

HYDRAULICS DIVISION
TECHNICAL NOTE



DATE: June 1982 **REPORT NO:** 82-15

TITLE: Particle Size Data Report - Hudson Bay
Lowlands

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REASON FOR REPORT: This report responds to a request for particle size data from D. W. Cowell, Lands Directorate.

CORRESPONDENCE FILE NO:
5690 (Study No. 302)

1.0 INTRODUCTION

This report provides the results of particle size analysis on sediments from the Hudson Bay Lowlands. D. Cowell, Lands Directorate, submitted 36 samples requesting sand, silt and clay percentages.

The samples were analysed under HD Study 302 using two procedures (Duncan and LaHaie, 1979).

2.0 PROCEDURES

(1) The Sieve, Settling Tube, Pipette and Sedigraph Procedure, which provides gravel, sand, silt and clay percentages with 1/2 PHI resolution of the size classes, was used to analyse 19 samples. Briefly, the procedure consists of:

1. Splitting the sample to 20 g.
2. Sieving the split at 1/2 PHI (1.41 mm).
3. Dispersing the sample in 50 ml of Calgon solution (50 g/l) and mixing it for 15 minutes.
4. Recovering a pipette aliquot of 25 ml for sedigraph analysis.
5. Automatic analysis by sedigraph.
6. Wet sieving the remaining suspension at 4.5 PHI (0.044 mm).
7. Resolving the sand residue with settling tube analysis.
8. Processing the results with SIZDIST: A Fortran IV computer program (Sandilands and Duncan, 1980).

(2) The Sieve, Short Pipette and Sedigraph Analyses, which provide sand, silt, and clay percentages with 1/2 PHI resolution on the silt and clay classes, was used to analyse 19 sample. Briefly, the procedure consists of:

1. Splitting the sample to 20 g.

2. Dispersing the sample in 50 ml of Calgon solution (50 g/l) and mixing it for 15 minutes.
3. Recovering pipette aliquots of 25 ml for (a) sedigraph analysis (b) clay percentage.
4. Automatic analysis by sedigraph.
5. Processing the results with SIZDIST: A Fortran IV computer program (Sandilands and Duncan, 1980).

3.0 RESULTS

(1) For the Sieve, Settling Tube, Pipette and Sedigraph Method, the output consists of:

1. A histogram of the frequency distribution.
2. The percentage and cumulative percentage of the material occurring within each 1/2 PHI unit.
3. Moment measure statistics (Krumbein and Pettijohn, 1938).
4. Percentiles.
5. Percent gravel, sand, silt and clay. Percentages of silt and clay are expressed as "(PIPETTE)" and "(SEDIGRAPH)" to show reproducibility of the two methods.
6. Ratios used to plot Folk's Ternary Classification.
7. Shepard (1954) and Folk (1968) Ternary Classifications.

(2) For the Sieve, Short Pipette and Sedigraph analysis, the output consists of:

1. A histogram of the frequency distribution.
2. The percentage and cumulative percentage of the material occurring within each 1/2 PHI unit.
3. Moment measure statistics (Krumbein & Pettijohn, 1938).
4. Percentiles.
5. Percent gravel, sand, silt and clay. Percentages of silt and clay are expressed as "(PIPETTE)" and "(SEDIGRAPH)" to show reproducibility of the two methods.
6. Ratios used to plot Folk's Ternary Classification.
7. Shepard (1954) and Folk (1968) Ternary Classification.

(3) For the Sieve, Short Pipette and Settling Tube Method, the output consists of:

1. A histogram of the frequency distribution.
2. The percentages and cumulative percentages of the material occurring within 1/2 PHI unit.
3. Moment measures (Krumbein and Pettijohn, 1938) and graphic (Folk and Ward, 1957) statistics.
4. Percentiles.
5. Percent gravel, sand, silt and clay.
6. Ratios used to plot Folk's Ternary Classification.
7. Shepard (1954) and Folk (1974) Ternary Classification.

