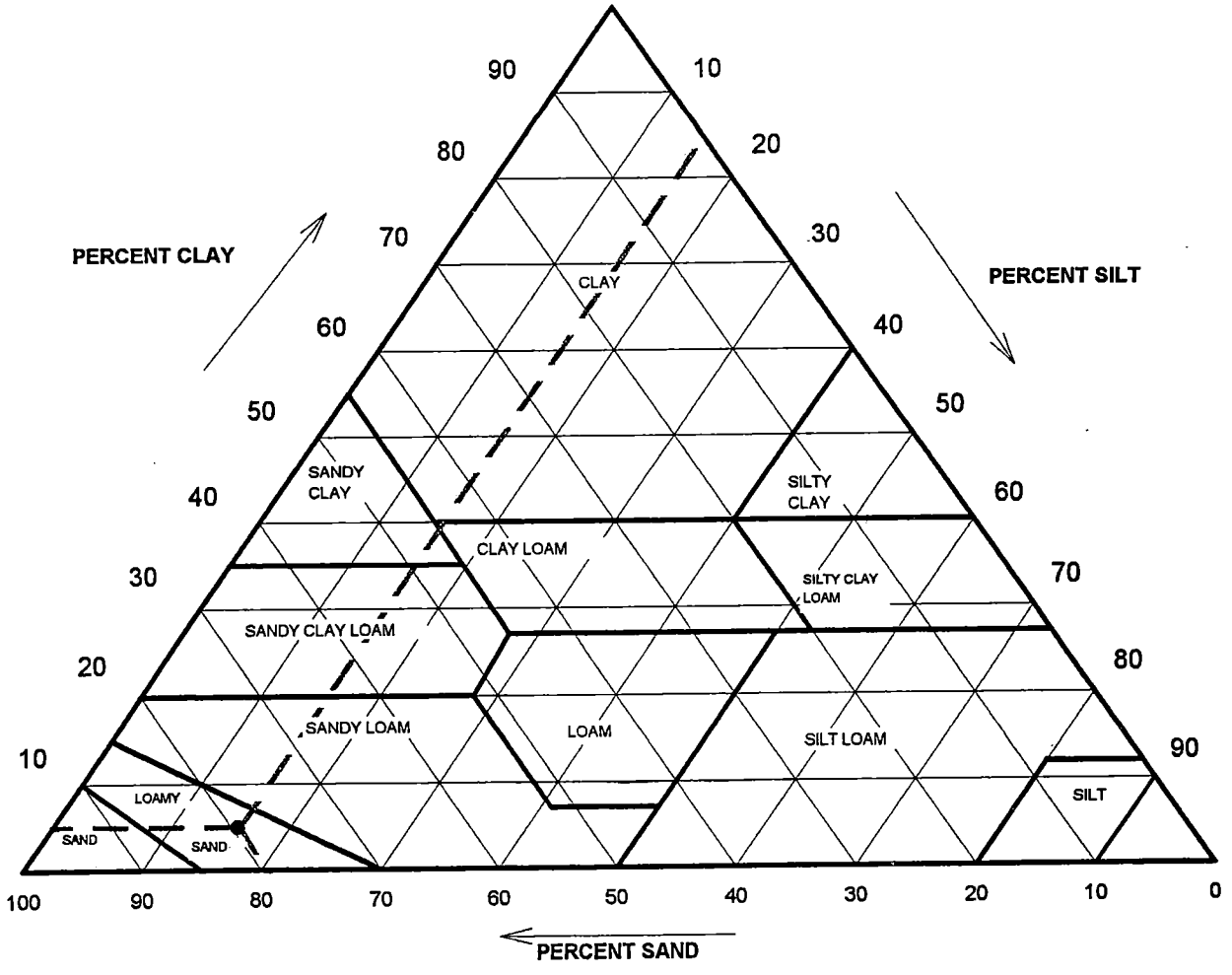
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1.5-1.8
Project No.	97178-02	Sample No.	SM029-TB01-0204
Lab ID	97178-02.064	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	79.45
Silt	15.55
Clay	5.00
USDA Classification	***LOAMY SAND***

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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)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	Soil Color	BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1089	Tare No.	1720
Wgt.Tare + Wet Specimen (gm)	1279.50	Wgt.Tare + Wet Specimen (gm)	270.72
Wgt.Tare + Dry Specimen (gm)	1151.30	Wgt.Tare + Dry Specimen (gm)	267.20
Weight of Tare (gm)	105.78	Weight of Tare (gm)	81.87
Weight of Water (gm)	128.20	Weight of Water (gm)	3.52
Weight of Dry Soil (gm)	1045.52	Weight of Dry Soil (gm)	185.33
Moisture Content (%)	**12.3**	**Moisture Content (%)**	**1.9**

Wet Weight -3/4" Sample (gm)	4614	Weight of the Dry Specimen (gm)	1045.52
Dry Weight - 3/4" Sample (gm)	4110.0	Weight of minus #200 material (gm)	606.33
Wet Weight +3/4" Sample (gm)	188.98	Weight of plus #200 material (gm)	439.19
Dry Weight + 3/4" Sample (gm)	185.46		
Total Dry Weight Sample (gm)	4295.5	**J - Factor (Percent Finer than 3/4")**	**0.9560**

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	122.63		2.85	2.85	97.15	**97.15**
3/4"	19	66.35		1.54	4.40	95.60	**95.60**
1/2"	12.5	93.68		8.96	8.96	91.04	**87.03**
3/8"	9.5	30.13		2.88	11.84	88.16	**84.28**
#4	4.75	81.41		7.79	19.63	80.37	**76.84**
#10	2	73.78		7.06	26.69	73.31	**70.09**
#20	0.85	46.21	(**)	4.42	31.11	68.89	**65.86**
#40	0.425	26.43		2.53	33.63	66.37	**63.45**
#60	0.25	20.97		2.01	35.64	64.36	**61.53**
#140	0.106	47.89		4.58	40.22	59.78	**57.15**
#200	0.075	18.69		1.79	42.01	57.99	**55.44**
Pan	-	606.33		57.99	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 JP Date 9/5/97 Checked By JCM Date 9-8-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	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	44.5	45.0	24.5	39.4	86.2	0.01275	0.0269	**47.8**
5		42.5	24.5	36.9	80.7	0.01275	0.0174	**44.7**
15		38.0	24.5	32.4	70.9	0.01275	0.0104	**39.3**
30		35.0	24.5	29.4	64.3	0.01275	0.0076	**35.7**
63		32.0	24.1	26.4	57.8	0.01281	0.0054	**32.0**
266		27.0	23.5	21.4	46.8	0.01290	0.0027	**26.0**
1440		22.0	23.4	16.4	35.9	0.01291	0.0012	**19.9**

Soil Specimen Data		Other Corrections	
Tare No.	1013		
Tare + Dry Material (gm)	153.16	a - Factor	0.99
Weight of Tare (gm)	102.83	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	55.44
Weight of Dry Material (gm)	45.33		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 9/6/97 Checked By JCM Date 9-8-97

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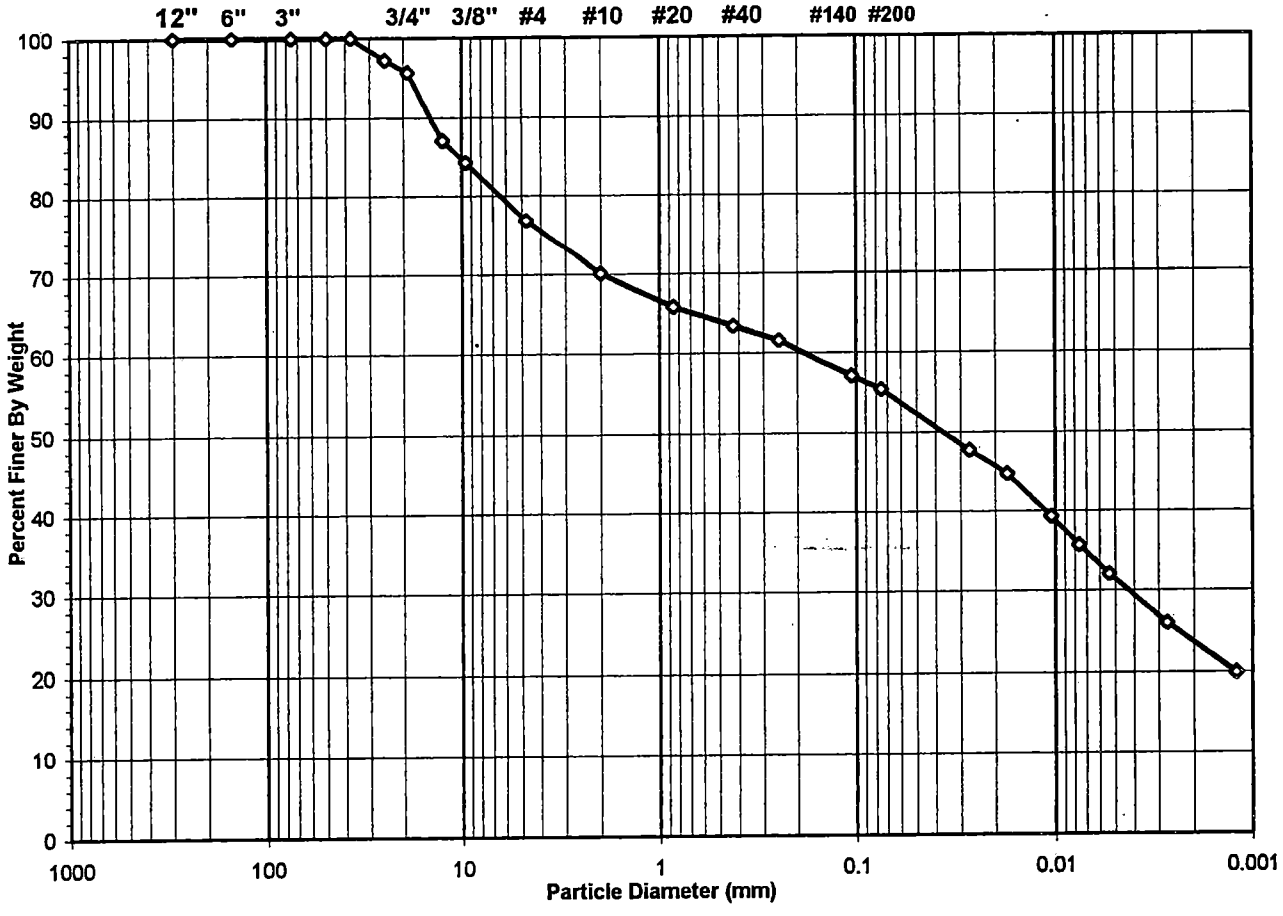
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	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*	29.91	**0.00**
2	70.09	*Sand*	17.69	**25.23**
0.075	55.44	*Silt*	28.74	**41.01**
0.05	52.40	*Clay*	23.66	**33.76**
0.002	23.66			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

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

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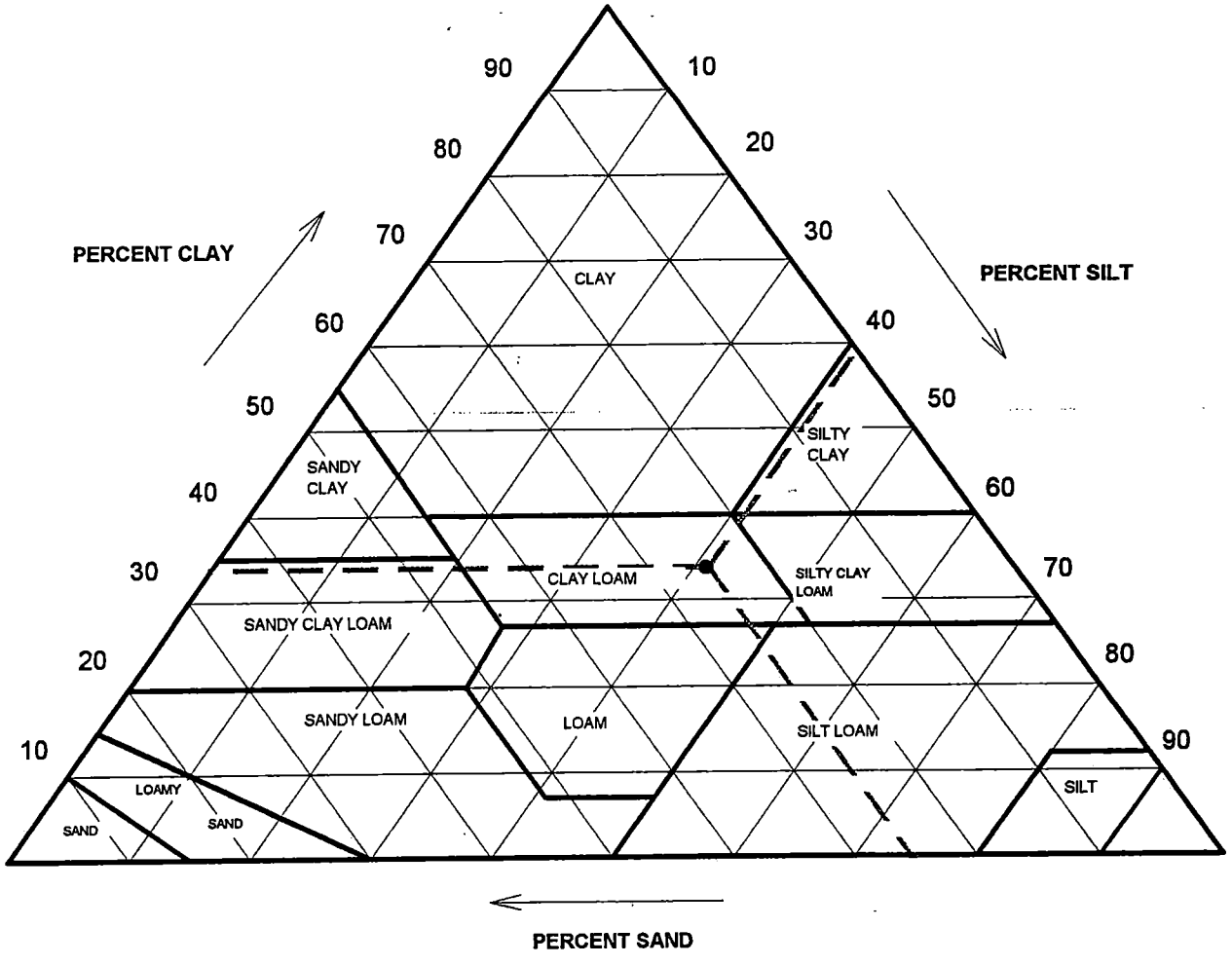
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	1-3
Project No.	97178-02	Sample No.	SM029-TB02-0103
Lab ID	97178-02.065	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	25.23
Silt	41.01
Clay	33.76
USDA Classification	***CLAY LOAM***

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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	SMO 9-5-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	0.80
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM029-TB02-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00				UNABLE TO GET DENSITY OR PERMEABILITY	
4.50				BROWN SANDY SILT	WC GRAIN SIZE HYDROMETER
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	1125				
Wt. Tare & WS(gm.)	504.50				
Wt. Tare & DS(gm.)	459.70				
Wt. Tare(gm.)	84.12				
Moisture Content(%)	11.9				

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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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1125	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	504.50	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	459.70	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	84.12	Weight of Tare (gm)	NA
Weight of Water (gm)	44.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	375.58	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**11.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	375.58
Dry Weight - 3/4" Sample (gm)	165.14	Weight of minus #200 material (gm)	210.44
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	165.14
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	1.90	0.51	0.51	99.49	**99.49**
3/8"	9.50	2.28	0.61	1.11	98.89	**98.89**
#4	4.75	4.62	1.23	2.34	97.66	**97.66**
#10	2.00	6.95	1.85	4.19	95.81	**95.81**
#20	0.85	3.95	1.05	5.25	94.75	**94.75**
#40	0.425	4.10	1.09	6.34	93.66	**93.66**
#60	0.250	12.03	3.20	9.54	90.46	**90.46**
#140	0.106	87.99	23.43	32.97	67.03	**67.03**
#200	0.075	41.32	11.00	43.97	56.03	**56.03**
Pan	-	210.44	56.03	100.00	-	-

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

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	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	29.0	29.0	24.2	23.3	68.6	0.0307	**38.4**
5		26.0	24.2	20.3	59.7	0.0198	**33.5**
15		23.0	24.2	17.3	50.9	0.0117	**28.5**
30		21.0	24.2	15.3	45.0	0.0084	**25.2**
60		19.5	23.5	13.8	40.6	0.0060	**22.8**
281		16.5	22.6	10.8	31.8	0.0028	**17.8**
1440		13.0	22.4	7.3	21.5	0.0013	**12.0**

Soil Specimen Data		Corrections	
Tare No.	4062	K - Factor	0.01279
Tare + Dry Material (gm)	144.68	a - Factor	0.99
Weight of Tare (gm)	106.04	Composite Correction	5.70
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	56.03
Weight of Dry Material (gm)	33.64		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/18/97 Checked By Jcm Date 8-28-97

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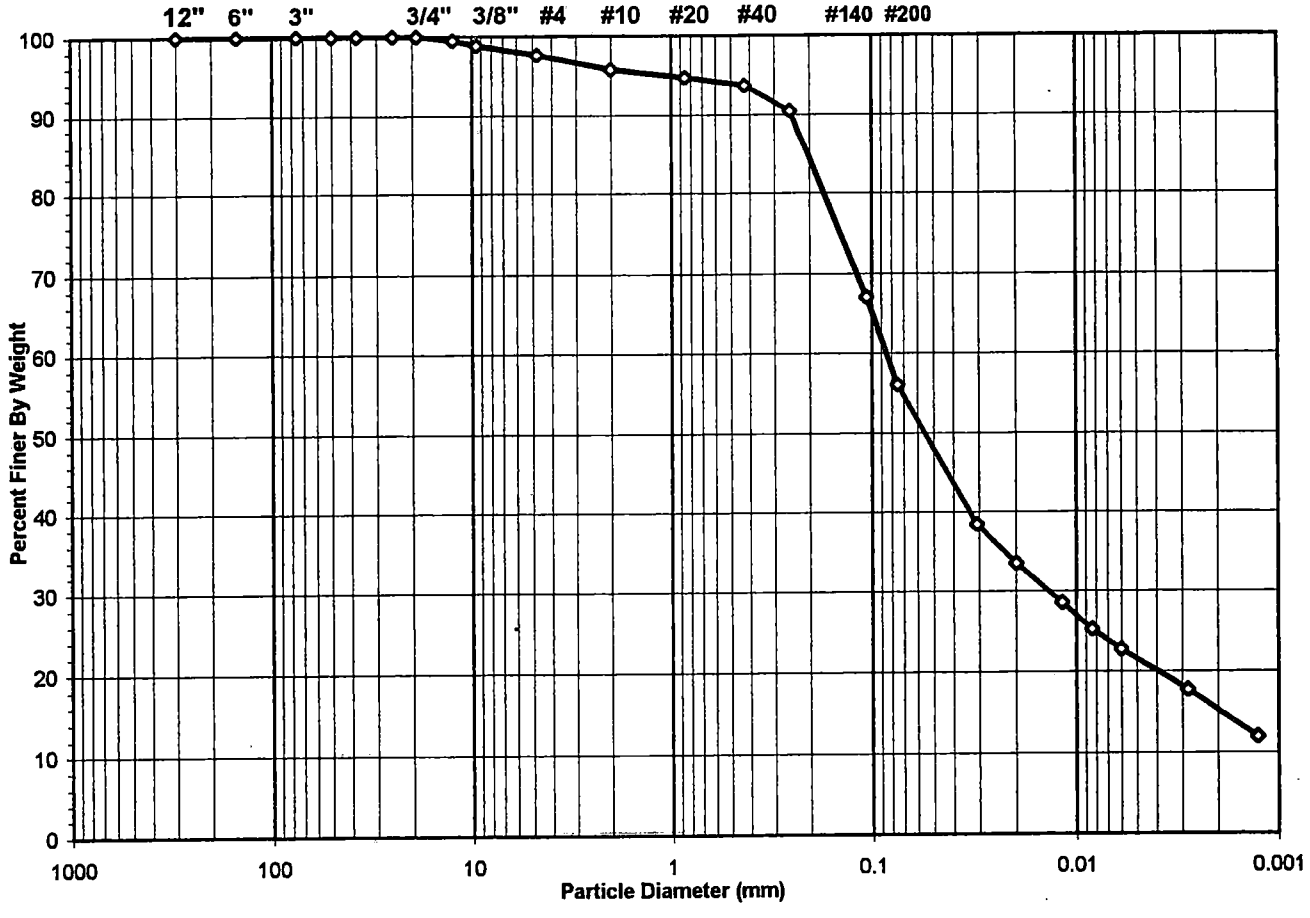
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	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*	4.19	**0.00**
2	95.81	*Sand*	47.78	**49.87**
0.075	56.03	*Silt*	32.69	**34.12**
0.05	48.03	*Clay*	15.34	**16.01**
0.002	15.34			

USDA Classification ***LOAM***

USCS Symbol ***ml, ASSUMED***

USCS Classification ***SANDY SILT***

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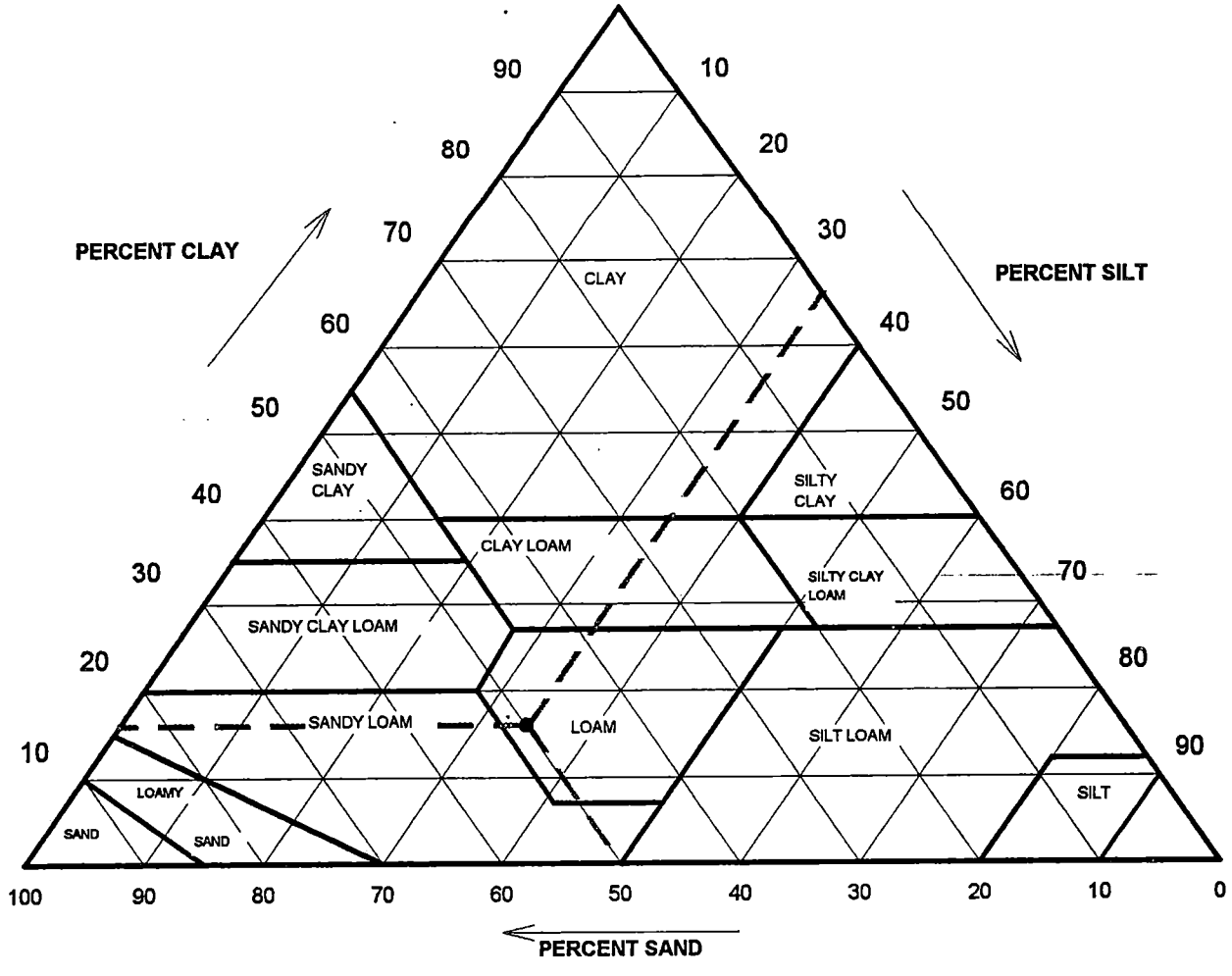
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3-5
Project No.	97178-02	Sample No.	SM029-TB02-0305
Lab ID	97178-02.066	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	49.87
Silt	34.12
Clay	16.01
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 8-15-97
Client Project	BAYER 51249	Checked By	JMO 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	14.0-16.0		
Shelby Tube No.	SM029-TB02-1416		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
14.00					
14.50					
15.00					
		3			GRAIN SIZE, HYDROMETER, UNIT WGT. WC.
15.50		2		BROWN CLAYEY SAND	PERMEABILITY
		1			WATER CONTENT
16.00					

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	1806		1694		
Wt. Tare & WS(gm.)	264.97		565.80		
Wt. Tare & DS(gm.)	239.05		511.30		
Wt. Tare(gm.)	40.16		83.95		
Moisture Content(%)	13.0		12.8		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	961.80	1341.40
Wt. Of Tube(gms.)	279.09	377.46
Wt. Of WS.(gms.)	682.71	963.94
Length 1 (in.)	3.593	4.877
Length 2 (in.)	3.598	4.876
Length 3 (in.)	3.561	4.877
Top Diameter (in.)	2.847	2.859
Middle Diameter (in.)	2.877	2.869
Bottom Diameter (in.)	2.877	2.866
Sample Volume (cc)	379.15	515.07
Moisture Content(%)	13.03	12.75
Unit Wet Wt.(gms/cc)	1.80	1.87
Unit Wet Wt.(pcf.)	112.4	116.8
Unit Dry Wt.(pcf.)	99.4	103.6
Unit Dry Wt.(gms/cc)	1.59	1.66

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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)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1694	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	565.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	511.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.95	Weight of Tare (gm)	NA
Weight of Water (gm)	54.50	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	427.35	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**12.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	427.35
Dry Weight - 3/4" Sample (gm)	303.89	Weight of minus #200 material (gm)	123.46
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	303.89
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	0.04	0.01	0.01	99.99	**99.99**
#10	2.00	3.14	0.73	0.74	99.26	**99.26**
#20	0.85	4.74	1.11	1.85	98.15	**98.15**
#40	0.425	35.25	8.25	10.10	89.90	**89.90**
#60	0.250	156.00	36.50	46.61	53.39	**53.39**
#140	0.106	90.63	21.21	67.81	32.19	**32.19**
#200	0.075	14.09	3.30	71.11	28.89	**28.89**
Pan	-	123.46	28.89	100.00	-	-

Tested By JCM Date 8/15/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	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	24.0	25.0	24.2	19.3	71.1	0.0316	**20.5**
5		23.0	24.2	17.3	63.7	0.0202	**18.4**
15		20.0	24.2	14.3	52.7	0.0119	**15.2**
32		18.5	24.2	12.8	47.1	0.0082	**13.6**
60		17.5	23.5	11.8	43.5	0.0061	**12.6**
250		15.0	23.2	9.3	34.3	0.0030	**9.9**
1440		13.0	23.9	7.3	26.9	0.0013	**7.8**

Soil Specimen Data		**Corrections**	
Tare No.	891	K - Factor	0.01279
Tare + Dry Material (gm)	136.98	a - Factor	0.99
Weight of Tare (gm)	105.1	Composite Correction	5.70
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	28.89
Weight of Dry Material (gm)	26.88		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/16/97 Checked By JMO Date 8/27/97

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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)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	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*	0.74	**0.00**
2	99.26	*Sand*	74.28	**74.84**
0.075	28.89	*Silt*	16.08	**16.20**
0.05	24.97	*Clay*	8.89	**8.96**
0.002	8.89			

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

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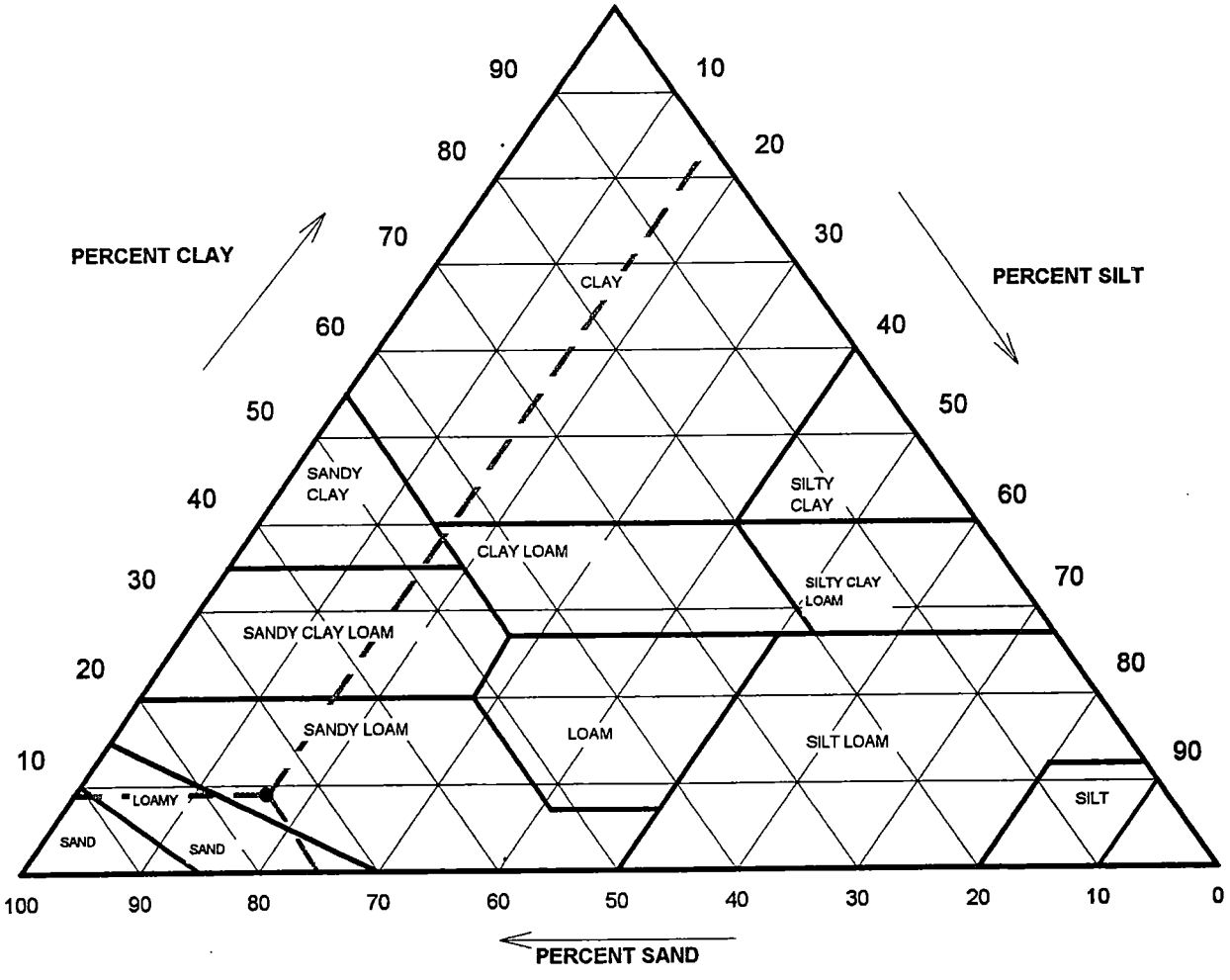
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.1-15.5
Project No.	97178-02	Sample No.	SM029-TB02-1416
Lab ID	97178-02.067	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	74.84
Silt	16.20
Clay	8.96
USDA Classification	***SANDY LOAM***

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PERMEABILITY TEST

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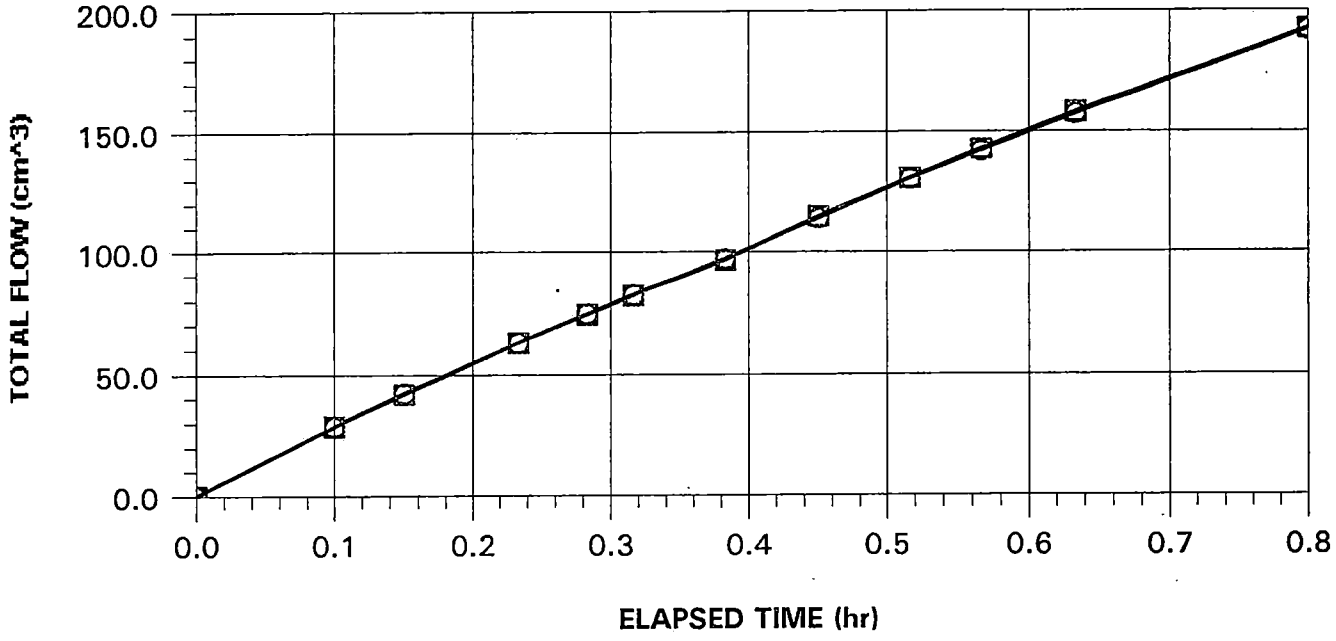
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	15.5-15.8
Project No.	97178-02	Sample No.	SM029-TB02-1416

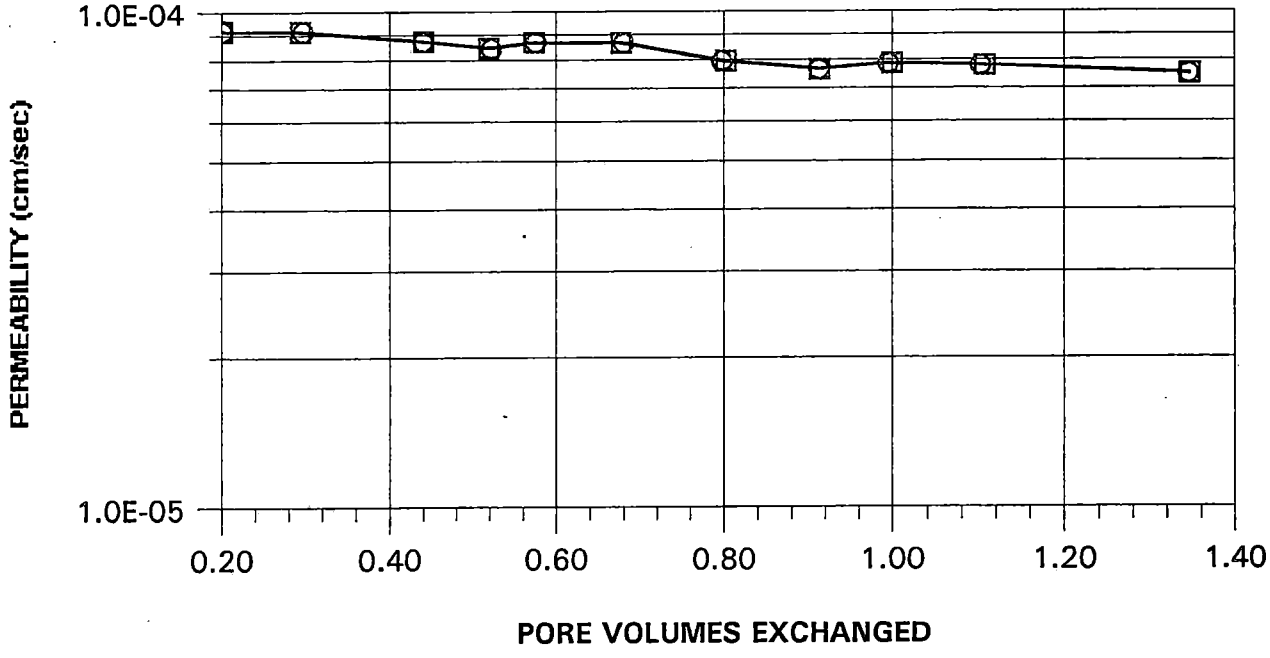
AVERAGE PERMEABILITY = 7.7E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.7E-07 m/sec @ 20°C

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	08-15-97
Client Project	BAYER 51249	Checked By	JMO	Date	8-27-97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	15.5-15.8	Sample Condition	UNDISTURBED		
Sample No.	SM029-TB02-1416				

Visual Description BROWN CLAYEY SAND

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1806	1703
Wt. Tare & WS(gm.)	264.97	458.70
Wt. Tare & DS(gm.)	239.05	387.69
Wt. Water(gm.)	25.92	71.01
Wt. Tare(gm.)	40.16	83.82
Wt. DS(gm.)	198.89	303.87
Moisture Content(%)	13.0	23.4

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	961.80	NA
Wt. Of Tube(gms.)	279.09	NA
Wt. Of WS.(gms.)	682.71	745.1
Length 1 (in.)	3.593	3.625
Length 2 (in.)	3.598	3.592
Length 3 (in.)	3.561	3.590
Top Diameter (in.)	2.897	2.808
Middle Diameter (in.)	2.877	2.812
Bottom Diameter (in.)	2.877	2.816
Average Length (in)	3.58	3.60
Average Area (in^2)	6.53	6.21
Sample Volume(cc.)	383.57	366.61
Unit Wet Wt.(gms/cc)	1.78	2.03
Unit Wet Wt.(pcf.)	111.1	126.8
Unit Dry Wt.(pcf.)	98.3	102.8
Unit Dry Wt.(gms/cc)	1.57	1.65
Void Ratio,e	0.71	0.64
Porosity, n	0.42	0.39
Pore Volume(cm^3)	159.9	142.9

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-15-97
Client Project	BAYER 51249	Checked By	JMO	Date	8-27-97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	15.5-15.8				
Sample No.	SM029-TB02-1416				
Visual Description	BROWN CLAYEY SAND				

Pressure Heads (Constant)	
Top Cap (psi)	92.5
Bottom Cap (psi)	95.0
Cell (psi)	100.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	9.15
Sample Diameter (cm.)	7.14
Sample Area (cm.^2), A	40.07
Inflow Burette Area, (cm.^2), a-in	4.48
Outflow Burette Area, (cm.^2), a-out	4.48
B Parameter	95%

AVERAGE PERMEABILITY = 7.7E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.7E-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
08-21-97	17	48	0.0	0.0	0.0	194.4	0	22.3	NA
08-21-97	17	54	0.1	28.6	28.7	181.6	0	22.3	9.2E-05
08-21-97	17	57	0.1	42.4	42.0	175.6	0	22.3	9.1E-05
08-21-97	18	2	0.2	62.9	63.0	166.3	0	22.3	8.7E-05
08-21-97	18	5	0.3	74.7	74.2	161.2	0	22.3	8.4E-05
08-21-97	18	7	0.3	82.3	81.9	157.8	0	22.3	8.7E-05
08-21-97	18	11	0.4	97.2	96.8	151.1	1	22.3	8.7E-05
08-21-97	18	14	0.4	97.2	96.8	201.4	0	22.3	NA
08-21-97	18	18	0.4	114.0	114.7	193.6	0	22.3	7.9E-05
08-21-97	18	22	0.5	130.4	130.6	186.4	0	22.3	7.6E-05
08-21-97	18	25	0.6	142.2	142.8	181.1	0	22.3	7.9E-05
08-21-97	18	29	0.6	157.5	158.2	174.2	0	22.3	7.8E-05
08-21-97	18	39	0.8	192.3	192.5	158.8	0	22.3	7.5E-05

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SHELBY TUBE UNIT WEIGHT

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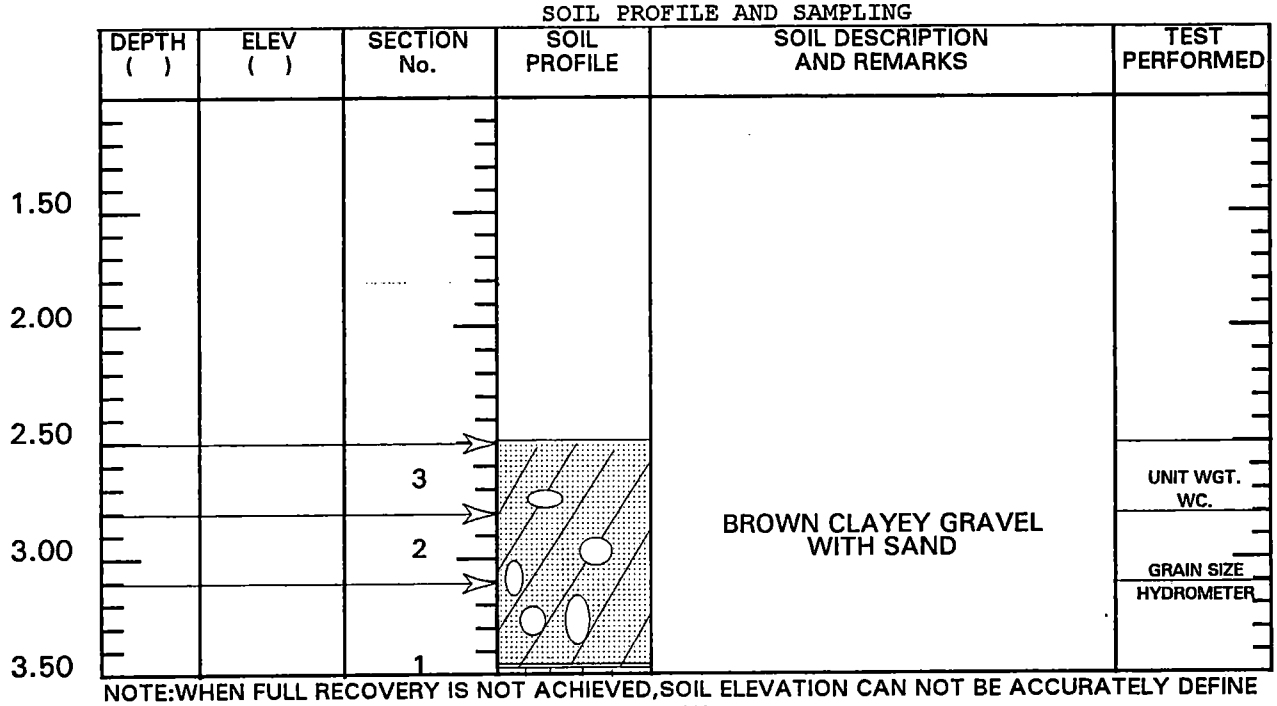
Client	ICF KAISER	Tested By	BL 8-18-97
Client Project	BAYER 51249	Checked By	JCM 9-5-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	1.60
Depth Pushed	1.3-3.5		
Shelby Tube No.	SM030-TB01-0103		

SOIL PROFILE AND SAMPLING



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.)			579.10		
Wt. Tare & DS(gm.)			491.70		
Wt. Tare(gm.)			73.04		
Moisture Content(%)			20.9		
UNIT WEIGHT					
Wt. Tube & WS.(gms.)			933.00		
Wt. Of Tube(gms.)			265.27		
Wt. Of WS.(gms.)			667.73		
Length 1 (in.)			3.592		
Length 2 (in.)			3.607		
Length 3 (in.)			3.564		
Top Diameter (in.)			2.881		
Middle Diameter (in.)			2.887		
Bottom Diameter (in.)			2.882		
Sample Volume (cc)			383.88		
Moisture Content(%)			20.88		
Unit Wet Wt.(gms/cc)			1.74		
Unit Wet Wt.(pcf.)			108.5		
Unit Dry Wt.(pcf.)			89.8		
Unit Dry Wt.(gms/cc)			1.44		

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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)	2.8-3.1
Project No.	97178-03	Sample No.	SM030-TB01-0103
Lab ID	97178-03.017	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	681	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	806.20	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	731.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	99.64	Weight of Tare (gm)	NA
Weight of Water (gm)	74.30	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	632.26	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**11.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	632.26
Dry Weight - 3/4" Sample (gm)	255.60	Weight of minus #200 material (gm)	167.91
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	464.35
Dry Weight + 3/4" Sample (gm)	208.75		
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	58.91	9.32	9.32	90.68	**90.68**
1"	25.0	84.81	13.41	22.73	77.27	**77.27**
3/4"	19.0	65.03	10.29	33.02	66.98	**66.98**
1/2"	12.5	38.68	6.12	39.13	60.87	**60.87**
3/8"	9.50	36.26	5.73	44.87	55.13	**55.13**
#4	4.75	62.23	9.84	54.71	45.29	**45.29**
#10	2.00	52.54	8.31	63.02	36.98	**36.98**
#20	0.85	28.17	4.46	67.48	32.52	**32.52**
#40	0.425	13.37	2.11	69.59	30.41	**30.41**
#60	0.250	8.09	1.28	70.87	29.13	**29.13**
#140	0.106	11.34	1.79	72.66	27.34	**27.34**
#200	0.075	4.92	0.78	73.44	26.56	**26.56**
Pan	-	167.91	26.56	100.00	-	-