REFERENCES

- Duncan, G. A. and LaHaie, G. G., 1979. "Size Analysis Procedures Used in the Sedimentology Laboratory, NWRI". NWRI, CCIW, Hydraulics Division Manual, September 1979.
- Folk, R. L., 1968. "Petrology of Sedimentary Rocks". Hemphill Publishing Co., Austin, Texas 182 p.
- Folk, R. L. and Ward, W. C., 1957. "Brazos River Bar: A Study in the Significance of Grain Size Parameters". Jour. Sed. Petrology, V. 27, pp. 3-26.
- Krumbein, W. C. and Pettijohn, F. J., 1938. "Manual of Sedimentary Petrography". Appleton-Century-Crofts, New York, 549 p.
- Sandilands, R. G. and Duncan, G. A., 1980. "SIZDIST - A Computer Program for Size Analysis". NWRI, CCIW, Hydraulics Division Technical Note, Report No. 80-08.
- Shepard, F. P., 1954. "Nomenclature Based on Sand-Silt Ratios". Jour. Sed. Petrology, V. 24, pp. 151-158.

APPENDIX 1
SIZDIST OUTPUT

HBL 1 0-56 270582

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 20.7563

06/25/82

PHI PCT. CUM PCT.

3.50			
4.00	1.02	1.02	*
4.50	.20	1.22	
5.00	.30	1.52	
5.50	1.48	3.00	*
6.00	5.44	8.44	*****
6.50	9.90	18.34	*****
7.00	10.50	29.23	*****
7.50	16.33	45.56	*****
8.00	5.90	55.46	*****
8.50	6.93	62.39	*****
9.00	5.94	68.33	*****
9.50	4.95	73.28	*****
*****	25.72	100.00	*****

MEAN ST. DEV. SKEWNESS KURTOSIS

7.24 1.11 -.13 .28

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.72	5TH	5.68	16TH	6.33	25TH	6.81
			75TH	*****	84TH	*****	95TH	*****

PCT. GRAVEL	0.00	SAND	1.02	SILT (PIPETTE)	55.85	CLAY (PIPETTE)	43.13
				(SEDIGRAPH)	54.44	(SEDIGRAPH)	44.54

GRAVEL+SAND 1.02 SILT/(SILT+CLAY) 55.00 PCT. GRAV+SAND/SILT+CLAY .01

LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-MUD (SCS)-MUD

HBL 2 0-55 270592

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 19.6996

06/25/32

PHI FCT. CUMECT.

3.50			
4.00	.50	.50	
4.50	0.00	.50	
5.00	.10	.60	
5.50	.65	1.25	*
6.00	5.22	6.47	*****
6.50	10.94	17.42	*****
7.00	14.43	31.84	*****
7.50	17.92	46.77	*****
8.00	10.45	57.22	*****
8.50	6.47	63.68	*****
9.00	5.47	69.16	*****
*****	30.84	100.00	*****

MEAN ST.DEV. SKEWNESS KUPTOSIS

7.11 .90 -.09 .36 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FILES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.65	5TH	5.85	16TH	6.44	25TH	6.76
			75TH	*****	84TH	*****	95TH	*****
PCT. GRAVEL	0.00	SAND	.50	SILT (PIPETTE)	57.94	CLAY (PIPETTE)		41.56
				(SEDIGRAPH)	56.71	(SEDIGRAPH)		42.78
GRAVEL+SAND	.50	SILT/(SILT+CLAY)	57.00	PCT.GRAV+SAND/SILT+CLAY				.01
LABELS SHEPARD	-CLAYEY SILT	FOLK(GMS)-MUD				(SCS)-MUD		

MBL 3 4-10 270562

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 20.5087

06/25/82

PHI	PCT. CUM.PCT.	
3.50		
4.00	1.22	+
4.50	.49	
5.00	1.96	**
5.50	2.93	***
6.00	6.85	*****
6.50	11.25	*****
7.00	12.71	*****
7.50	14.18	*****
8.00	10.75	*****
8.50	5.67	*****
9.00	4.89	*****
9.50	26.90	*****
10.00	100.00	