Tested By BL Date 8/18/97 Checked By JAM Date 9-9-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.8-3.1
Project No.	97178-03	Sample No.	SM030-TB01-0103
Lab ID	97178-03.017	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	45.0	46.5	23	40.2	87.8	0.0270	**23.3**
5		42.5	23	36.2	79.1	0.0177	**21.0**
17		37.5	23	31.2	68.2	0.0100	**18.1**
30		34.0	23	27.7	60.5	0.0078	**16.1**
60		30.5	22.2	24.2	52.9	0.0056	**14.0**
250		24.0	22.7	17.7	38.7	0.0029	**10.3**
1440		18.0	23.5	11.7	25.6	0.0012	**6.8**

Soil Specimen Data		Corrections	
Tare No.	1618	K - Factor	0.01297
Tare + Dry Material (gm)	150.24	a - Factor	0.99
Weight of Tare (gm)	99.91	Composite Correction	6.29
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	26.56
Weight of Dry Material (gm)	45.33		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/20/97 Checked By JCM Date 9-9-97

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

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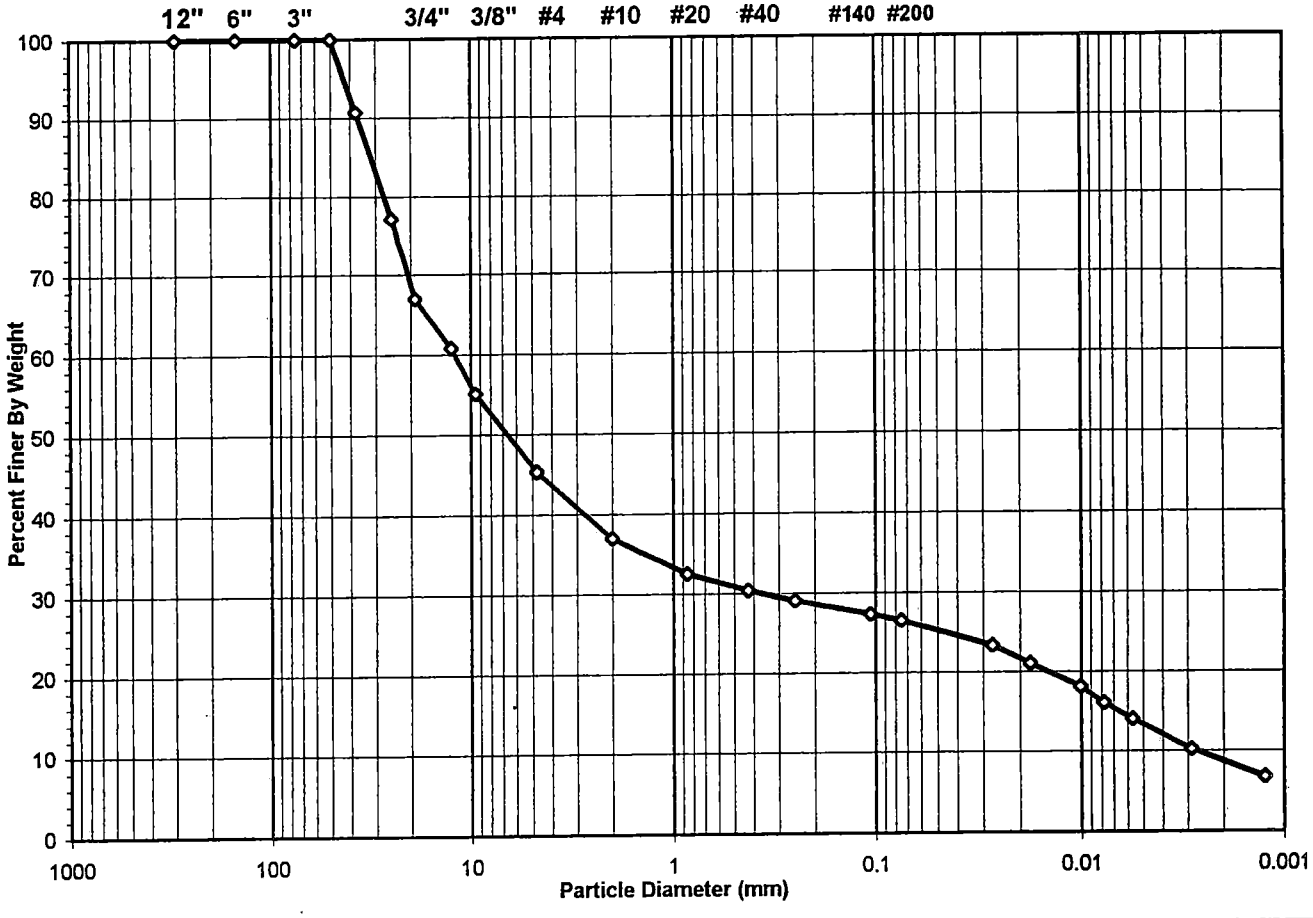
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.8-3.1
Project No.	97178-03	Sample No.	SM030-TB01-0103
Lab ID	97178-03.017	Soil Color	BROWN

	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*	63.02	**0.00**
2	36.98	*Sand*	11.71	**31.65**
0.075	26.56	*Silt*	16.52	**44.68**
0.05	25.27	*Clay*	8.75	**23.67**
0.002	8.75			

USDA Classification *LOAM*

USCS Symbol *gc, ASSUMED*

USCS Classification *CLAYEY GRAVEL WITH SAND*

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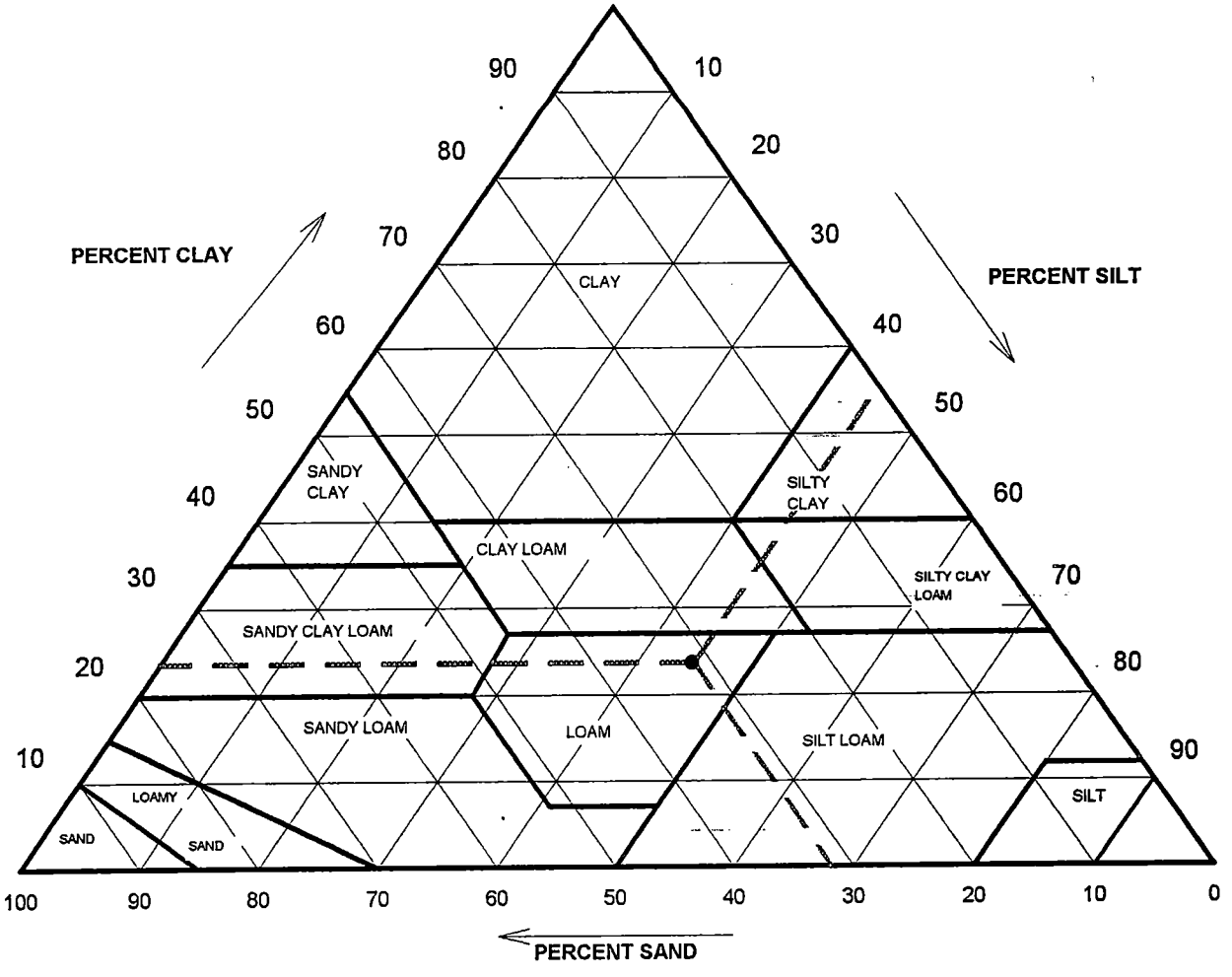
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.8-3.1
Project No.	97178-03	Sample No.	SM030-TB01-0103
Lab ID	97178-03.017	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	31.65
Silt	44.68
Clay	23.67
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 8-4-97
Client Project	BAYER 51249	Checked By	JHO 9-5-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	5.0-7.0		
Shelby Tube No.	SM030-TB02-0507		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
5.00					
5.50					
6.00				MATERIAL TOO LOOSE TO GET A DENSITY	
6.50				BROWN WELL GRADED SAND WITH SILT AND GRAVEL	GRAIN SIZE HYDROMETER WC.
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	841				
Wt. Tare & WS(gm.)	358.29				
Wt. Tare & DS(gm.)	281.94				
Wt. Tare(gm.)	92.93				
Moisture Content(%)	40.4				

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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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.0-7.0
Project No.	97178-03	Sample No.	SM030-TB02-0507
Lab ID	97178-03.018	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	841	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	358.29	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	281.94	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	92.93	Weight of Tare (gm)	NA
Weight of Water (gm)	76.35	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	189.01	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**40.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	189.01
Dry Weight - 3/4" Sample (gm)	170.97	Weight of minus #200 material (gm)	12.39
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	176.62
Dry Weight + 3/4" Sample (gm)	5.65		
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	5.65	2.99	2.99	97.01	**97.01**
1/2"	12.5	20.77	10.99	13.98	86.02	**86.02**
3/8"	9.50	14.99	7.93	21.91	78.09	**78.09**
#4	4.75	39.26	20.77	42.68	57.32	**57.32**
#10	2.00	48.11	25.45	68.13	31.87	**31.87**
#20	0.85	23.40	12.38	80.51	19.49	**19.49**
#40	0.425	12.55	6.64	87.15	12.85	**12.85**
#60	0.250	5.71	3.02	90.18	9.82	**9.82**
#140	0.106	5.17	2.74	92.91	7.09	**7.09**
#200	0.075	1.01	0.53	93.44	6.56	**6.56**
Pan	-	12.39	6.56	100.00	-	-

Tested By GU Date 8/4/97 Checked By Jam Date 8-25-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.0-7.0
Project No.	97178-03	Sample No.	SM030-TB02-0507
Lab ID	97178-03.018	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	17.0	18.0	24.7	12.5	81.8	0.0329	**5.4**
5		17.5	24.7	12.0	78.6	0.0208	**5.1**
15		16.0	24.7	10.5	68.8	0.0121	**4.5**
30		15.0	24.7	9.5	62.3	0.0086	**4.1**
60		13.5	23.2	8.0	52.5	0.0062	**3.4**
250		12.0	22.5	6.5	42.7	0.0030	**2.8**
1440		10.0	24.1	4.5	29.7	0.0013	**1.9**

Soil Specimen Data		Corrections	
Tare No.	1321	K - Factor	0.01272
Tare + Dry Material (gm)	123.09	a - Factor	0.99
Weight of Tare (gm)	102.91	Composite Correction	5.45
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	6.56
Weight of Dry Material (gm)	15.18		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/7/97 Checked By JCM Date 8-25-97

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

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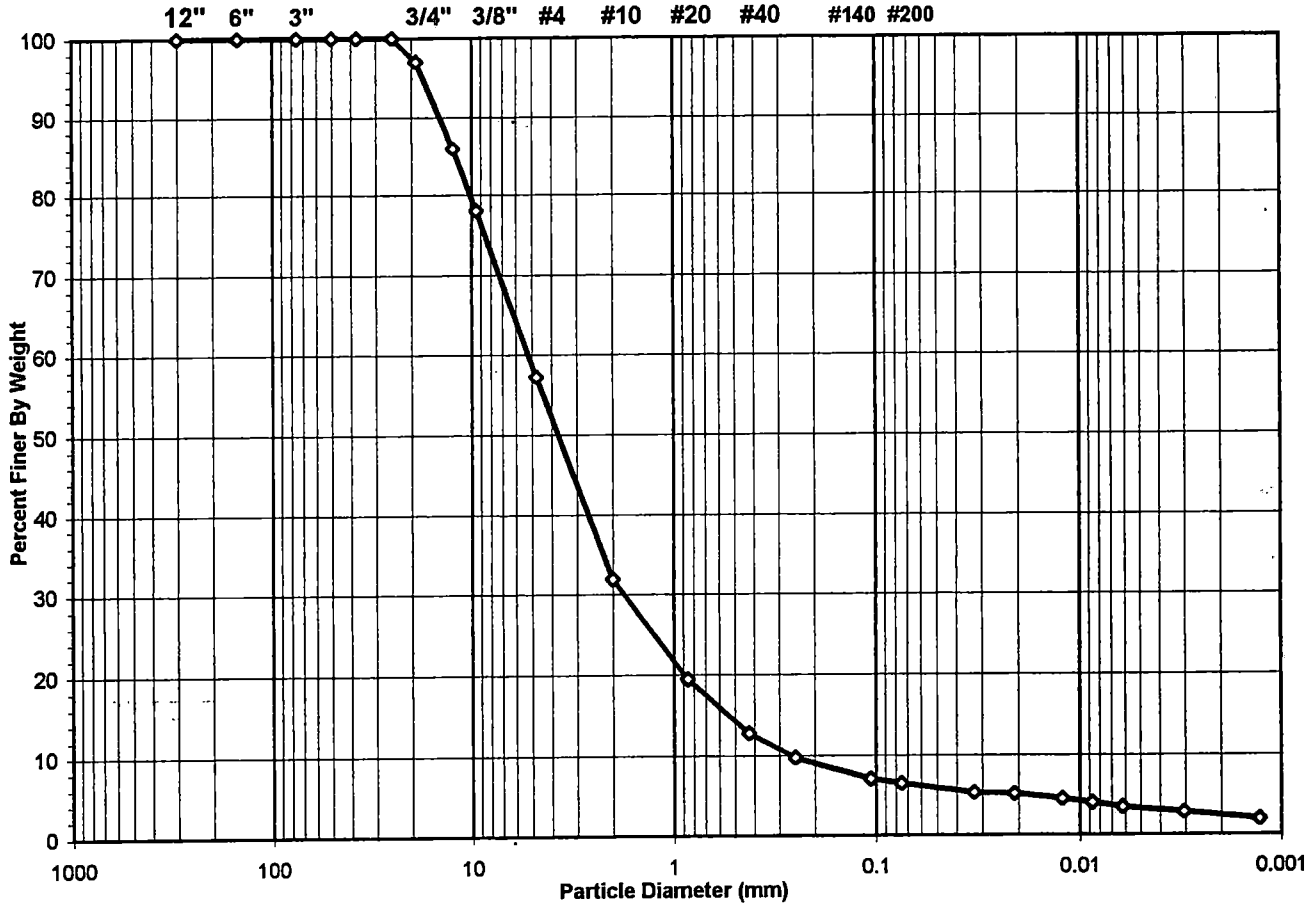
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.0-7.0
Project No.	97178-03	Sample No.	SM030-TB02-0507
Lab ID	97178-03.018	Soil Color	BROWN

	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*	68.13	**0.00**
2	31.87	*Sand*	25.90	**81.27**
0.075	6.56	*Silt*	3.59	**11.26**
0.05	5.97	*Clay*	2.38	**7.48**
0.002	2.38			

USDA Classification	***LOAMY SAND***	**D60 =**	**5.194**			
USCS Symbol	***SW-SM, TESTED (NON-PLASTIC FINES)***	**D30 =**	**1.758**	**CC =**	**2.31**	
USCS Classification	***WELL-GRADED SAND WITH SILT AND GRAVEL***	**D10 =**	**0.258**	**CU =**	**20.15**	

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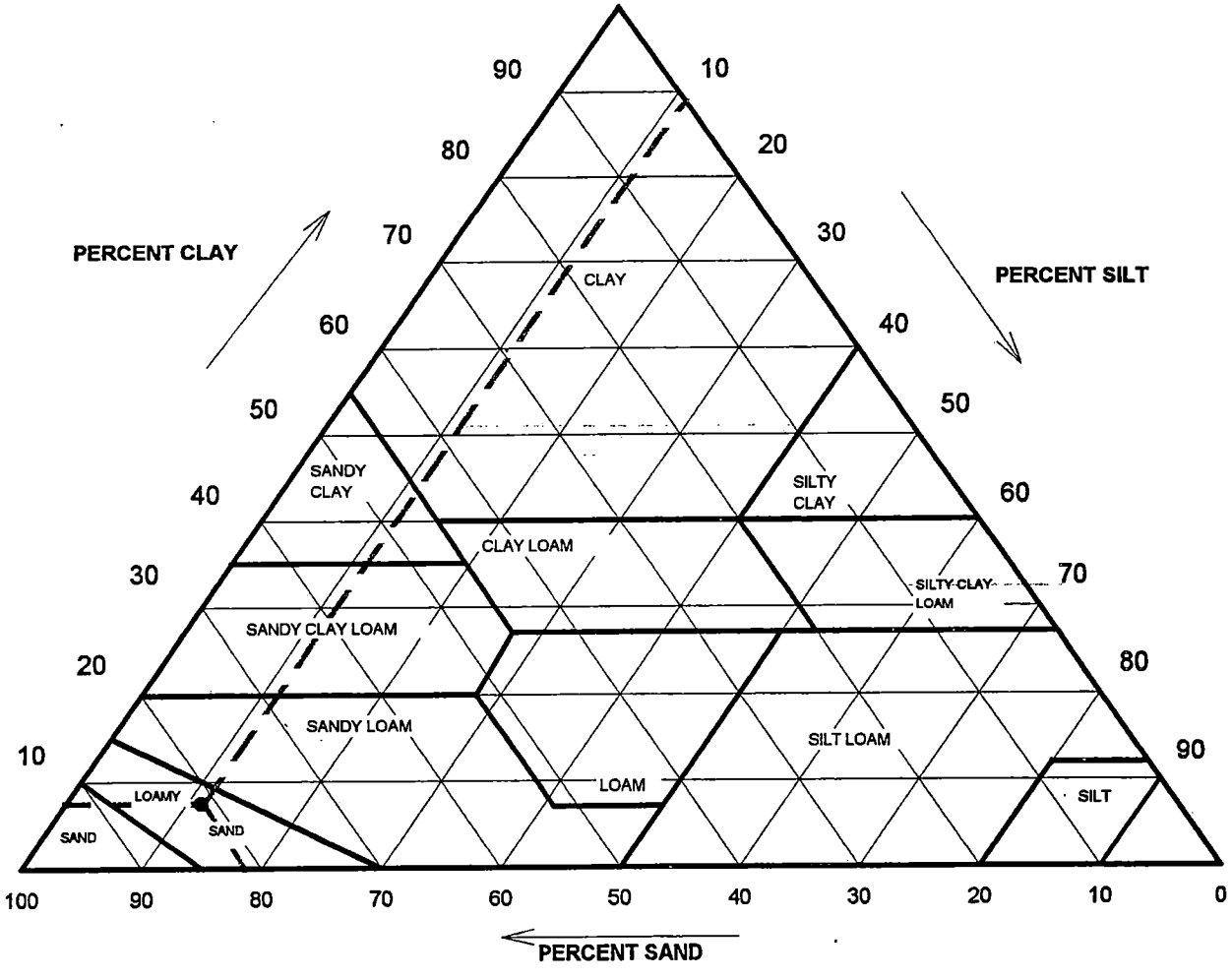
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.0-7.0
Project No.	97178-03	Sample No.	SM030-TB02-0507
Lab ID	97178-03.018	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	81.27
Silt	11.26
Clay	7.48
USDA Classification	***LOAMY SAND***

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DATE: 7/11/97
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ATTERBERG LIMIT

ASTM D 4318-96 (SOP - S4)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.0-7.0
Project No.	97178-03	Sample No.	SM030-TB02-0507
Lab ID	97178-03.018	Visual Description	**DARK BROWN**
			(Minus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By BL *Date* 8/7/97 *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 8-22-97
Client Project	BAYER 51249	Checked By	JMO 9-5-97
Project No.	97178-03		
Boring No.	NA	Tube Recovery	0.90
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM030-TB03-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00				TUBE COLLAPSED	
4.50				BROWN CLAYEY GRAVEL WITH SAND	WC GRAIN SIZE HYDROMETER
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.)	826.80				
Wt. Tare & DS(gm.)	759.80				
Wt. Tare(gm.)	76.12				
Moisture Content(%)	9.8				

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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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-5.0
Project No.	97178-03	Sample No.	SM030-TB03-0305
Lab ID	97178-03.019	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)	826.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	759.80	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	76.12	Weight of Tare (gm)	NA
Weight of Water (gm)	67.00	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	683.68	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**9.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	683.68
Dry Weight - 3/4" Sample (gm)	217.79	Weight of minus #200 material (gm)	320.21
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	363.47
Dry Weight + 3/4" Sample (gm)	145.68		
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	99.44	14.54	14.54	85.46	**85.46**
1"	25.0	46.24	6.76	21.31	78.69	**78.69**
3/4"	19.0	0.00	0.00	21.31	78.69	**78.69**
1/2"	12.5	45.52	6.66	27.97	72.03	**72.03**
3/8"	9.50	21.29	3.11	31.08	68.92	**68.92**
#4	4.75	32.56	4.76	35.84	64.16	**64.16**
#10	2.00	35.92	5.25	41.10	58.90	**58.90**
#20	0.85	29.57	4.33	45.42	54.58	**54.58**
#40	0.425	15.11	2.21	47.63	52.37	**52.37**
#60	0.250	9.41	1.38	49.01	50.99	**50.99**
#140	0.106	16.76	2.45	51.46	48.54	**48.54**
#200	0.075	11.65	1.70	53.16	46.84	**46.84**
Pan	-	320.21	46.84	100.00	-	-

Tested By JCM Date 8/7/97 Checked By Jam Date 8-25-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-5.0
Project No.	97178-03	Sample No.	SM030-TB03-0305
Lab ID	97178-03.019	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	47.5	48.5	24.7	43.0	84.6	0.0260	**39.6**
5		44.5	24.7	39.0	76.7	0.0171	**35.9**
15		38.5	24.7	33.0	64.9	0.0104	**30.4**
30		34.0	24.7	28.5	56.1	0.0076	**26.3**
60		30.5	23.2	25.0	49.2	0.0055	**23.0**
250		23.5	22.5	18.0	35.4	0.0028	**16.6**
1440		16.5	24.1	11.0	21.7	0.0012	**10.2**

Soil Specimen Data		**Corrections**	
Tare No.	1337	K - Factor	0.01272
Tare + Dry Material (gm)	155.94	a - Factor	0.99
Weight of Tare (gm)	100.54	Composite Correction	5.45
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	46.84
Weight of Dry Material (gm)	50.4		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/7/97 Checked By JCM Date 8-25-97

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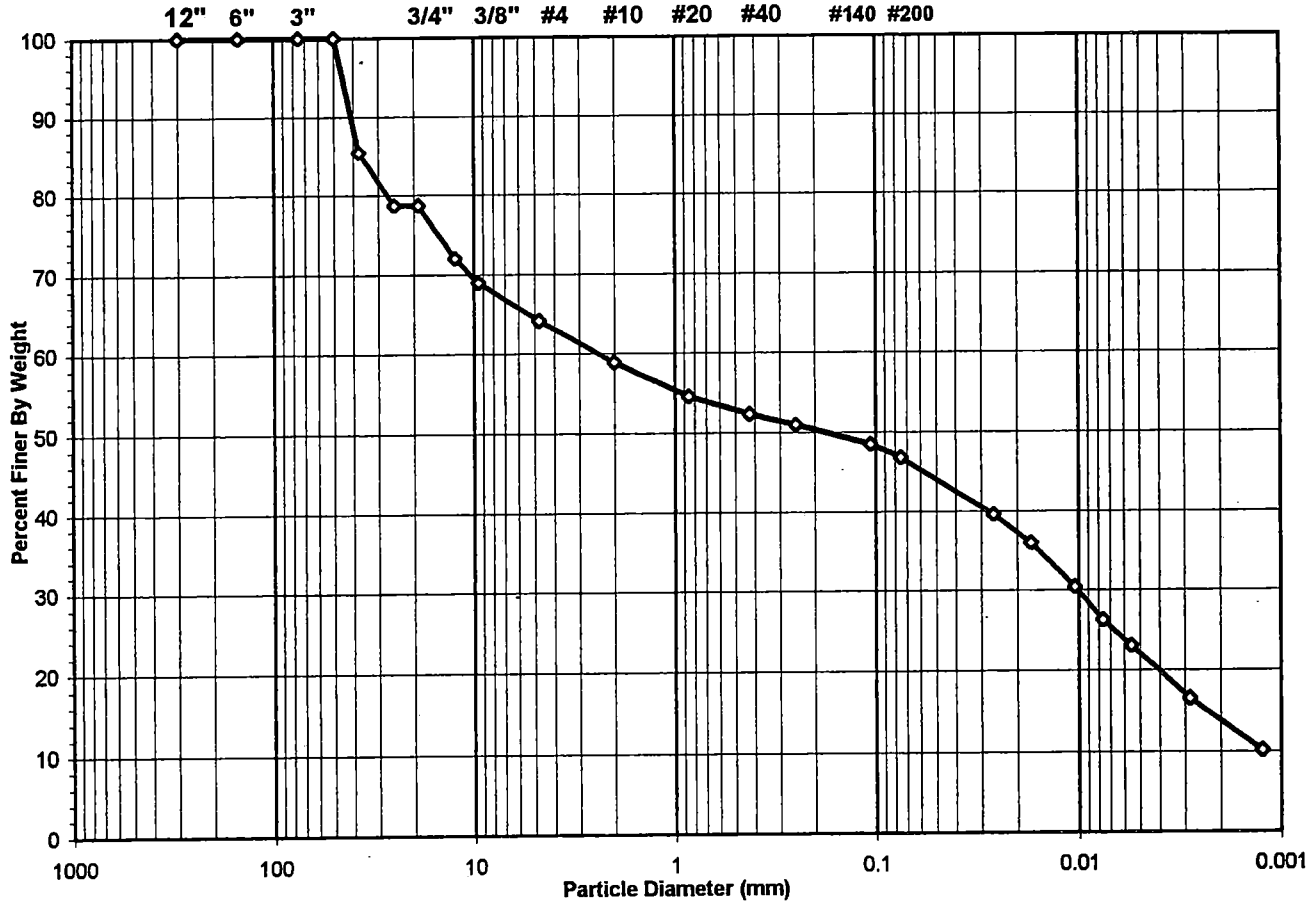
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-5.0
Project No.	97178-03	Sample No.	SM030-TB03-0305
Lab ID	97178-03.019	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*	41.10	**0.00**
2	58.90	*Sand*	14.83	**25.18**
0.075	46.84	*Silt*	30.18	**51.23**
0.05	44.07	*Clay*	13.89	**23.59**
0.002	13.89			

USDA Classification ***SILT LOAM***

USCS Symbol ***GC, TESTED***

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

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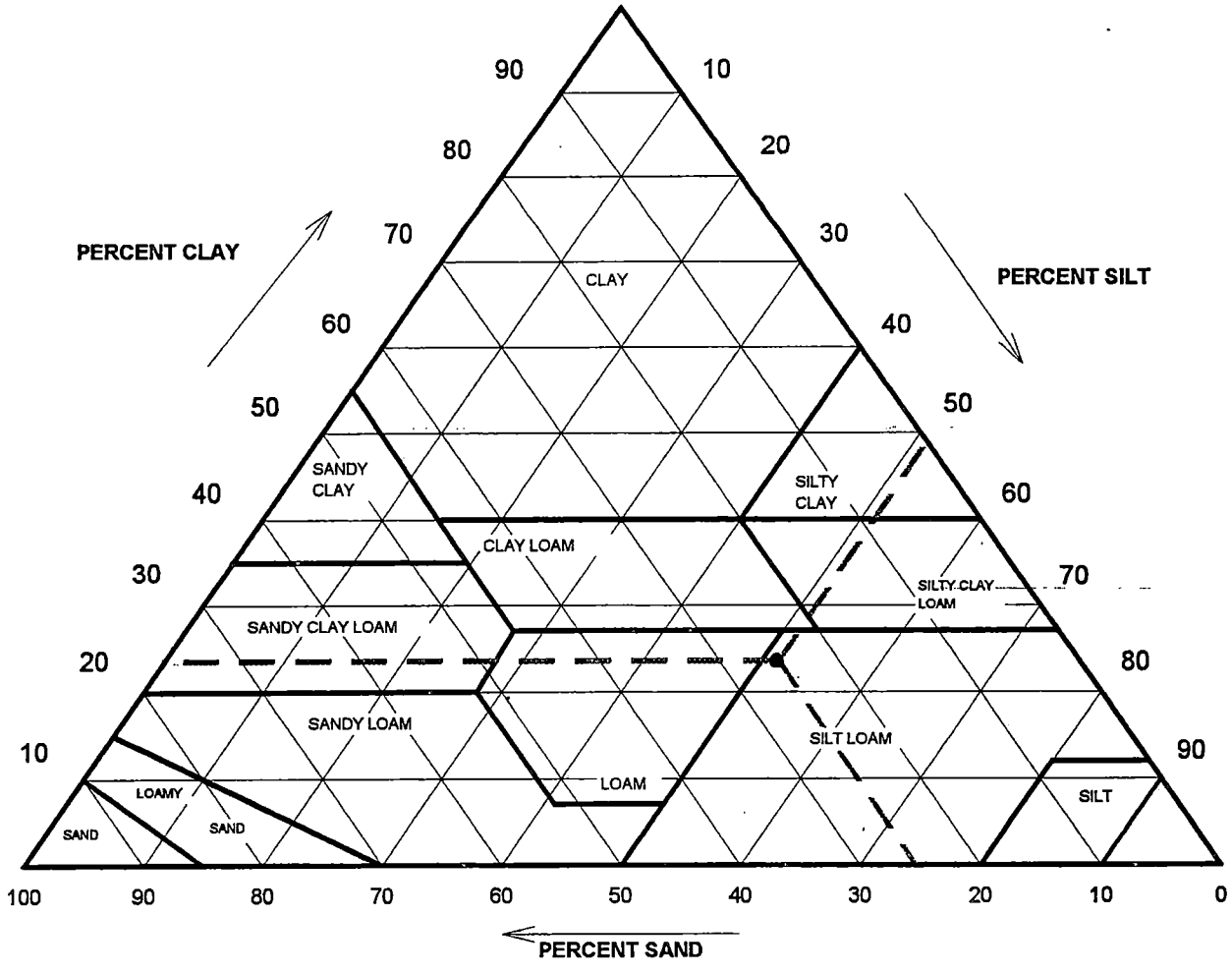
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-5.0
Project No.	97178-03	Sample No.	SM030-TB03-0305
Lab ID	97178-03.019	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	25.18
Silt	51.23
Clay	23.59
USDA Classification	***SILT LOAM***

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ATTERBERG LIMIT

ASTM D 4318-96 (SOP - S4)

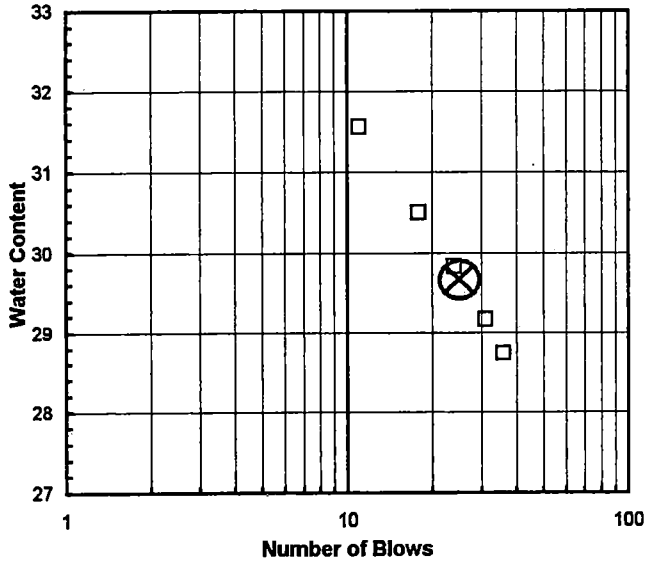
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.4-5.0
Project No.	97178-03	Sample No.	SM030-TB03-0305
Lab ID	97178-03.019	Soil Description	**BROWN LEAN CLAY** (Minus No. 40 sieve material, Airdried)

Liquid Limit Test	**1**	**2**	**3**	**4**	**5**	
Tare Number	2059	1900	2304	2053	2320	MULTIPOINT
Wt. of Tare & WS (gm)	38.27	37.22	37.94	41.02	37.42	
Wt. of Tare & DS (gm)	33.06	32.29	33.11	35.86	32.91	
Wt. of Tare (gm)	16.55	16.13	16.92	18.17	17.22	
Wt. of Water (gm)	5.21	4.93	4.83	5.16	4.51	
Wt. of DS (gm)	16.51	16.16	16.19	17.69	15.69	
Moisture Content (%)	**31.6**	**30.5**	**29.8**	**29.2**	**28.7**	
Number of Blows	**11**	**18**	**24**	**31**	**36**	

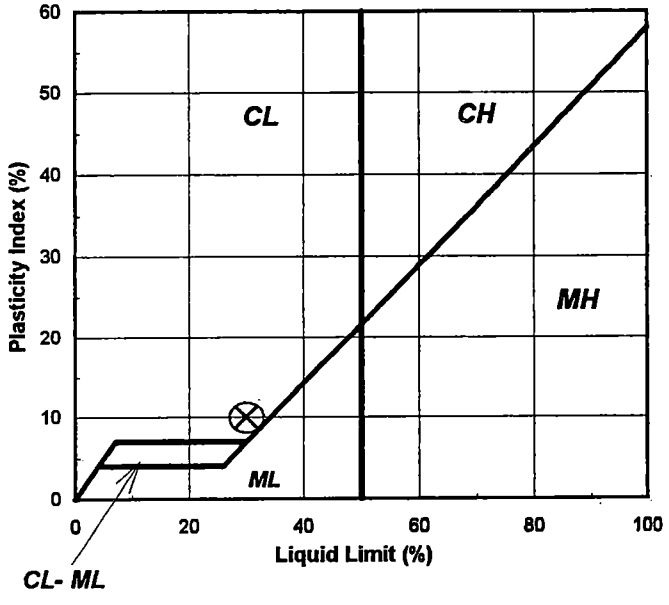
Plastic Limit Test	**1**	**2**	**3**
Tare Number	2218	2062	2296
Wt. of Tare & WS (gm)	24.45	26.09	25.19
Wt. of Tare & DS (gm)	23.32	24.9	24.15
Wt. of Tare (gm)	17.74	19.01	19.07
Wt. of Water (gm)	1.13	1.19	1.04
Wt. of DS (gm)	5.58	5.89	5.08
Moisture Content (%)	**20.3**	**20.2**	**20.5**

Test Results	
Liquid Limit (%)	**30**
Plastic Limit (%)	**20**
Plasticity Index (%)	**10**
USCS Symbol	**CL**

Flow Curve



Plasticity Chart



Tested By BL *Date* 8/7/97 *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)	0-2.5
Project No.	97178-01	Sample No.	SM011-TB01-0002.5
Lab ID	97178-01.027	Soil Color	BROWN

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	863	Tare No.	W-17
Wgt.Tare + Wet Specimen (gm)	1301.40	Wgt.Tare + Wet Specimen (gm)	256.89
Wgt.Tare + Dry Specimen (gm)	1205.80	Wgt.Tare + Dry Specimen (gm)	250.22
Weight of Tare (gm)	105.69	Weight of Tare (gm)	8.10
Weight of Water (gm)	95.60	Weight of Water (gm)	6.67
Weight of Dry Soil (gm)	1100.11	Weight of Dry Soil (gm)	242.12
Moisture Content (%)	**8.7**	**Moisture Content (%)**	**2.8**

Wet Weight -3/4" Sample (gm)	3958	Weight of the Dry Specimen (gm)	1100.11
Dry Weight - 3/4" Sample (gm)	3641.5	Weight of minus #200 material (gm)	220.16
Wet Weight +3/4" Sample (gm)	490.61	Weight of plus #200 material (gm)	879.95
Dry Weight + 3/4" Sample (gm)	477.46		
Total Dry Weight Sample (gm)	4119.0	**J - Factor (Percent Finer than 3/4")**	**0.8809**

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	241.44		5.86	5.86	94.14	**94.14**
3/4"	19	249.17		6.05	11.91	88.09	**88.09**
1/2"	12.5	106.05		9.64	9.64	90.36	**79.60**
3/8"	9.5	78.72		7.16	16.80	83.20	**73.29**
#4	4.75	166.20		15.11	31.90	68.10	**59.99**
#10	2	163.12		14.83	46.73	53.27	**46.92**
#20	0.85	126.91	(**)	11.54	58.27	41.73	**36.76**
#40	0.425	97.58		8.87	67.14	32.86	**28.95**
#60	0.25	58.00		5.27	72.41	27.59	**24.30**
#140	0.106	67.72		6.16	78.56	21.44	**18.88**
#200	0.075	15.65		1.42	79.99	20.01	**17.63**
Pan	-	220.16		20.01	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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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.	SM011-TB01-0002.5
Lab ID	97178-01.027	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	69.9	0.0328	**12.3**
5		18.5	24.5	12.9	69.9	0.0208	**12.3**
16		18.0	24.5	12.4	67.2	0.0116	**11.8**
30		16.5	24.5	10.9	59.1	0.0086	**10.4**
61		15.0	23.4	9.4	51.0	0.0061	**9.0**
250		12.5	22.7	6.9	37.5	0.0030	**6.6**
1440		9.5	24.7	3.9	21.3	0.0013	**3.8**

Soil Specimen Data		**Corrections**	
Tare No.	1335	K - Factor	0.01275
Tare + Dry Material (gm)	124.86	a - Factor	0.99
Weight of Tare (gm)	101.52	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	17.63
Weight of Dry Material (gm)	18.34		
		Specific Gravity	2.7 Assumed

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

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

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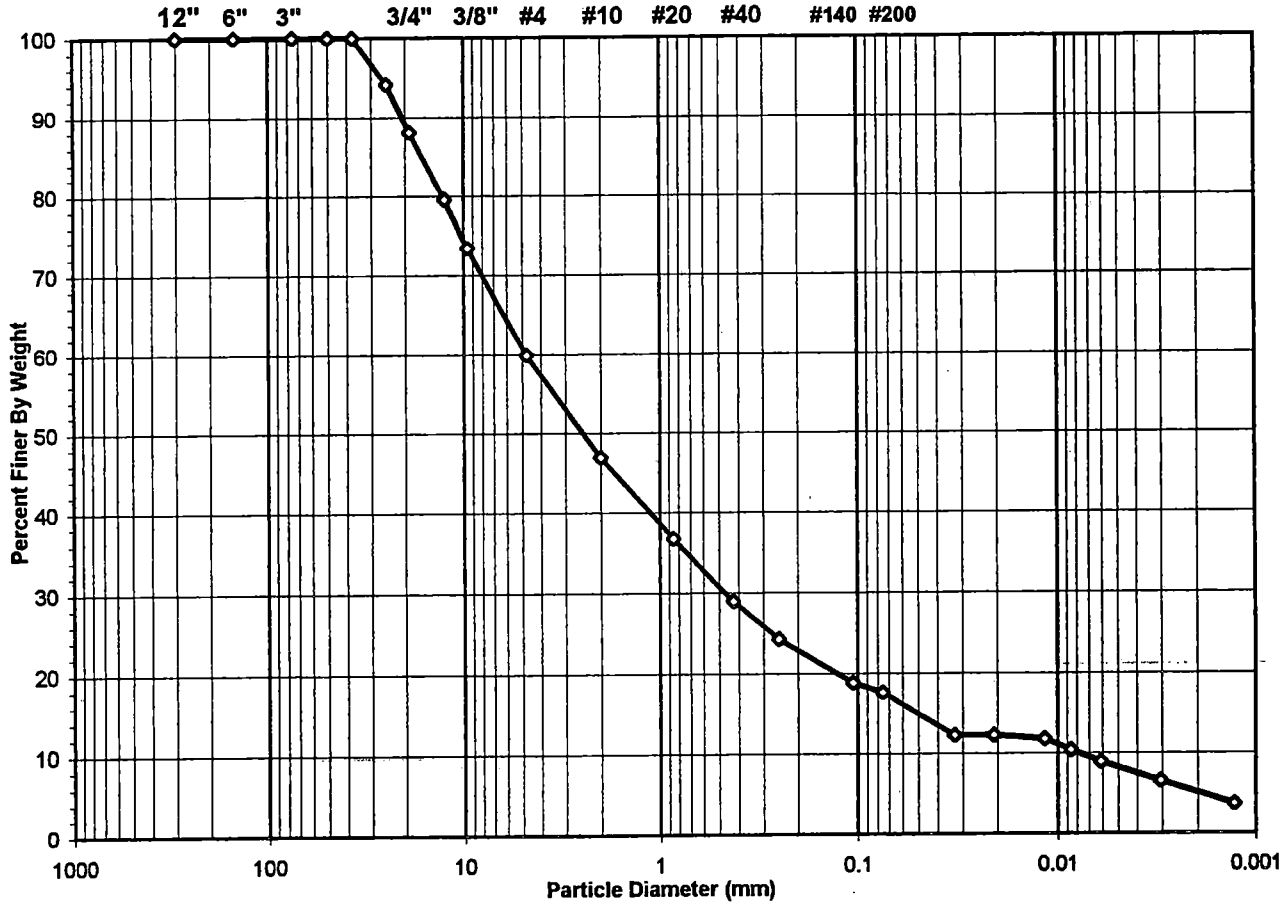
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM011-TB01-0002.5
Lab ID	97178-01.027	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*	53.08	**0.00**
2	46.92	*Sand*	31.90	**67.98**
0.075	17.63	*Silt*	9.81	**20.90**
0.05	15.02	*Clay*	5.22	**11.12**
0.002	5.22			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

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

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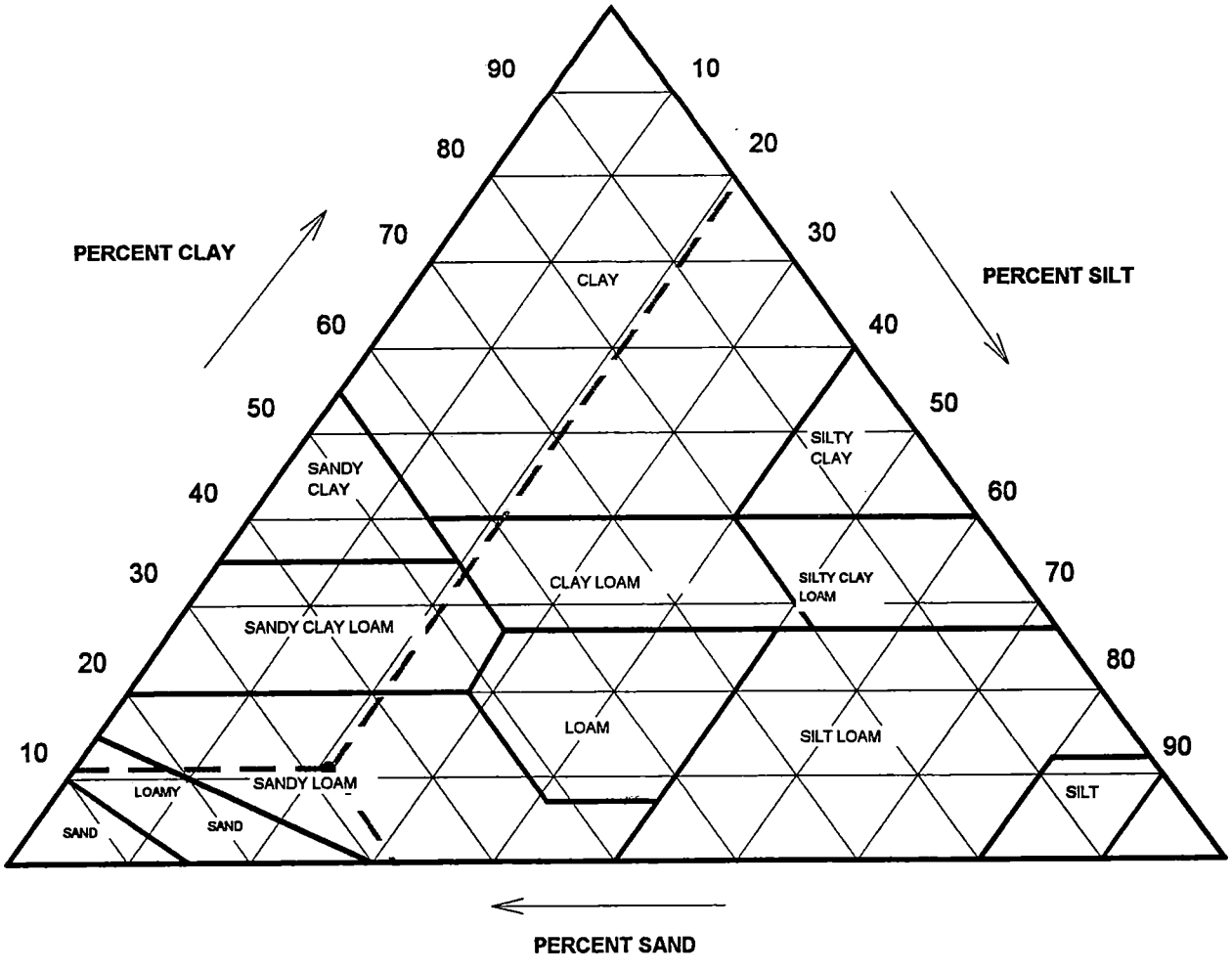
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM011-TB01-0002.5
Lab ID	97178-01.027	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	67.98
Silt	20.90
Clay	11.12
USDA Classification	***SANDY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	JCM 8-12-97
Client Project	BAYER 51249	Checked By	JMO 9-5-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.00
Depth Pushed	2.0-4.0		
Shelby Tube No.	SM012-TB02-0204		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
2.00					
2.50					
3.00					NO TEST
		4		BROWN POORLY GRADED GRAVEL WITH SILT AND SAND	
3.50		3			PERMEABILITY
		2			GRAIN SIZE WC HYDROMETER
					WC
4.00		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	1489	1696			
Wt. Tare & WS(gm.)	180.31	633.30			
Wt. Tare & DS(gm.)	167.34	585.70			
Wt. Tare(gm.)	42.60	83.36			
Moisture Content(%)	10.4	9.5			

UNIT WEIGHT

Wt. Tube & WS.(gms.)	947.60
Wt. Of Tube(gms.)	275.10
Wt. Of WS.(gms.)	672.50
Length 1 (in.)	3.628
Length 2 (in.)	3.639
Length 3 (in.)	3.644
Top Diameter (in.)	2.859
Middle Diameter (in.)	2.876
Bottom Diameter (in.)	2.882
Sample Volume (cc)	386.19
Moisture Content(%)	9.48
Unit Wet Wt.(gms/cc)	1.74
Unit Wet Wt.(pcf.)	108.7
Unit Dry Wt.(pcf.)	99.3
Unit Dry Wt.(gms/cc)	1.59

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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)	3.6-3.8
Project No.	97178-02	Sample No.	SM012-TB02-0204
Lab ID	97178-02.021	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1696	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	633.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	585.70	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.36	Weight of Tare (gm)	NA
Weight of Water (gm)	47.60	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	502.34	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**9.5**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	502.34
Dry Weight - 3/4" Sample (gm)	144.73	Weight of minus #200 material (gm)	50.55
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	451.79
Dry Weight + 3/4" Sample (gm)	307.06		
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	240.35	47.85	47.85	52.15	**52.15**
3/4"	19.0	66.71	13.28	61.13	38.87	**38.87**
1/2"	12.5	52.91	10.53	71.66	28.34	**28.34**
3/8"	9.50	9.97	1.98	73.64	26.36	**26.36**
#4	4.75	21.18	4.22	77.86	22.14	**22.14**
#10	2.00	18.43	3.67	81.53	18.47	**18.47**
#20	0.85	15.27	3.04	84.57	15.43	**15.43**
#40	0.425	8.86	1.76	86.33	13.67	**13.67**
#60	0.250	6.47	1.29	87.62	12.38	**12.38**
#140	0.106	8.66	1.72	89.34	10.66	**10.66**
#200	0.075	2.98	0.59	89.94	10.06	**10.06**
Pan	-	50.55	10.06	100.00	-	-

Tested By JCM Date 8/12/97 Checked By JMO Date 8/27/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3.6-3.8
Project No.	97178-02	Sample No.	SM012-TB02-0204
Lab ID	97178-02.021	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	15.0	15.5	24.2	9.8	99.4	0.0335	**10.0**
5		14.0	24.2	8.3	84.2	0.0214	**8.5**
15		8.5	24.2	2.8	28.4	0.0128	**2.9**
30		8.0	24.2	2.3	23.3	0.0090	**2.3**
60		7.5	23.5	1.8	18.3	0.0064	**1.8**
250		7.0	23.2	1.3	13.2	0.0031	**1.3**
1440		7.0	23.9	1.3	13.2	0.0013	**1.3**

Soil Specimen Data		Corrections	
Tare No.	1662	K - Factor	0.01279
Tare + Dry Material (gm)	114.14	a - Factor	0.99
Weight of Tare (gm)	99.38	Composite Correction	5.70
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	10.06
Weight of Dry Material (gm)	9.76		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/18/97 Checked By JMC Date 8/27/97

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

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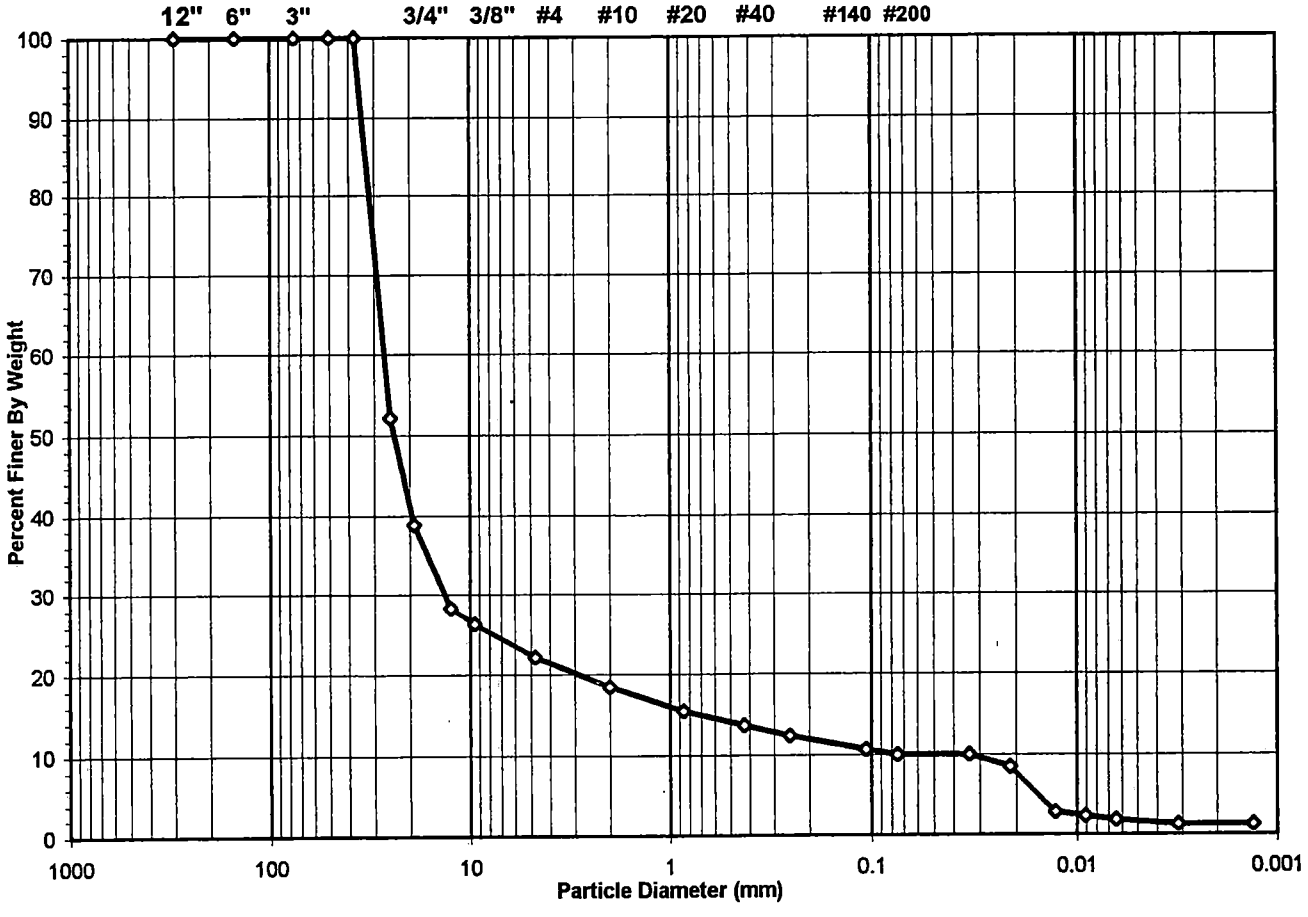
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3.6-3.8
Project No.	97178-02	Sample No.	SM012-TB02-0204
Lab ID	97178-02.021	Soil Color	BROWN

	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*	81.53	**0.00**
2	18.47	*Sand*	8.44	**45.68**
0.075	10.06	*Silt*	8.71	**47.13**
0.05	10.03	*Clay*	1.33	**7.19**
0.002	1.33			

USDA Classification	***LOAM***	**D60 =**	**26.719**			
USCS Symbol	***gp-gc, ASSUMED***	**D30 =**	**13.352**	**CC =**	**199.15**	
USCS Classification	***POORLY GRADED GRAVEL WITH CLAY***	**D10 =**	**0.034**	**CU =**	**797.49**	

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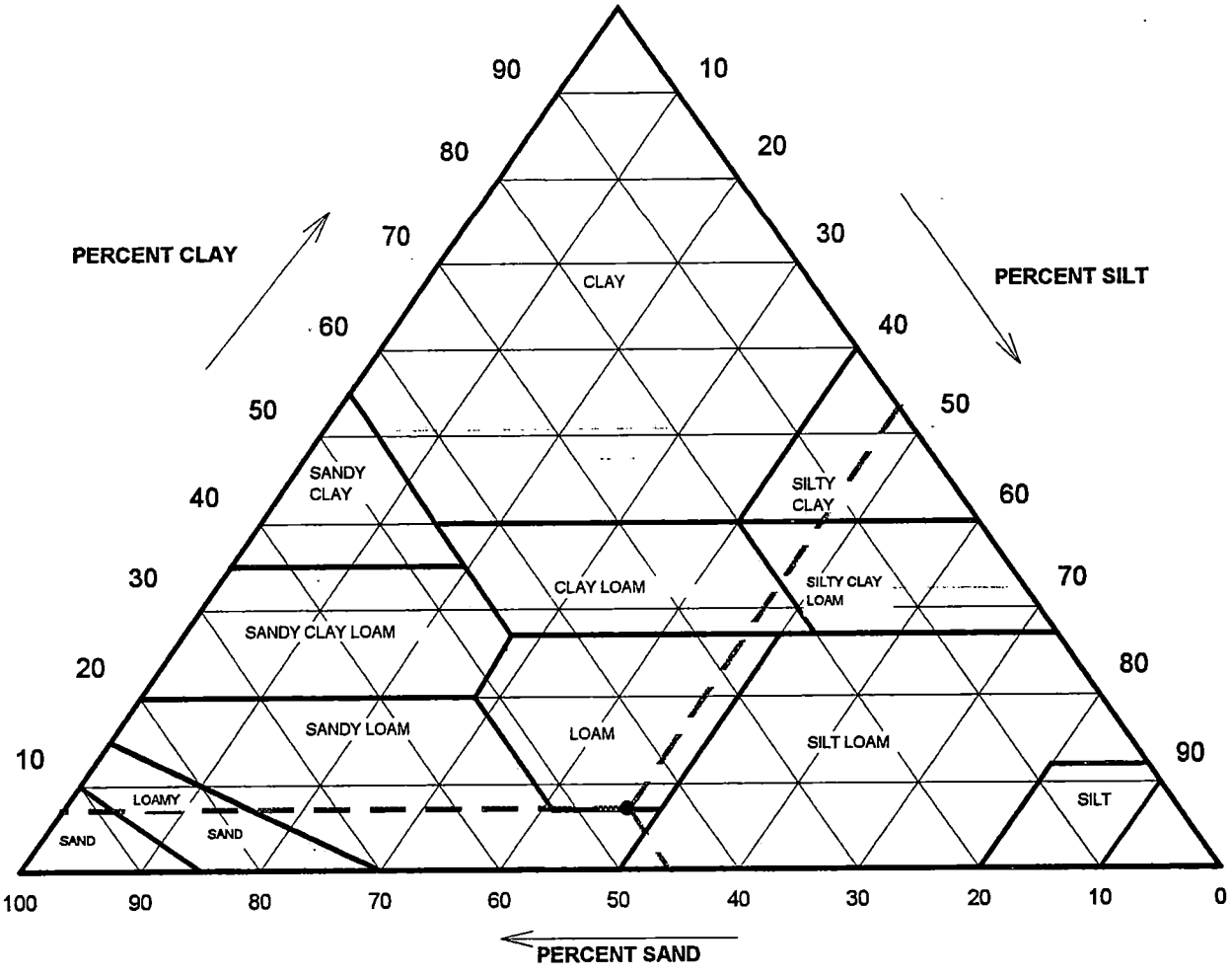
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	3.6-3.8
Project No.	97178-02	Sample No.	SM012-TB02-0204
Lab ID	97178-02.021	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	45.68
Silt	47.13
Clay	7.19
USDA Classification	***LOAM***

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PERMEABILITY TEST

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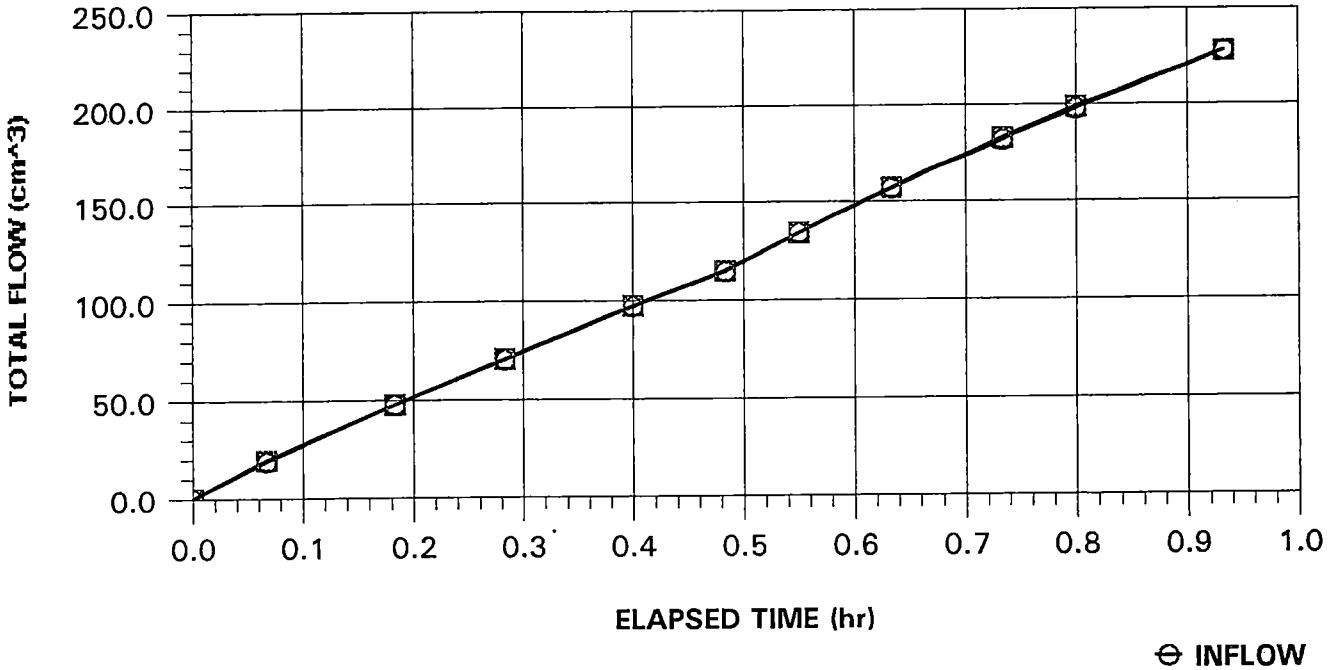
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	3.3-3.6
Project No.	97178-02	Sample No.	SM012-TB02-0204

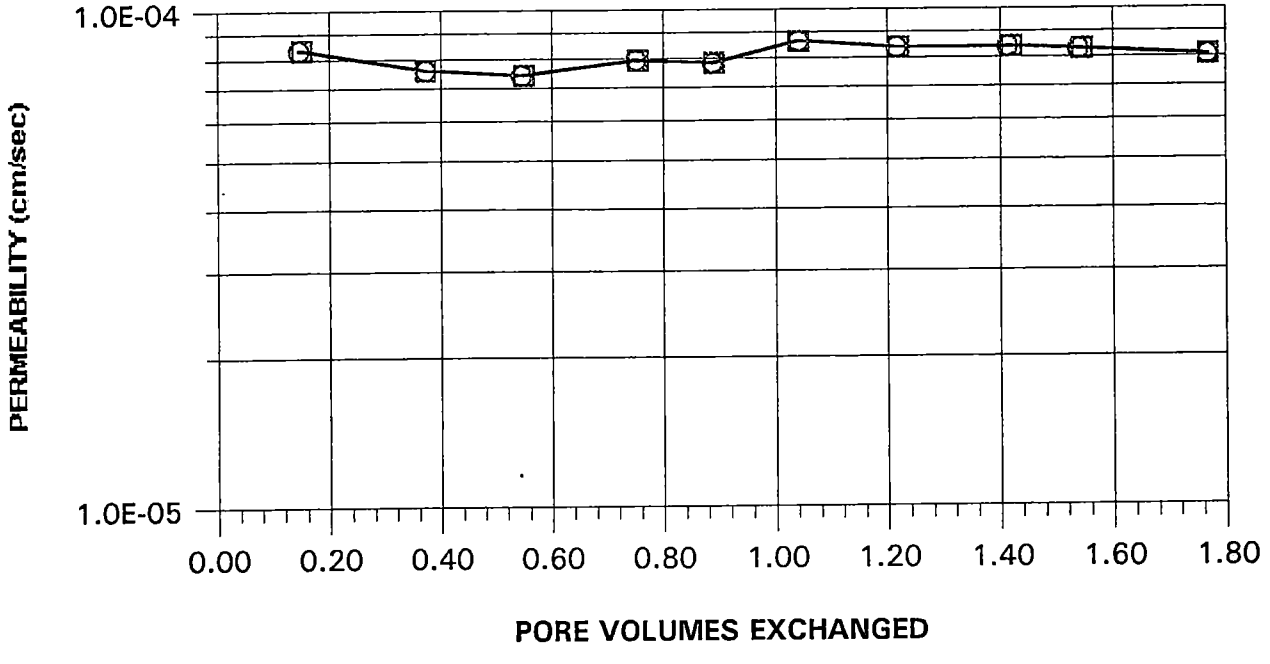
AVERAGE PERMEABILITY = 8.3E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 8.3E-07 m/sec @ 20°C

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 08-12-97
Client Project	BAYER 51249	Checked By	JMO Date 8/22/97
Project No.	97178-02		
Boring No.	NA	Specific Gravity	2.70 ASSUMED
Depth(ft.)	3.3-3.6	Sample Condition	REMOLDED
Sample No.	SM012-TB02-0204		

Visual Description ROCKS AND SOME BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1696	781
Wt. Tare & WS(gm.)	633.30	756.10
Wt. Tare & DS(gm.)	585.70	663.00
Wt. Water(gm.)	47.60	93.10
Wt. Tare(gm.)	83.36	85.34
Wt. DS(gm.)	502.34	577.66
Moisture Content(%)	9.5	16.1

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	947.60	NA
Wt. Of Tube(gms.)	275.10	NA
Wt. Of WS.(gms.)	672.50	713.3
Length 1 (in.)	3.628	3.538
Length 2 (in.)	3.639	3.469
Length 3 (in.)	3.644	3.464
Top Diameter (in.)	2.859	2.825
Middle Diameter (in.)	2.876	2.825
Bottom Diameter (in.)	2.882	2.800
Average Length (in)	3.64	3.49
Average Area (in^2)	6.48	6.23
Sample Volume(cc.)	386.19	356.39
Unit Wet Wt.(gms/cc)	1.74	2.00
Unit Wet Wt.(pcf.)	108.7	124.9
Unit Dry Wt.(pcf.)	99.3	107.6
Unit Dry Wt.(gms/cc)	1.59	1.72
Void Ratio,e	0.70	0.57
Porosity, n	0.41	0.36
Pore Volume(cm^3)	158.7	128.9

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-12-97
Client Project	BAYER 51249	Checked By	JMO	Date	8/22/97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	3.3-3.6				
Sample No.	SM012-TB02-0204				
Visual Description	ROCKS AND SOME BROWN CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions	
Sample Length (cm.), L	8.87
Sample Diameter (cm.)	7.15
Sample Area (cm.^2), A	40.20
Inflow Burette Area, (cm.^2), a-in	4.52
Outflow Burette Area, (cm.^2), a-out	4.48
B Parameter	97%

AVERAGE PERMEABILITY = 8.3E-05 cm/sec @ 20°C
AVERAGE PERMEABILITY = 8.3E-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
08-14-97	14	12	0.0	0.0	0.0	202.5	0	22.5	NA
08-14-97	14	16	0.1	18.7	19.5	194.0	0	22.5	8.3E-05
08-14-97	14	23	0.2	47.9	47.9	181.2	0	22.5	7.6E-05
08-14-97	14	29	0.3	70.2	70.8	171.2	0	22.5	7.4E-05
08-14-97	14	36	0.4	96.8	97.3	159.4	0	22.5	7.9E-05
08-14-97	14	41	0.5	114.5	114.7	151.6	1	22.5	7.8E-05
08-14-97	14	45	0.5	114.5	114.7	201.2	0	22.5	NA
08-14-97	14	49	0.6	134.2	134.2	192.5	0	22.5	8.6E-05
08-14-97	14	54	0.6	156.6	157.1	182.4	0	22.5	8.4E-05
08-14-97	15	0	0.7	182.1	183.1	171.0	0	22.5	8.4E-05
08-14-97	15	4	0.8	198.2	199.1	163.9	0	22.5	8.3E-05
08-14-97	15	12	0.9	227.9	228.0	150.8	1	22.5	8.1E-05

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SHELBY TUBE UNIT WEIGHT

geotechnics

Client	ICF KAISER	Tested By	JCM 8-12-97
Client Project	BAYER 51249	Checked By	JMO 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	11.0-13.0		
Shelby Tube No.	SM012-TB02-1113		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
11.00					
11.50					
12.00					
		3			UNIT WGT. WC. GRAINSIZE HYDROMETER
12.50				BROWN LEAN CLAY (CLAYEY SLUDGE)	
		2			PERMEABILITY
		1			WATER CONTENT
13.00					

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	1912		1706		
Wt. Tare & WS(gm.)	156.90		556.00		
Wt. Tare & DS(gm.)	88.37		351.69		
Wt. Tare(gm.)	41.18		83.30		
Moisture Content(%)	145.2		76.1		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	850.10	1161.70
Wt. Of Tube(gms.)	281.73	356.03
Wt. Of WS.(gms.)	568.37	805.67
Length 1 (in.)	3.753	4.722
Length 2 (in.)	3.732	4.746
Length 3 (in.)	3.740	4.727
Top Diameter (in.)	2.869	2.879
Middle Diameter (in.)	2.875	2.875
Bottom Diameter (in.)	2.880	2.871
Sample Volume (cc)	397.95	503.36
Moisture Content(%)	145.22	76.12
Unit Wet Wt.(gms/cc)	1.43	1.60
Unit Wet Wt.(pcf.)	89.1	99.9
Unit Dry Wt.(pcf.)	36.3	56.7
Unit Dry Wt.(gms/cc)	0.58	0.91

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DCN: DS-S3A
DATE: 11/12/96
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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)	12.1-12.5
Project No.	97178-02	Sample No.	SM012-TB02-1113
Lab ID	97178-02.022	Soil Color	**BROWN**

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)	556.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	351.69	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	83.30	Weight of Tare (gm)	NA
Weight of Water (gm)	204.31	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	268.39	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**76.1**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	268.39
Dry Weight - 3/4" Sample (gm)	20.11	Weight of minus #200 material (gm)	248.28
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	20.11
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	1.12	0.42	0.42	99.58	**99.58**
#10	2.00	3.14	1.17	1.59	98.41	**98.41**
#20	0.85	4.68	1.74	3.33	96.67	**96.67**
#40	0.425	3.00	1.12	4.45	95.55	**95.55**
#60	0.250	2.37	0.88	5.33	94.67	**94.67**
#140	0.106	4.19	1.56	6.89	93.11	**93.11**
#200	0.075	1.61	0.60	7.49	92.51	**92.51**
Pan	-	248.28	92.51	100.00	-	-

Tested By JCM Date 8/12/97 Checked By TIO Date 8-21-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.1-12.5
Project No.	97178-02	Sample No.	SM012-TB02-1113
Lab ID	97178-02.022	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	23.5	23.5	24	17.7	79.7	0.0320	**73.7**
5		23.0	24	17.2	77.5	0.0203	**71.6**
15		20.0	24	14.2	63.9	0.0119	**59.2**
30		18.5	24	12.7	57.2	0.0085	**52.9**
65		16.5	23.4	10.7	48.2	0.0059	**44.6**
250		14.0	23.4	8.2	36.9	0.0030	**34.2**
1440		11.5	23.7	5.7	25.7	0.0013	**23.8**

Soil Specimen Data		**Corrections**	
Tare No.	1342	K - Factor	0.01282
Tare + Dry Material (gm)	127.84	a - Factor	0.99
Weight of Tare (gm)	100.85	Composite Correction	5.80
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	92.51
Weight of Dry Material (gm)	21.99		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/16/97 Checked By Jam Date 8-21-97

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

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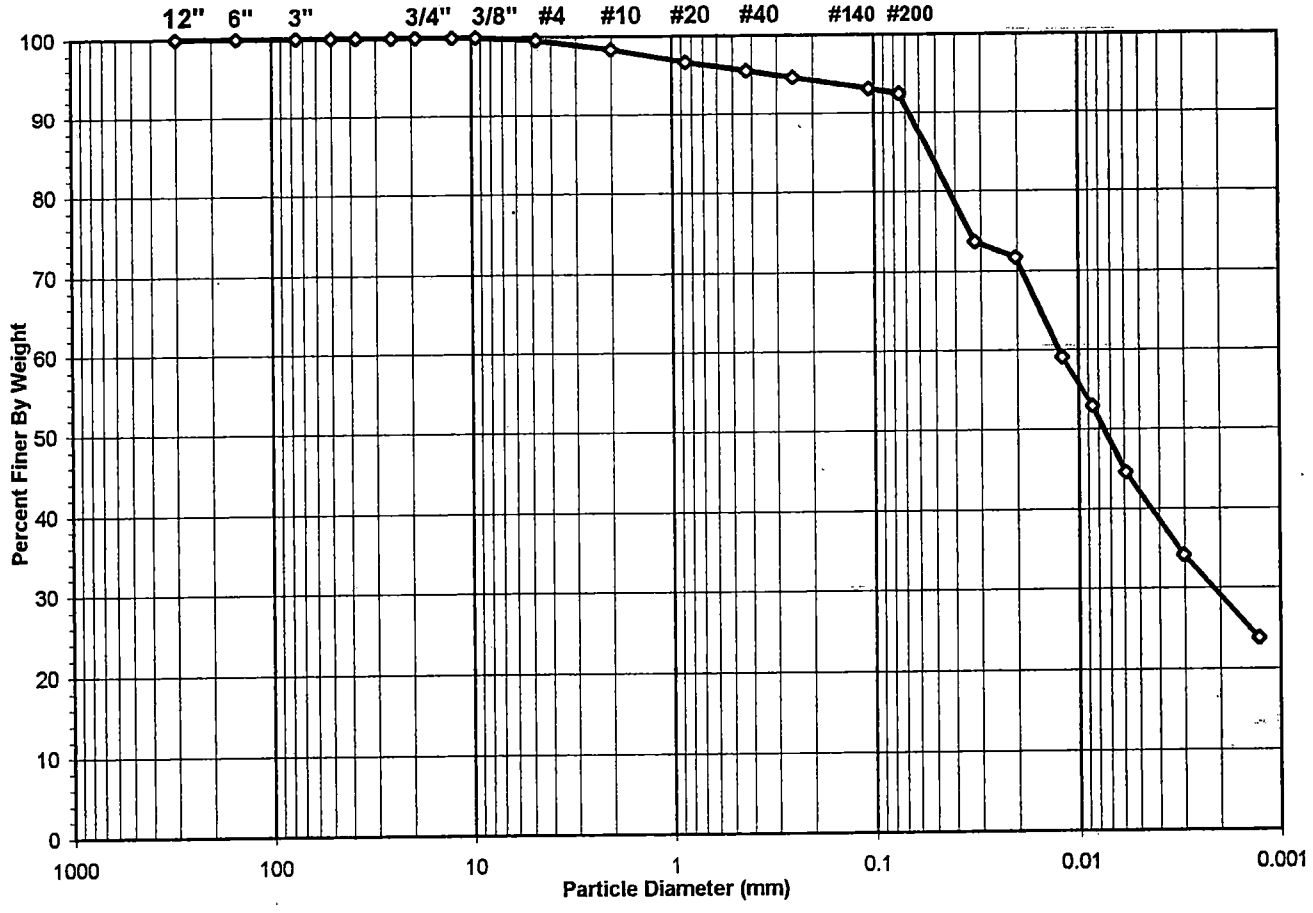
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.1-12.5
Project No.	97178-02	Sample No.	SM012-TB02-1113
Lab ID	97178-02.022	Soil Color	BROWN

	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*	1.59	**0.00**
2	98.41	*Sand*	14.84	**15.08**
0.075	92.51	*Silt*	54.45	**55.33**
0.05	83.57	*Clay*	29.12	**29.59**
0.002	29.12			

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

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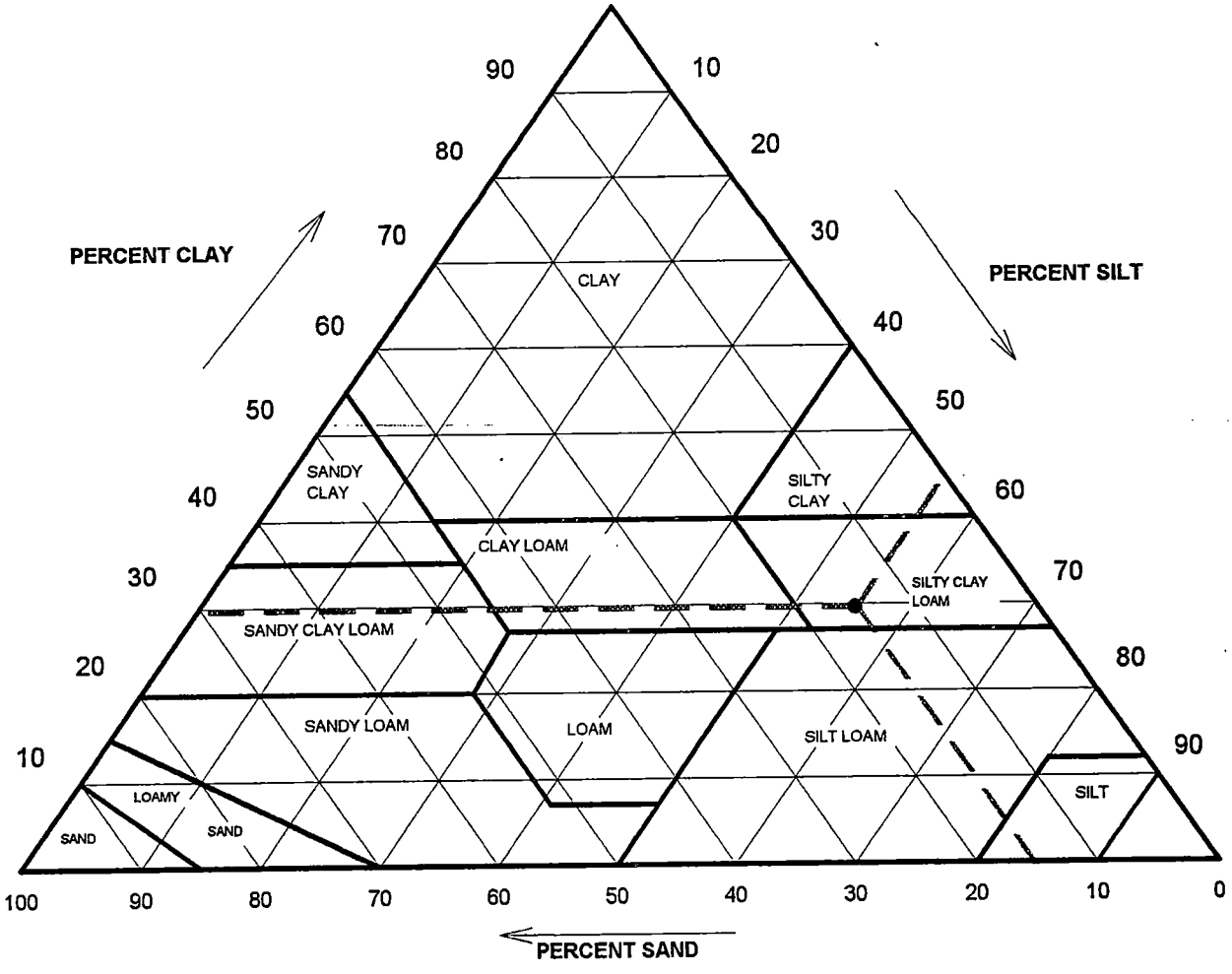
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	12.1-12.5
Project No.	97178-02	Sample No.	SM012-TB02-1113
Lab ID	97178-02.022	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	15.08
Silt	55.33
Clay	29.59
USDA Classification	***SILTY CLAY LOAM***

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PERMEABILITY TEST

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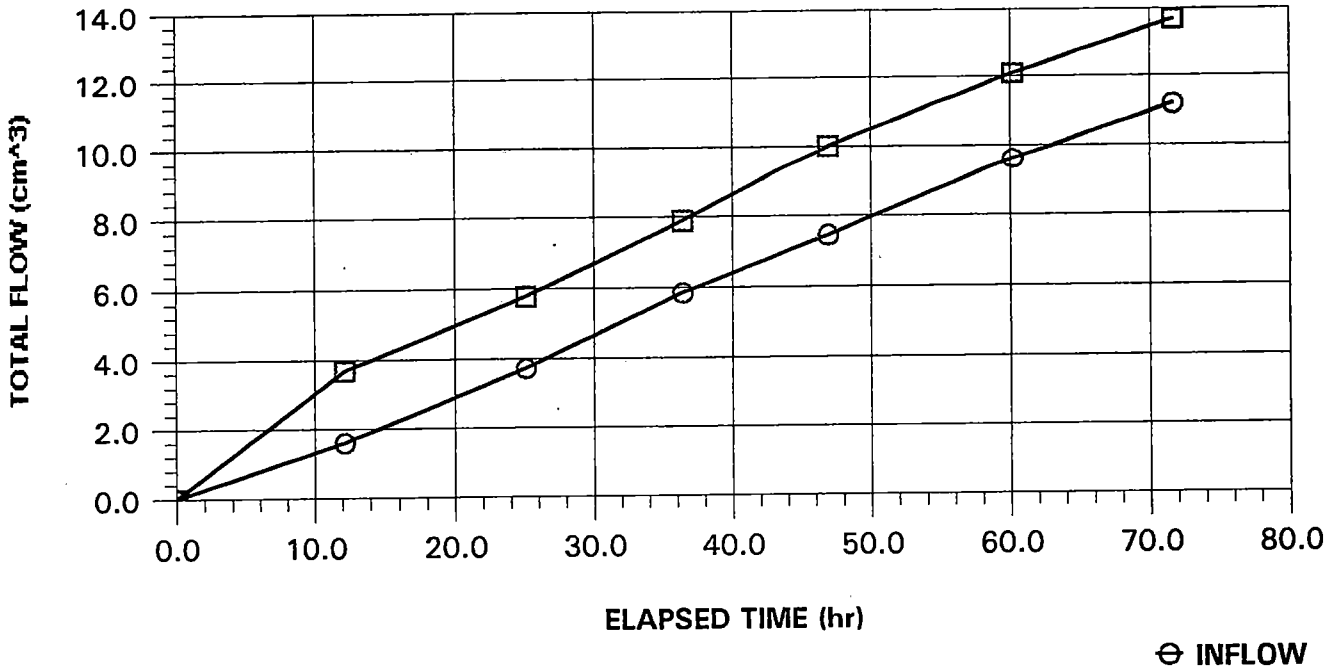
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	12.5-12.8
Project No.	97178-02	Sample No.	SM012-TB02-1113

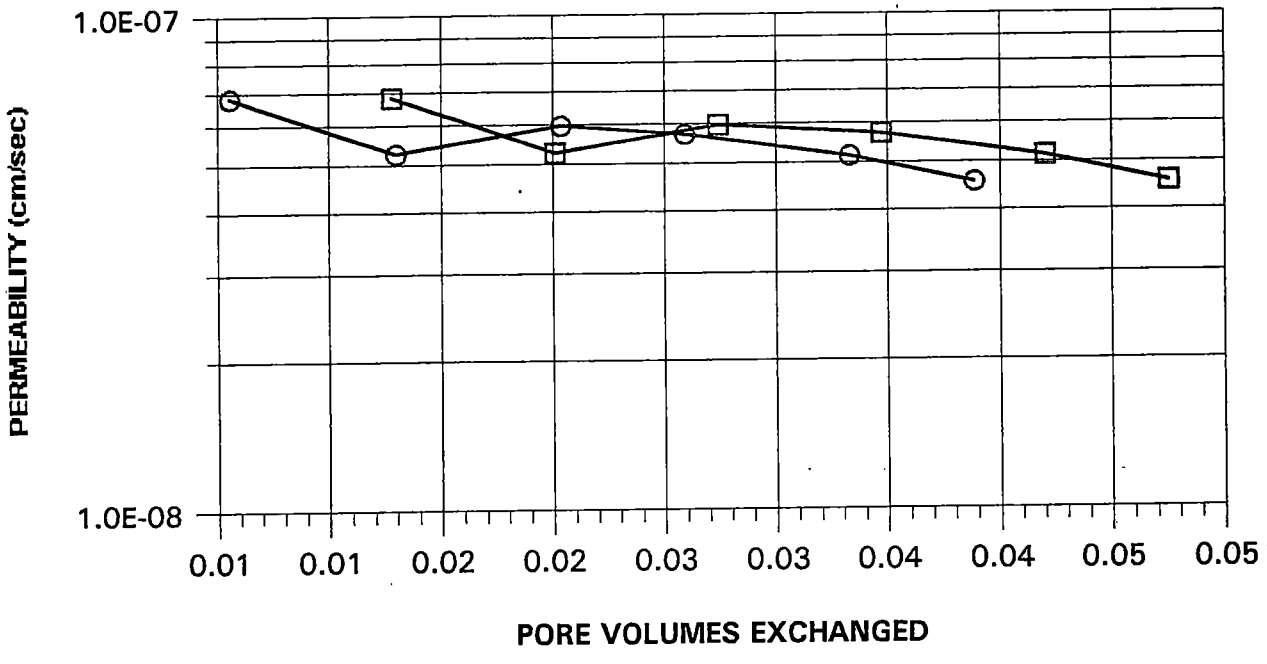
AVERAGE PERMEABILITY = 5.3E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.3E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



INFLOW
OUTFLOW

PORE VOLUMES EXCHANGED vs. PERMEABILITY



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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-12-97
Client Project	BAYER 51249	Checked By	JHC	Date	8/22/97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	12.5-12.8	Sample Condition	UNDISTURBED		
Sample No.	SM012-TB02-1113				

Visual Description BROWN CLAYEY SLUDGE

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1912	8
Wt. Tare & WS(gm.)	156.90	617.30
Wt. Tare & DS(gm.)	88.37	379.24
Wt. Water(gm.)	68.53	238.06
Wt. Tare(gm.)	41.18	74.22
Wt. DS(gm.)	47.19	305.02
Moisture Content(%)	145.2	78.0

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	850.10	NA
Wt. Of Tube(gms.)	281.73	NA
Wt. Of WS.(gms.)	568.37	412.7
Length 1 (in.)	3.753	3.700
Length 2 (in.)	3.732	3.690
Length 3 (in.)	3.740	3.633
Top Diameter (in.)	2.869	2.800
Middle Diameter (in.)	2.875	2.812
Bottom Diameter (in.)	2.880	2.821
Average Length (in)	3.74	3.67
Average Area (in^2)	6.49	6.21
Sample Volume(cc.)	397.95	373.67
Unit Wet Wt.(gms/cc)	1.43	1.10
Unit Wet Wt.(pcf.)	89.1	68.9
Unit Dry Wt.(pcf.)	36.3	38.7
Unit Dry Wt.(gms/cc)	0.58	0.62
Void Ratio,e	3.64	3.35
Porosity, n	0.78	0.77
Pore Volume(cm^3)	312.1	287.8

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-12-97
Client Project	BAYER 51249	Checked By	JMO	Date	8/22/97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	12.5-12.8				
Sample No.	SM012-TB02-1113				
Visual Description	BROWN CLAYEY SLUDGE				

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.)	7.14
Sample Area (cm.^2), A	40.04
Inflow Burette Area, (cm.^2), a-in	4.80
Outflow Burette Area, (cm.^2), a-out	4.76
B Parameter	98%

AVERAGE PERMEABILITY = 5.3E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.3E-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
08-12-97	19	0	0.0	0.0	0.0	191.3	0	22.5	NA
08-13-97	7	10	12.2	1.6	3.7	190.2	0	23.2	6.8E-08
08-13-97	20	5	25.1	3.7	5.8	189.3	0	22.6	5.3E-08
08-14-97	7	25	36.4	5.9	7.9	188.5	0	23.0	6.0E-08
08-14-97	17	55	46.9	7.5	10.0	187.7	0	22.5	5.7E-08
08-15-97	7	10	60.2	9.6	12.1	186.8	0	23.0	5.1E-08
08-15-97	18	40	71.7	11.2	13.7	186.1	0	22.2	4.5E-08

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 7-29-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	0.85
Depth Pushed	1.0-2.5		
Shelby Tube No.	SM013-TB01-0102.5		

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 SANDY CLAY WITH ROCK FRAGMENTS	UNIT WGT. WC.
		2			WC
2.50		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	2008	L7	W-67		
Wt. Tare & WS(gm.)	243.99	209.67	363.70		
Wt. Tare & DS(gm.)	205.61	176.27	309.12		
Wt. Tare(gm.)	8.36	8.19	8.29		
Moisture Content(%)	19.5	19.9	18.1		

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	690.50
Wt. Of Tube(gms.)	188.95
Wt. Of WS.(gms.)	501.55
Length 1 (in.)	2.481
Length 2 (in.)	2.481
Length 3 (in.)	2.464
Top Diameter (in.)	2.870
Middle Diameter (in.)	2.864
Bottom Diameter (in.)	2.874
Sample Volume (cc)	262.20
Moisture Content(%)	18.14
Unit Wet Wt.(gms/cc)	1.91
Unit Wet Wt.(pcf.)	119.4
Unit Dry Wt.(pcf.)	101.0
Unit Dry Wt.(gms/cc)	1.62

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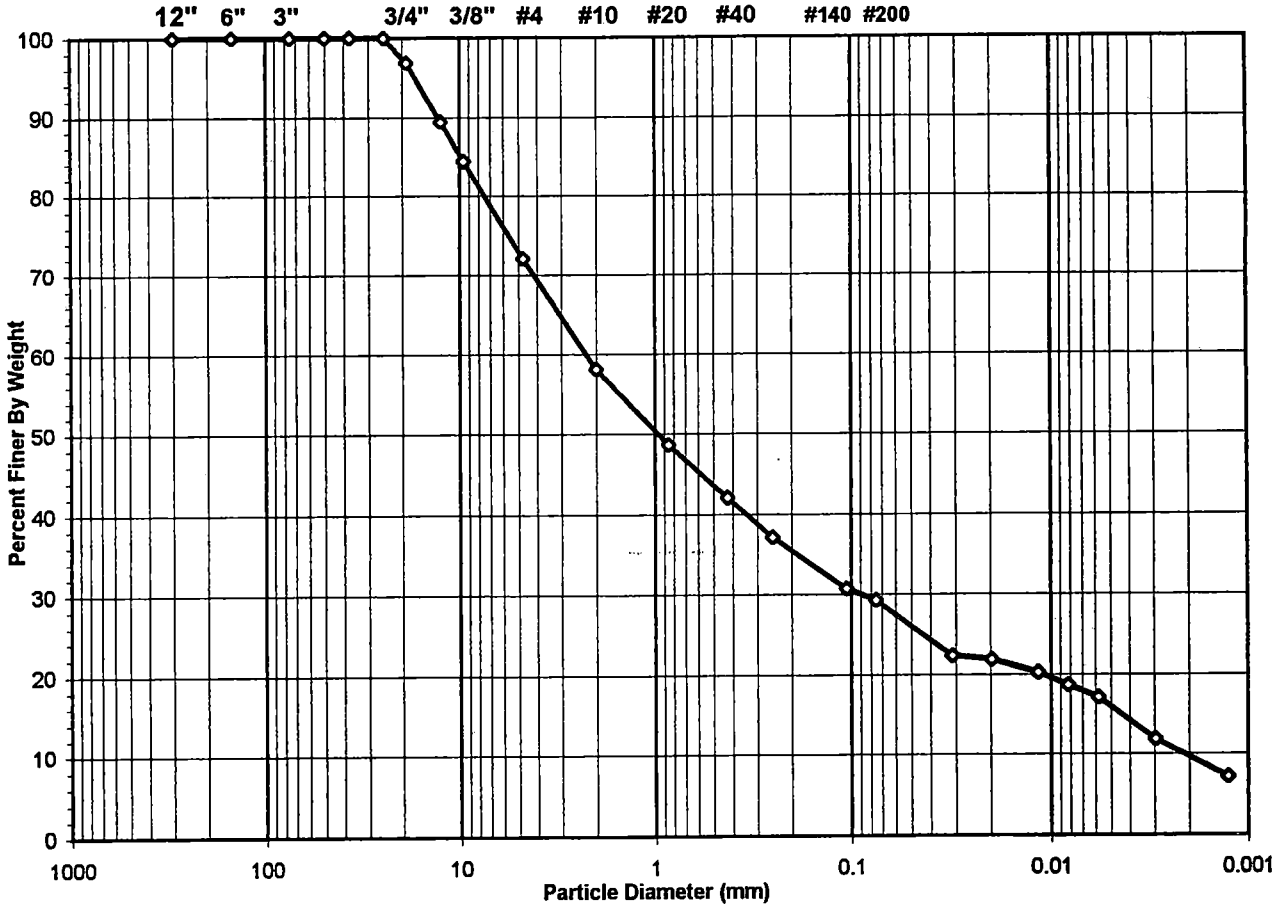
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM013-TB01-0002.5
Lab ID	97178-01.031	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*	41.83	**0.00**
2	58.17	*Sand*	32.09	**55.16**
0.075	29.27	*Silt*	16.33	**28.07**
0.05	26.08	*Clay*	9.75	**16.77**
0.002	9.75			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