MEAN ST.DEV. SKEWNESS KURTOSIS

6.90 1.07 -.22 .18 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES
 FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.44	5TH	5.23	16TH	6.11	25TH	6.51
			75TH	*****	84TH	*****	95TH	*****
PCT. GRAVEL	0.00	SAND	1.22	SILT (PIPETTE)	61.64	CLAY (PIPETTE)	37.14	
				(SEDIGRAPH)	61.13	(SEDIGRAPH)	37.65	
GRAVEL+SAND	1.22	SILT/(SILT+CLAY)	61.88	PCT.GRAV+SAND/SILT+CLAY	.01			
LABELS SHEPARD	-CLAYEY SILT	FOLK(GMD)	-MUD			(SCS)	-MUD	

HBL 4 0-9 270582

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 18.1876

06/25/82

PHI PCT. CUMFCT.

3.50			
4.00	.46		
4.50	.12	.46	
5.00	1.07	.58	*
5.50	4.15	1.64	****
6.00	8.30	5.79	*****
6.50	12.44	14.09	*****
7.00	14.22	26.53	*****
7.50	14.81	40.75	*****
8.00	10.67	55.56	*****
8.50	5.93	66.23	*****
9.00	4.74	72.15	*****
****	23.11	76.89	*****
		100.00	

MEAN ST.DEV. SKEWNESS KURTOSIS

6.90 .99 -.06 -.21

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE -0.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.31	5TH	5.40	15TH	6.08	25TH	6.44
			75TH	8.80	84TH*****		95TH*****	
PCT. GRAVEL	0.00	SAND	.46	SILT (PIPETTE)	69.59	CLAY (PIPETTE)	29.95	
				(SEDIGRAPH)	65.77	(SEDIGRAPH)	33.77	
GRAVEL+SAND	.46	SILT/(SILT+CLAY)	66.07	PCT.GRAV+SAND/SILT+CLAY			.00	
LABELS SHEPARD	-CLAYEY SILT	FOLK(GMC)-MUD				(SCS)-MUD		
COMMENTS -								
HBL 4 0-3	VERY ORGANIC WITH WOOD CHIPS ETC.							*

MBL 4 9-21 270582

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 19.9609

06/25/62

PHI	FCT.	CUMFCT.	
3.50			
4.00	.38	.38	*
4.50	.54	.92	**
5.00	1.62	2.53	****
5.50	4.31	6.84	*****
6.00	9.96	16.80	*****
6.50	14.81	31.61	*****
7.00	11.31	42.92	*****
7.50	15.62	58.54	*****
8.00	9.15	67.69	*****
8.50	6.46	74.15	*****
9.00	5.38	79.54	*****
****	20.46	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.85 1.03 -.04 -.39

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.23	5TH	5.29	16TH	5.96	25TH	6.28
			75TH	8.58	84TH	*****	95TH	*****
PCT. GRAVEL	0.00	SAND	.38	SILT (PIPETTE)	70.58	CLAY (PIPETTE)	29.04	
				(SEDIGRAPH)	67.31	(SEDIGRAPH)	32.31	
GRAVEL+SAND	.38	SILT/(SILT+CLAY)	67.57	PCT.GRAV+SAND/SILT+CLAY	.00			
LABELS SHEPARD	-CLAYEY SILT	FOLK(GMS)-MUD		(SCS)-SILT				
COMMENTS -								
MBL 4 9-21	VERY ORGANIC WITHWOOD CHIPS ETC.							