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

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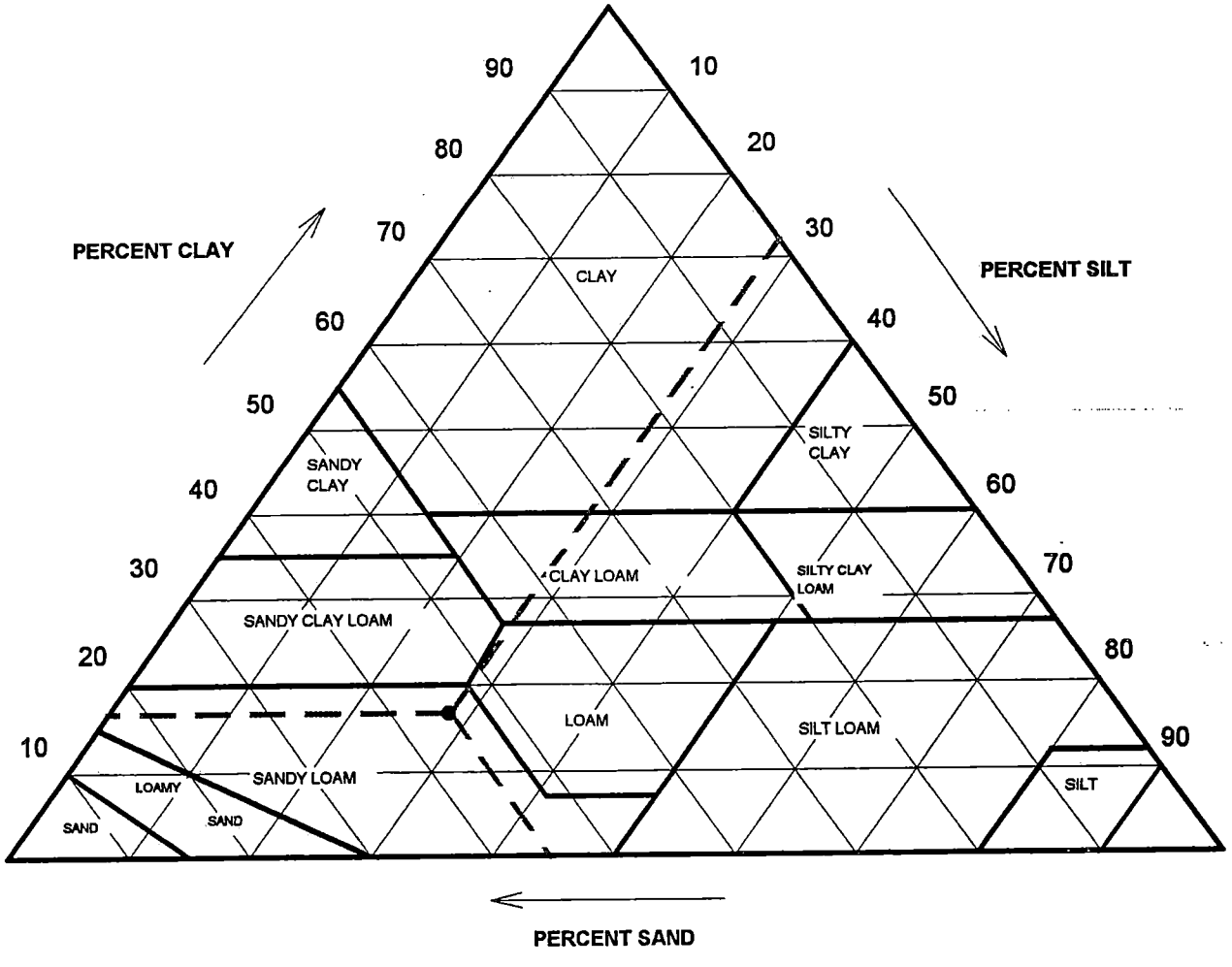
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	0-2.5
Project No.	97178-01	Sample No.	SM013-TB01-0002.5
Lab ID	97178-01.031	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	55.16
Silt	28.07
Clay	16.77
USDA Classification	***SANDY LOAM***

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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.	SM013-TB01-0002.5
Lab ID	97178-01.031	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1314	Tare No.	2263
Wgt.Tare + Wet Specimen (gm)	1366.90	Wgt.Tare + Wet Specimen (gm)	174.60
Wgt.Tare + Dry Specimen (gm)	1295.30	Wgt.Tare + Dry Specimen (gm)	172.55
Weight of Tare (gm)	100.85	Weight of Tare (gm)	8.21
Weight of Water (gm)	71.60	Weight of Water (gm)	2.05
Weight of Dry Soil (gm)	1194.45	Weight of Dry Soil (gm)	164.34
Moisture Content (%)	**6.0**	**Moisture Content (%)**	**1.2**

Wet Weight -3/4" Sample (gm)	5481	Weight of the Dry Specimen (gm)	1194.45
Dry Weight - 3/4" Sample (gm)	5171.0	Weight of minus #200 material (gm)	360.83
Wet Weight +3/4" Sample (gm)	166.45	Weight of plus #200 material (gm)	833.62
Dry Weight + 3/4" Sample (gm)	164.40		
Total Dry Weight Sample (gm)	5335.4	**J - Factor (Percent Finer than 3/4")**	**0.9688**

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	166.45		3.12	3.12	96.88	**96.88**
1/2"	12.5	91.84		7.69	7.69	92.31	**89.43**
3/8"	9.5	62.90		5.27	12.95	87.05	**84.33**
#4	4.75	150.50		12.60	25.55	74.45	**72.12**
#10	2	172.05		14.40	39.96	60.04	**58.17**
#20	0.85	117.64	(**)	9.85	49.81	50.19	**48.63**
#40	0.425	80.40		6.73	56.54	43.46	**42.11**
#60	0.25	60.95		5.10	61.64	38.36	**37.16**
#140	0.106	78.91		6.61	68.25	31.75	**30.76**
#200	0.075	18.43		1.54	69.79	30.21	**29.27**
Pan	-	360.83		30.21	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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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.	SM013-TB01-0002.5
Lab ID	97178-01.031	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	27.0	27.0	24.5	21.4	76.3	0.0311	**22.3**
5		26.5	24.5	20.9	74.5	0.0197	**21.8**
15		25.0	24.5	19.4	69.2	0.0115	**20.3**
30		23.5	24.5	17.9	63.9	0.0082	**18.7**
62		22.0	23.4	16.4	58.5	0.0058	**17.1**
250		17.0	22.7	11.4	40.7	0.0030	**11.9**
1440		12.5	24.7	6.9	24.7	0.0013	**7.2**

Soil Specimen Data		**Corrections**	
Tare No.	1686	K - Factor	0.01275
Tare + Dry Material (gm)	131.68	a - Factor	0.99
Weight of Tare (gm)	98.86	Composite Correction	5.55
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	29.27
Weight of Dry Material (gm)	27.82		
		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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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 8-7-97
Client Project	BAYER 51249	Checked By	JMD 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.25
Depth Pushed	5.5-7.5		
Shelby Tube No.	SM013-TB02-0507		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
5.50					
6.00					
6.50					
7.00		3		BROWN LEAN CLAY	HYDROMETER
		2			UNIT WGT. WC.
7.50		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		W43			
Wt. Tare & WS(gm.)		365.73			
Wt. Tare & DS(gm.)		310.93			
Wt. Tare(gm.)		8.30			
Moisture Content(%)		18.1			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1077.80
Wt. Of Tube(gms.)	271.10
Wt. Of WS.(gms.)	806.70
Length 1 (in.)	3.592
Length 2 (in.)	3.578
Length 3 (in.)	3.591
Top Diameter (in.)	2.874
Middle Diameter (in.)	2.863
Bottom Diameter (in.)	2.866
Sample Volume (cc)	379.50
Moisture Content(%)	18.11
Unit Wet Wt.(gms/cc)	2.13
Unit Wet Wt.(pcf.)	132.6
Unit Dry Wt.(pcf.)	112.3
Unit Dry Wt.(gms/cc)	1.80

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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)	7.2-7.5
Project No.	97178-02	Sample No.	SM013-TB02-0507
Lab ID	97178-02.024	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1681	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	794.20	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	703.00	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	106.33	Weight of Tare (gm)	NA
Weight of Water (gm)	91.20	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	596.67	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**15.3**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	596.67
Dry Weight - 3/4" Sample (gm)	218.44	Weight of minus #200 material (gm)	254.22
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	342.45
Dry Weight + 3/4" Sample (gm)	124.01		
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	45.93	7.70	7.70	92.30	**92.30**
1"	25.0	69.09	11.58	19.28	80.72	**80.72**
3/4"	19.0	8.99	1.51	20.78	79.22	**79.22**
1/2"	12.5	26.53	4.45	25.23	74.77	**74.77**
3/8"	9.50	20.77	3.48	28.71	71.29	**71.29**
#4	4.75	49.80	8.35	37.06	62.94	**62.94**
#10	2.00	46.41	7.78	44.84	55.16	**55.16**
#20	0.85	30.92	5.18	50.02	49.98	**49.98**
#40	0.425	18.09	3.03	53.05	46.95	**46.95**
#60	0.250	10.01	1.68	54.73	45.27	**45.27**
#140	0.106	11.93	2.00	56.73	43.27	**43.27**
#200	0.075	3.98	0.67	57.39	42.61	**42.61**
Pan	-	254.22	42.61	100.00	-	-

Tested By TO Date 8/7/97 Checked By Jam Date 8-22-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	6.7-6.9
Project No.	97178-02	Sample No.	SM013-TB02-0507
Lab ID	97178-02.024	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	48.0	49.0	24	43.2	85.5	0.0261	**36.4**
5		45.5	24	39.7	78.6	0.0170	**33.5**
15		40.0	24	34.2	67.7	0.0103	**28.9**
30		35.5	24	29.7	58.8	0.0076	**25.1**
73		31.0	23.4	25.2	49.9	0.0050	**21.3**
271		26.0	23.4	20.2	40.0	0.0027	**17.0**
1440		20.5	23.7	14.7	29.1	0.0012	**12.4**

Soil Specimen Data		**Corrections**	
Tare No.	1620	K - Factor	0.01282
Tare + Dry Material (gm)	152.79	a - Factor	0.99
Weight of Tare (gm)	97.79	Composite Correction	5.80
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	42.61
Weight of Dry Material (gm)	50		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/16/97 Checked By JCM Date 8-22-97

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

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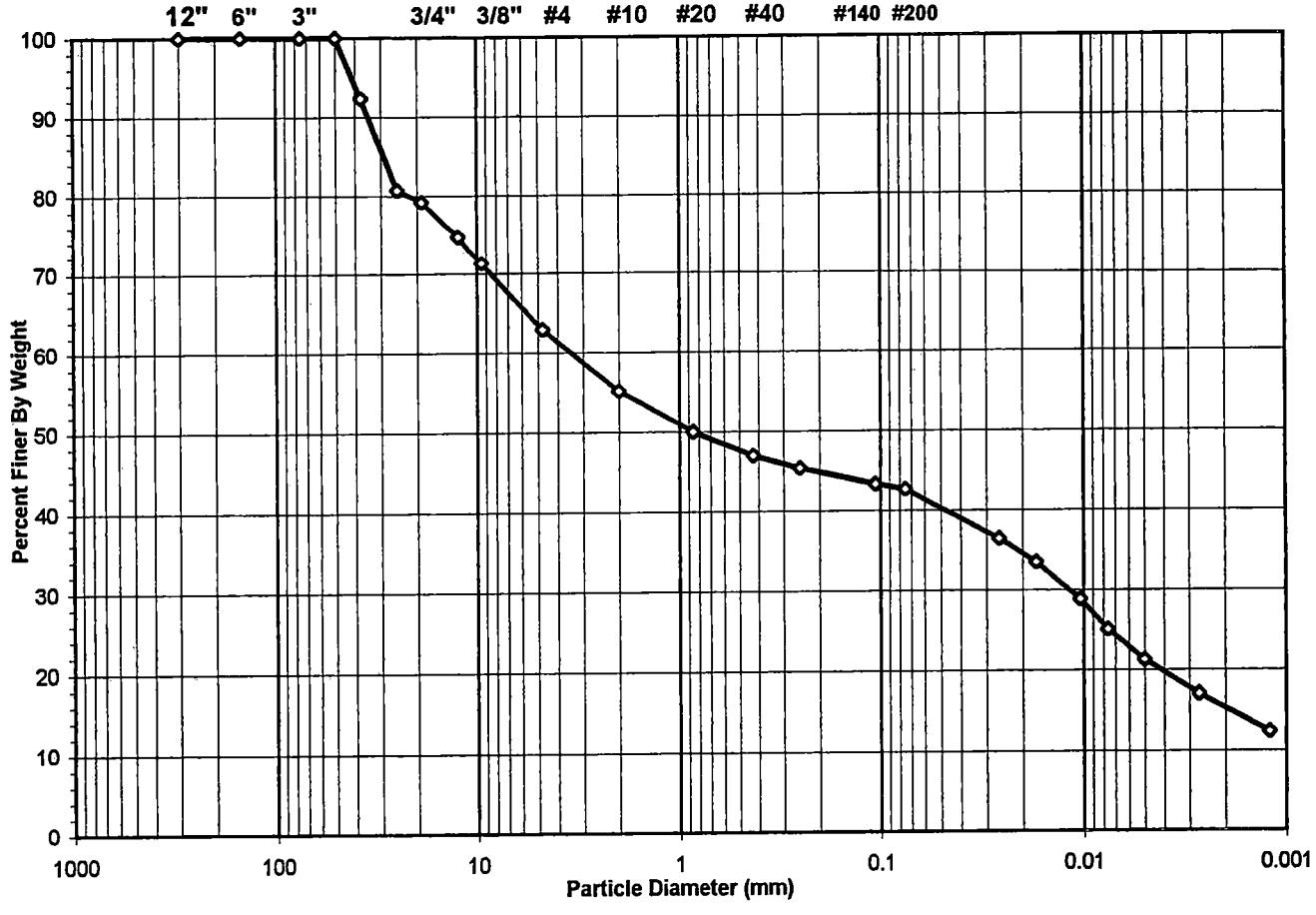
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	7.2-7.5
Project No.	97178-02	Sample No.	SM013-TB02-0507
Lab ID	97178-02.024	Soil Color	BROWN

	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*	44.84	**0.00**
2	55.16	*Sand*	14.92	**27.05**
0.075	42.61	*Silt*	24.95	**45.22**
0.05	40.24	*Clay*	15.30	**27.73**
0.002	15.30			

USDA Classification ***CLAY LOAM***

USCS Symbol ***gc, ASSUMED***

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

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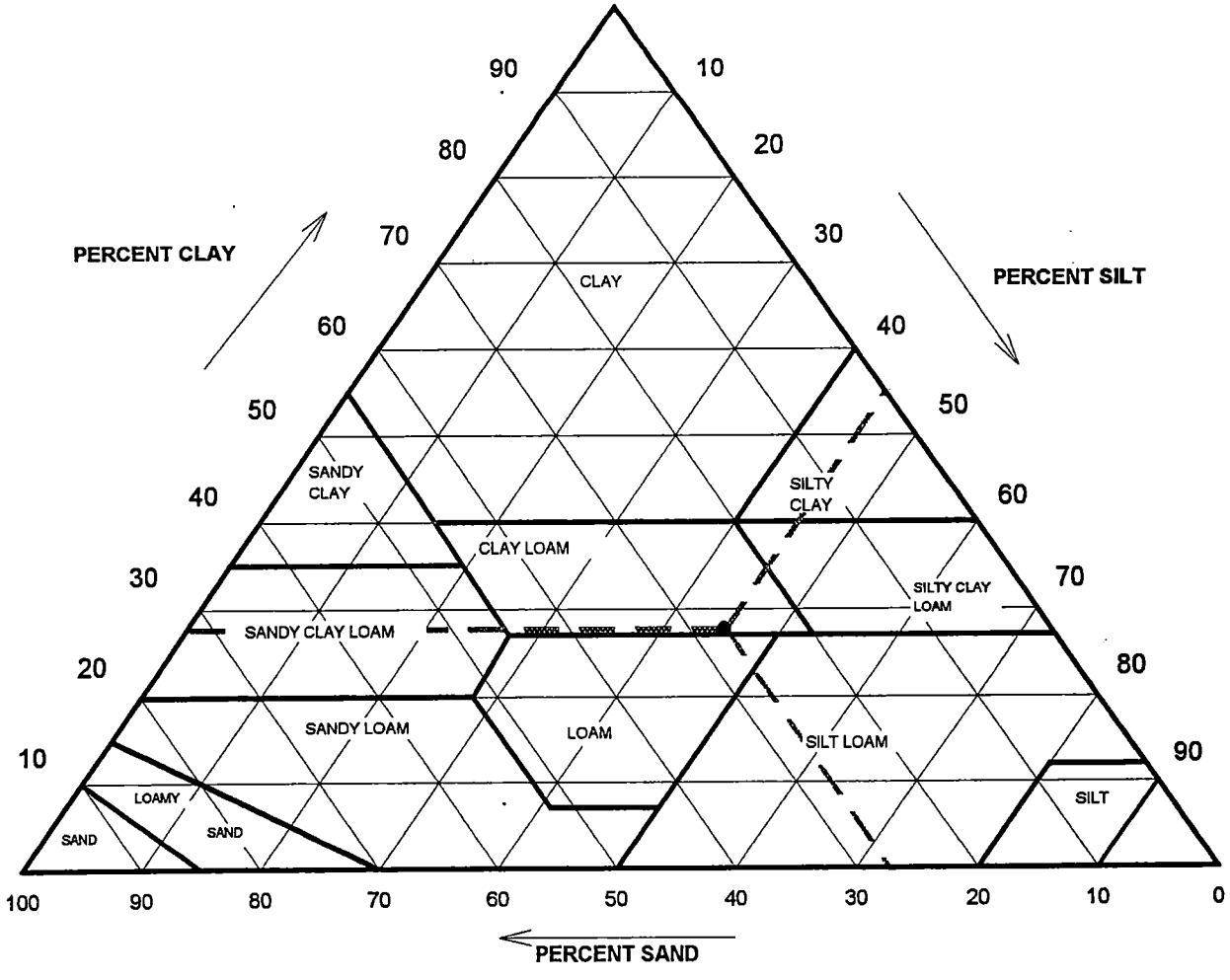
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	7.2-7.5
Project No.	97178-02	Sample No.	SM013-TB02-0507
Lab ID	97178-02.024	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	27.05
Silt	45.22
Clay	27.73
USDA Classification	***CLAY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 8-7-97
Client Project	BAYER 51249	Checked By	JMO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.10
Depth Pushed	15.0-17.0		
Shelby Tube No.	SM013-TB02-1517		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
15.00					
15.50					
16.00					
16.50		2		REDDISH BROWN CLAYEY SAND WITH GRAVEL	UNIT WGT. WC.
17.00		1			GRAINSIZE 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		W-55			
Wt. Tare & WS(gm.)		301.77			
Wt. Tare & DS(gm.)		242.90			
Wt. Tare(gm.)		8.47			
Moisture Content(%)		25.1			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	709.60
Wt. Of Tube(gms.)	186.94
Wt. Of WS.(gms.)	522.66
Length 1 (in.)	2.461
Length 2 (in.)	2.463
Length 3 (in.)	2.454
Top Diameter (in.)	2.877
Middle Diameter (in.)	2.861
Bottom Diameter (in.)	2.879
Sample Volume (cc)	261.05
Moisture Content(%)	25.11
Unit Wet Wt.(gms/cc)	2.00
Unit Wet Wt.(pcf.)	124.9
Unit Dry Wt.(pcf.)	99.9
Unit Dry Wt.(gms/cc)	1.60

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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)	16.7-17.0
Project No.	97178-02	Sample No.	SM013-TB02-1517
Lab ID	97178-02.025	Soil Color	**REDDISH BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	803	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	827.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	716.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	100.66	Weight of Tare (gm)	NA
Weight of Water (gm)	110.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	615.94	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)	615.94
Dry Weight - 3/4" Sample (gm)	287.20	Weight of minus #200 material (gm)	255.26
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	360.68
Dry Weight + 3/4" Sample (gm)	73.48		
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	63.45	10.30	10.30	89.70	**89.70**
3/4"	19.0	10.03	1.63	11.93	88.07	**88.07**
1/2"	12.5	37.70	6.12	18.05	81.95	**81.95**
3/8"	9.50	13.13	2.13	20.18	79.82	**79.82**
#4	4.75	39.76	6.46	26.64	73.36	**73.36**
#10	2.00	52.99	8.60	35.24	64.76	**64.76**
#20	0.85	46.38	7.53	42.77	57.23	**57.23**
#40	0.425	29.19	4.74	47.51	52.49	**52.49**
#60	0.250	25.48	4.14	51.65	48.35	**48.35**
#140	0.106	33.39	5.42	57.07	42.93	**42.93**
#200	0.075	9.18	1.49	58.56	41.44	**41.44**
Pan	-	255.26	41.44	100.00	-	-

Tested By TO Date 8/7/97 Checked By Jam Date 8-21-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.7-17.0
Project No.	97178-02	Sample No.	SM013-TB02-1517
Lab ID	97178-02.025	Soil Color	**REDDISH BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	40.5	42.0	24.7	36.5	84.3	0.0276	**34.9**
5		38.5	24.7	33.0	76.2	0.0180	**31.6**
15		33.5	24.7	28.0	64.7	0.0108	**26.8**
30		30.5	24.7	25.0	57.8	0.0078	**23.9**
60		28.5	23.2	23.0	53.1	0.0056	**22.0**
258		22.5	22.5	17.0	39.3	0.0028	**16.3**
1440		18.0	24.1	12.5	28.9	0.0012	**12.0**

Soil Specimen Data		**Corrections**	
Tare No.	1632	K - Factor	0.01272
Tare + Dry Material (gm)	145.19	a - Factor	0.99
Weight of Tare (gm)	97.26	Composite Correction	5.45
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	41.44
Weight of Dry Material (gm)	42.93		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/7/97 Checked By JCM Date 8-21-97

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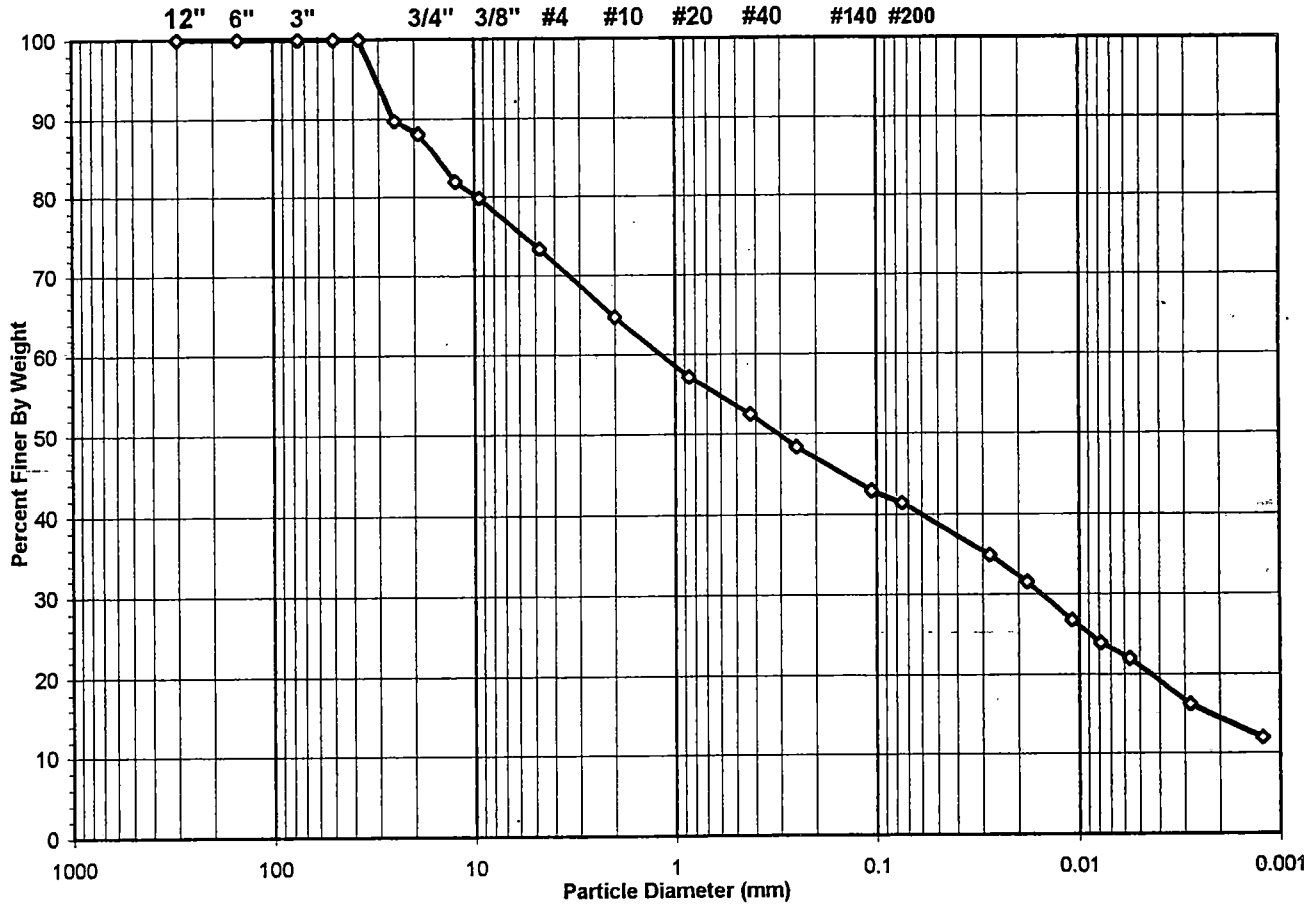
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.7-17.0
Project No.	97178-02	Sample No.	SM013-TB02-1517
Lab ID	97178-02.025	Soil Color	**REDDISH 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*	35.24	**0.00**
2	64.76	*Sand*	25.96	**40.09**
0.075	41.44	*Silt*	24.27	**37.48**
0.05	38.80	*Clay*	14.53	**22.43**
0.002	14.53			

USDA Classification ***LOAM***

USCS Symbol ***sc, ASSUMED***

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

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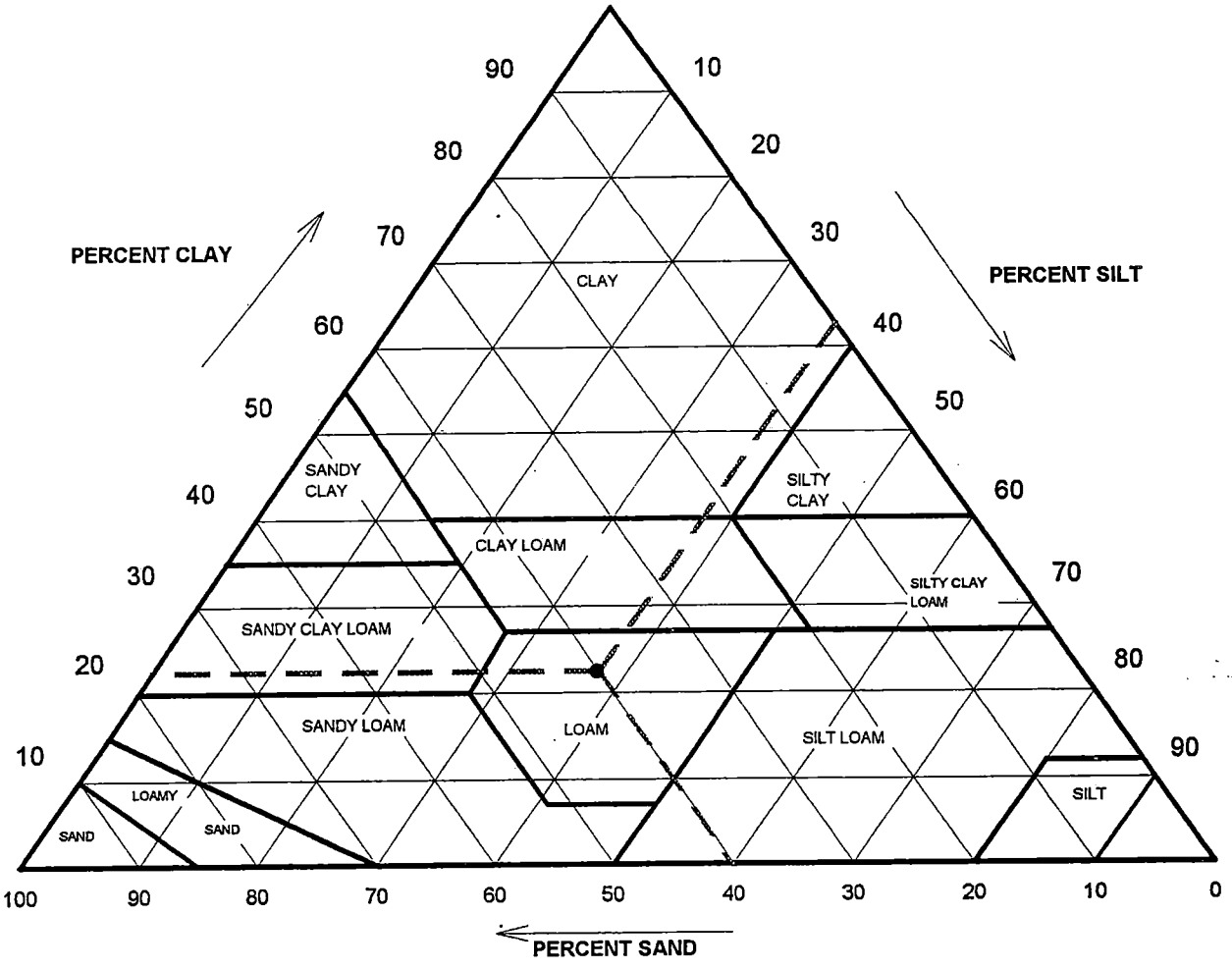
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.7-17.0
Project No.	97178-02	Sample No.	SM013-TB02-1517
Lab ID	97178-02.025	Soil Color	REDDISH BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	40.09
Silt	37.48
Clay	22.43
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

geotechnics

Client	ICF KAISER	Tested By	TO 8-7-97
Client Project	BAYER 51249	Checked By	JMC 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.10
Depth Pushed	1.0-3.0		
Shelby Tube No.	SM013-TB04-0103		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
1.00					
1.50					
2.00					
2.50		3		BROWN SANDY LEAN CLAY WITH GRAVEL	UNIT WGT.WC.
		2			NO TEST
3.00		1			GRAINSIZE 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			T455		
Wt. Tare & WS(gm.)			234.60		
Wt. Tare & DS(gm.)			205.75		
Wt. Tare(gm.)			8.13		
Moisture Content(%)			14.6		

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	664.10
Wt. Of Tube(gms.)	168.38
Wt. Of WS.(gms.)	495.72
Length 1 (in.)	2.243
Length 2 (in.)	2.237
Length 3 (in.)	2.242
Top Diameter (in.)	2.878
Middle Diameter (in.)	2.882
Bottom Diameter (in.)	2.876
Sample Volume (cc)	238.97
Moisture Content(%)	14.60
Unit Wet Wt.(gms/cc)	2.07
Unit Wet Wt.(pcf.)	129.4
Unit Dry Wt.(pcf.)	113.0
Unit Dry Wt.(gms/cc)	1.81

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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
Project No.	97178-02	Sample No.	SM013-TB04-0103
Lab ID	97178-02.026	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	276	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	934.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	830.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	104.64	Weight of Tare (gm)	NA
Weight of Water (gm)	103.10	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	726.26	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**14.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	726.26
Dry Weight - 3/4" Sample (gm)	323.75	Weight of minus #200 material (gm)	371.44
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	354.82
Dry Weight + 3/4" Sample (gm)	31.07		
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	31.07	4.28	4.28	95.72	**95.72**
1/2"	12.5	51.88	7.14	11.42	88.58	**88.58**
3/8"	9.50	11.85	1.63	13.05	86.95	**86.95**
#4	4.75	40.62	5.59	18.65	81.35	**81.35**
#10	2.00	50.43	6.94	25.59	74.41	**74.41**
#20	0.85	37.73	5.20	30.79	69.21	**69.21**
#40	0.425	28.81	3.97	34.75	65.25	**65.25**
#60	0.250	34.69	4.78	39.53	60.47	**60.47**
#140	0.106	54.27	7.47	47.00	53.00	**53.00**
#200	0.075	13.47	1.85	48.86	51.14	**51.14**
Pan	-	371.44	51.14	100.00	-	-

Tested By TO Date 8/7/97 Checked By Jcm Date 8-21-97

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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
Project No.	97178-02	Sample No.	SM013-TB04-0103
Lab ID	97178-02.026	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	37.0	37.5	24.7	32.0	83.8	0.0287	**42.8**
5		35.5	24.7	30.0	78.5	0.0184	**40.2**
15		32.0	24.7	26.5	69.4	0.0109	**35.5**
30		29.5	24.7	24.0	62.9	0.0079	**32.2**
60		27.5	23.2	22.0	57.6	0.0056	**29.5**
261		23.0	22.5	17.5	45.9	0.0028	**23.5**
1440		19.0	24.1	13.5	35.4	0.0012	**18.1**

Soil Specimen Data		Corrections	
Tare No.	1913	K - Factor	0.01272
Tare + Dry Material (gm)	147.42	a - Factor	0.99
Weight of Tare (gm)	104.55	Composite Correction	5.45
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	51.14
Weight of Dry Material (gm)	37.87		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/7/97 Checked By Jcm Date 8-21-97

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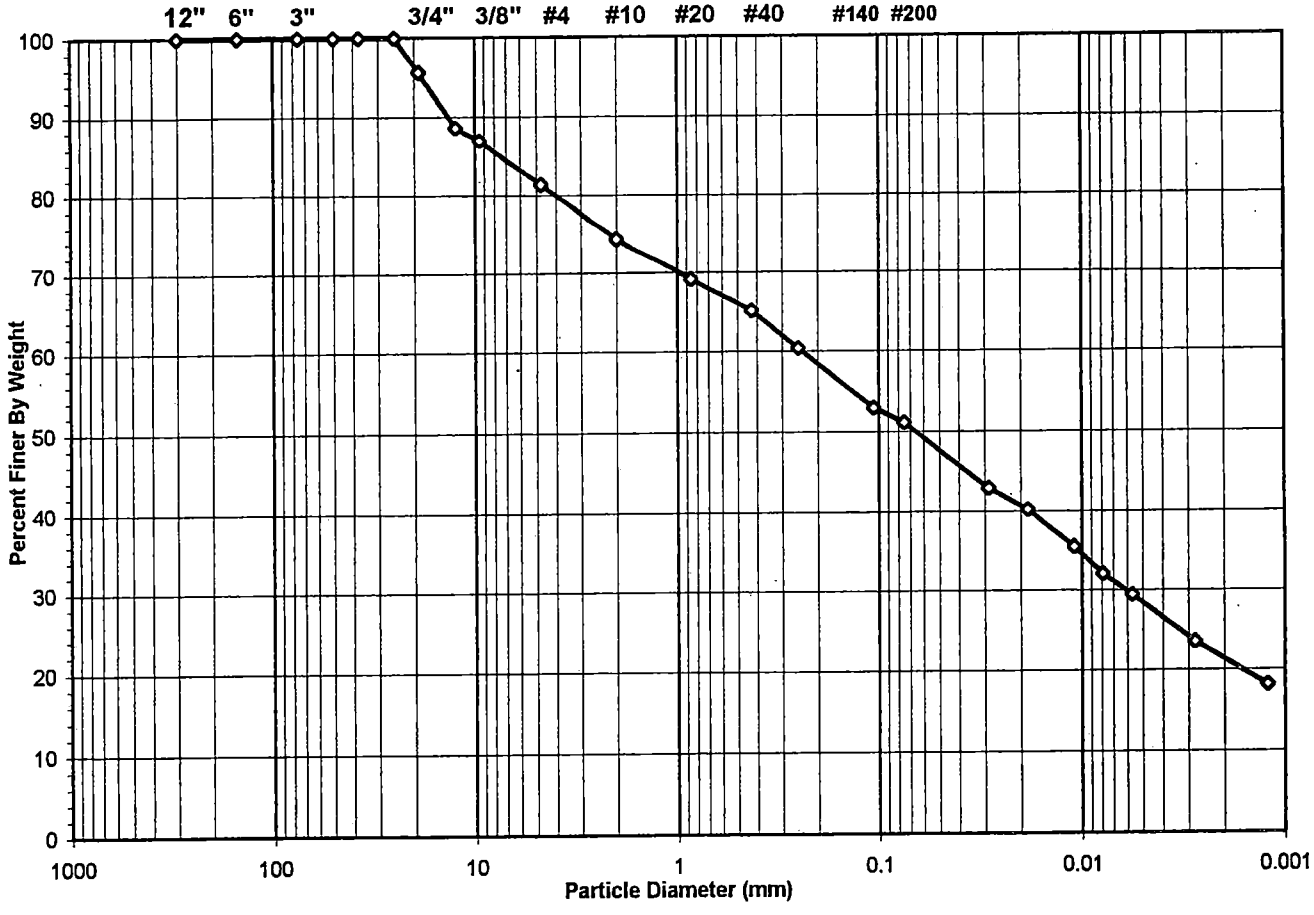
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.7-3.0
Project No.	97178-02	Sample No.	SM013-TB04-0103
Lab ID	97178-02.026	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*	25.59	**0.00**
2	74.41	*Sand*	26.76	**35.97**
0.075	51.14	*Silt*	26.33	**35.38**
0.05	47.65	*Clay*	21.32	**28.65**
0.002	21.32			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

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

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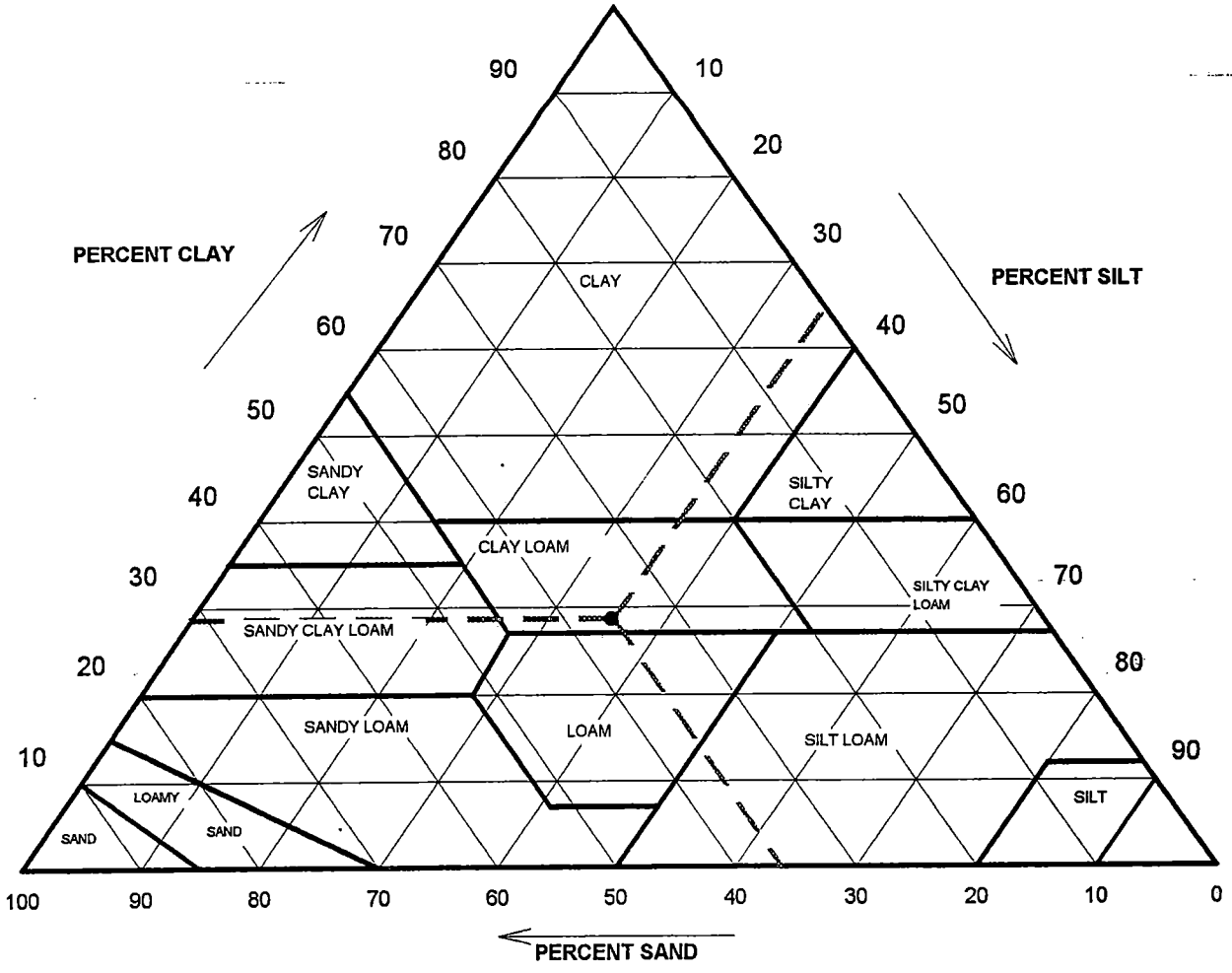
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.7-3.0
Project No.	97178-02	Sample No.	SM013-TB04-0103
Lab ID	97178-02.026	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	35.97
Silt	35.38
Clay	28.65
USDA Classification	***CLAY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMD 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.65
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM013-TB05-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					
4.50		2		BROWN CLAYEY GRAVEL WITH SAND	UNIT WGT. WC.
5.00		1			GRAINSIZE 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		1716			
Wt. Tare & WS(gm.)		615.60			
Wt. Tare & DS(gm.)		541.10			
Wt. Tare(gm.)		83.50			
Moisture Content(%)		16.3			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	708.50
Wt. Of Tube(gms.)	175.06
Wt. Of WS.(gms.)	533.44
Length 1 (in.)	2.382
Length 2 (in.)	2.370
Length 3 (in.)	2.364
Top Diameter (in.)	2.739
Middle Diameter (in.)	2.827
Bottom Diameter (in.)	2.874
Sample Volume (cc)	241.58
Moisture Content(%)	16.28
Unit Wet Wt.(gms/cc)	2.21
Unit Wet Wt.(pcf.)	137.8
Unit Dry Wt.(pcf.)	118.5
Unit Dry Wt.(gms/cc)	1.90

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)	4.7-5.0
Project No.	97178-02	Sample No.	SM013-TB05-0305
Lab ID	97178-02.027	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)	809.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	719.70	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	104.75	Weight of Tare (gm)	NA
Weight of Water (gm)	90.10	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	614.95	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**14.7**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	614.95
Dry Weight - 3/4" Sample (gm)	314.35	Weight of minus #200 material (gm)	208.84
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	406.11
Dry Weight + 3/4" Sample (gm)	91.76		
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	73.01	11.87	11.87	88.13	**88.13**
3/4"	19.0	18.75	3.05	14.92	85.08	**85.08**
1/2"	12.5	72.03	11.71	26.63	73.37	**73.37**
3/8"	9.50	15.87	2.58	29.22	70.78	**70.78**
#4	4.75	51.53	8.38	37.59	62.41	**62.41**
#10	2.00	46.48	7.56	45.15	54.85	**54.85**
#20	0.85	29.96	4.87	50.03	49.97	**49.97**
#40	0.425	23.96	3.90	53.92	46.08	**46.08**
#60	0.250	27.76	4.51	58.44	41.56	**41.56**
#140	0.106	36.98	6.01	64.45	35.55	**35.55**
#200	0.075	9.78	1.59	66.04	33.96	**33.96**
Pan	-	208.84	33.96	100.00	-	-

Tested By KBL Date 8/11/97 Checked By TID Date 8-21-97

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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.	97178-02	Sample No.	SM013-TB05-0305
Lab ID	97178-02.027	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	35.0	36.0	24.3	30.4	86.9	0.0291	**29.5**
5		34.0	24.3	28.4	81.1	0.0187	**27.6**
15		31.0	24.3	25.4	72.6	0.0110	**24.6**
30		29.5	24.3	23.9	68.3	0.0079	**23.2**
60		27.0	23.5	21.4	61.1	0.0057	**20.8**
250		23.5	23.5	17.9	51.1	0.0029	**17.4**
1490		19.0	23.8	13.4	38.2	0.0012	**13.0**

Soil Specimen Data		Corrections	
Tare No.	892	K - Factor	0.01278
Tare + Dry Material (gm)	145.66	a - Factor	0.99
Weight of Tare (gm)	106.07	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	33.96
Weight of Dry Material (gm)	34.59		
		Specific Gravity	2.7 Assumed

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

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

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

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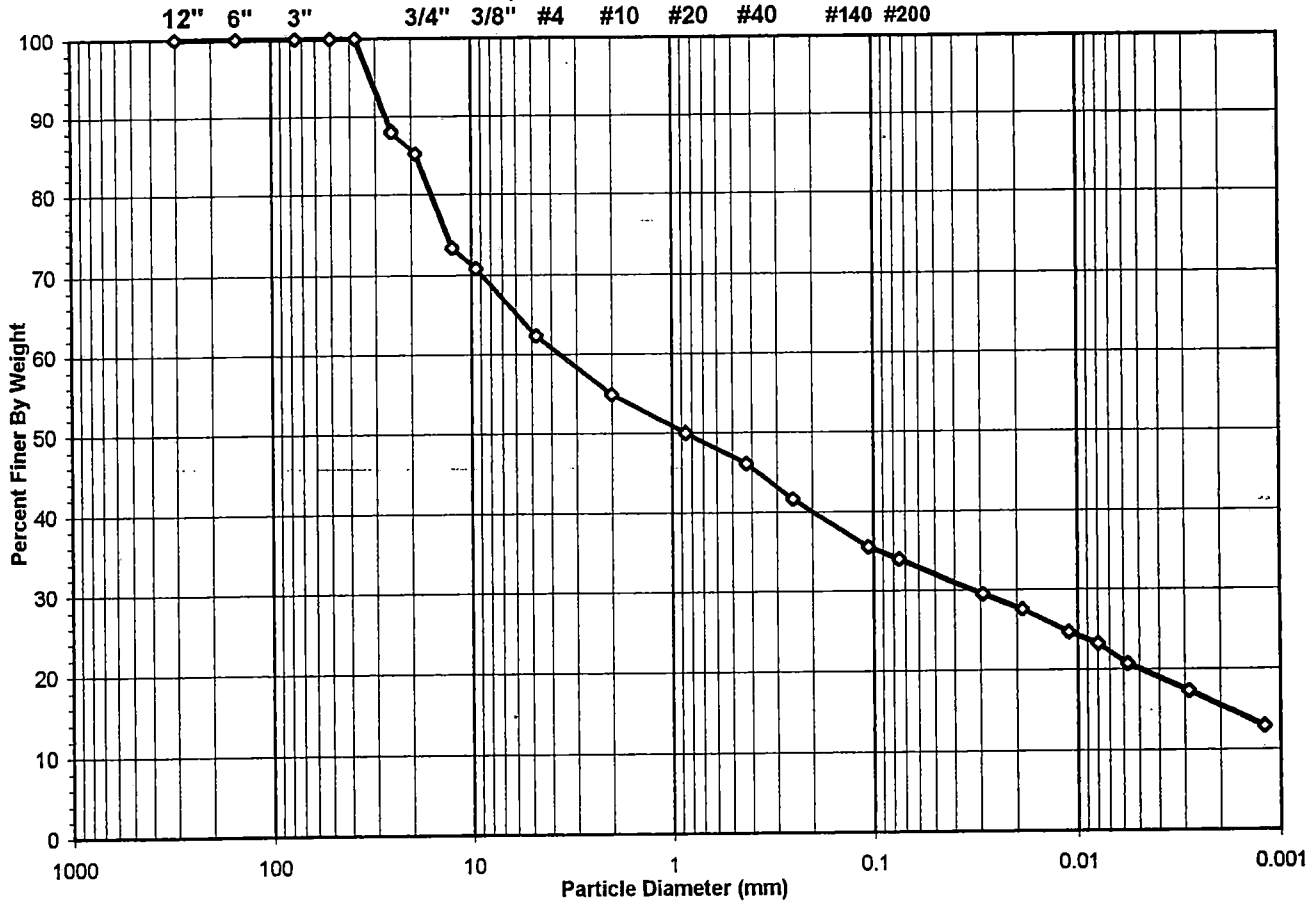
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.7-5.0
Project No.	97178-02	Sample No.	SM013-TB05-0305
Lab ID	97178-02.027	Soil Color	**BROWN**