HBL 5 51-89 270582

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 20.8534

06/25/32

PHI	PCT. CUMFCT.		
3.50			
4.00	2.56	2.56	***
4.50	.19	2.75	
5.00	.97	3.73	*
5.50	5.16	3.90	*****
6.00	9.74	13.64	*****
6.50	12.67	31.31	*****
7.00	10.23	41.54	*****
7.50	11.21	52.74	*****
8.00	7.79	60.54	*****
8.50	5.85	66.39	*****
9.00	4.87	71.26	*****
9.50	3.90	75.15	*****
****	24.68	100.00	*****

MEAN ST. DEV. SKEWNESS KURTOSIS

6.65 1.26 -.06 -.16

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.39	5TH	5.12	16TH	5.25	25TH	6.25
			75TH	9.48	84TH	*****	95TH	*****

PCT. GRAVEL	0.00	SAND	2.56	SILT (PIPETTE)	60.95	CLAY (PIPETTE)	36.49
				(SEDIGRAPH)	57.97	(SEDIGRAPH)	39.46

GRAVEL+SAND 2.56 SILT/(SILT+CLAY) 59.50 PCT. GRAV+SAND/SILT+CLAY .03

LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-MUD (SCS)-MUD

MBL 6 46-E7 270562

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 19.5579

06/25/32

PHI PCT. CUM PCT.

3.50			
4.00	1.36	1.36	*
4.50	.10	1.46	
5.00	1.38	2.84	*
5.50	4.44	7.28	****
6.00	9.37	16.65	*****
6.50	11.84	28.48	*****
7.00	11.84	40.32	*****
7.50	11.84	52.16	*****
8.00	8.38	60.54	*****
8.50	5.43	65.97	*****
9.00	-.24	70.41	****
9.50	3.45	73.86	***
****	26.14	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.90 1.17 -.01 -.16

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.41	5TH	6.24	16TH	5.97	25TH	6.35
			75TH	*****	84TH	*****	95TH	*****

PCT. GRAVEL 0.00 SAND 1.36 SILT (PIPETTE) 61.43 CLAY (PIPETTE) 37.22
 (SEDIGRAPH) 59.19 (SEDIGRAPH) 39.46

GRAVEL+SAND 1.36 SILT/(SILT+CLAY) 60.03 PCT.GRAV+SAND/SILT+CLAY .01

LABELS SHEPARD -CLAYEY SILT FOLK (GMS)-MUD (SCS)-MUD

HBL 7 43-48 110682

SIEVE, SH. PIP., SEDIGRAPH

SAMPLE WT.= 21.2660

06/25/82

PHI	FCT.	CUMFCT.	
3.50			
4.00	.41	.41	*
4.50	.75	1.15	
5.00	.50	1.65	
5.50	2.74	4.39	***
6.00	7.27	11.66	*****
6.50	10.96	22.62	*****
7.00	12.45	35.07	*****
7.50	13.45	48.52	*****
8.00	9.96	58.48	*****
8.50	6.47	64.95	*****
9.00	5.48	70.43	*****
9.50	29.38	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.98 1.02 -.12 -.11

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN 7.56	5TH 5.54	16TH 6.19	25TH 6.59
		75TH*****	84TH*****	95TH*****
PCT. GRAVEL	0.00	SAND .41	SILT (PIPETTE) 58.79	CLAY (PIPETTE) 40.81
			(SEDIGRAPH) 58.26	(SEDIGRAPH) 41.33
GRAVEL+SAND	.41	SILT/(SILT+CLAY)	58.50	PCT.GRAV+SAND/SILT+CLAY .00
LABELS SHEPARD	-CLAYEY SILT	FOLK(GMS)-MUD		(SCS)-MUD

HBL 7 4A-67 110682

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 21.1548

06/25/82

PHI PCT. CUMFCT.

3.50			
4.00	.96	.96	*
4.50	.49	1.44	
5.00	.49	1.93	
5.50	3.42	5.35	***
6.00	10.25	15.60	*****
6.50	13.17	28.77	*****
7.00	11.22	39.99	*****
7.50	13.66	53.65	*****
8.00	5.29	61.94	*****
8.50	5.85	67.80	*****
9.00	-0.88	72.88	*****
****	27.32	100.00	*****

MEAN ST. DEV. SKEWNESS KURTOSIS

6.64 1.04 -0.09 -.05 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN 7.37	5TH 5.45	16TH 6.02	25TH 6.36
		75TH*****	84TH*****	95TH*****
PCT. GRAVEL	0.00	SAND .96	SILT (PIPETTE) 60.52	CLAY (PIPETTE) 38.52
			(SEDIGRAPH) 60.99	(SEDIGRAPH) 38.06
GRAVEL+SAND	.96	SILT/(SILT+CLAY)	61.58PCT.GRAV+SAND/SILT+CLAY	.01
LABELS SHEPARD	-CLAYEY SILT	FOLK (GMS)-MUD		(SCS)-MUD

HBL d 41-71 110662

SIEVE, SH. FIP., SEDIGRAPH SAMPLE WT.= 21.0361

06/25/82

PHI	FCT.	CUMFCT.	
3.50			
4.00	1.36	1.36	
4.50	.24	1.61	
5.00	1.07	2.68	*
5.50	4.04	6.72	****
6.00	8.04	14.76	*****
6.50	12.18	26.94	*****
7.00	10.72	37.65	*****
7.50	13.15	50.80	*****
8.00	9.74	60.55	*****
8.50	6.33	66.88	*****
9.00	6.62	73.70	*****
*****	26.30	100.00	*****

MEAN ST.DEV. SKEWNESS KUPTOSIS

6.92 1.11 -.16 -.10

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN 7.47	5TH 5.29	16TH 6.05	25TH 6.42
		75TH*****	84TH*****	95TH*****
PCT. GRAVEL	0.00	SAND 1.36	SILT (PIPETTE) 57.95	CLAY (PIPETTE) 41.03
			(SEDIGRAPH) 59.18	(SEDIGRAPH) 39.45
GRAVEL+SAND	1.36	SILT/(SILT+CLAY)	60.00PCT.GRAV+SAND/SILT+CLAY	.01
LABELS SHEPARD	-CLAYEY SILT	FOLK(GMB)-MUD		(SCS)-MUD

HL 9 84 + 110682

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 20.6844

06/25/82

PHI	FCT.	CUMFCT.	
3.50			
4.00	.96	.96	*
4.50	.30	1.26	
5.00	.94	2.20	*
5.50	3.22	5.42	***
6.00	8.91	14.33	*****
6.50	14.36	28.69	*****
7.00	16.34	45.03	*****
7.50	15.35	60.38	*****
8.00	7.92	68.31	*****
8.50	4.46	72.76	****
9.00	3.96	76.73	****
****	23.27	100.00	*****

MEAN ST. DEV. SKEWNESS KUPTOSIS

6.80 .97 -.10 .41

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.16	5TH	5.43	16TH	6.06	25TH	6.37
			75TH	6.76	84TH*****		95TH*****	
FCT. GRAVEL	0.00	SAND	.96	SILT (PIPETTE)	60.91	CLAY (PIPETTE)		38.13
				(SEDIGRAPH)	67.35	(SEDIGRAPH)		31.69
GRAVEL+SAND	.96	SILT/(SILT+CLAY)	63.00	PCT. GRAV+SAND/SILT+CLAY				.01
LABELS SHEPARD	-CLAYEY	SILT (FOLK(GMS))-MUD				(SCS)-SILT		

MBL 10 73-90 110682

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 22.3040

06/25/82

PHI PCT. CUMECT.