	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*	45.15	**0.00**
2	54.85	*Sand*	22.80	**41.57**
0.075	33.96	*Silt*	16.49	**30.07**
0.05	32.05	*Clay*	15.56	**28.36**
0.002	15.56			

USDA Classification ***CLAY LOAM***

USCS Symbol ***gc, ASSUMED***

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

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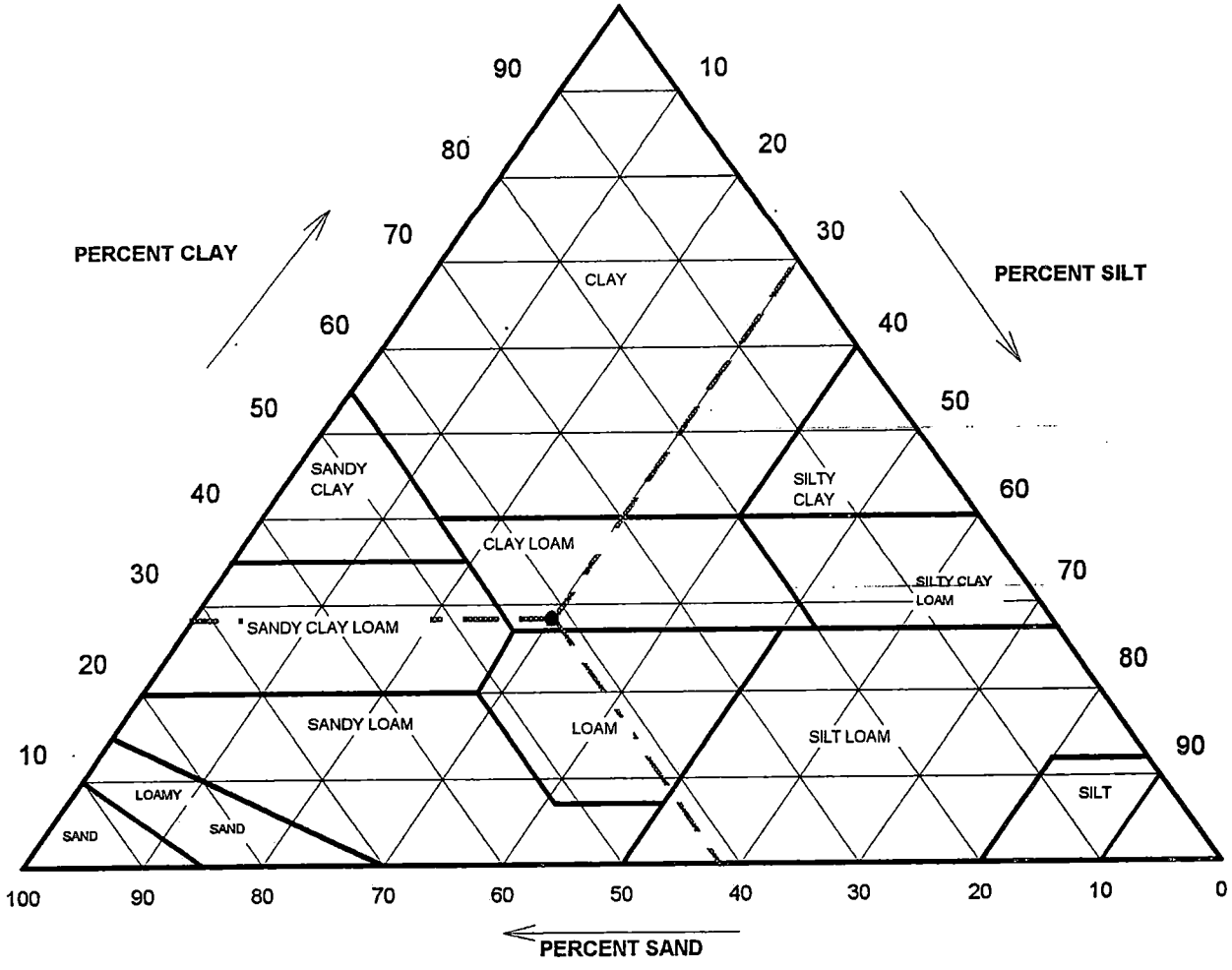
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.7-5.0
Project No.	97178-02	Sample No.	SM013-TB05-0305
Lab ID	97178-02.027	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	41.57
Silt	30.07
Clay	28.36
USDA Classification	***CLAY LOAM***

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C:\WINGZ\QA\SHELBY.WKZ

SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMO 8/24/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	15.0-17.0		
Shelby Tube No.	SM013-TB05-1517		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
15.00					
15.50					
16.00					
16.50		2		BROWN CLAYEY SAND	UNIT WGT. WC. GRAINSIZE HYDROMETER
17.00		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		1714			
Wt. Tare & WS(gm.)		286.54			
Wt. Tare & DS(gm.)		254.22			
Wt. Tare(gm.)		83.51			
Moisture Content(%)		18.9			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1152.90
Wt. Of Tube(gms.)	296.71
Wt. Of WS.(gms.)	856.19
Length 1 (in.)	3.949
Length 2 (in.)	3.904
Length 3 (in.)	3.934
Top Diameter (in.)	2.872
Middle Diameter (in.)	2.874
Bottom Diameter (in.)	2.773
Sample Volume (cc)	407.76
Moisture Content(%)	18.93
Unit Wet Wt.(gms/cc)	2.10
Unit Wet Wt.(pcf.)	131.0
Unit Dry Wt.(pcf.)	110.2
Unit Dry Wt.(gms/cc)	1.77

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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)	16.5-16.8
Project No.	97178-02	Sample No.	SM013-TB05-1517
Lab ID	97178-02.028	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1058	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	601.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	520.80	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	103.71	Weight of Tare (gm)	NA
Weight of Water (gm)	81.00	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	417.09	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)	417.09
Dry Weight - 3/4" Sample (gm)	211.90	Weight of minus #200 material (gm)	205.19
Wet Weight +3/4" Sample (gm)	NA.	Weight of plus #200 material (gm)	211.90
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	0.22	0.05	0.05	99.95	**99.95**
#40	0.425	1.01	0.24	0.29	99.71	**99.71**
#60	0.250	10.01	2.40	2.69	97.31	**97.31**
#140	0.106	167.50	40.16	42.85	57.15	**57.15**
#200	0.075	33.16	7.95	50.80	49.20	**49.20**
Pan	-	205.19	49.20	100.00	-	-

Tested By BL Date 8/11/97 Checked By TW Date 8-21-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.5-16.8
Project No.	97178-02	Sample No.	SM013-TB05-1517
Lab ID	97178-02.028	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	26.0	26.5	24.3	20.9	68.7	0.0312	**33.8**
5		23.0	24.3	17.4	57.2	0.0202	**28.1**
15		20.0	24.3	14.4	47.3	0.0119	**23.3**
30		19.0	24.3	13.4	44.0	0.0085	**21.7**
60		17.0	23.5	11.4	37.4	0.0061	**18.4**
250		15.0	23.5	9.4	30.8	0.0030	**15.2**
1493		12.0	23.8	6.4	20.9	0.0013	**10.3**

Soil Specimen Data		Corrections	
Tare No.	891	K - Factor	0.01278
Tare + Dry Material (gm)	140.18	a - Factor	0.99
Weight of Tare (gm)	105.15	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	49.20
Weight of Dry Material (gm)	30.03		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By Jam Date 8.21.97

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

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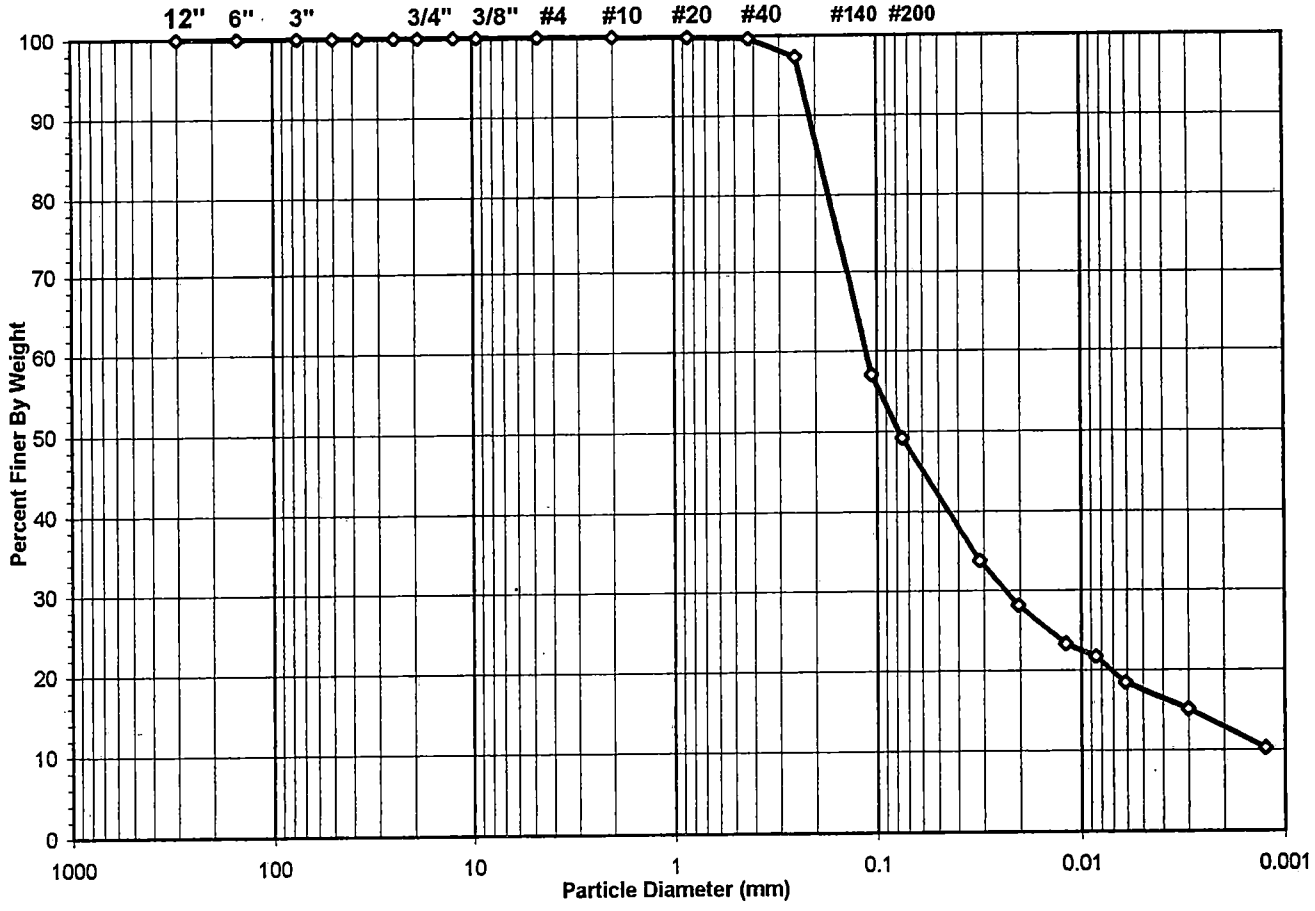
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.5-16.8
Project No.	97178-02	Sample No.	SM013-TB05-1517
Lab ID	97178-02.028	Soil Color	**BROWN**

	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*	57.92	**57.92**
0.075	49.20	*Silt*	29.17	**29.17**
0.05	42.08	*Clay*	12.90	**12.90**
0.002	12.90			

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

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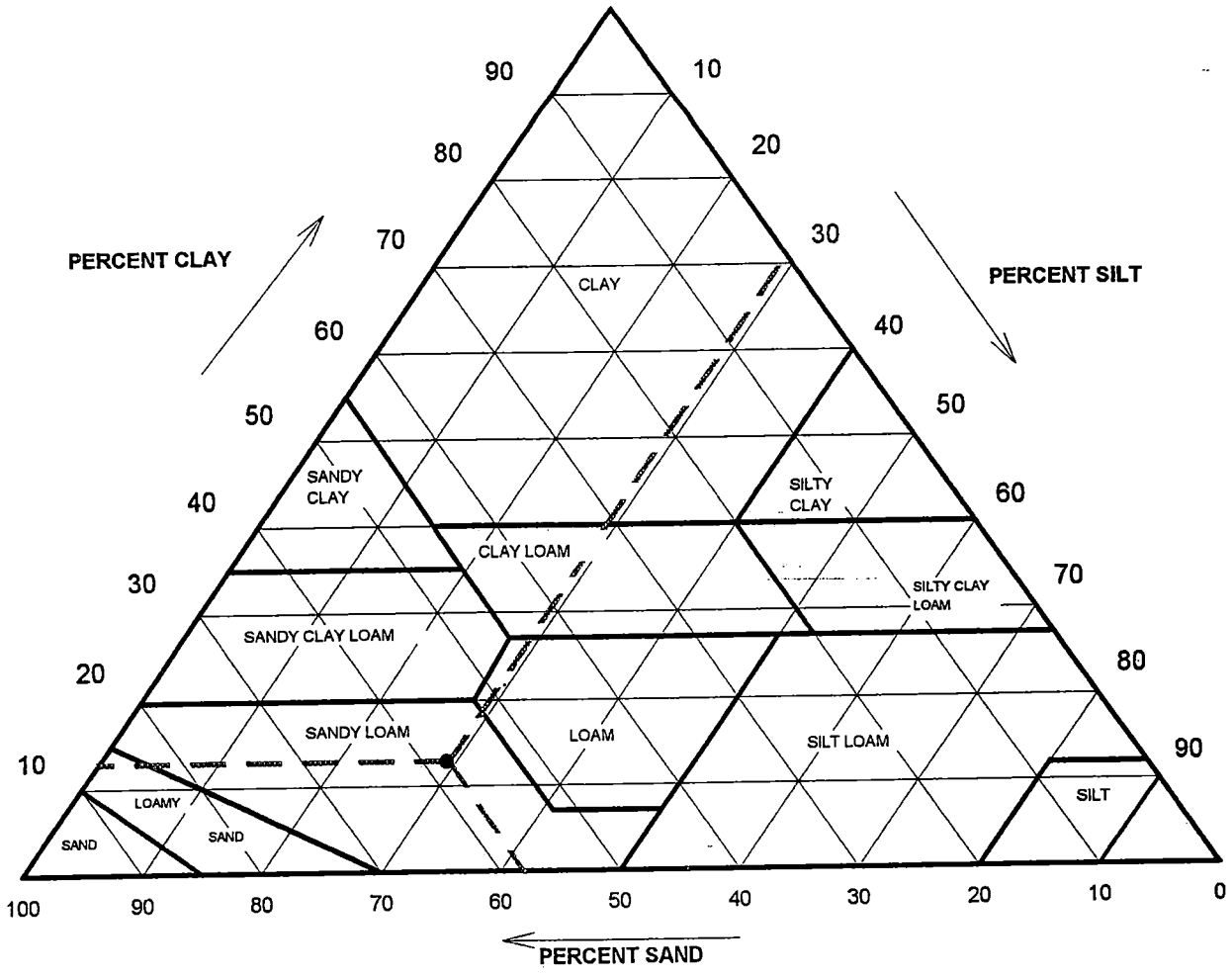
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.5-16.8
Project No.	97178-02	Sample No.	SM013-TB05-1517
Lab ID	97178-02.028	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	57.92
Silt	29.17
Clay	12.90
USDA Classification	***SANDY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.05
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM013-TB08-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					
4.50		2		BROWN LEAN CLAY WITH SAND	UNIT WGT. WC. GRAINSIZE HYDROMETER
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		1724			
Wt. Tare & WS(gm.)		294.23			
Wt. Tare & DS(gm.)		262.55			
Wt. Tare(gm.)		83.03			
Moisture Content(%)		17.6			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1069.40
Wt. Of Tube(gms.)	277.71
Wt. Of WS.(gms.)	791.69
Length 1 (in.)	3.741
Length 2 (in.)	3.768
Length 3 (in.)	3.731
Top Diameter (in.)	2.879
Middle Diameter (in.)	2.885
Bottom Diameter (in.)	2.875
Sample Volume (cc)	399.87
Moisture Content(%)	17.65
Unit Wet Wt.(gms/cc)	1.98
Unit Wet Wt.(pcf.)	123.5
Unit Dry Wt.(pcf.)	105.0
Unit Dry Wt.(gms/cc)	1.68

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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)	4.5-4.8
Project No.	97178-02	Sample No.	SM013-TB08-0305
Lab ID	97178-02.029	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1005	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	534.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	466.80	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	106.10	Weight of Tare (gm)	NA
Weight of Water (gm)	68.00	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	360.70	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**18.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	360.70
Dry Weight - 3/4" Sample (gm)	83.68	Weight of minus #200 material (gm)	277.02
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	83.68
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	3.25	0.90	0.90	99.10	**99.10**
3/8"	9.50	2.22	0.62	1.52	98.48	**98.48**
#4	4.75	17.59	4.88	6.39	93.61	**93.61**
#10	2.00	16.23	4.50	10.89	89.11	**89.11**
#20	0.85	15.65	4.34	15.23	84.77	**84.77**
#40	0.425	9.60	2.66	17.89	82.11	**82.11**
#60	0.250	6.41	1.78	19.67	80.33	**80.33**
#140	0.106	8.70	2.41	22.08	77.92	**77.92**
#200	0.075	4.03	1.12	23.20	76.80	**76.80**
Pan	-	277.02	76.80	100.00	-	-

Tested By BL Date 8/11/97 Checked By JMO Date 8/22/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM013-TB08-0305
Lab ID	97178-02.029	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	50.0	51.0	24.3	45.4	82.9	0.0255	**63.7**
5		46.5	24.3	40.9	74.7	0.0168	**57.3**
15		40.0	24.3	34.4	62.8	0.0103	**48.2**
30		37.0	24.3	31.4	57.3	0.0075	**44.0**
60		33.0	23.5	27.4	50.0	0.0054	**38.4**
250		28.5	23.5	22.9	41.8	0.0028	**32.1**
1484		22.5	23.8	16.9	30.8	0.0012	**23.7**

Soil Specimen Data		Corrections	
Tare No.	1653	K - Factor	0.01278
Tare + Dry Material (gm)	159.56	a - Factor	0.99
Weight of Tare (gm)	100.39	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	76.80
Weight of Dry Material (gm)	54.17		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMO Date 8/22/97

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

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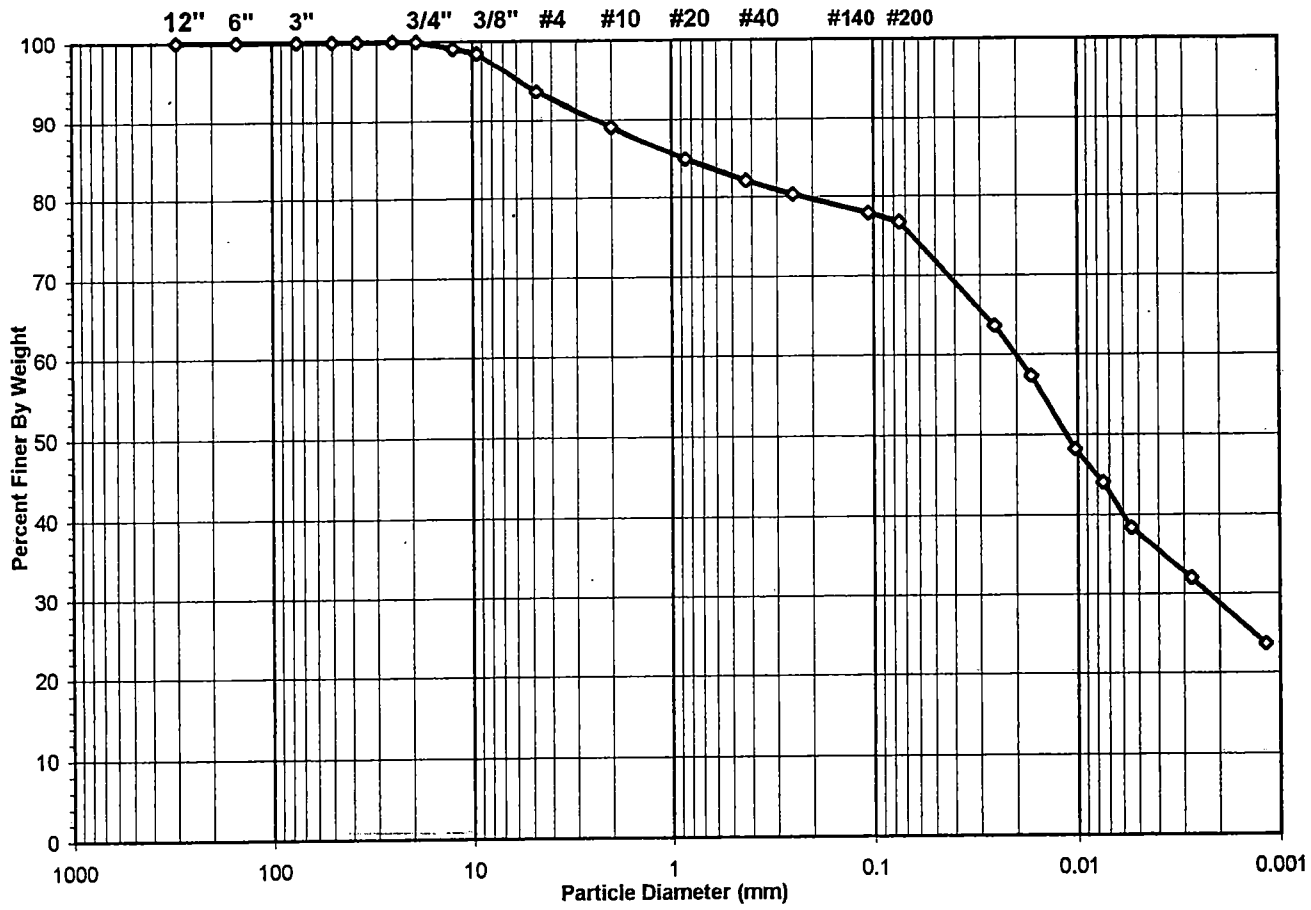
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM013-TB08-0305
Lab ID	97178-02.029	Soil Color	**BROWN**

	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*	10.89	**0.00**
2	89.11	*Sand*	17.24	**19.35**
0.075	76.80	*Silt*	42.97	**48.22**
0.05	71.87	*Clay*	28.90	**32.43**
0.002	28.90			

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

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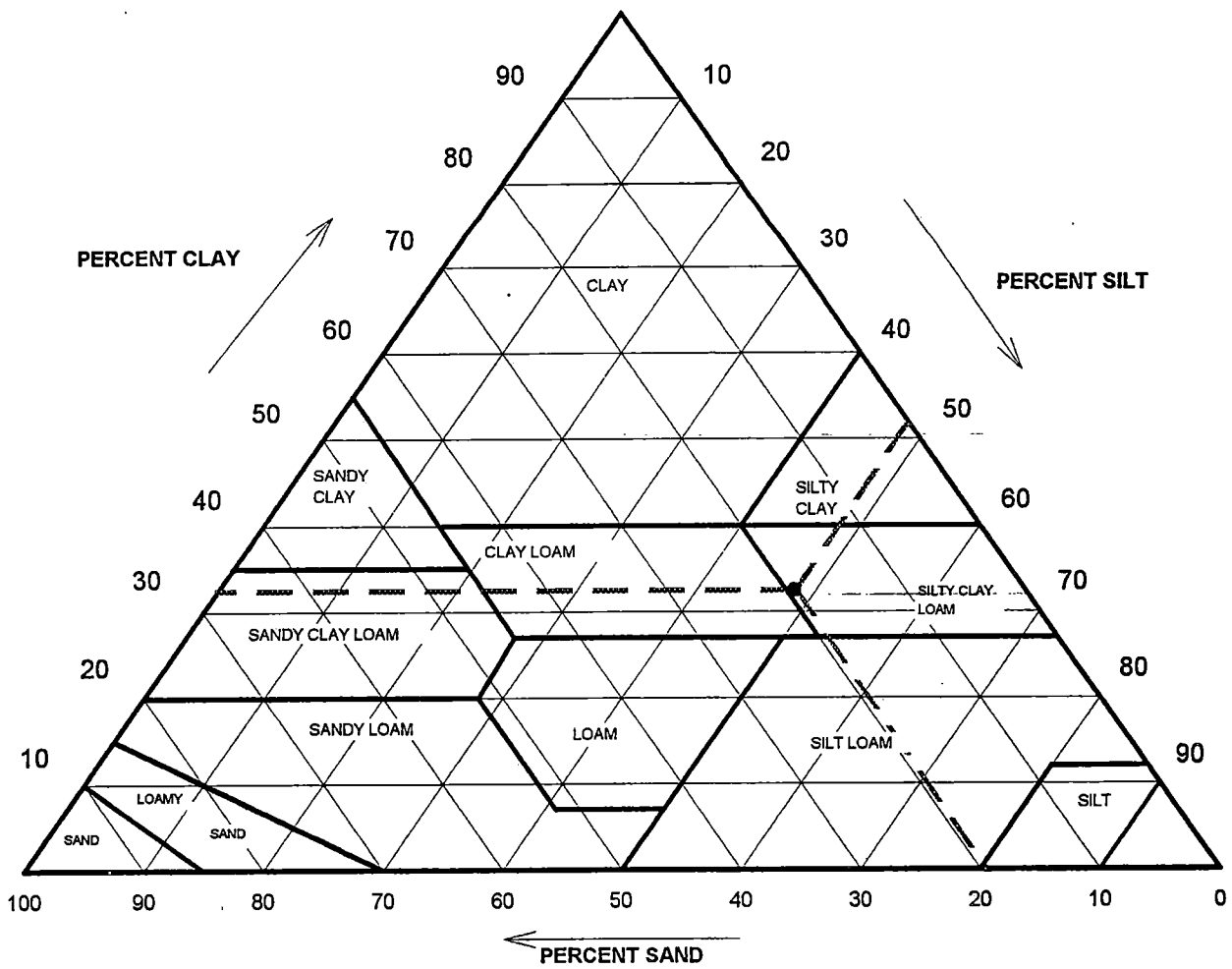
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM013-TB08-0305
Lab ID	97178-02.029	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	19.35
Silt	48.22
Clay	32.43
USDA Classification	***SILTY CLAY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMD 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.95
Depth Pushed	9.0-11.0		
Shelby Tube No.	SM013-TB08-0911		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
9.00					
9.50					
10.00					
10.50		2		GRAYISH BROWN LEAN CLAY	UNIT WGT. WC. GRAINSIZE HYDROMETER
11.00		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		1695			
Wt. Tare & WS(gm.)		246.06			
Wt. Tare & DS(gm.)		210.31			
Wt. Tare(gm.)		81.38			
Moisture Content(%)		27.7			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	998.80
Wt. Of Tube(gms.)	268.65
Wt. Of WS.(gms.)	730.15
Length 1 (in.)	3.622
Length 2 (in.)	3.659
Length 3 (in.)	3.615
Top Diameter (in.)	2.860
Middle Diameter (in.)	2.856
Bottom Diameter (in.)	2.817
Sample Volume (cc)	378.18
Moisture Content(%)	27.73
Unit Wet Wt.(gms/cc)	1.93
Unit Wet Wt.(pcf.)	120.5
Unit Dry Wt.(pcf.)	94.3
Unit Dry Wt.(gms/cc)	1.51

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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)	10.5-10.8
Project No.	97178-02	Sample No.	SM013-TB08-0911
Lab ID	97178-02.030	Soil Color	**GRAYISH BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1089	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	510.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	424.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	105.88	Weight of Tare (gm)	NA
Weight of Water (gm)	85.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	318.72	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**26.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	318.72
Dry Weight - 3/4" Sample (gm)	13.71	Weight of minus #200 material (gm)	305.01
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	13.71
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	0.21	0.07	0.07	99.93	**99.93**
#10	2.00	1.65	0.52	0.58	99.42	**99.42**
#20	0.85	2.64	0.83	1.41	98.59	**98.59**
#40	0.425	1.62	0.51	1.92	98.08	**98.08**
#60	0.250	2.06	0.65	2.57	97.43	**97.43**
#140	0.106	3.55	1.11	3.68	96.32	**96.32**
#200	0.075	1.98	0.62	4.30	95.70	**95.70**
Pan	-	305.01	95.70	100.00	-	-

Tested By BL Date 8/11/97 Checked By JCM Date 8-22-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	10.5-10.8
Project No.	97178-02	Sample No.	SM013-TB08-0911
Lab ID	97178-02.030	Soil Color	**GRAYISH BROWN**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	45.0	46.0	24.3	40.4	88.6	0.0267	**84.8**
5		44.0	24.3	38.4	84.2	0.0172	**80.6**
15		39.0	24.3	33.4	73.2	0.0104	**70.1**
30		36.5	24.3	30.9	67.8	0.0075	**64.8**
60		33.0	23.5	27.4	60.1	0.0054	**57.5**
250		26.5	23.5	20.9	45.8	0.0028	**43.8**
1481		20.0	23.8	14.4	31.5	0.0012	**30.2**

Soil Specimen Data		**Corrections**	
Tare No.	SGI11	K - Factor	0.01278
Tare + Dry Material (gm)	157.24	a - Factor	0.99
Weight of Tare (gm)	107.16	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	95.70
Weight of Dry Material (gm)	45.08		
		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 8-22-97

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

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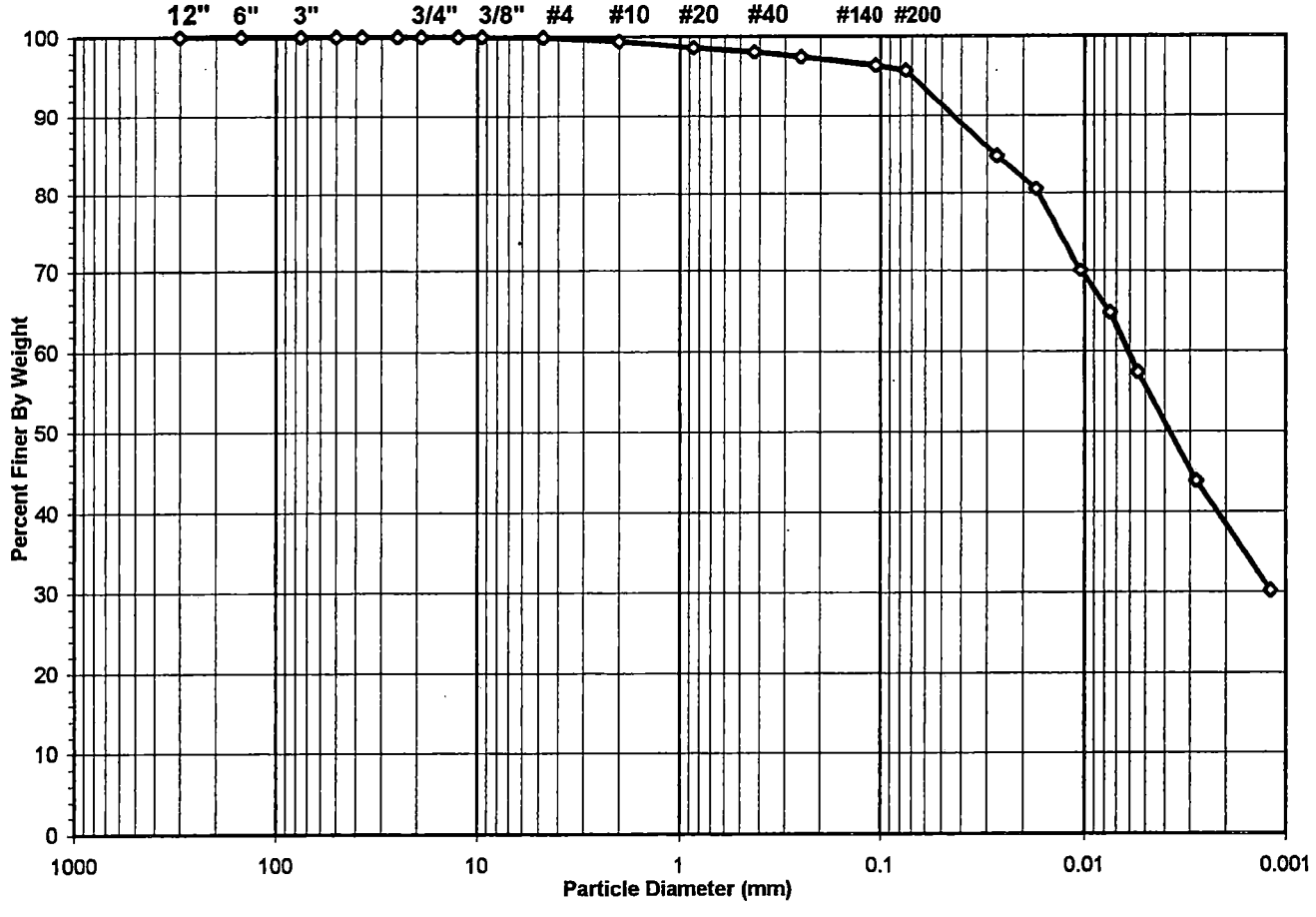
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	10.5-10.8
Project No.	97178-02	Sample No.	SM013-TB08-0911
Lab ID	97178-02.030	Soil Color	**GRAYISH BROWN**

	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*	0.58	**0.00**
2	99.42	*Sand*	8.00	**8.05**
0.075	95.70	*Silt*	52.99	**53.30**
0.05	91.42	*Clay*	38.43	**38.65**
0.002	38.43			

USDA Classification ***SILTY CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY***

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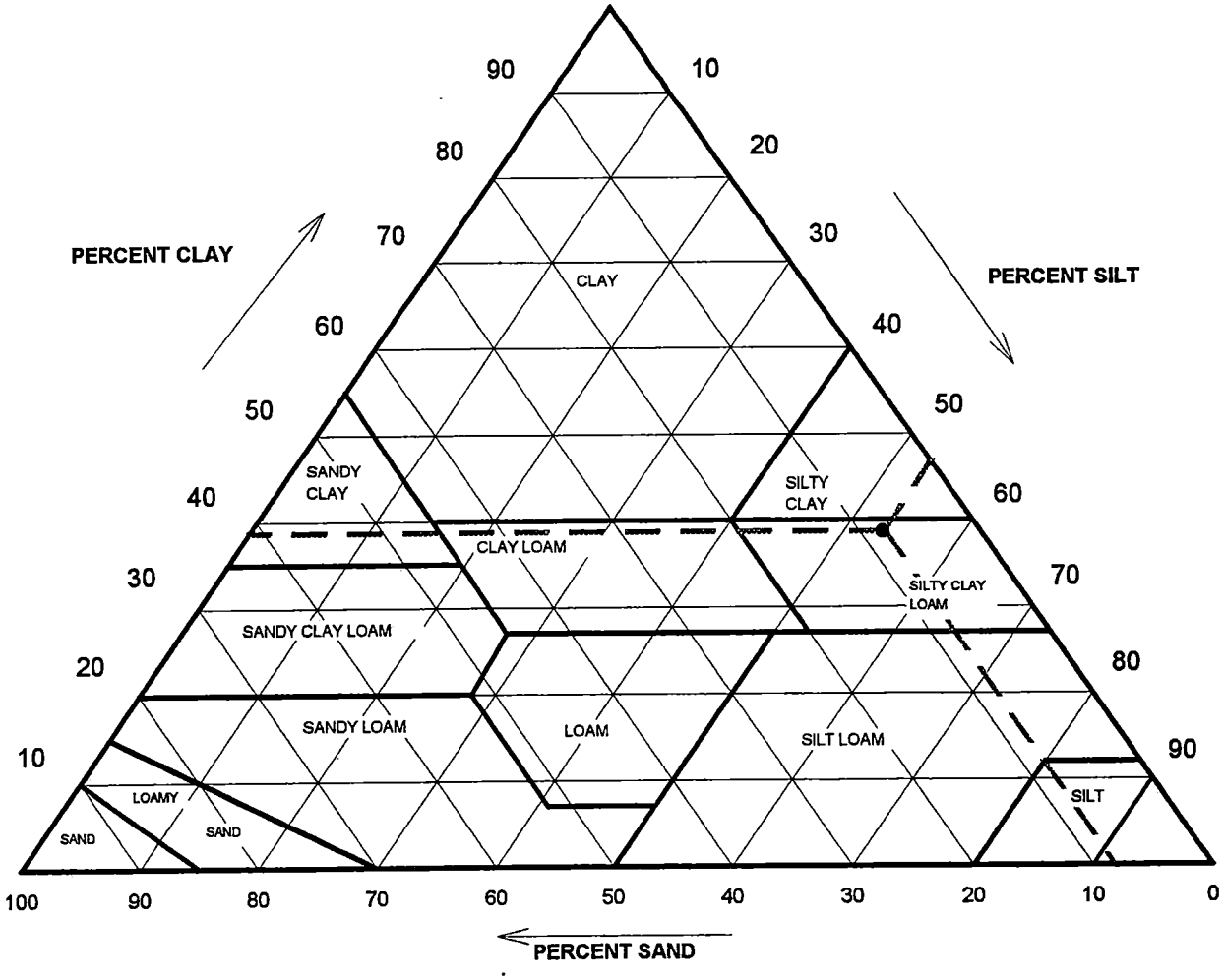
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	10.5-10.8
Project No.	97178-02	Sample No.	SM013-TB08-0911
Lab ID	97178-02.030	Soil Color	GRAYISH BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	8.05
Silt	53.30
Clay	38.65
USDA Classification	***SILTY CLAY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	14.0-16.0		
Shelby Tube No.	SM013-TB08-1416		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
14.00					
14.50					
15.00					
15.50		2		BROWN CLAYEY SAND	UNIT WGT. WC. GRAINSIZE HYDROMETER
16.00		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		1734			
Wt. Tare & WS(gm.)		228.02			
Wt. Tare & DS(gm.)		208.06			
Wt. Tare(gm.)		83.19			
Moisture Content(%)		16.0			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1000.50
Wt. Of Tube(gms.)	267.65
Wt. Of WS.(gms.)	732.85
Length 1 (in.)	3.587
Length 2 (in.)	3.579
Length 3 (in.)	3.565
Top Diameter (in.)	2.833
Middle Diameter (in.)	2.865
Bottom Diameter (in.)	2.784
Sample Volume (cc)	368.01
Moisture Content(%)	15.98
Unit Wet Wt.(gms/cc)	1.99
Unit Wet Wt.(pcf.)	124.3
Unit Dry Wt.(pcf.)	107.1
Unit Dry Wt.(gms/cc)	1.72

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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)	15.5-15.8
Project No.	97178-02	Sample No.	SM013-TB08-1416
Lab ID	97178-02.031	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	892	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	598.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	531.20	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	106.07	Weight of Tare (gm)	NA
Weight of Water (gm)	66.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	425.13	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**15.7**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	425.13
Dry Weight - 3/4" Sample (gm)	284.35	Weight of minus #200 material (gm)	140.78
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	284.35
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	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	0.37	0.09	0.09	99.91	**99.91**
#40	0.425	2.20	0.52	0.60	99.40	**99.40**
#60	0.250	89.32	21.01	21.61	78.39	**78.39**
#140	0.106	163.52	38.46	60.08	39.92	**39.92**
#200	0.075	28.94	6.81	66.89	33.11	**33.11**
Pan	-	140.78	33.11	100.00	-	-

Tested By BL Date 8/11/97 Checked By JMO Date 8/22/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.5-15.8
Project No.	97178-02	Sample No.	SM013-TB08-1416
Lab ID	97178-02.031	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	21.0	21.5	24.3	15.9	71.7	0.0323	**23.7**
5		20.0	24.3	14.4	64.9	0.0206	**21.5**
15		18.5	24.3	12.9	58.1	0.0120	**19.2**
30		17.5	24.3	11.9	53.6	0.0085	**17.7**
60		16.0	23.5	10.4	46.8	0.0061	**15.5**
250		14.5	23.5	8.9	40.0	0.0030	**13.3**
1478		12.5	23.8	6.9	31.0	0.0013	**10.3**

Soil Specimen Data		Corrections	
Tare No.	1682	K - Factor	0.01278
Tare + Dry Material (gm)	135.09	a - Factor	0.99
Weight of Tare (gm)	108.2	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	33.11
Weight of Dry Material (gm)	21.89		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMO Date 8/22/97

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

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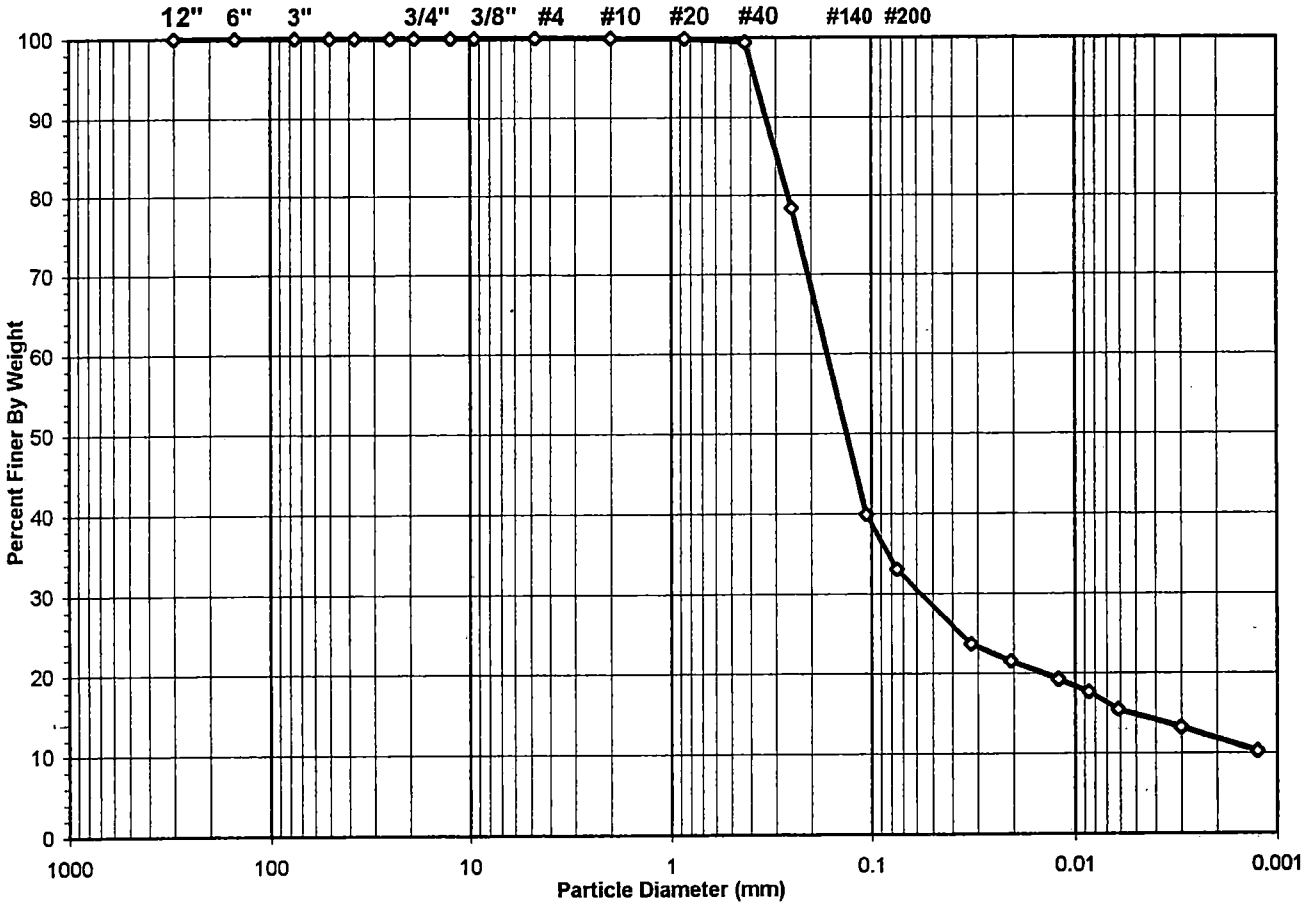
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.5-15.8
Project No.	97178-02	Sample No.	SM013-TB08-1416
Lab ID	97178-02.031	Soil Color	BROWN

	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*	71.40	**71.40**
0.075	33.11	*Silt*	16.75	**16.75**
0.05	28.60	*Clay*	11.85	**11.85**
0.002	11.85			