3.50			*
4.00	1.24	1.24	
4.50	.49	1.74	**
5.00	1.98	3.71	*****
5.50	4.94	8.65	*****
6.00	8.64	17.29	*****
6.50	12.10	29.39	*****
7.00	11.36	40.75	*****
7.50	12.84	53.58	*****
8.00	8.89	62.47	*****
8.50	6.42	68.89	*****
9.00	7.41	76.30	*****
*****	23.70	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.86 1.15 -.12 -.33 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN 7.36	5TH 5.13	16TH 5.93	25TH 6.32
		75TH 8.91	84TH*****	95TH*****
PCT. GRAVEL	0.00	SAND 1.24	SILT (PIPETTE) 61.31	CLAY (PIPETTE) 37.44
			(SEDIGRAPH) 61.23	(SEDIGRAPH) 37.53
GRAVEL+SAND	1.24	SILT/(SILT+CLAY)	62.00	PCT.GRAV+SAND/SILT+CLAY .01
LABELS SHEPARD	-CLAYEY SILT	FOLK (3MS)-MUD		(SCS)-MUD

HBL 11 72-95 110682

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 20.3509

06/25/82

PHI	PCT. CUMECT.		
3.50			
4.00	2.93	2.93	***
4.50	.48	3.41	
5.00	2.64	6.06	***
5.50	4.08	10.14	****
6.00	9.13	19.27	*****
6.50	10.57	29.84	*****
7.00	10.57	40.41	*****
7.50	12.97	53.39	*****
8.00	9.13	62.52	*****
8.50	5.29	67.81	*****
9.00	4.32	72.13	*****
*****	27.87	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.70 1.19 -.22 -.09

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN 7.37	5TH 4.30	16TH 5.62	25TH 6.27
		75TH*****	84TH*****	95TH*****
PCT. GRAVEL	0.00	SAND 2.93	SILT (PIPETTE) 60.33	CLAY (PIPETTE) 36.23
			(SEDIGRAPH) 55.59	(SEDIGRAPH) 37.43
GRAVEL+SAND	2.93	SILT/(SILT+CLAY)	61.39PCT.GRAV+SAND/SILT+CLAY	.03
LABELS SHEPARD	-CLAYEY SILT	FOLK (GMS)-MUD		(SCS)-MUD

HL 13 0-20 110662

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 20.4097

06/25/32

PHI	FCT. CUM.PCT.		
3.50			
4.00	2.03	2.03	**
4.50	1.45	3.48	*
5.00	2.17	5.65	**
5.50	8.93	14.58	*****
6.00	13.51	28.09	*****
6.50	14.00	42.09	*****
7.00	10.62	52.71	*****
7.50	12.55	65.26	*****
8.00	7.24	72.49	*****
8.50	3.56	76.05	****
9.00	3.38	79.73	***
*****	20.27	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.48 1.12 -.03 -.25

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN 6.87	5TH 4.85	16TH 5.55	25TH 5.89
		75TH 8.32	84TH*****	95TH*****
PCT. GRAVEL	0.00	SAND 2.03	SILT (PIPETTE) .60	CLAY (PIPETTE) 97.37
			(SEDIGRAPH) 70.46	(SEDIGRAPH) 27.51
GRAVEL+SAND	2.03	SILT/(SILT+CLAY)	71.92	PCT.GRAV+SAND/SILT+CLAY .02
LABELS SHEPARD	-CLAYEY SILT	FOLK(GHE)-MUD		(SCS)-SILT

HBL 14 0-20 110682

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH

SAMPLE WT. = 19.7540

06/25/82

PHI FGT. CUMFCT.

-0.50			
0.00	.02	.02	
.50	.20	.23	
1.00	.56	.79	*
1.50	1.13	1.92	*
2.00	.68	2.59	*
2.50	.56	3.16	*
3.00	.45	3.61	*
3.50	.56	4.17	*
4.00	.90	5.07	*
4.50	.26	5.33	
5.00	2.57	7.90	+++
5.50	5.15	13.05	+++++
6.00	9.78	22.82	++++++
6.50	9.78	32.60	++++++
7.00	9.26	41.86	++++++
7.50	10.80	52.66	++++++
8.00	6.69	59.35	+++++
8.50	6.17	65.53	+++++
9.00	4.63	70.16	++++
9.50	3.60	73.76	++++
10.00	3.09	76.85	+++
10.50	3.09	79.03	+++
11.00	3.09	83.02	+++
11.50	3.09	86.11	+++
12.00	2.57	88.68	+++
*****	11.32	100.00	++++++

MEAN ST.DEV. SKEWNESS KURTOSIS

7.28 2.21 -.11 .58

KRUMBEIN + PETTICORN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 12.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.38	5TH	3.96	16TH	5.65	25TH	6.11
			75TH	9.70	84TH	11.16	95TH	*****

PCT. GRAVEL	0.00	SAND	5.07	SILT (PIPETTE)	57.83	CLAY (PIPETTE)	37.10
				(SEDIGRAPH)	54.28	(SEDIGRAPH)	40.65

GRAVEL+SAND 5.07 SILT/(SILT+CLAY) 57.13 PCT. GRAV+SAND/SILT+CLAY .05

LABELS SHEPARD -CLAYEY SILT FOLK(5HS)-MUJ

(SCS)-100

HBL 15 89 + 110682

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH SAMPLE WT. = 19.7596

06/25/82

PHI PCT. CUMFCT.

-3.00			***
-2.50	3.29	3.29	
-2.00	0.00	3.29	
-1.50	.30	3.59	
-1.00	.94	4.53	*
-.50	.35	4.88	
0.00	.03	4.91	
.50	.20	5.11	
1.00	.34	5.45	
1.50	.40	5.85	
2.00	.85	6.71	*
2.50	.80	7.50	*
3.00	.63	8.13	*
3.50	.85	8.98	*
4.00	2.96	11.94	***
4.50	1.62	13.56	**
5.00	1.62	15.18	**
5.50	17.29	32.47	*****
6.00	11.34	43.82	*****
6.50	9.72	53.54	*****
7.00	8.64	62.18	*****
7.50	8.10	70.29	*****
8.00	5.40	75.69	*****
8.50	4.32	80.01	*****
9.00	3.78	83.79	*****
9.50	3.24	87.03	*****
*****	12.97	100.00	*****

MEAN ST. DEV. SKEWNESS KURTOSIS

5.72 2.51 -.87 3.66 KRUMHOLTZ + PETT-JOHN (1938) MOMENT MEASURES FOR SIZE RANGE -2.5 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.32	5TH	.23	16TH	5.02	25TH	5.26
			75TH	7.94	84TH	9.03	95TH	*****
PCT. GRAVEL	4.53	SAND	7.41	SILT (PIPETTE)	64.38	CLAY (PIPETTE)	23.67	
				(SEDIGRAPH)	63.75	(SEDIGRAPH)	24.31	
GRAVEL+SAND	11.94	SILT/(SILT+CLAY)	72.39	PCT. GRAV+SAND/SILT+CLAY			.14	

LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-MUD

(SCS)-SANDY SILT

HBL 17 110-120 110662

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 21.4920

06/25/82

PHI PCT. CUMECT.

3.50			
4.00	1.08	1.08	*
4.50	.49	1.58	
5.00	1.48	3.06	*
5.50	2.47	5.53	**
6.00	7.42	12.95	*****
6.50	10.88	23.83	*****
7.00	12.36	36.20	*****
7.50	13.85	50.05	*****
8.00	9.89	59.94	*****
8.50	5.93	65.87	*****
9.00	5.93	71.81	*****
9.50	4.45	76.26	*****
*****	23.74	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

7.07 1.17 -.09 -.06

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.50	5TH	5.39	16TH	6.14	25TH	6.55
			75TH	9.36	94TH	*****	95TH	*****

PCT. GRAVEL	0.00	SAND	1.06	SILT (PIPETTE)	61.35	CLAY (PIPETTE)	37.54
				(SEDIGRAPH)	56.86	(SEDIGRAPH)	40.06

GRAVEL+SAND 1.06 SILT/(SILT+CLAY) 59.50 PCT. GRAV+SAND/SILT+CLAY .01

LABELS SHEPARD -CLAYEY SILT FOLK(5 ME)-MUD (SCS)-MUD

HBL 12 107-130 110582

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 21.3094

06/25/82

PHI FCT. CUMECT.