USDA Classification ***SANDY LOAM***

USCS Symbol ***sc, ASSUMED***

USCS Classification ***CLAYEY SAND***

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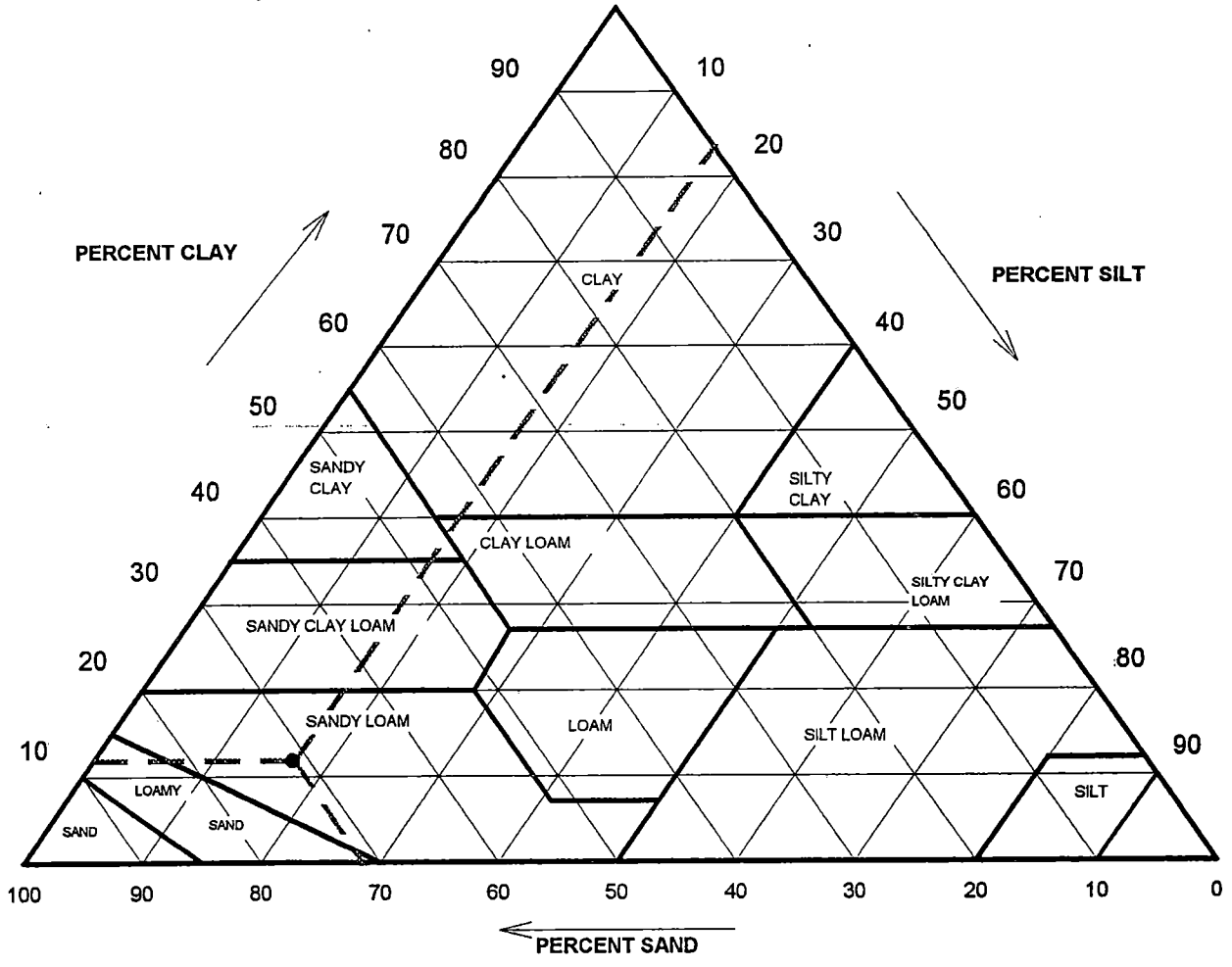
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	15.5-15.8
Project No.	97178-02	Sample No.	SM013-TB08-1416
Lab ID	97178-02.031	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	71.40
Silt	16.75
Clay	11.85
USDA Classification	***SANDY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	TO 7-29-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	1.20
Depth Pushed	1.0-3.0		
Shelby Tube No.	SM014-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			WC.
2.50		1		BROWN SANDY LEAN CLAY WITH GRAVEL VOID AND BENT TUBE	GRAINSIZE HYDROMETER
3.00					

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		W-39			
Wt. Tare & WS(gm.)		364.43			
Wt. Tare & DS(gm.)		329.93			
Wt. Tare(gm.)		8.19			
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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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)	2.4-3.0 SEC. 1
Project No.	97178-01	Sample No.	SM014-TB02-0103
Lab ID	97178-01.032	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*	27.68	**0.00**
2	72.32	*Sand*	17.20	**23.78**
0.075	57.39	*Silt*	35.86	**49.58**
0.05	55.12	*Clay*	19.26	**26.63**
0.002	19.26			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

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

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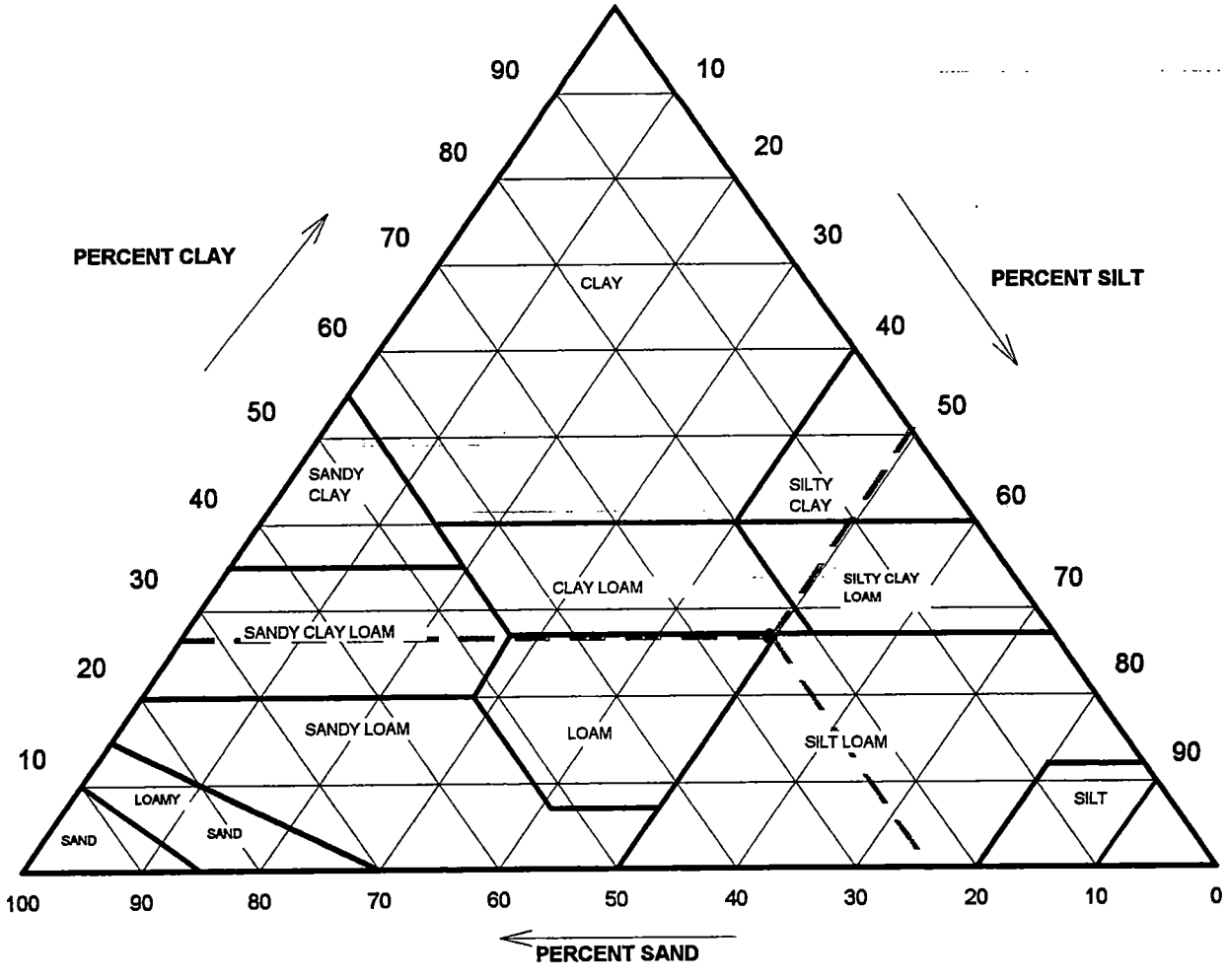
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.4-3.0 SEC. 1
Project No.	97178-01	Sample No.	SM014-TB02-0103
Lab ID	97178-01.032	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	23.78
Silt	49.58
Clay	26.63
USDA Classification	***LOAM***

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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)	2.4-3.0 SEC. 1
Project No.	97178-01	Sample No.	SM014-TB02-0103
Lab ID	97178-01.032	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1635	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	553.60	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	485.00	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	99.13	Weight of Tare (gm)	NA
Weight of Water (gm)	68.60	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	385.87	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**17.8**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	385.87
Dry Weight - 3/4" Sample (gm)	134.56	Weight of minus #200 material (gm)	221.44
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	164.43
Dry Weight + 3/4" Sample (gm)	29.87		
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	29.87	7.74	7.74	92.26	**92.26**
1/2"	12.5	19.58	5.07	12.82	87.18	**87.18**
3/8"	9.50	5.25	1.36	14.18	85.82	**85.82**
#4	4.75	26.43	6.85	21.03	78.97	**78.97**
#10	2.00	25.68	6.66	27.68	72.32	**72.32**
#20	0.85	17.52	4.54	32.22	67.78	**67.78**
#40	0.425	12.13	3.14	35.36	64.64	**64.64**
#60	0.250	10.76	2.79	38.15	61.85	**61.85**
#140	0.106	13.71	3.55	41.71	58.29	**58.29**
#200	0.075	3.50	0.91	42.61	57.39	**57.39**
Pan	-	221.44	57.39	100.00	-	-

Tested By TO Date 7/29/97 Checked By LB Date 8-8-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.4-3.0 SEC. 1
Project No.	97178-01	Sample No.	SM014-TB02-0103
Lab ID	97178-01.032	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	42.0	23.2	35.8	90.4	0.0281	**51.9**
5		37.5	23.2	31.3	79.1	0.0184	**45.4**
15		32.5	23.2	26.3	66.4	0.0111	**38.1**
30		30.0	23.2	23.8	60.1	0.0080	**34.5**
63		27.0	22.7	20.8	52.5	0.0056	**30.2**
250		21.5	22.6	15.3	38.7	0.0029	**22.2**
1440		17.0	23.9	10.8	27.3	0.0013	**15.7**

Soil Specimen Data		Corrections	
Tare No.	1065	K - Factor	0.01294
Tare + Dry Material (gm)	148.91	a - Factor	0.99
Weight of Tare (gm)	104.7	Composite Correction	6.19
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	57.39
Weight of Dry Material (gm)	39.21		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 7/29/97 Checked By LB Date 8-8-97

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SHELBY TUBE UNIT WEIGHT

geotechnics

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	0.90
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM014-TB02-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					NO TEST
		2		WAX	
4.50				BROWN CLAYEY GRAVEL WITH SAND	WC. GRAINSIZE HYDROMETER SP.GR.
		1		VOID AND BENT TUBE	
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	7				
Wt. Tare & WS(gm.)	793.80				
Wt. Tare & DS(gm.)	743.00				
Wt. Tare(gm.)	75.04				
Moisture Content(%)	7.6				

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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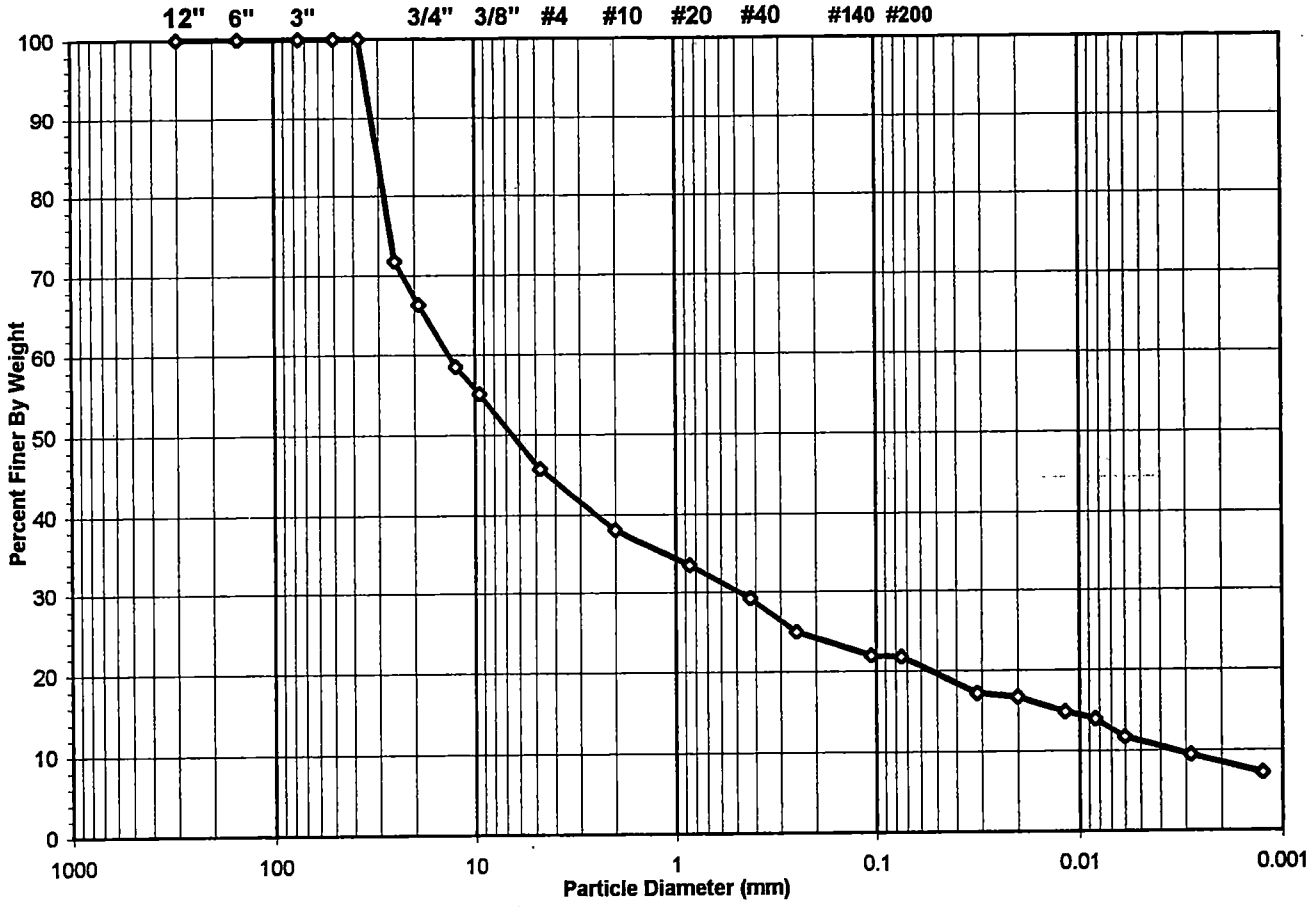
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-5.0
Project No.	97178-01	Sample No.	SM014-TB02-0305
Lab ID	97178-01.033	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*	61.99	**0.00**
2	38.01	*Sand*	18.39	**48.37**
0.075	21.75	*Silt*	11.16	**29.35**
0.05	19.62	*Clay*	8.47	**22.28**
0.002	8.47			

USDA Classification ***LOAM***

USCS Symbol ***gc, ASSUMED***

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

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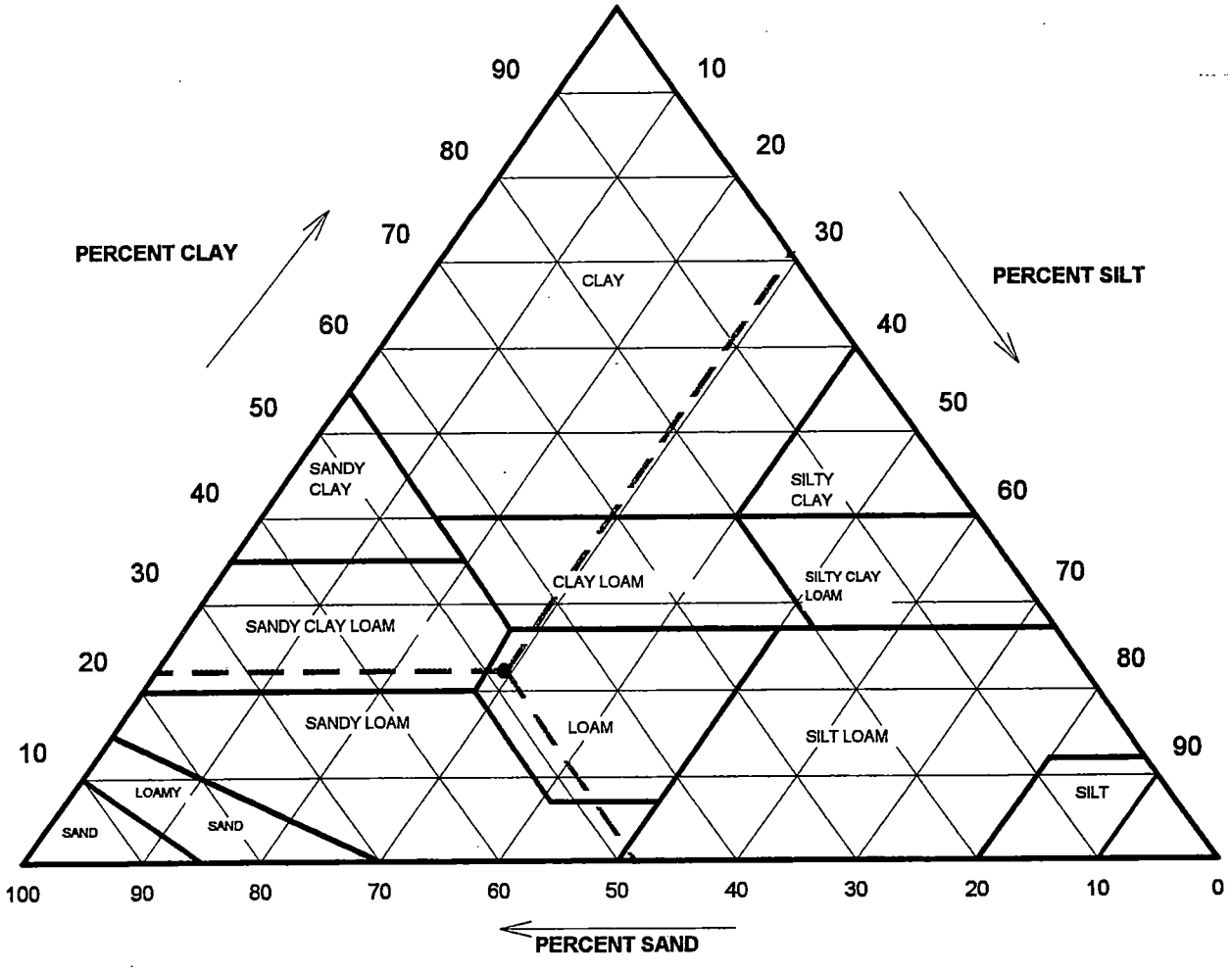
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-5.0
Project No.	97178-01	Sample No.	SM014-TB02-0305
Lab ID	97178-01.033	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	48.37
Silt	29.35
Clay	22.28
USDA Classification	***LOAM***

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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)	4.5-5.0
Project No.	97178-01	Sample No.	SM014-TB02-0305
Lab ID	97178-01.033	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	7	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	793.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	743.00	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	75.04	Weight of Tare (gm)	NA
Weight of Water (gm)	50.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	667.96	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**7.6**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	667.96
Dry Weight - 3/4" Sample (gm)	297.31	Weight of minus #200 material (gm)	145.26
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	522.70
Dry Weight + 3/4" Sample (gm)	225.39		
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	188.43	28.21	28.21	71.79	**71.79**
3/4"	19.0	36.96	5.53	33.74	66.26	**66.26**
1/2"	12.5	51.48	7.71	41.45	58.55	**58.55**
3/8"	9.50	22.55	3.38	44.83	55.17	**55.17**
#4	4.75	63.21	9.46	54.29	45.71	**45.71**
#10	2.00	51.43	7.70	61.99	38.01	**38.01**
#20	0.85	30.37	4.55	66.54	33.46	**33.46**
#40	0.425	28.46	4.26	70.80	29.20	**29.20**
#60	0.250	28.41	4.25	75.05	24.95	**24.95**
#140	0.106	19.98	2.99	78.04	21.96	**21.96**
#200	0.075	1.42	0.21	78.25	21.75	**21.75**
Pan	-	145.26	21.75	100.00	-	-

Tested By JCM Date 7/25/97 Checked By LB Date 8-4-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-5.0
Project No.	97178-01	Sample No.	SM014-TB02-0305
Lab ID	97178-01.033	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	24.5	24.5	24.3	18.9	79.1	0.0315	**17.2**
5		24.0	24.3	18.4	77.0	0.0200	**16.7**
15		22.0	24.3	16.4	68.6	0.0117	**14.9**
30		21.0	24.3	15.4	64.4	0.0083	**14.0**
60		18.5	23.5	12.9	53.9	0.0060	**11.7**
275		16.0	23	10.4	43.4	0.0028	**9.4**
1440		13.5	24	7.9	32.9	0.0013	**7.2**

Soil Specimen Data		**Corrections**	
Tare No.	860	K - Factor	0.01270
Tare + Dry Material (gm)	133.27	a - Factor	0.986
Weight of Tare (gm)	104.77	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	21.75
Weight of Dry Material (gm)	23.5		
		Specific Gravity	2.72 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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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-5.0
Project No.	97178-01	Sample No.	SM014-TB02-0305
Lab ID	97178-01.033	Visual Description	**BROWN CLAY** (Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	448	449
Weight of Pycnometer + Soil + Water (gm)	700.6	702.2
Temperature, T (°Celcius)	21.9	21.7
Weight of Pycnometer + Water (gm)	681.52	683.65
Tare Number	86.3	1665
Weight of Tare + Dry Soil (gm)	135.96	130.54
Weight of Tare (gm)	105.74	101.26
Weight of Dry Soil (gm)	30.22	29.28
Specific Gravity of Soil @ T	2.714	2.730
Specific Gravity of Water @ T	0.9978	0.9979
Conversion Factor for Temperature T	0.9996	0.9996
Specific Gravity @ 20° Celcius	2.715	2.731

Average Specific Gravity @ 20° Celcius	2.72

Tested By TM *Date* 7/30/97 *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 7-25-97
Client Project	BAYER 51249	Checked By	LB 8-11-97
Project No.	97178-01		
Boring No.	NA	Tube Recovery	1.70
Depth Pushed	17.0-19.0		
Shelby Tube No.	SM014-TB02-1719		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
17.00					
17.50					
18.00				BROWN CLAYEY SAND WITH GRAVEL	UNIT WGT. WC. GRAINSIZE HYDROMETER SP.GR.
18.50		3		BROWN CLAY	PERMEABILITY
		2			
19.00		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	1417		1708		
Wt. Tare & WS(gm.)	217.56		887.80		
Wt. Tare & DS(gm.)	172.02		741.60		
Wt. Tare(gm.)	37.38		82.90		
Moisture Content(%)	33.8		22.2		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	992.30	1708.20
Wt. Of Tube(gms.)	271.05	460.80
Wt. Of WS.(gms.)	721.25	1247.40
Length 1 (in.)	3.512	6.065
Length 2 (in.)	3.517	6.055
Length 3 (in.)	3.513	6.047
Top Diameter (in.)	2.879	2.872
Middle Diameter (in.)	2.871	2.884
Bottom Diameter (in.)	2.856	2.885
Sample Volume (cc)	372.18	646.60
Moisture Content(%)	33.82	22.20
Unit Wet Wt.(gms/cc)	1.94	1.93
Unit Wet Wt.(pcf.)	120.9	120.4
Unit Dry Wt.(pcf.)	90.4	98.5
Unit Dry Wt.(gms/cc)	1.45	1.58

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

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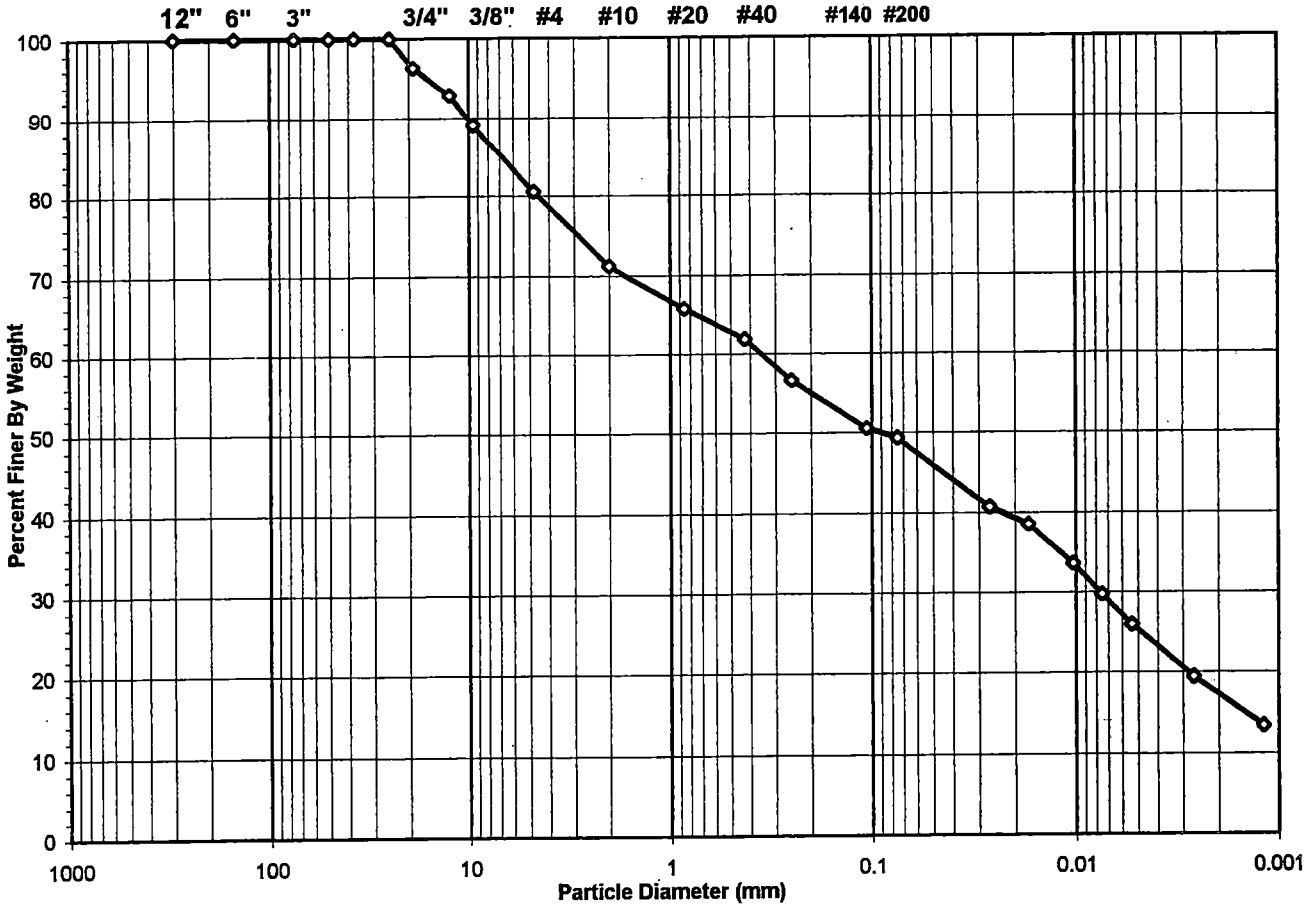
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	18.0-18.5
Project No.	97178-01	Sample No.	SM014-TB02-1719
Lab ID	97178-01.034	Soil Color	BROWN

	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*	28.80	**0.00**
2	71.20	*Sand*	25.23	**35.43**
0.075	49.36	*Silt*	28.63	**40.21**
0.05	45.97	*Clay*	17.34	**24.36**
0.002	17.34			

USDA Classification ***LOAM***

USCS Symbol ***sc, ASSUMED***

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

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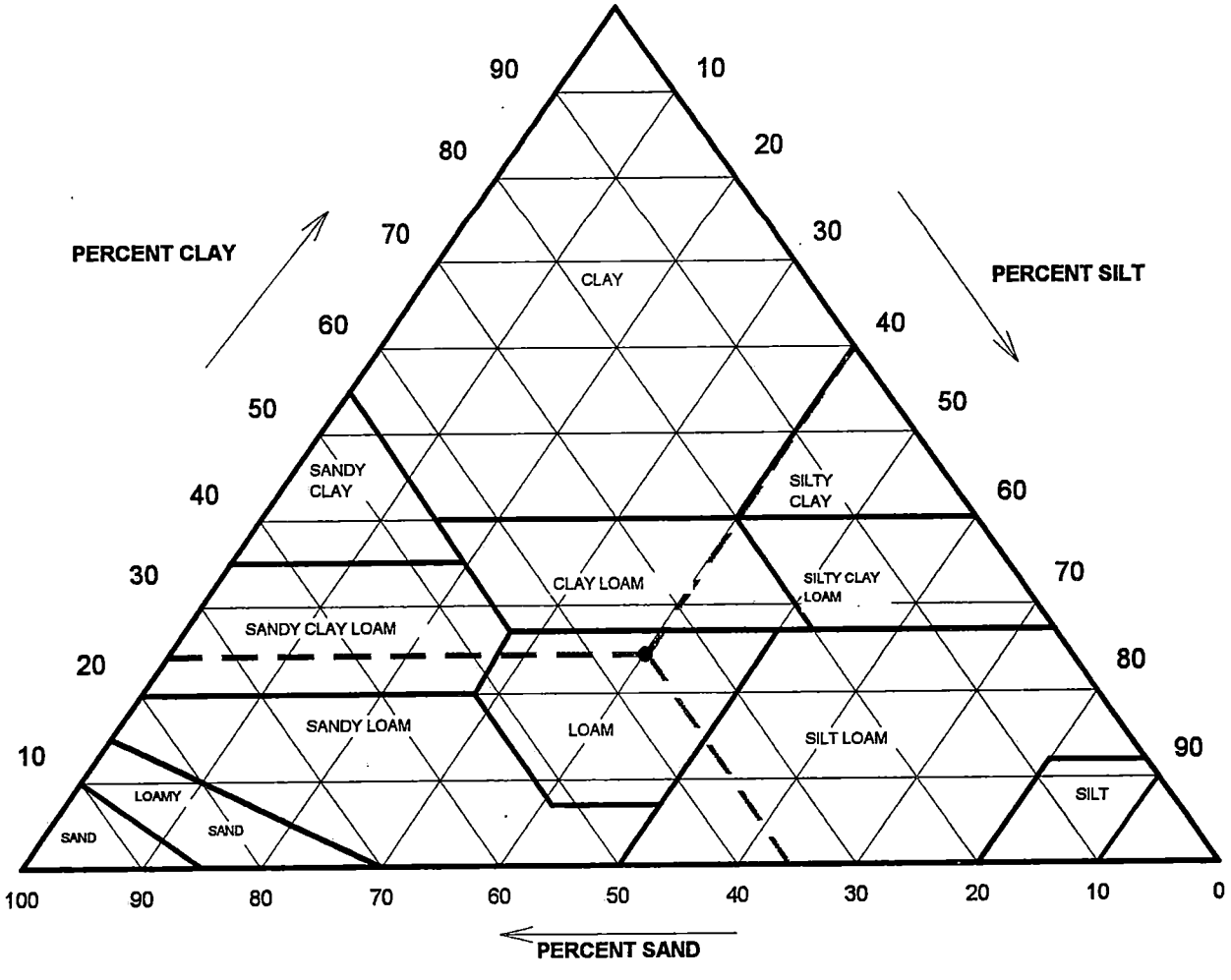
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	18.0-18.5
Project No.	97178-01	Sample No.	SM014-TB02-1719
Lab ID	97178-01.034	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	35.43
Silt	40.21
Clay	24.36
USDA Classification	***LOAM***

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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)	18.0-18.5
Project No.	97178-01	Sample No.	SM014-TB02-1719
Lab ID	97178-01.034	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1708	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	887.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	741.60	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	82.90	Weight of Tare (gm)	NA
Weight of Water (gm)	146.20	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	658.70	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**22.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	658.70
Dry Weight - 3/4" Sample (gm)	309.20	Weight of minus #200 material (gm)	325.13
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	333.57
Dry Weight + 3/4" Sample (gm)	24.37		
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	24.37	3.70	3.70	96.30	**96.30**
1/2"	12.5	23.22	3.53	7.22	92.78	**92.78**
3/8"	9.50	24.28	3.69	10.91	89.09	**89.09**
#4	4.75	56.00	8.50	19.41	80.59	**80.59**
#10	2.00	61.84	9.39	28.80	71.20	**71.20**
#20	0.85	35.84	5.44	34.24	65.76	**65.76**
#40	0.425	25.33	3.85	38.09	61.91	**61.91**
#60	0.250	34.80	5.28	43.37	56.63	**56.63**
#140	0.106	39.99	6.07	49.44	50.56	**50.56**
#200	0.075	7.90	1.20	50.64	49.36	**49.36**
Pan	-	325.13	49.36	100.00	-	-

Tested By JCM Date 7/25/97 Checked By LB Date 8-4-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	18.0-18.5
Project No.	97178-01	Sample No.	SM014-TB02-1719
Lab ID	97178-01.034	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	43.0	43.0	24.3	37.4	82.5	0.0266	**40.7**
5		41.0	24.3	35.4	78.1	0.0171	**38.5**
15		36.5	24.3	30.9	68.1	0.0103	**33.6**
30		33.0	24.3	27.4	60.4	0.0075	**29.8**
61		29.5	23.5	23.9	52.7	0.0054	**26.0**
272		23.5	23	17.9	39.4	0.0026	**19.5**
1440		18.0	24	12.4	27.3	0.0012	**13.5**

Soil Specimen Data		Corrections	
Tare No.	1314	K - Factor	0.01238
Tare + Dry Material (gm)	149.62	a - Factor	0.968
Weight of Tare (gm)	100.78	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	49.36
Weight of Dry Material (gm)	43.84		
		Specific Gravity	2.81 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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SPECIFIC GRAVITY

ASTM D 854-92 (SOP - S5)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	18.0-18.5
Project No.	97178-01	Sample No.	SW014-TB02-1719
Lab ID	97178-01.034	Visual Description	**BROWN CLAY** (Minus No. 4 sieve material, Airdried)

Replicate Number	**1**	**2**
Pycnometer ID	448	449
Weight of Pycnometer + Soil + Water (gm)	742.1	740.1
Temperature, T (°Celcius)	23.5	23.3
Weight of Pycnometer + Water (gm)	681.33	683.46
Tare Number	865	1072
Weight of Tare + Dry Soil (gm)	199.99	193.96
Weight of Tare (gm)	105.39	106.2
Weight of Dry Soil (gm)	94.60	87.76
Specific Gravity of Soil @ T	2.796	2.820
Specific Gravity of Water @ T	0.9974	0.9975
Conversion Factor for Temperature T	0.9992	0.9993
Specific Gravity @ 20° Celcius	2.799	2.822

Average Specific Gravity @ 20° Celcius	2.81

Tested By TM *Date* 7/31/97 *Checked By* LB *Date* 8-1-97

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PERMEABILITY TEST

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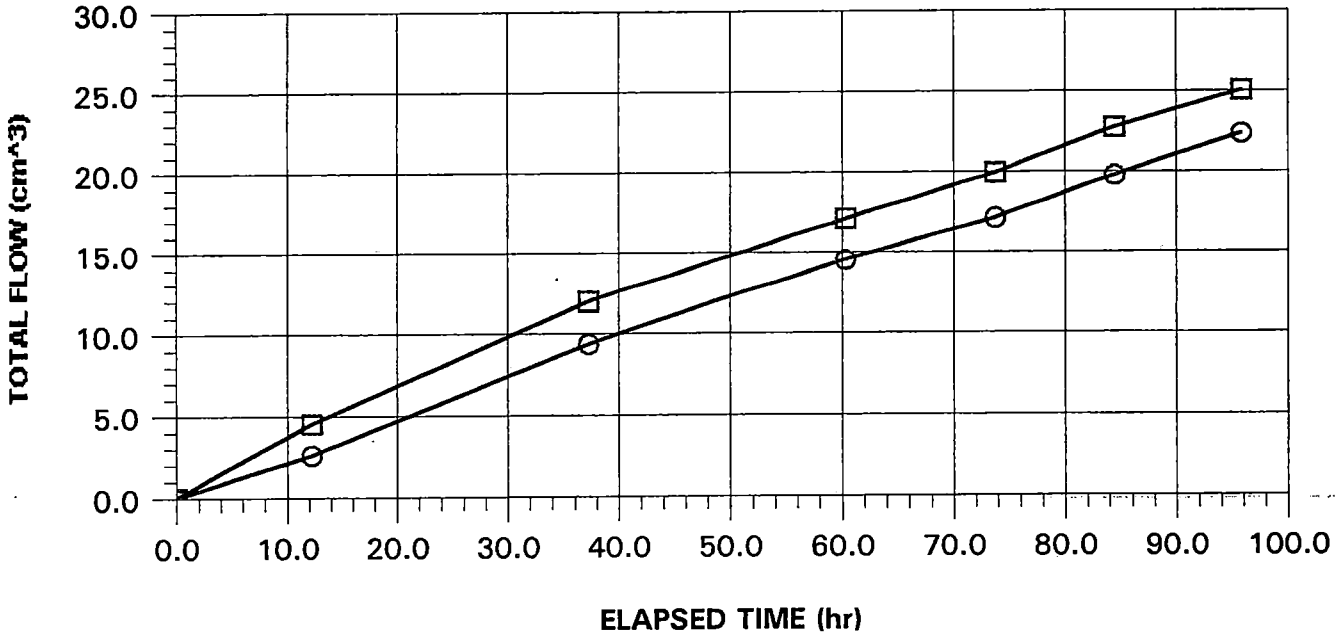
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	18.5-18.8
Project No.	97178-01	Sample No.	SM014-TB02-1719

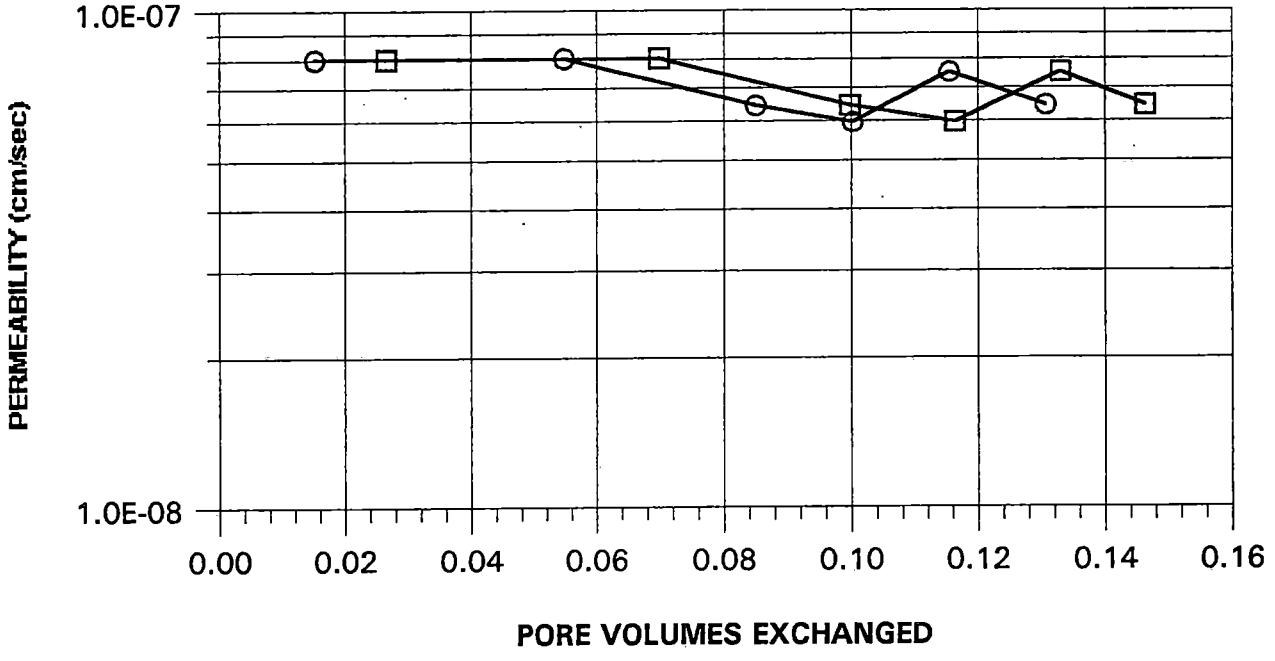
AVERAGE PERMEABILITY = 6.6E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.6E-10 m/sec @ 20°C

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	07-25-97
Client Project	BAYER 51249	Checked By	LB	Date	8-11-97
Project No.	97178-01				
Boring No.	NA	Specific Gravity	2.81 MEASURED		
Depth(ft.)	18.5-18.8	Sample Condition	UNDISTURBED		
Sample No.	SM014-TB02-1719				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1417	1128
Wt. Tare & WS(gm.)	217.56	447.60
Wt. Tare & DS(gm.)	172.02	370.60
Wt. Water(gm.)	45.54	77.00
Wt. Tare(gm.)	37.38	84.34
Wt. DS(gm.)	134.64	286.26
Moisture Content(%)	33.8	26.9

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	992.30	NA
Wt. Of Tube(gms.)	271.05	NA
Wt. Of WS.(gms.)	721.25	683.9
Length 1 (in.)	3.512	3.490
Length 2 (in.)	3.517	3.497
Length 3 (in.)	3.517	3.492
Top Diameter (in.)	2.879	2.840
Middle Diameter (in.)	2.871	2.839
Bottom Diameter (in.)	2.856	2.844
Average Length (in)	3.52	3.49
Average Area (in^2)	6.46	6.34
Sample Volume(cc.)	372.32	362.85
Unit Wet Wt.(gms/cc)	1.94	1.88
Unit Wet Wt.(pcf.)	120.9	117.6
Unit Dry Wt.(pcf.)	90.3	92.7
Unit Dry Wt.(gms/cc)	1.45	1.49
Void Ratio,e	0.94	0.89
Porosity, n	0.48	0.47
Pore Volume(cm^3)	180.5	171.1

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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.)	18.5-18.8				
Sample No.	SM014-TB02-1719				
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	8.87
Sample Diameter (cm.)	7.22
Sample Area (cm.^2), A	40.90
Inflow Burette Area, (cm.^2), a-in	4.55
Outflow Burette Area, (cm.^2), a-out	4.97
B Parameter	97%

AVERAGE PERMEABILITY = 6.6E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 6.6E-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	19	0	0.0	0.0	0.0	197.9	0	23.0	NA
07-26-97	7	15	12.3	2.6	4.6	196.4	0	24.0	8.0E-08
07-27-97	8	15	37.3	9.4	11.9	193.5	0	23.5	8.0E-08
07-28-97	7	20	60.3	14.5	17.1	191.3	0	23.5	6.4E-08
07-28-97	20	45	73.8	17.1	19.9	190.1	0	23.0	6.0E-08
07-29-97	7	25	84.4	19.7	22.8	189.0	0	23.0	7.5E-08
07-29-97	18	50	95.8	22.3	25.0	188.0	0	22.5	6.4E-08

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMO 9-3-97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.55
Depth Pushed	.5-2.5		
Shelby Tube No.	SM015-TB02-0103		

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		BROWNISH GRAY SANDY LEAN CLAY WITH GRAVEL	NO TEST
		2			WC GRAINSIZE HYDROMETER
2.50		1		UNABLE TO GET DENSITY DUE TO WAX IN SAMPLE	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		1684			
Wt. Tare & WS(gm.)		413.00			
Wt. Tare & DS(gm.)		357.06			
Wt. Tare(gm.)		109.31			
Moisture Content(%)		22.6			

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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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	.5-2.5
Project No.	97178-02	Sample No.	SM015-TB02-0103
Lab ID	97178-02.032	Soil Color	**BROWNISH GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1684	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	413.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	357.06	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	109.31	Weight of Tare (gm)	NA
Weight of Water (gm)	55.94	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	247.75	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**22.6**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	247.75
Dry Weight - 3/4" Sample (gm)	95.07	Weight of minus #200 material (gm)	143.72
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	104.03
Dry Weight + 3/4" Sample (gm)	8.96		
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	8.96	3.62	3.62	96.38	**96.38**
1/2"	12.5	28.43	11.48	15.09	84.91	**84.91**
3/8"	9.50	3.31	1.34	16.43	83.57	**83.57**
#4	4.75	9.88	3.99	20.42	79.58	**79.58**
#10	2.00	13.65	5.51	25.93	74.07	**74.07**
#20	0.85	11.03	4.45	30.38	69.62	**69.62**
#40	0.425	8.98	3.62	34.00	66.00	**66.00**
#60	0.250	7.31	2.95	36.95	63.05	**63.05**
#140	0.106	9.33	3.77	40.72	59.28	**59.28**
#200	0.075	3.15	1.27	41.99	58.01	**58.01**
Pan	-	143.72	58.01	100.00	-	-

Tested By BL Date 8/11/97 Checked By JMO Date 8/22/96

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	.5-2.5
Project No.	97178-02	Sample No.	SM015-TB02-0103
Lab ID	97178-02.032	Soil Color	**BROWNISH GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	R Corrected	N (%)	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA
2	46.0	47.5	24.3	41.9	85.6	0.0264	**49.7**
5		44.5	24.3	38.9	79.5	0.0171	**46.1**
15		38.5	24.3	32.9	67.2	0.0104	**39.0**
30		34.5	24.3	28.9	59.0	0.0076	**34.2**
60		31.0	23.5	25.4	51.9	0.0055	**30.1**
243		26.5	23.5	20.9	42.6	0.0028	**24.7**
1440		20.0	23.8	14.4	29.4	0.0012	**17.0**

Soil Specimen Data		Corrections	
Tare No.	8589	K - Factor	0.01278
Tare + Dry Material (gm)	159.13	a - Factor	0.99
Weight of Tare (gm)	105.73	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	58.01
Weight of Dry Material (gm)	48.4		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMO Date 8/22/96

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

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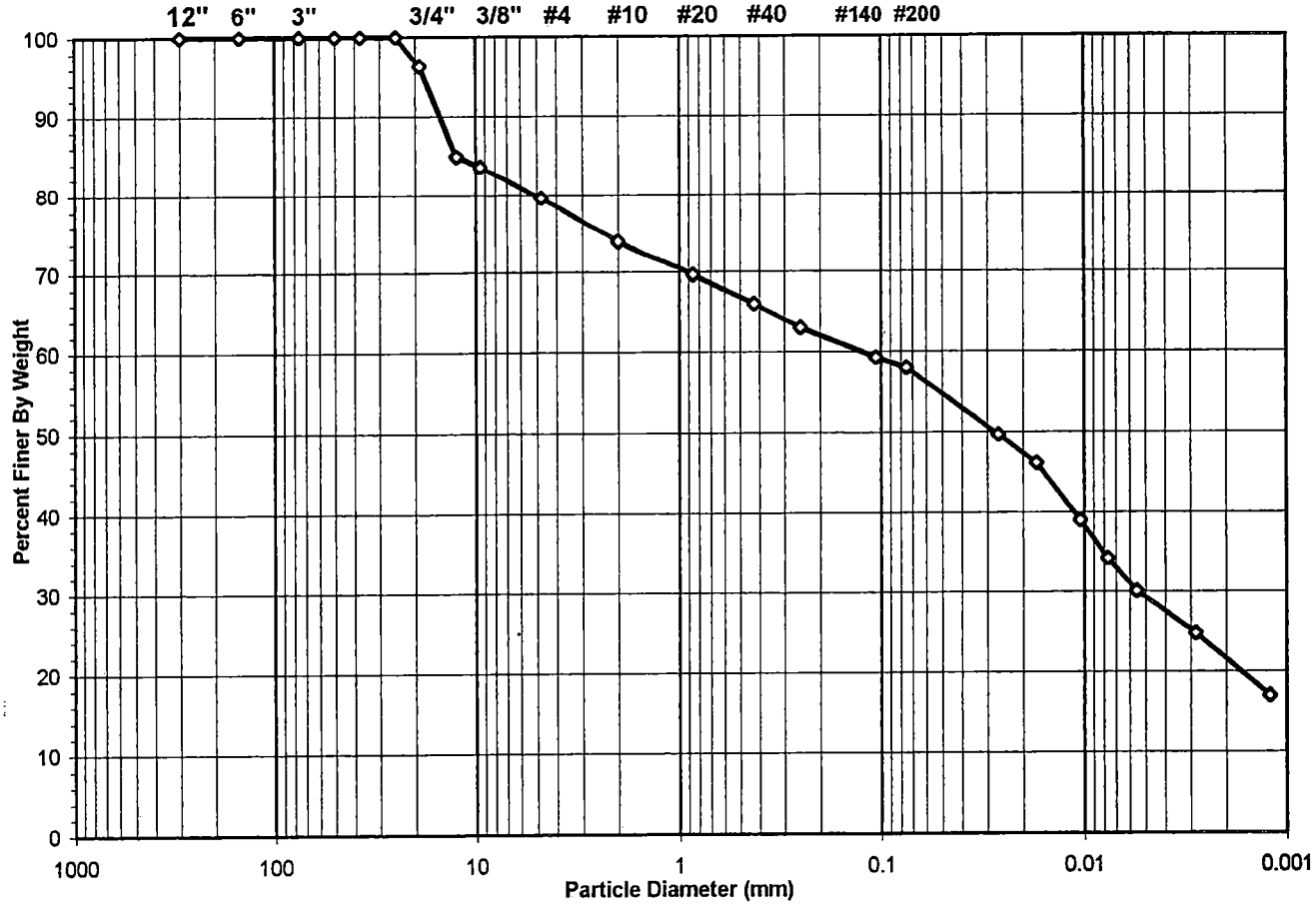
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	.5-2.5
Project No.	97178-02	Sample No.	SM015-TB02-0103
Lab ID	97178-02.032	Soil Color	**BROWNISH GRAY**

	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*	25.93	**0.00**
2	74.07	*Sand*	19.30	**26.06**
0.075	58.01	*Silt*	33.20	**44.83**
0.05	54.77	*Clay*	21.57	**29.12**
0.002	21.57			

USDA Classification ***CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

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

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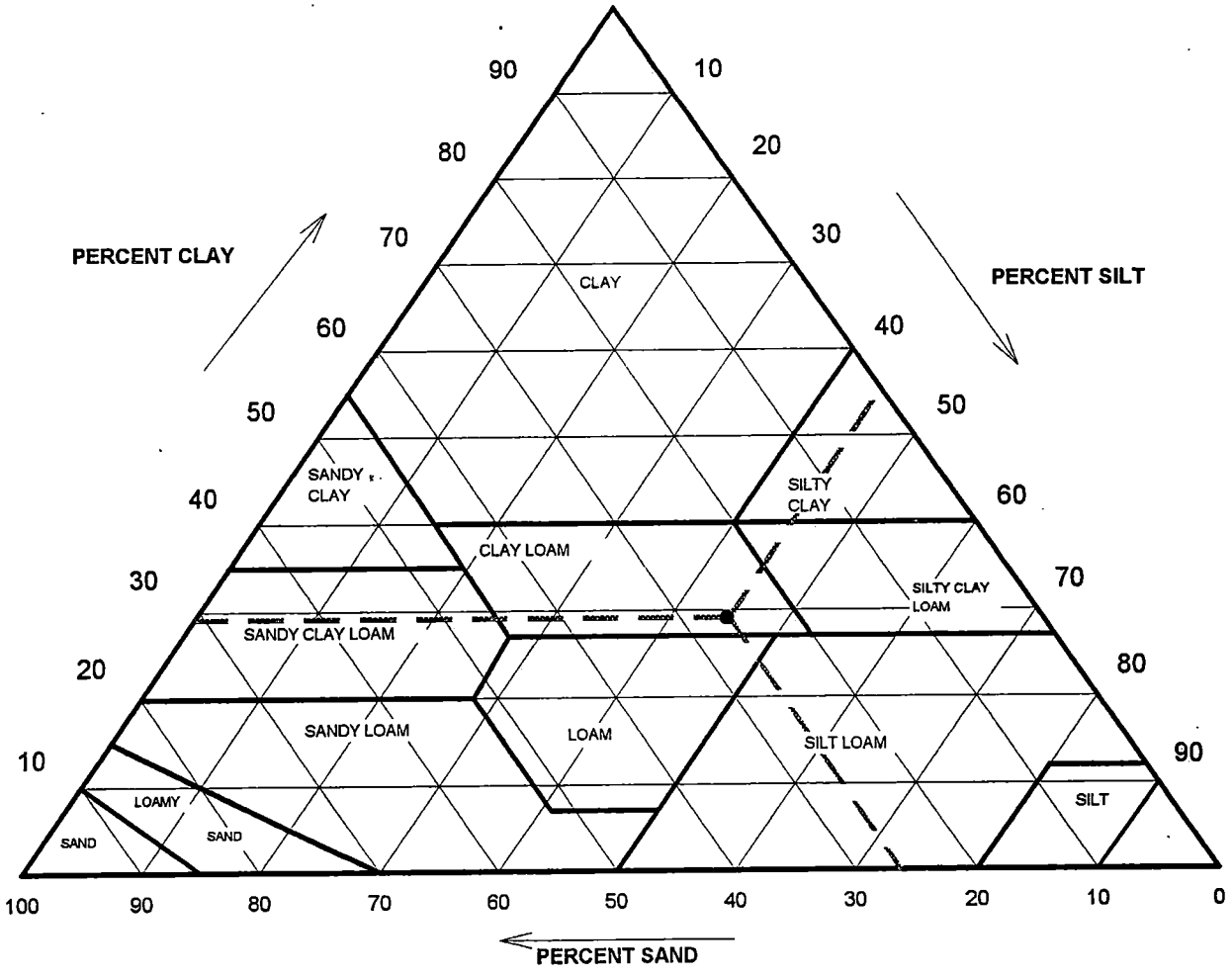
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	.5-2.5
Project No.	97178-02	Sample No.	SM015-TB02-0103
Lab ID	97178-02.032	Soil Color	BROWNISH GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	26.06
Silt	44.83
Clay	29.12
USDA Classification	***CLAY LOAM***

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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.	SM015-TB02-0305

Tested By JCM 8-12-97
Checked By JMO 9-3-97

Tube Recovery 1.10

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
11.00					
11.50					
12.00					UNIT WGT. WC. GRAINSIZE HYDROMETER
12.50		3		BROWN CLAYEY GRAVEL WITH SAND	
		2			PERMEABILITY
13.00		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	19		783		
Wt. Tare & WS(gm.)	290.83		892.30		
Wt. Tare & DS(gm.)	262.41		787.90		
Wt. Tare(gm.)	90.96		85.98		
Moisture Content(%)	16.6		14.9		

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1134.20	1370.70
Wt. Of Tube(gms.)	280.81	355.21
Wt. Of WS.(gms.)	853.39	1015.49
Length 1 (in.)	3.686	4.681
Length 2 (in.)	3.679	4.684
Length 3 (in.)	3.709	4.683
Top Diameter (in.)	2.884	2.875
Middle Diameter (in.)	2.875	2.874
Bottom Diameter (in.)	2.856	2.880
Sample Volume (cc)	391.78	498.61
Moisture Content(%)	16.58	14.87
Unit Wet Wt.(gms/cc)	2.18	2.04
Unit Wet Wt.(pcf.)	135.9	127.1
Unit Dry Wt.(pcf.)	116.6	110.6
Unit Dry Wt.(gms/cc)	1.87	1.77

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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)	4.1-4.5
Project No.	97178-02	Sample No.	SM015-TB02-0305
Lab ID	97178-02.033	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	783	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	892.30	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	787.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	85.98	Weight of Tare (gm)	NA
Weight of Water (gm)	104.40	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	701.92	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)	701.92
Dry Weight - 3/4" Sample (gm)	201.73	Weight of minus #200 material (gm)	311.52
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	390.40
Dry Weight + 3/4" Sample (gm)	188.67		
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	170.95	24.35	24.35	75.65	**75.65**
3/4"	19.0	17.72	2.52	26.88	73.12	**73.12**
1/2"	12.5	36.81	5.24	32.12	67.88	**67.88**
3/8"	9.50	23.73	3.38	35.50	64.50	**64.50**
#4	4.75	35.23	5.02	40.52	59.48	**59.48**
#10	2.00	35.03	4.99	45.51	54.49	**54.49**
#20	0.85	22.18	3.16	48.67	51.33	**51.33**
#40	0.425	12.07	1.72	50.39	49.61	**49.61**
#60	0.250	7.83	1.12	51.51	48.49	**48.49**
#140	0.106	22.44	3.20	54.71	45.29	**45.29**
#200	0.075	6.41	0.91	55.62	44.38	**44.38**
Pan	-	311.52	44.38	100.00	-	-

Tested By JCM Date 8/12/97 Checked By JMO Date 8/22/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.1-4.5
Project No.	97178-02	Sample No.	SM015-TB02-0305
Lab ID	97178-02.033	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	51.5	52.5	24	46.7	88.3	0.0251	**39.2**
5		48.5	24	42.7	80.7	0.0166	**35.8**
15		43.0	24	37.2	70.3	0.0101	**31.2**
31		39.5	24	33.7	63.7	0.0072	**28.3**
63		36.0	23.4	30.2	57.1	0.0052	**25.3**
250		30.0	23.4	24.2	45.7	0.0027	**20.3**
1440		24.0	23.7	18.2	34.4	0.0012	**15.3**

Soil Specimen Data		**Corrections**	
Tare No.	846	K - Factor	0.01282
Tare + Dry Material (gm)	161.83	a - Factor	0.99
Weight of Tare (gm)	104.45	Composite Correction	5.80
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	44.38
Weight of Dry Material (gm)	52.38		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/16/97 Checked By JMO Date 8/22/97

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

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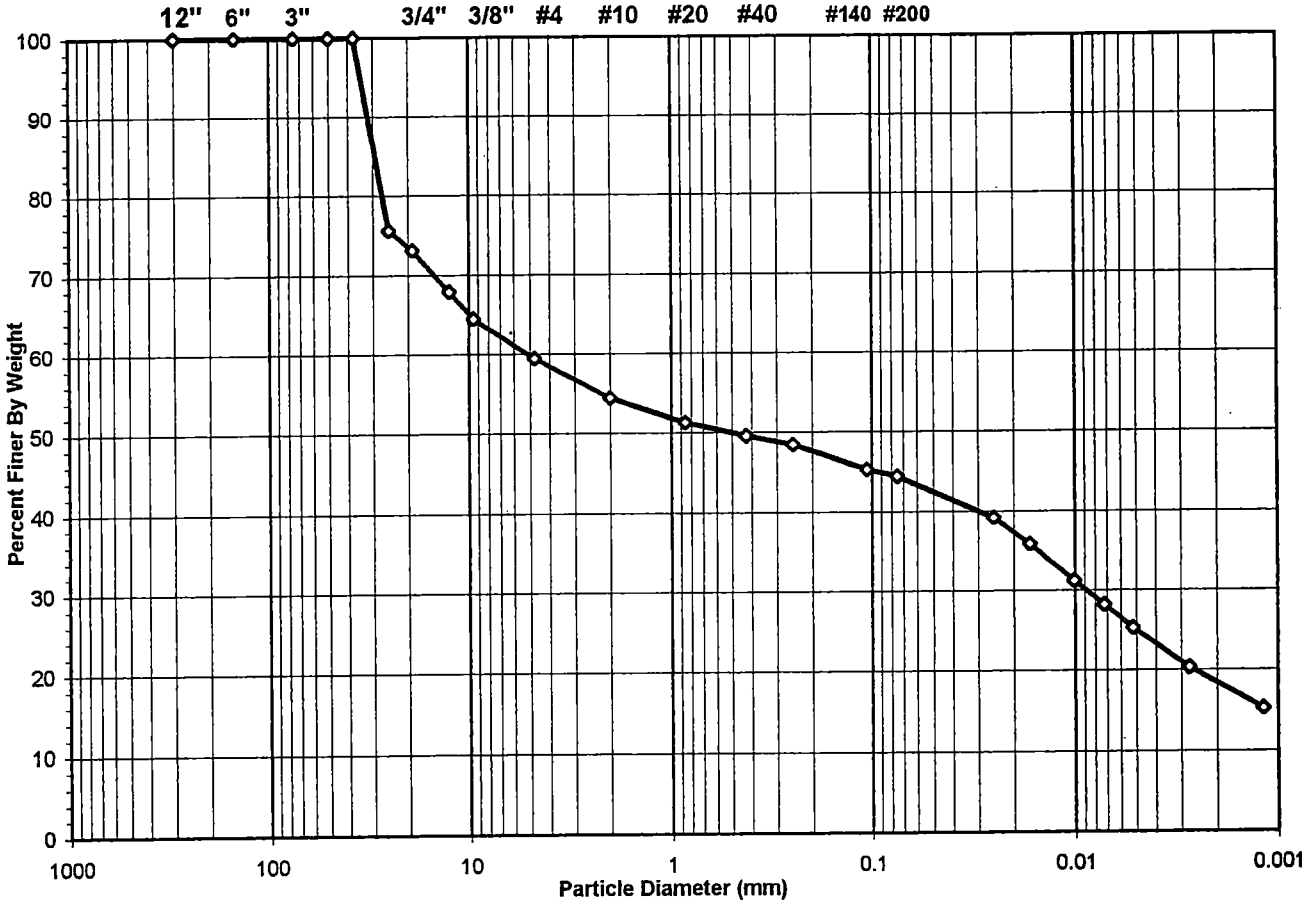
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.1-4.5
Project No.	97178-02	Sample No.	SM015-TB02-0305
Lab ID	97178-02.033	Soil Color	BROWN

	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*	45.51	**0.00**
2	54.49	*Sand*	12.04	**22.09**
0.075	44.38	*Silt*	24.04	**44.12**
0.05	42.45	*Clay*	18.41	**33.79**
0.002	18.41			

USDA Classification ***CLAY LOAM***

USCS Symbol ***gc, ASSUMED***

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

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DATE: 11/12/96
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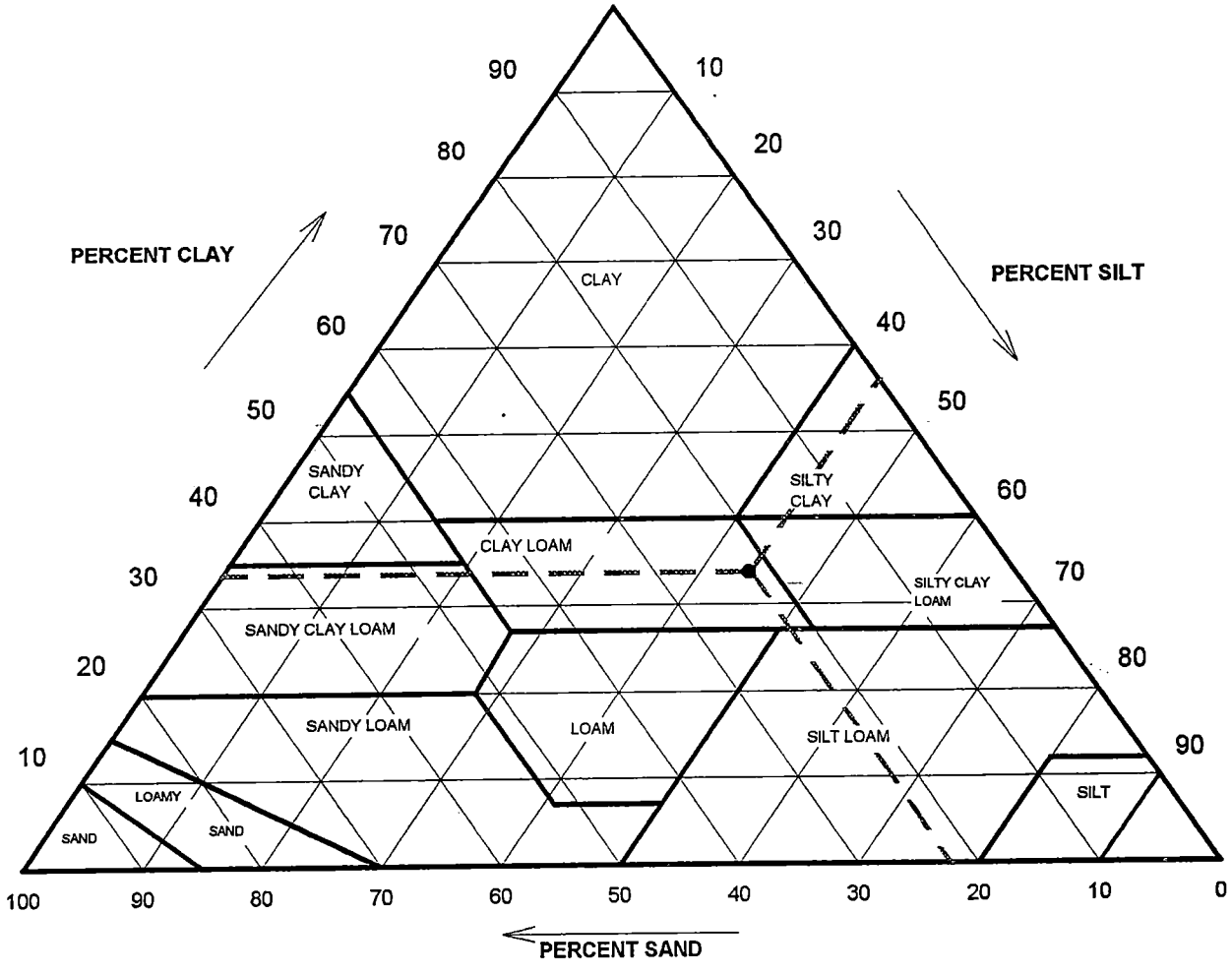
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.1-4.5
Project No.	97178-02	Sample No.	SM015-TB02-0305
Lab ID	97178-02.033	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	22.09
Silt	44.12
Clay	33.79
USDA Classification	***CLAY LOAM***

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PERMEABILITY TEST

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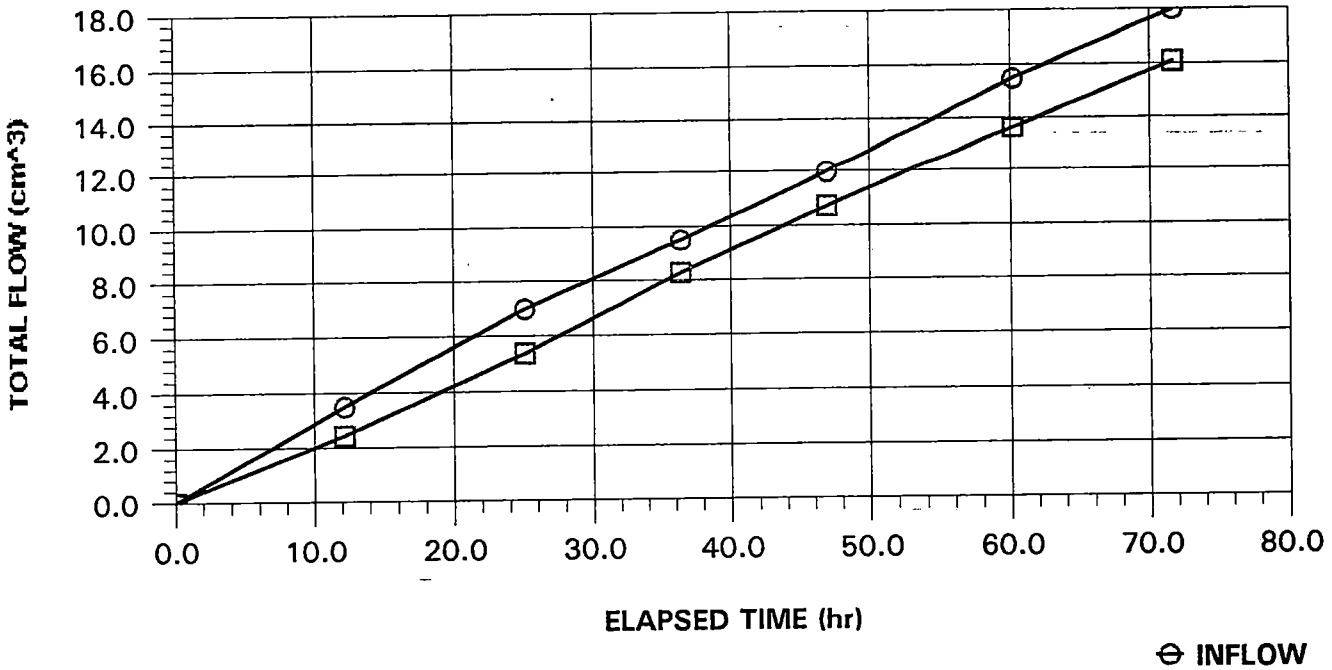
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	4.5-4.8
Project No.	97178-02	Sample No.	SM015-TB02-0305

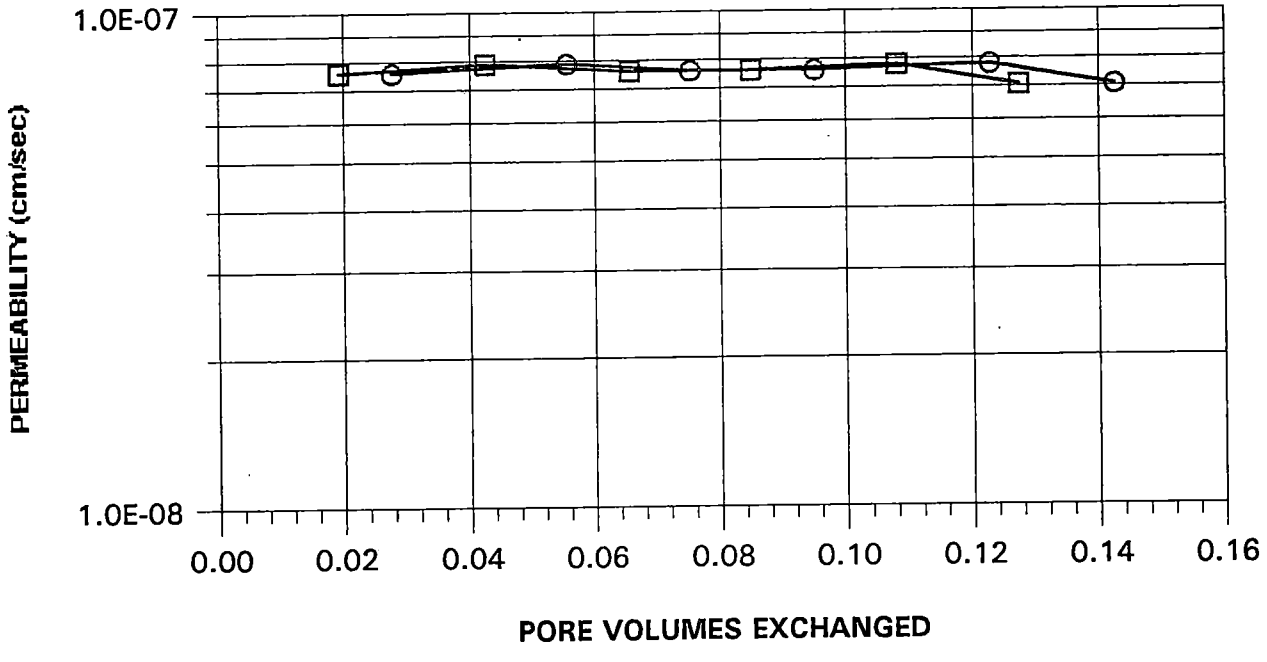
AVERAGE PERMEABILITY = 7.5E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 7.5E-10 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY

INFLOW
OUTFLOW



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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-12-97
Client Project	BAYER 51249	Checked By	JMC	Date	8/22/97
Project No.	97178-02				
Boring No.	NA	Specific Gravity	2.70 ASSUMED		
Depth(ft.)	4.5-4.8	Sample Condition	UNDISTURBED		
Sample No.	SM015-TB02-0305				

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	19	1123
Wt. Tare & WS(gm.)	290.83	739.50
Wt. Tare & DS(gm.)	262.41	647.40
Wt. Water(gm.)	28.42	92.10
Wt. Tare(gm.)	90.96	85.42
Wt. DS(gm.)	171.45	561.98
Moisture Content(%)	16.6	16.4

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1134.20	NA
Wt. Of Tube(gms.)	280.81	NA
Wt. Of WS.(gms.)	853.39	852.0
Length 1 (in.)	3.686	3.778
Length 2 (in.)	3.679	3.755
Length 3 (in.)	3.709	3.754
Top Diameter (in.)	2.884	2.864
Middle Diameter (in.)	2.875	2.862
Bottom Diameter (in.)	2.856	2.865
Average Length (in)	3.69	3.76
Average Area (in^2)	6.48	6.44
Sample Volume(cc.)	391.78	397.09
Unit Wet Wt.(gms/cc)	2.18	2.15
Unit Wet Wt.(pcf.)	135.9	133.9
Unit Dry Wt.(pcf.)	116.6	115.0
Unit Dry Wt.(gms/cc)	1.87	1.84
Void Ratio,e	0.45	0.46
Porosity, n	0.31	0.32
Pore Volume(cm^3)	120.7	126.0

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-12-97
Client Project	BAYER 51249	Checked By	JMO	Date	8/22/97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	4.5-4.8				
Sample No.	SM015-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	9.56
Sample Diameter (cm.)	7.27
Sample Area (cm.^2), A	41.55
Inflow Burette Area, (cm.^2), a-in	4.50
Outflow Burette Area, (cm.^2), a-out	4.37
B Parameter	96%

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
08-12-97	19	0	0.0	0.0	0.0	190.7	0	22.5	NA
08-13-97	7	10	12.2	3.5	2.4	189.4	0	23.2	7.6E-08
08-13-97	20	5	25.1	7.0	5.3	187.9	0	22.6	7.9E-08
08-14-97	7	25	36.4	9.5	8.3	186.7	0	23.0	7.6E-08
08-14-97	17	55	46.9	12.0	10.7	185.6	0	22.5	7.6E-08
08-15-97	7	10	60.2	15.5	13.6	184.2	0	23.0	7.8E-08
08-15-97	18	40	71.7	18.0	16.0	183.1	0	22.2	7.1E-08

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SHELBY TUBE UNIT WEIGHT

geotechnics

Client	ICF KAISER	Tested By	JCM 8-12-97
Client Project	BAYER 51249	Checked By	JMO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.70
Depth Pushed	13.0-15.0		
Shelby Tube No.	SM015-TB02-1315		

SOIL PROFILE AND SAMPLING

	DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
13.00						
13.50						
14.00						
			3			UNIT WGT. WC. GRAINSIZE HYDROMETER
14.50			2		BROWN LEAN CLAY SAMPLE OUT OF ROUND	PERMEABILITY
			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	1417		1735		
Wt. Tare & WS(gm.)	268.12		620.20		
Wt. Tare & DS(gm.)	220.66		519.90		
Wt. Tare(gm.)	37.39		82.23		
Moisture Content(%)	25.9		22.9		

UNIT WEIGHT

Wt. Tube & WS.(gms.)	1044.70
Wt. Of Tube(gms.)	275.94
Wt. Of WS.(gms.)	768.76
Length 1 (in.)	3.649
Length 2 (in.)	3.642
Length 3 (in.)	3.670
Top Diameter (in.)	2.893
Middle Diameter (in.)	2.880
Bottom Diameter (in.)	2.861
Sample Volume (cc)	389.49
Moisture Content(%)	25.90
Unit Wet Wt.(gms/cc)	1.97
Unit Wet Wt.(pcf.)	123.2
Unit Dry Wt.(pcf.)	97.8
Unit Dry Wt.(gms/cc)	1.57

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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.	97178-02	Sample No.	SM015-TB02-1315
Lab ID	97178-02.034	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1735	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	620.20	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	519.90	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	82.23	Weight of Tare (gm)	NA
Weight of Water (gm)	100.30	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	437.67	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**22.9**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	437.67
Dry Weight - 3/4" Sample (gm)	42.28	Weight of minus #200 material (gm)	395.39
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	42.28
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	0.67	0.15	0.15	99.85	**99.85**
#10	2.00	2.54	0.58	0.73	99.27	**99.27**
#20	0.85	3.14	0.72	1.45	98.55	**98.55**
#40	0.425	2.17	0.50	1.95	98.05	**98.05**
#60	0.250	5.78	1.32	3.27	96.73	**96.73**
#140	0.106	19.29	4.41	7.67	92.33	**92.33**
#200	0.075	8.69	1.99	9.66	90.34	**90.34**
Pan	-	395.39	90.34	100.00	-	-

Tested By JCM Date 8/12/97 Checked By JHO Date 8/22/97

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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.	97178-02	Sample No.	SM015-TB02-1315
Lab ID	97178-02.034	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	47.5	48.0	24	42.2	84.3	0.0263	**76.2**
5		45.0	24	39.2	78.3	0.0171	**70.8**
15		38.5	24	32.7	65.4	0.0105	**59.0**
30		35.0	24	29.2	58.4	0.0076	**52.7**
70		30.0	23.4	24.2	48.4	0.0052	**43.7**
268		24.5	23.4	18.7	37.4	0.0027	**33.8**
1440		20.0	23.7	14.2	28.4	0.0012	**25.6**

Soil Specimen Data		Corrections	
Tare No.	1654	K - Factor	0.01282
Tare + Dry Material (gm)	148.18	a - Factor	0.99
Weight of Tare (gm)	93.64	Composite Correction	5.80
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	90.34
Weight of Dry Material (gm)	49.54		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/16/97 Checked By JMO Date 8/22/97

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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)

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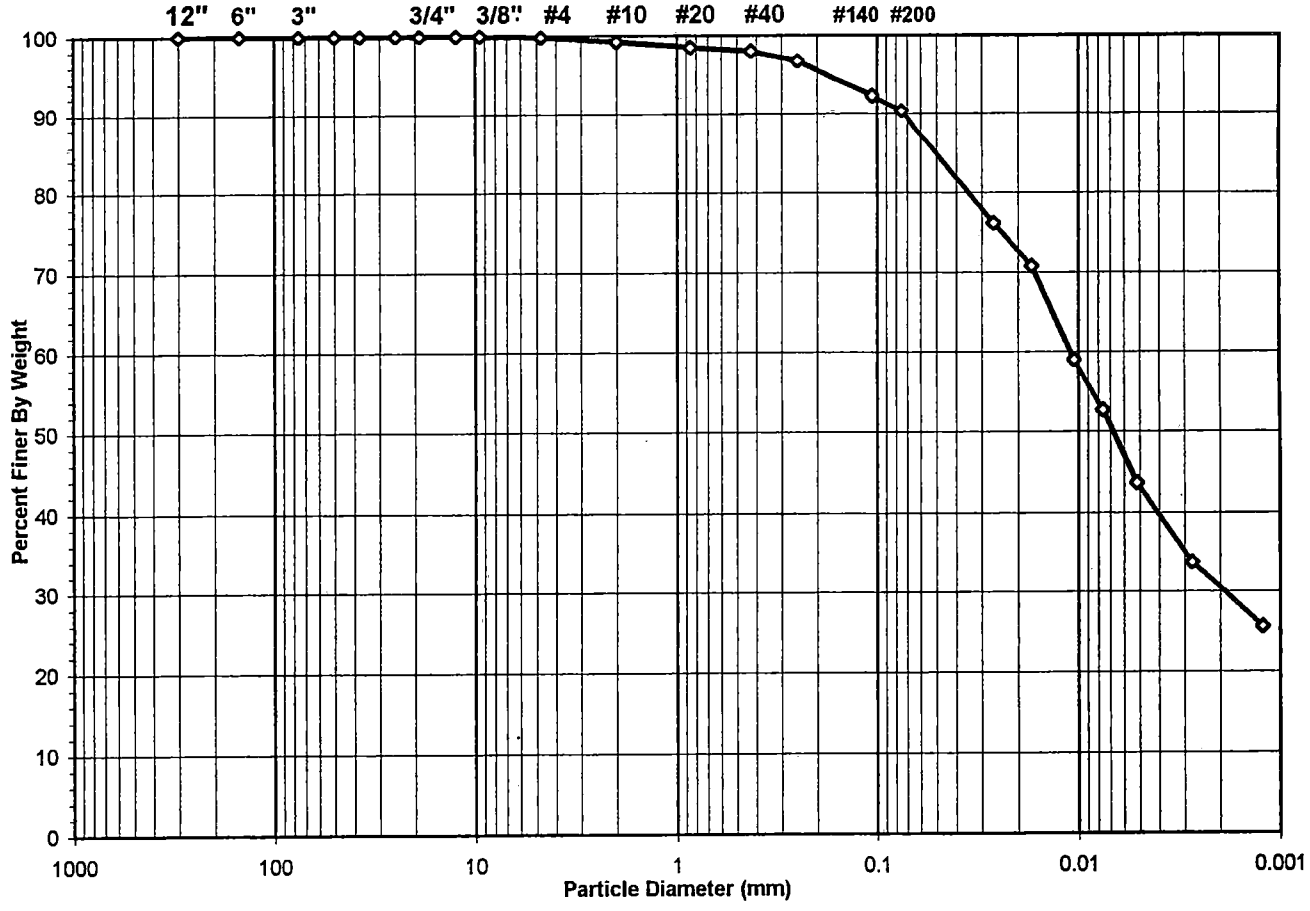
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.1-14.5
Project No.	97178-02	Sample No.	SM015-TB02-1315
Lab ID	97178-02.034	Soil Color	BROWN

	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*	0.73	**0.00**
2	99.27	*Sand*	14.41	**14.51**
0.075	90.34	*Silt*	54.26	**54.66**
0.05	84.86	*Clay*	30.60	**30.82**
0.002	30.60			

USDA Classification ***SILTY CLAY LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***LEAN CLAY***

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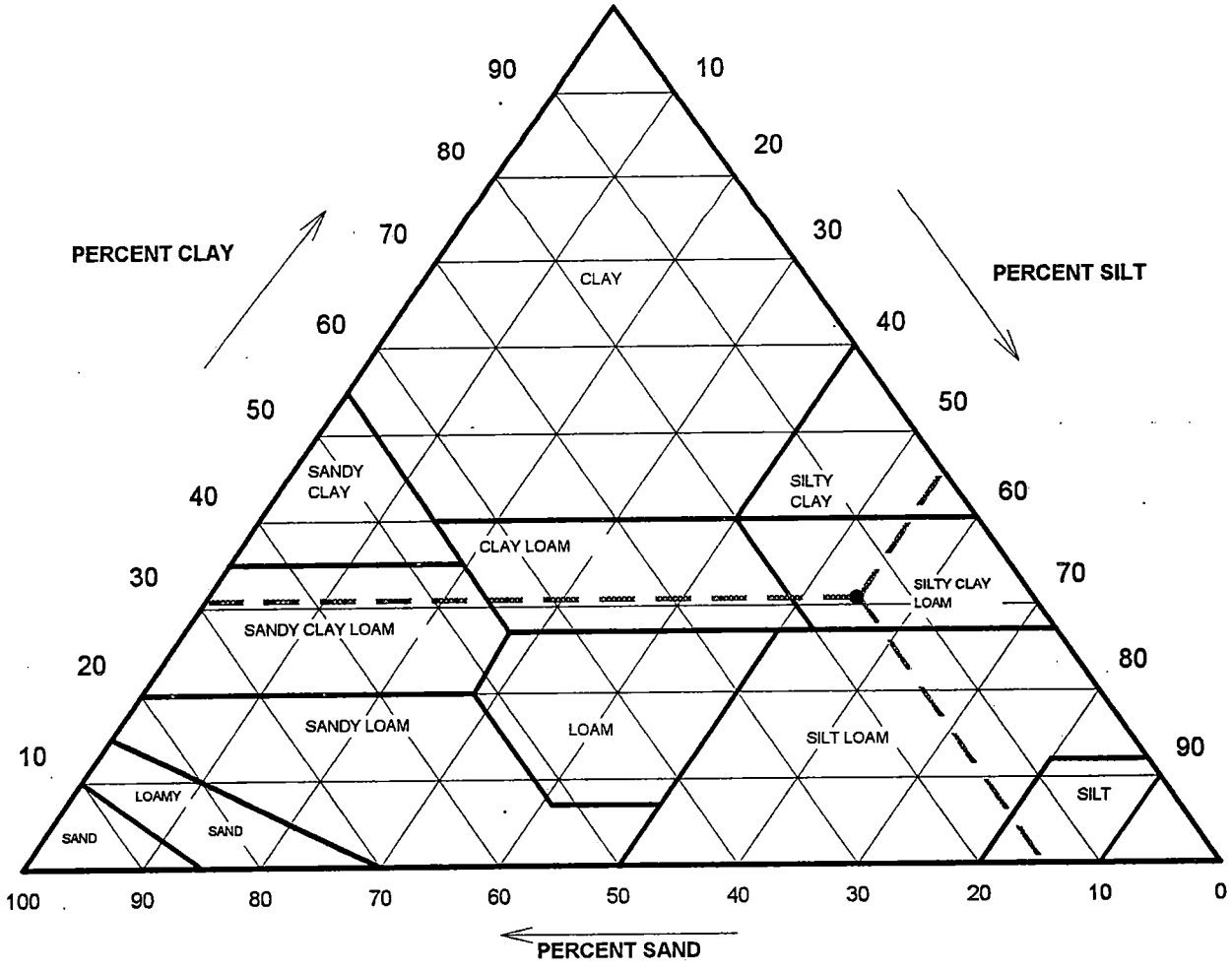
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	14.1-14.5
Project No.	97178-02	Sample No.	SM015-TB02-1315
Lab ID	97178-02.034	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	14.51
Silt	54.66
Clay	30.82
USDA Classification	***SILTY CLAY LOAM***

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PERMEABILITY TEST

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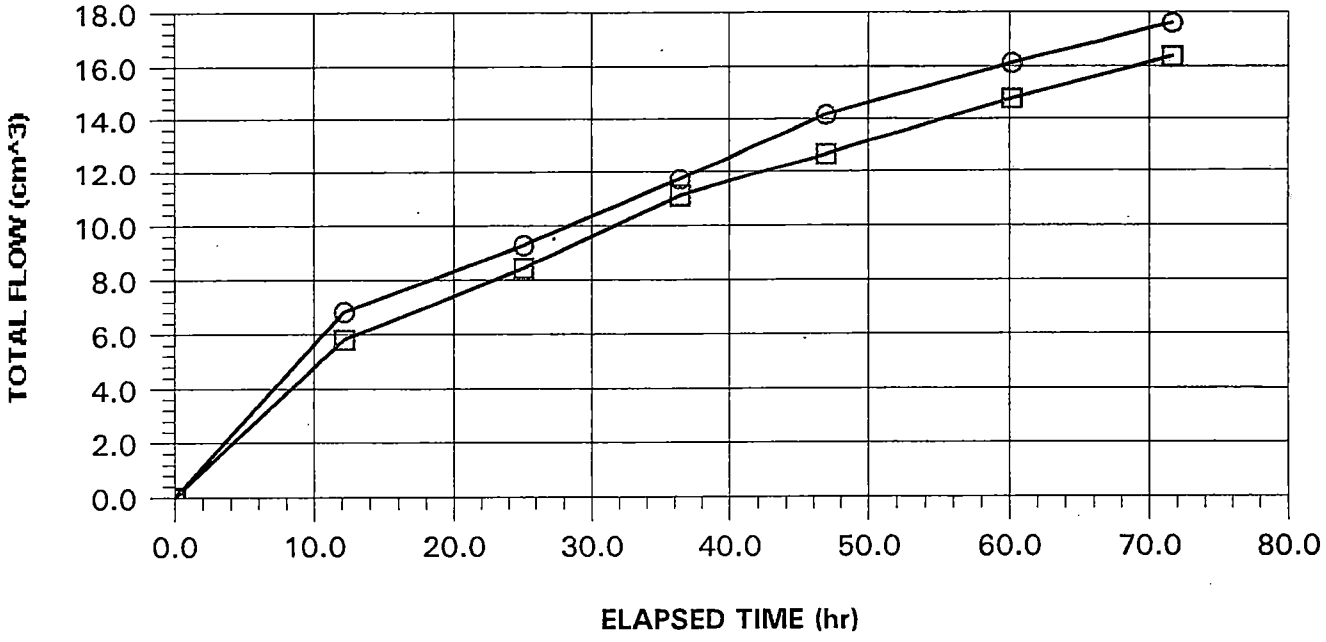
Client	ICF KAISER	Boring No.	NA
Client Project	BAYER 51249	Depth(ft.)	14.5-14.8
Project No.	97178-02	Sample No.	SM015-TB02-1315

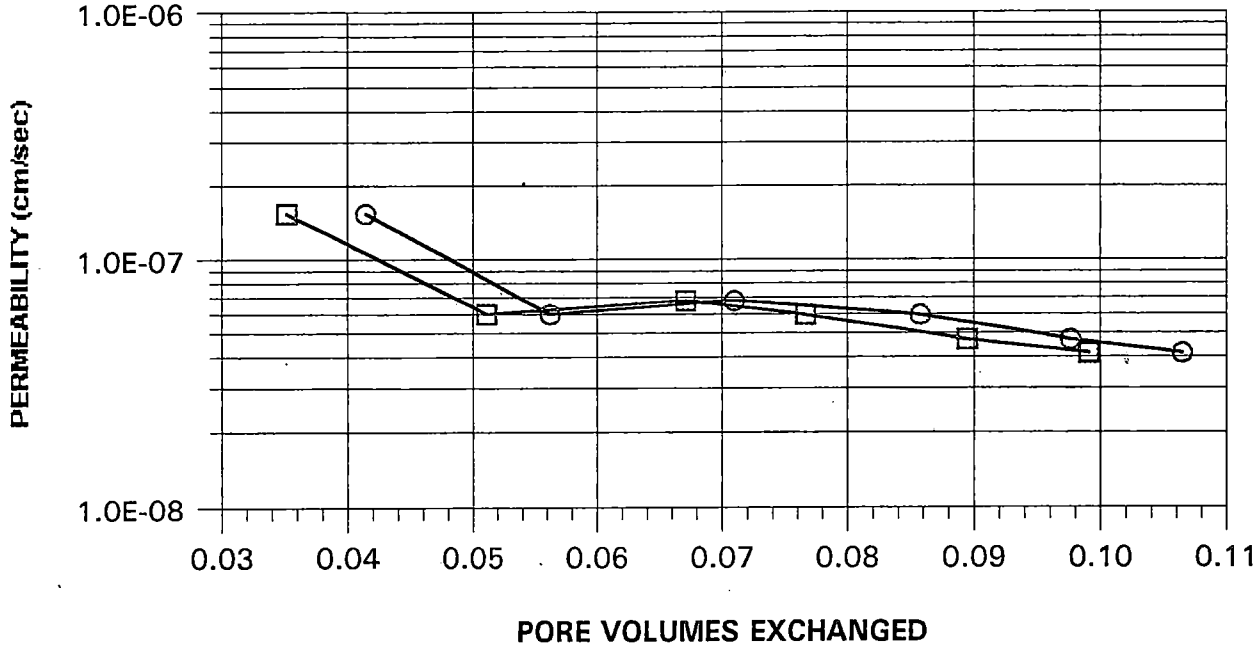
AVERAGE PERMEABILITY = 5.4E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.4E-10 m/sec @ 20°C

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 08-12-97
Client Project	BAYER 51249	Checked By	JMO Date 8/22/97
Project No.	97178-02		
Boring No.	NA	Specific Gravity	2.70 ASSUMED
Depth(ft.)	14.5-14.8	Sample Condition	UNDISTURBED
Sample No.	SM015-TB02-1315		

Visual Description BROWN CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1417	1698
Wt. Tare & WS(gm.)	268.12	419.40
Wt. Tare & DS(gm.)	220.66	350.28
Wt. Water(gm.)	47.46	69.12
Wt. Tare(gm.)	37.39	81.39
Wt. DS(gm.)	183.27	268.89
Moisture Content(%)	25.9	25.7

UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1044.70	NA
Wt. Of Tube(gms.)	275.94	NA
Wt. Of WS.(gms.)	768.76	767.6
Length 1 (in.)	3.649	3.718
Length 2 (in.)	3.642	3.729
Length 3 (in.)	3.670	3.765
Top Diameter (in.)	2.893	2.850
Middle Diameter (in.)	2.880	2.853
Bottom Diameter (in.)	2.861	2.853
Average Length (in)	3.65	3.74
Average Area (in^2)	6.51	6.39
Sample Volume(cc.)	389.49	391.25
Unit Wet Wt.(gms/cc)	1.97	1.96
Unit Wet Wt.(pcf.)	123.2	122.4
Unit Dry Wt.(pcf.)	97.8	97.4
Unit Dry Wt.(gms/cc)	1.57	1.56
Void Ratio,e	0.72	0.73
Porosity, n	0.42	0.42
Pore Volume(cm^3)	163.3	165.1

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PERMEABILITY TEST

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Client	ICF KAISER	Tested By	JCM	Date	08-12-97
Client Project	BAYER 51249	Checked By	JMO	Date	8/22/97
Project No.	97178-02				
Boring No.	NA				
Depth(ft.)	14.5-14.8				
Sample No.	SM015-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	9.49
Sample Diameter (cm.)	7.24
Sample Area (cm.^2), A	41.22
Inflow Burette Area, (cm.^2), a-in	4.41
Outflow Burette Area, (cm.^2), a-out	4.69
B Parameter	95%

AVERAGE PERMEABILITY = 5.4E-08 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.4E-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
08-12-97	19	0	0.0	0.0	0.0	200.6	0	22.5	NA
08-13-97	7	10	12.2	6.8	5.8	197.8	0	23.2	1.6E-07
08-13-97	20	5	25.1	9.3	8.4	196.7	0	22.6	6.0E-08
08-14-97	7	25	36.4	11.7	11.1	195.6	0	23.0	6.8E-08
08-14-97	17	55	46.9	14.2	12.7	194.7	0	22.5	6.0E-08
08-15-97	7	10	60.2	16.1	14.8	193.8	0	23.0	4.7E-08
08-15-97	18	40	71.7	17.6	16.4	193.1	0	22.2	4.2E-08

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SHELBY TUBE UNIT WEIGHT

geotechnics

Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.90
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM016-TB01-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					
4.50		2		GRAY LEAN CLAY	UNIT WGT. WC, GRAINSIZE HYDROMETER
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		1122			
Wt. Tare & WS(gm.)		235.21			
Wt. Tare & DS(gm.)		204.94			
Wt. Tare(gm.)		84.63			
Moisture Content(%)		25.2			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1067.30
Wt. Of Tube(gms.)	278.58
Wt. Of WS.(gms.)	788.72
Length 1 (in.)	3.748
Length 2 (in.)	3.763
Length 3 (in.)	3.784
Top Diameter (in.)	2.884
Middle Diameter (in.)	2.866
Bottom Diameter (in.)	2.839
Sample Volume (cc)	397.19
Moisture Content(%)	25.16
Unit Wet Wt.(gms/cc)	1.99
Unit Wet Wt.(pcf.)	123.9
Unit Dry Wt.(pcf.)	99.0
Unit Dry Wt.(gms/cc)	1.59

DCN: DS-S3A
DATE: 11/12/96
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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)	4.5-4.8
Project No.	97178-02	Sample No.	SM016-TB01-0305
Lab ID	97178-02.035	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	869	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	596.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	492.10	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	109.38	Weight of Tare (gm)	NA
Weight of Water (gm)	103.90	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	382.72	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**27.1**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	382.72
Dry Weight - 3/4" Sample (gm)	36.40	Weight of minus #200 material (gm)	346.32
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	36.40
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	0.24	0.06	0.06	99.94	**99.94**
#10	2.00	1.47	0.38	0.45	99.55	**99.55**
#20	0.85	5.19	1.36	1.80	98.20	**98.20**
#40	0.425	5.61	1.47	3.27	96.73	**96.73**
#60	0.250	4.24	1.11	4.38	95.62	**95.62**
#140	0.106	10.53	2.75	7.13	92.87	**92.87**
#200	0.075	9.12	2.38	9.51	90.49	**90.49**
Pan	-	346.32	90.49	100.00	-	-

Tested By BL Date 8/11/97 Checked By JMO Date 8/22/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM016-TB01-0305
Lab ID	97178-02.035	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	52.0	52.5	24.3	46.9	84.4	0.0251	**76.4**
5		47.5	24.3	41.9	75.4	0.0167	**68.2**
15		40.5	24.3	34.9	62.8	0.0103	**56.8**
30		36.5	24.3	30.9	55.6	0.0075	**50.3**
60		32.0	23.5	26.4	47.5	0.0055	**43.0**
240		26.5	23.5	20.9	37.6	0.0029	**34.0**
1440		19.5	23.8	13.9	24.9	0.0012	**22.6**

Soil Specimen Data		Corrections	
Tare No.	1139	K - Factor	0.01278
Tare + Dry Material (gm)	164.84	a - Factor	0.99
Weight of Tare (gm)	104.88	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	90.49
Weight of Dry Material (gm)	54.96		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMO Date 8/22/97

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

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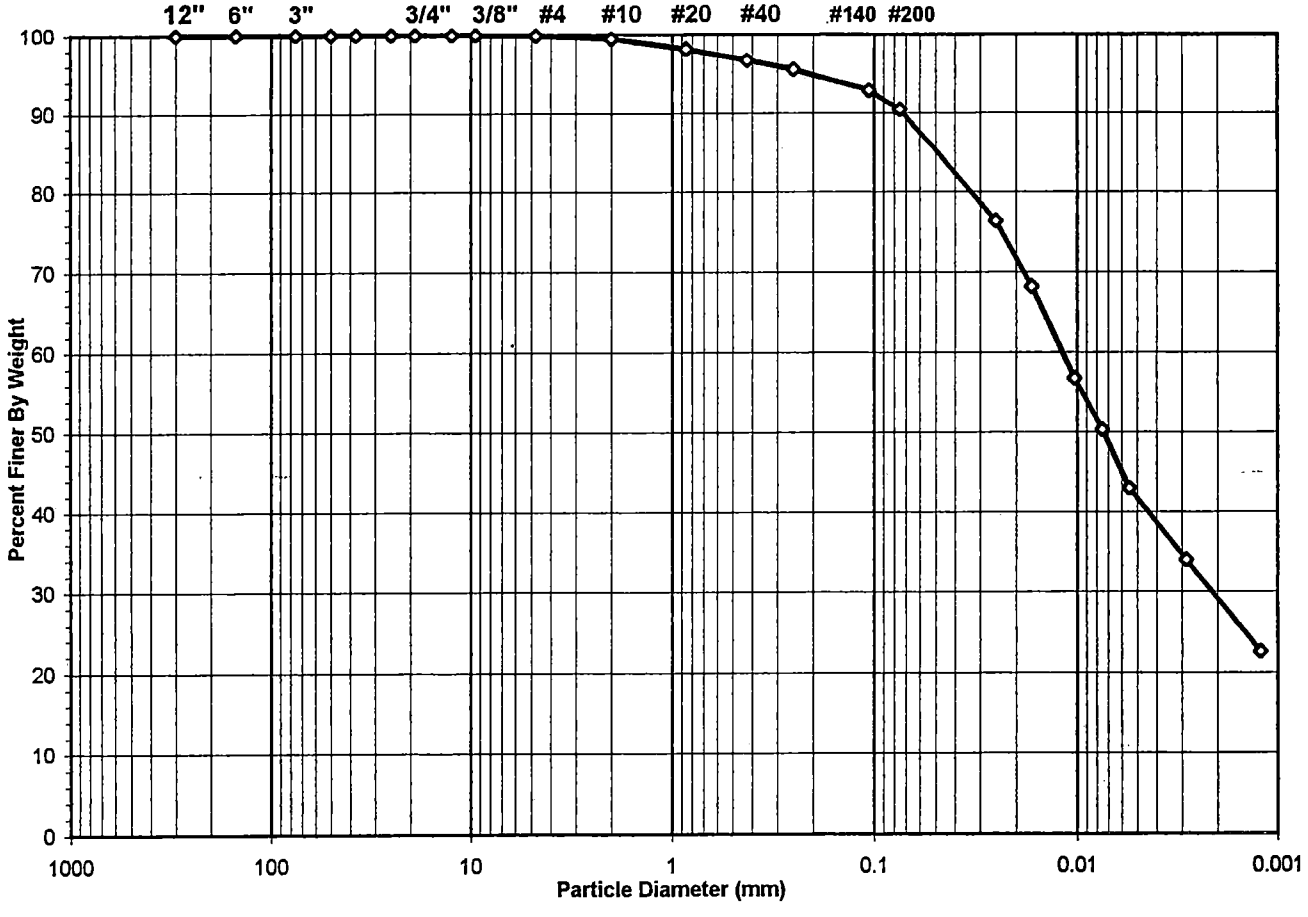
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM016-TB01-0305
Lab ID	97178-02.035	Soil Color	GRAY

	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*	0.45	**0.00**
2	99.55	*Sand*	14.29	**14.35**
0.075	90.49	*Silt*	56.04	**56.29**
0.05	85.27	*Clay*	29.22	**29.36**
0.002	29.22			

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

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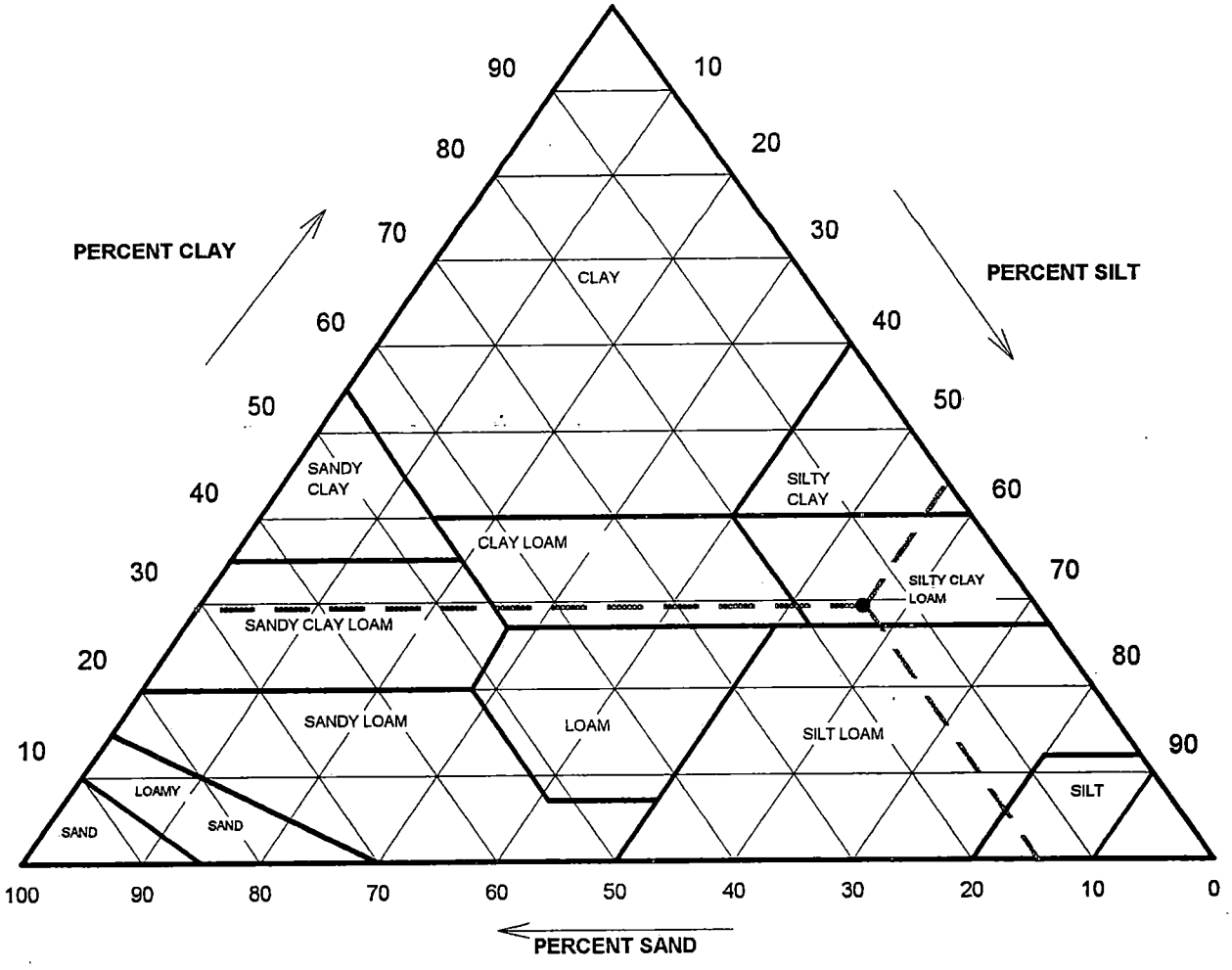
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM016-TB01-0305
Lab ID	97178-02.035	Soil Color	GRAY



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	14.35
Silt	56.29
Clay	29.36
USDA Classification	***SILTY CLAY LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JHO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	2.00
Depth Pushed	15.0-17.0		
Shelby Tube No.	SM016-TB01-1517		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
15.00					
15.50					
16.00					
16.50		2		BROWN SANDY LEAN CLAY	UNIT WGT. WC, GRAINSIZE HYDROMETER
17.00		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		1125			
Wt. Tare & WS(gm.)		228.07			
Wt. Tare & DS(gm.)		196.89			
Wt. Tare(gm.)		84.09			
Moisture Content(%)		27.6			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	912.10
Wt. Of Tube(gms.)	251.56
Wt. Of WS.(gms.)	660.54
Length 1 (in.)	3.347
Length 2 (in.)	3.352
Length 3 (in.)	3.372
Top Diameter (in.)	2.979
Middle Diameter (in.)	2.850
Bottom Diameter (in.)	2.852
Sample Volume (cc)	361.78
Moisture Content(%)	27.64
Unit Wet Wt.(gms/cc)	1.83
Unit Wet Wt.(pcf.)	113.9
Unit Dry Wt.(pcf.)	89.3
Unit Dry Wt.(gms/cc)	1.43

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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)	16.5-16.8
Project No.	97178-02	Sample No.	SM016-TB01-1517
Lab ID	97178-02.036	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1075	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	490.80	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	420.10	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	104.29	Weight of Tare (gm)	NA
Weight of Water (gm)	70.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	315.81	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**22.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	315.81
Dry Weight - 3/4" Sample (gm)	148.32	Weight of minus #200 material (gm)	167.49
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	148.32
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	1.44	0.46	0.46	99.54	**99.54**
#20	0.85	4.71	1.49	1.95	98.05	**98.05**
#40	0.425	7.33	2.32	4.27	95.73	**95.73**
#60	0.250	44.62	14.13	18.40	81.60	**81.60**
#140	0.106	70.41	22.30	40.69	59.31	**59.31**
#200	0.075	19.81	6.27	46.96	53.04	**53.04**
Pan	-	167.49	53.04	100.00	-	-

Tested By BL Date 8/11/97 Checked By JMO Date 8/22/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.5-16.8
Project No.	97178-02	Sample No.	SM016-TB01-1517
Lab ID	97178-02.036	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	24.3	28.9	82.5	0.0295	**43.7**
5		32.0	24.3	26.4	75.3	0.0190	**39.9**
15		28.5	24.3	22.9	65.3	0.0112	**34.6**
30		25.5	24.3	19.9	56.7	0.0081	**30.1**
60		23.5	23.5	17.9	51.0	0.0058	**27.1**
237		20.0	23.5	14.4	41.0	0.0030	**21.8**
1440		16.5	23.8	10.9	31.0	0.0012	**16.4**

Soil Specimen Data		Corrections	
Tare No.	1305	K - Factor	0.01278
Tare + Dry Material (gm)	141.93	a - Factor	0.99
Weight of Tare (gm)	102.29	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	53.04
Weight of Dry Material (gm)	34.64		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMO Date 8/22/97

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

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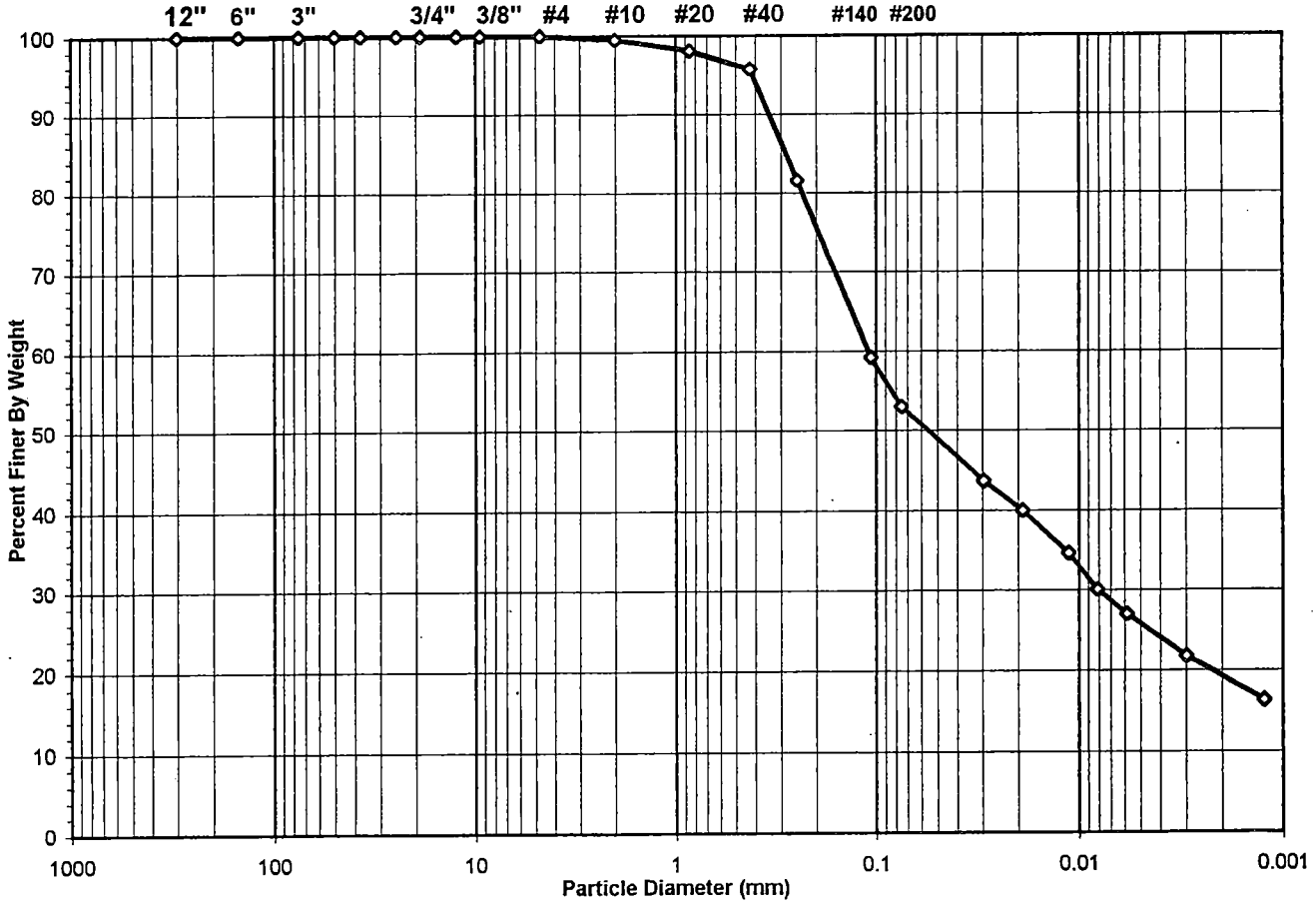
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.5-16.8
Project No.	97178-02	Sample No.	SM016-TB01-1517
Lab ID	97178-02.036	Soil Color	**BROWN**

	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*	0.46	**0.00**
2	99.54	*Sand*	50.55	**50.78**
0.075	53.04	*Silt*	29.68	**29.81**
0.05	49.00	*Clay*	19.32	**19.41**
0.002	19.32			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY***

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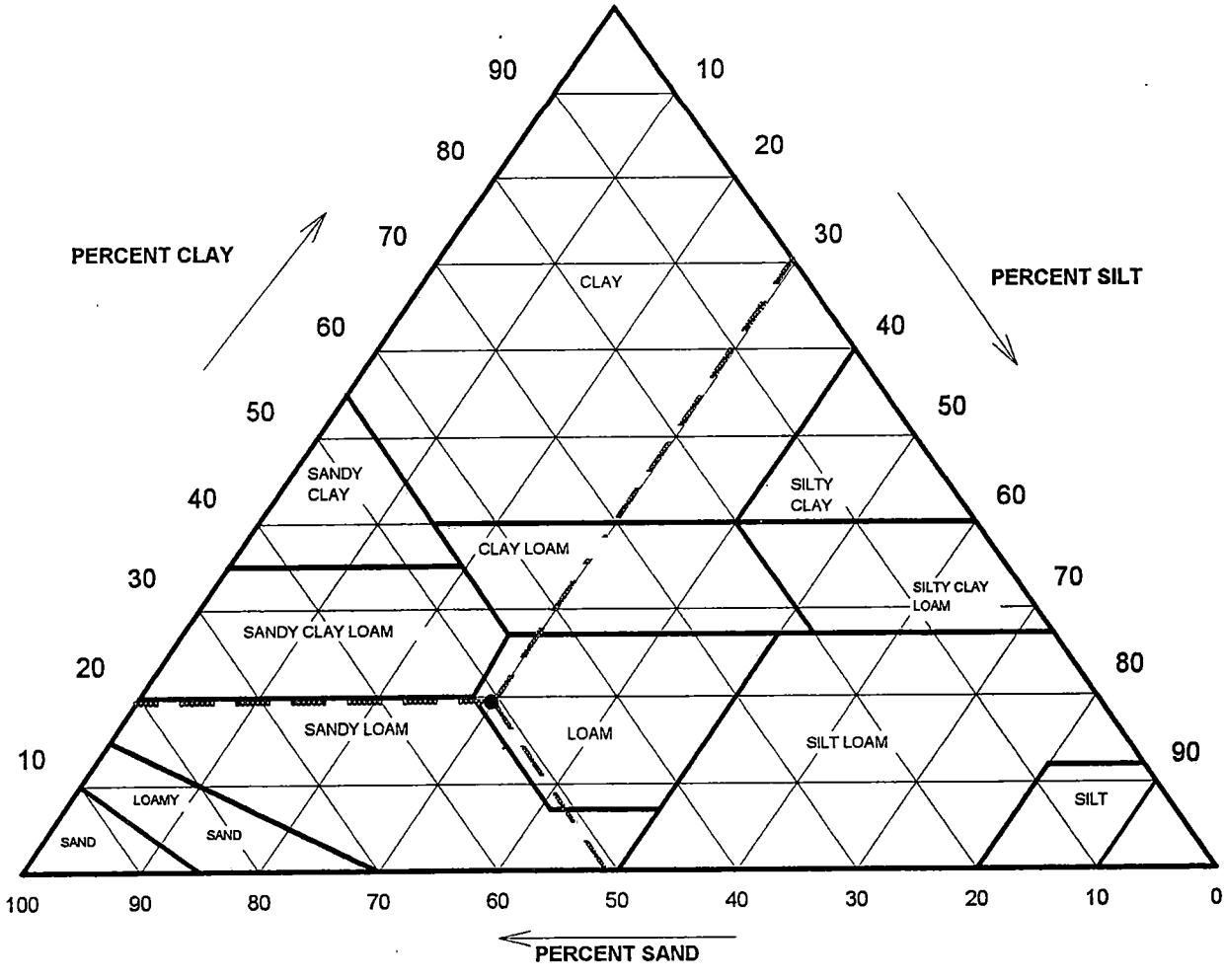
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	16.5-16.8
Project No.	97178-02	Sample No.	SM016-TB01-1517
Lab ID	97178-02.036	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	50.78
Silt	29.81
Clay	19.41
USDA Classification	***LOAM***

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SHELBY TUBE UNIT WEIGHT

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Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JHO 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.50
Depth Pushed	3.0-5.0		
Shelby Tube No.	SM017-TB01-0305		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
3.00					
3.50					
4.00					
4.50		2		BROWN SANDY LEAN CLAY	UNIT WGT. WC. GRAINSIZE HYDROMETER
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		730			
Wt. Tare & WS(gm.)		217.23			
Wt. Tare & DS(gm.)		199.53			
Wt. Tare(gm.)		86.56			
Moisture Content(%)		15.7			

UNIT WEIGHT	
Wt. Tube & WS.(gms.)	1093.20
Wt. Of Tube(gms.)	267.15
Wt. Of WS.(gms.)	826.05
Length 1 (in.)	3.612
Length 2 (in.)	3.595
Length 3 (in.)	3.583
Top Diameter (in.)	2.856
Middle Diameter (in.)	2.867
Bottom Diameter (in.)	2.865
Sample Volume (cc)	379.34
Moisture Content(%)	15.67
Unit Wet Wt.(gms/cc)	2.18
Unit Wet Wt.(pcf.)	135.9
Unit Dry Wt.(pcf.)	117.5
Unit Dry Wt.(gms/cc)	1.88

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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)	4.5-4.8
Project No.	97178-02	Sample No.	SM017-TB01-0305
Lab ID	97178-02.037	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1665	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	646.70	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	569.50	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	101.18	Weight of Tare (gm)	NA
Weight of Water (gm)	77.20	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	468.32	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)	468.32
Dry Weight - 3/4" Sample (gm)	162.77	Weight of minus #200 material (gm)	305.55
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	162.77
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	12.65	2.70	2.70	97.30	**97.30**
#4	4.75	31.98	6.83	9.53	90.47	**90.47**
#10	2.00	33.47	7.15	16.68	83.32	**83.32**
#20	0.85	21.86	4.67	21.34	78.66	**78.66**
#40	0.425	15.56	3.32	24.67	75.33	**75.33**
#60	0.250	18.21	3.89	28.56	71.44	**71.44**
#140	0.106	22.89	4.89	33.44	66.56	**66.56**
#200	0.075	6.15	1.31	34.76	65.24	**65.24**
Pan	-	305.55	65.24	100.00	-	-

Tested By BL Date 8/11/97 Checked By JMD Date 8/22/97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM017-TB01-0305
Lab ID	97178-02.037	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	44.5	47.0	24.3	41.4	86.8	0.0265	**56.7**
5		42.0	24.3	36.4	76.3	0.0175	**49.8**
15		37.5	24.3	31.9	66.9	0.0105	**43.6**
30		34.0	24.3	28.4	59.5	0.0076	**38.8**
60		31.0	23.5	25.4	53.2	0.0055	**34.7**
234		26.5	23.5	20.9	43.8	0.0029	**28.6**
1440		20.5	23.8	14.9	31.2	0.0012	**20.3**

Soil Specimen Data		Corrections	
Tare No.	1919	K - Factor	0.01278
Tare + Dry Material (gm)	154.95	a - Factor	0.99
Weight of Tare (gm)	102.81	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	65.24
Weight of Dry Material (gm)	47.14		
		Specific Gravity	2.7 Assumed

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

Tested By TO Date 8/14/97 Checked By JMC Date 8/22/97

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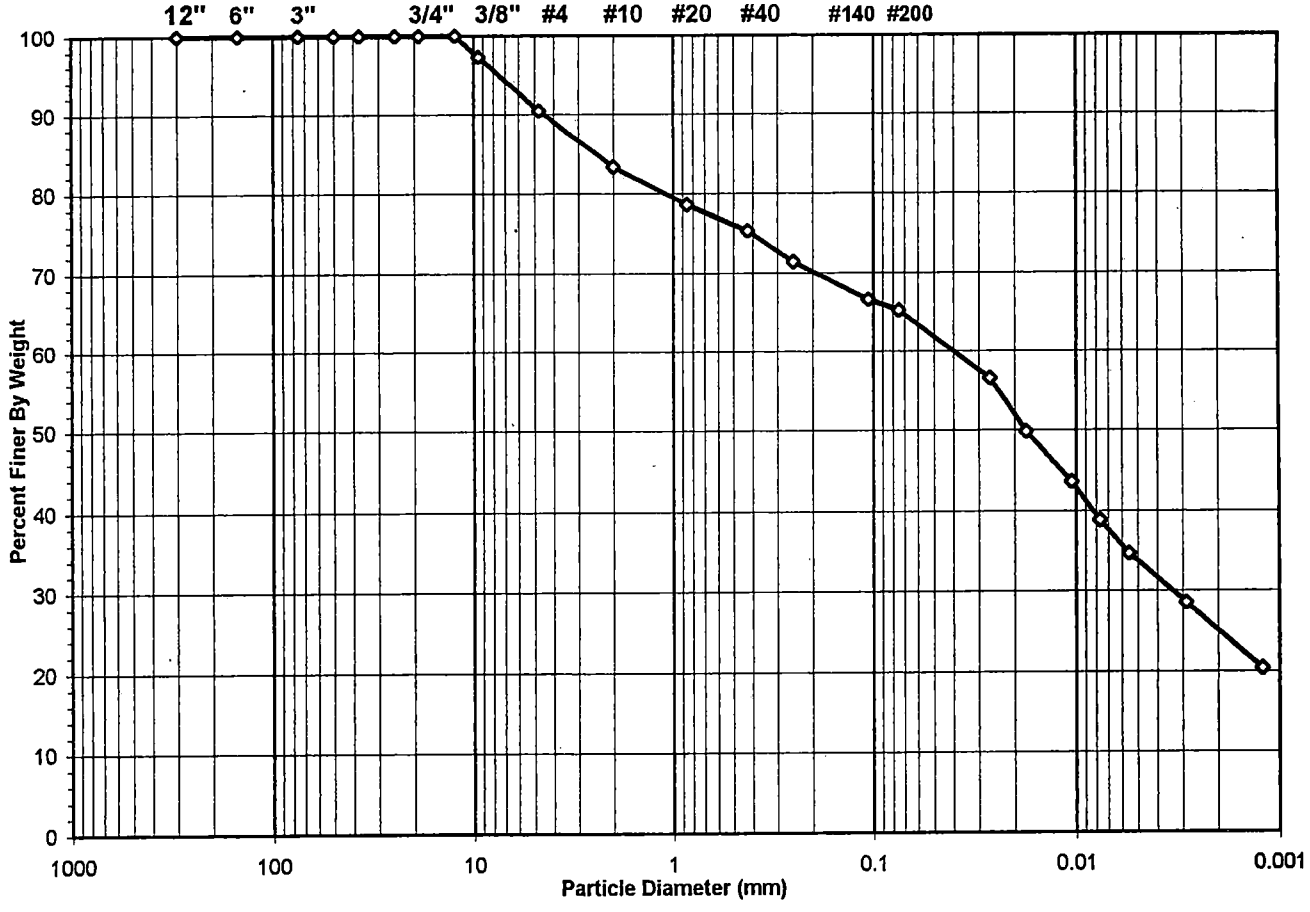
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (SOP-S3)

geotechnics

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM017-TB01-0305
Lab ID	97178-02.037	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*	16.68	**0.00**
2	83.32	*Sand*	21.42	**25.71**
0.075	65.24	*Silt*	36.81	**44.17**
0.05	61.90	*Clay*	25.09	**30.12**
0.002	25.09			

USDA Classification	***CLAY LOAM***
USCS Symbol	***cl, ASSUMED***
USCS Classification	***SANDY LEAN CLAY***

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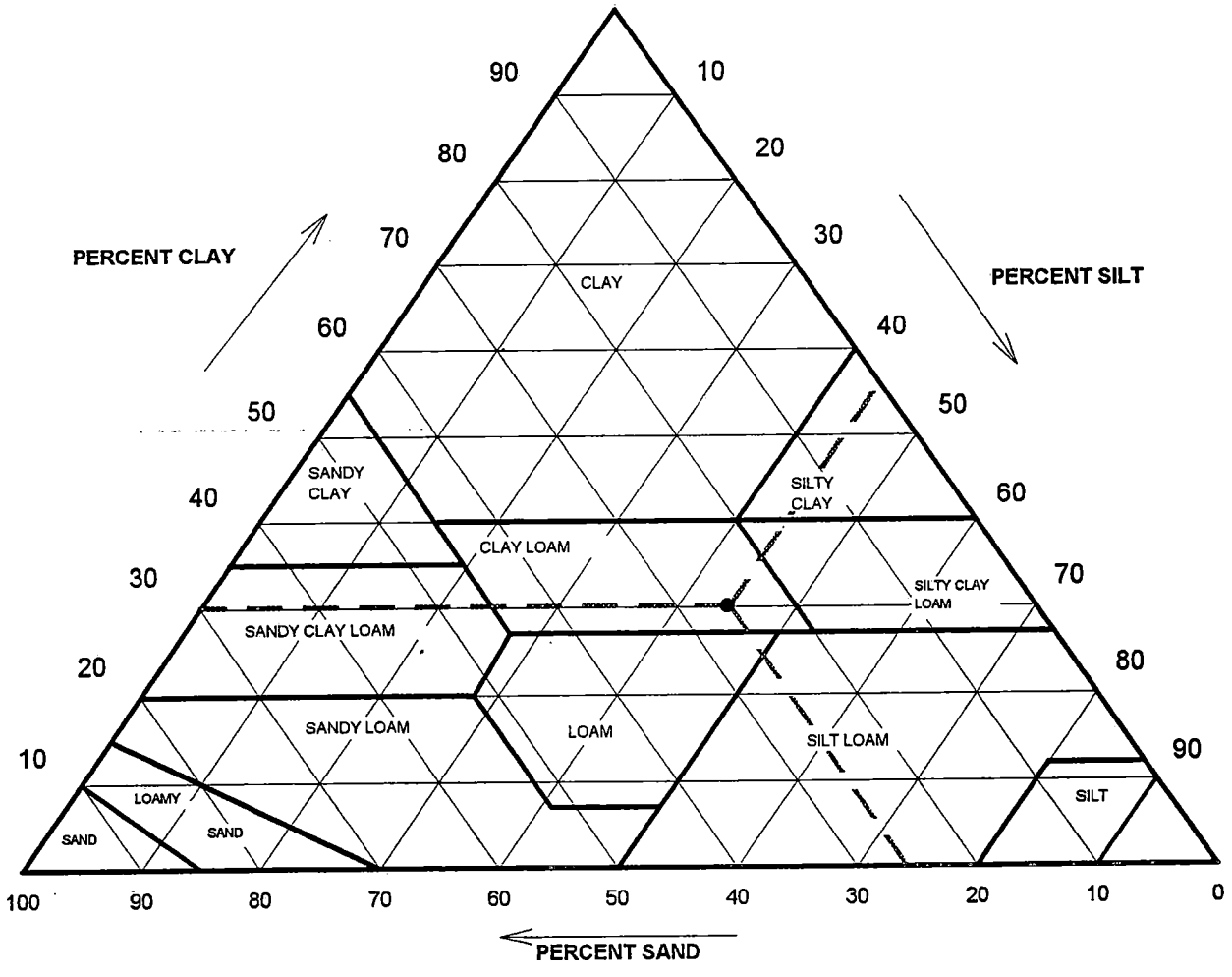
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	4.5-4.8
Project No.	97178-02	Sample No.	SM017-TB01-0305
Lab ID	97178-02.037	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	25.71
Silt	44.17
Clay	30.12
USDA Classification	***CLAY LOAM***

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SHELBY TUBE UNIT WEIGHT

geotechnics

Client	ICF KAISER	Tested By	BL 8-11-97
Client Project	BAYER 51249	Checked By	JMC 8/29/97
Project No.	97178-02		
Boring No.	NA	Tube Recovery	1.70
Depth Pushed	.5-2.5		
Shelby Tube No.	SM017-TB02-0102		

SOIL PROFILE AND SAMPLING

DEPTH ( )	ELEV ( )	SECTION No.	SOIL PROFILE	SOIL DESCRIPTION AND REMARKS	TEST PERFORMED
0.50					
1.00					
1.50		4			NO TEST
		3		BROWN SANDY LEAN CLAY	NO TEST
2.00		2			WC GRAINSIZE HYDROMETER
		1		VOID	NO TEST
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		1615			
Wt. Tare & WS(gm.)		541.00			
Wt. Tare & DS(gm.)		485.30			
Wt. Tare(gm.)		98.98			
Moisture Content(%)		14.4			

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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WASH SIEVE ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.0-2.3
Project No.	97178-02	Sample No.	SM017-TB02-0102
Lab ID	97178-02.038	Soil Color	**BROWN**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	1615	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	541.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	485.30	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	98.98	Weight of Tare (gm)	NA
Weight of Water (gm)	55.70	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	386.32	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**14.4**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	386.32
Dry Weight - 3/4" Sample (gm)	135.99	Weight of minus #200 material (gm)	238.45
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	147.87
Dry Weight + 3/4" Sample (gm)	11.88		
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	11.88	3.08	3.08	96.92	**96.92**
1/2"	12.5	17.96	4.65	7.72	92.28	**92.28**
3/8"	9.50	6.47	1.67	9.40	90.60	**90.60**
#4	4.75	14.65	3.79	13.19	86.81	**86.81**
#10	2.00	19.93	5.16	18.35	81.65	**81.65**
#20	0.85	14.32	3.71	22.06	77.94	**77.94**
#40	0.425	9.33	2.42	24.47	75.53	**75.53**
#60	0.250	10.41	2.69	27.17	72.83	**72.83**
#140	0.106	31.20	8.08	35.24	64.76	**64.76**
#200	0.075	11.72	3.03	38.28	61.72	**61.72**
Pan	-	238.45	61.72	100.00	-	-

Tested By BL Date 8/12/97 Checked By JCM Date 8-22-97

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HYDROMETER ANALYSIS

ASTM D 422-63 (SOP-S3)

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.0-2.3
Project No.	97178-02	Sample No.	SM017-TB02-0102
Lab ID	97178-02.038	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	43.0	45.0	24.3	39.4	82.1	0.0270	**50.7**
5		40.0	24.3	34.4	71.7	0.0178	**44.2**
15		35.5	24.3	29.9	62.3	0.0107	**38.4**
30		32.0	24.3	26.4	55.0	0.0078	**33.9**
60		29.0	23.4	23.4	48.7	0.0056	**30.1**
208		25.0	23.5	19.4	40.4	0.0031	**24.9**
1440		19.5	23.8	13.9	28.9	0.0012	**17.8**

Soil Specimen Data		Corrections	
Tare No.	1636	K - Factor	0.01278
Tare + Dry Material (gm)	152	a - Factor	0.99
Weight of Tare (gm)	99.55	Composite Correction	5.65
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	61.72
Weight of Dry Material (gm)	47.45		
		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 8-22-97

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

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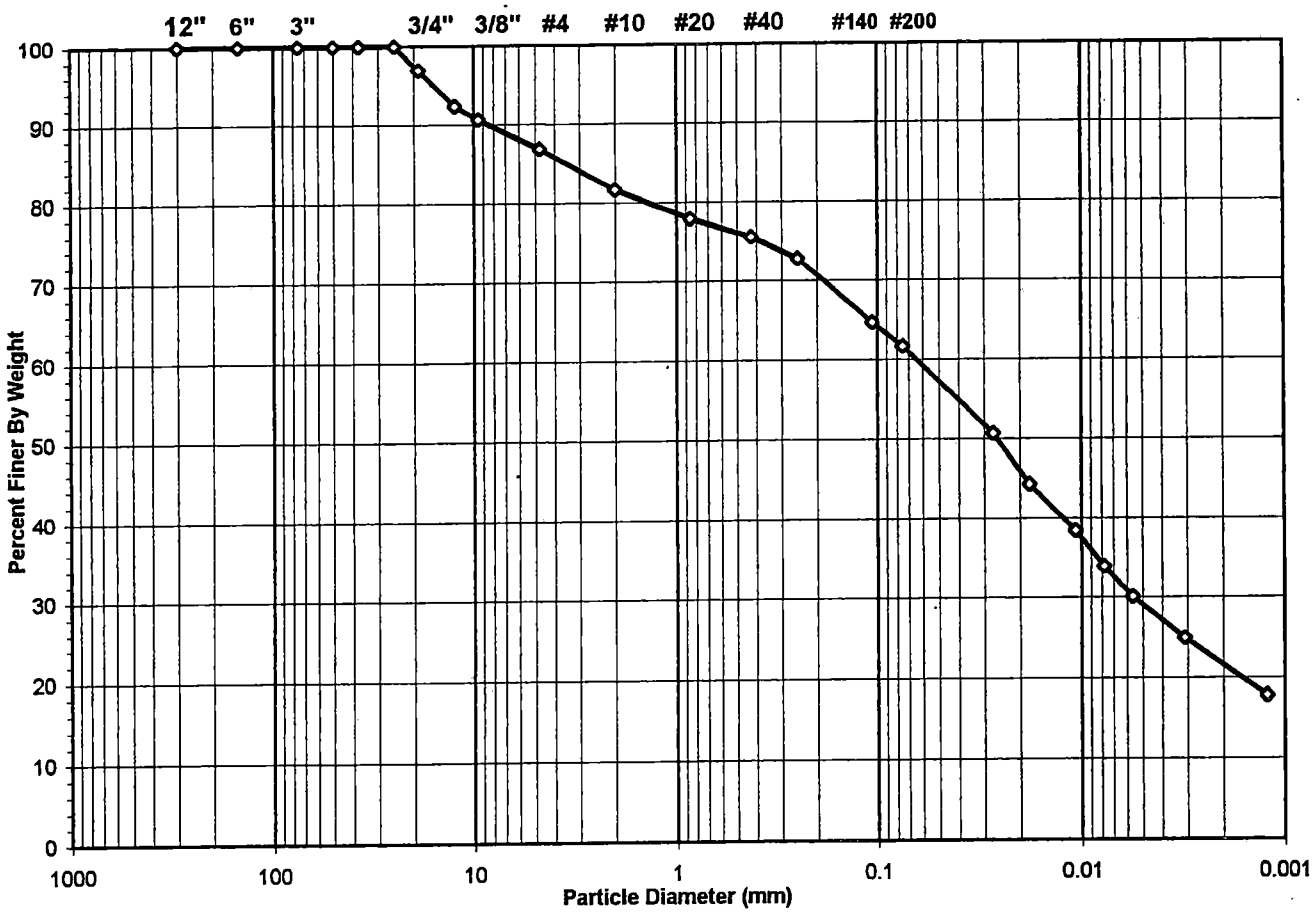
Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.0-2.3
Project No.	97178-02	Sample No.	SM017-TB02-0102
Lab ID	97178-02.038	Soil Color	BROWN

	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*	18.35	**0.00**
2	81.65	*Sand*	24.31	**29.77**
0.075	61.72	*Silt*	35.74	**43.77**
0.05	57.34	*Clay*	21.60	**26.46**
0.002	21.60			

USDA Classification ***LOAM***

USCS Symbol ***cl, ASSUMED***

USCS Classification ***SANDY LEAN CLAY***

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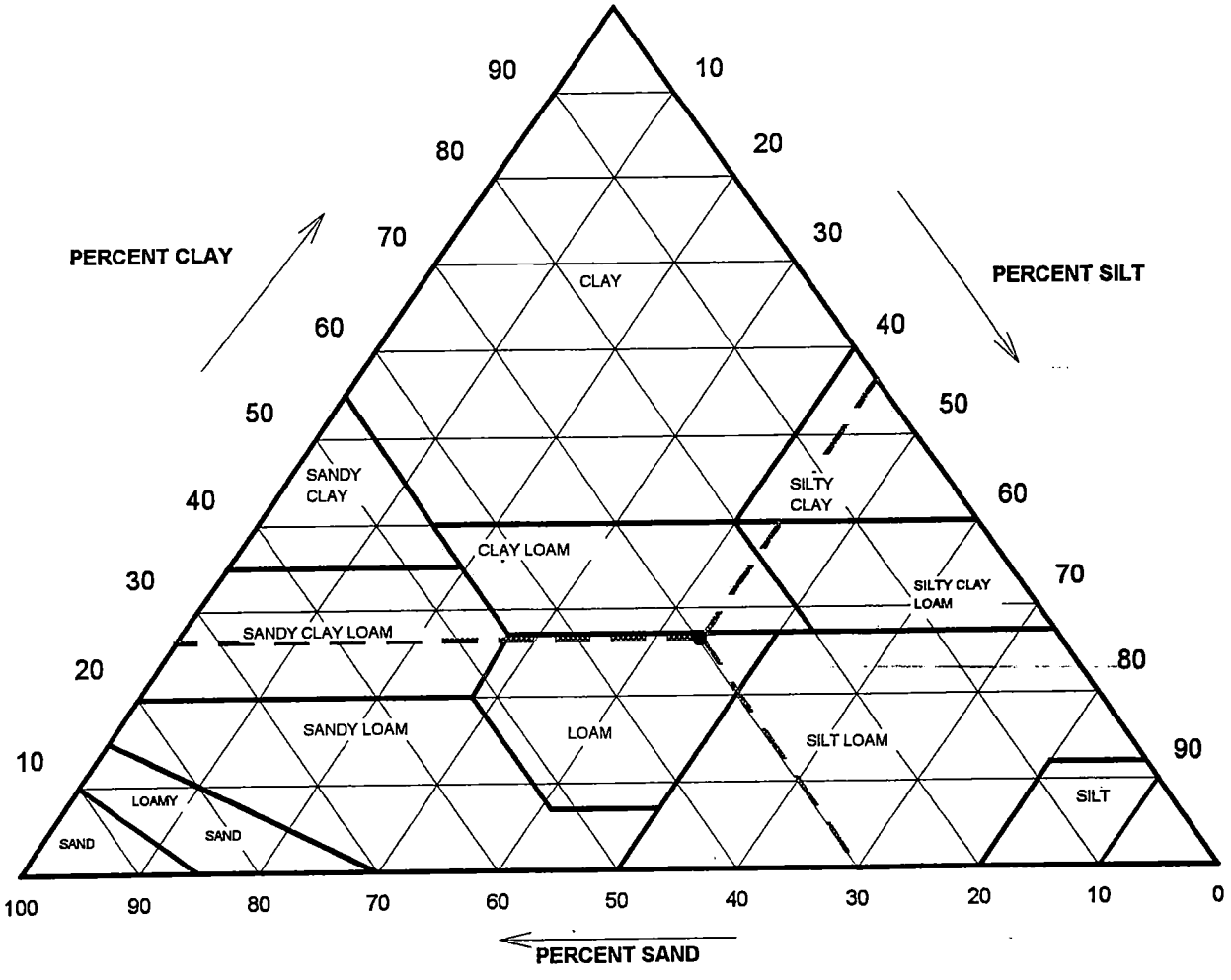
USDA CLASSIFICATION CHART

Client	ICF KAISER	Boring No.	NA
Client Reference	BAYER 51249	Depth (ft)	2.0-2.3
Project No.	97178-02	Sample No.	SM017-TB02-0102
Lab ID	97178-02.038	Soil Color	BROWN



Components	Corrected % of Minus 2.0 mm material for USDA Classificat.
Gravel	0.00
Sand	29.77
Silt	43.77
Clay	26.46
USDA Classification	***LOAM***

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