3.50			
4.00	1.66	1.66	**
4.50	.48	2.14	
5.00	1.45	3.60	*
5.50	4.36	7.96	****
6.00	9.60	17.65	*****
6.50	12.60	30.24	*****
7.00	12.11	42.35	*****
7.50	14.53	56.89	*****
8.00	9.20	66.09	*****
8.50	5.33	71.42	*****
9.00	4.36	75.78	****
9.50	3.39	79.17	***
10.00	20.83	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.88 1.17 -.06 -.01 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES
 FOR SIZE RANGE 4.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.26	5TH	5.16	16TH	5.92	25TH	6.29
			75TH	8.91	84TH	*****	95TH	*****

PCT. GRAVEL 0.00 SAND 1.66 SILT (PIPETTE) 62.15 CLAY (PIPETTE) 36.19
 (SEDIGRAPH) 64.43 (SEDIGRAPH) 33.91

GRAVEL+SAND 1.66 SILT/(SILT+CLAY) 65.52 PCT.GRAV+SAND/SILT+CLAY .02

LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-MUD (SCS)-MUD

HBL 20 116 + 110622

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 19.4245

06/25/82

PHI	PCT. CUM.PCT.	
3.50		**
4.00	2.15	
	.24	
4.50	2.39	***
5.00	5.08	*****
5.50	10.95	*****
6.00	11.74	*****
	22.69	*****
6.50	13.70	*****
	36.39	*****
7.00	11.25	*****
	47.65	*****
7.50	13.70	*****
	61.35	*****
8.00	5.32	*****
	69.67	*****
8.50	5.38	*****
	75.05	*****
9.00	4.89	*****
	79.94	*****
*****	20.06	*****
	100.00	

MEAN ST.DEV. SKEWNESS KURTOSIS

6.66 1.13 -.10 -.19

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	7.09	5TH	4.98	16TH	5.71	25TH	6.08
			75TH	8.50	84TH	*****	95TH	*****
PCT. GRAVEL	0.00	SAND	2.15	SILT (PIPETTE)	71.05	CLAY (PIPETTE)	26.80	
				(SEDIGRAPH)	67.52	(SEDIGRAPH)	30.33	
GRAVEL+SAND	2.15	SILT/(SILT+CLAY)	69.00	PCT.GRAV+SAND/SILT+CLAY	.02			
LABELS SHEPARD	-CLAYEY SILT	FOLK(GMS)-MUD		(SCS)-SILT				

06/25/82

PHI PCT. CUMFCT.

-2.00			
-1.50	.67	.67	
-1.00	.30	.97	
-.50	.05	1.01	
0.00	.02	1.04	
.50	.09	1.13	
1.00	.11	1.24	
1.50	.23	1.47	
2.00	.23	1.70	
2.50	.46	2.16	
3.00	1.95	4.11	**
3.50	5.85	9.96	*****
4.00	8.49	18.44	*****
4.50	3.14	21.58	***
5.00	9.93	31.51	*****
5.50	12.02	43.54	*****
6.00	12.02	55.56	*****
6.50	9.93	65.49	*****
7.00	6.27	71.77	*****
7.50	5.75	77.52	*****
8.00	3.66	81.18	****
8.50	3.14	84.32	***
9.00	2.61	86.93	***
9.50	2.61	89.54	***
*****	10.46	100.00	*****

MEAN ST. DEV. SKEWNESS KURTOSIS

5.55 1.30 -.24 1.66 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE -1.5 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES MEDIAN 5.77 5TH 3.08 16TH 3.86 25TH 4.67
75TH 7.28 84TH 8.45 95TH*****

PCT. GRAVEL .97 SAND 17.48 SILT (PIPETTE) 61.44 CLAY (PIPETTE) 20.12
(SEDIGRAPH) 52.74 (SEDIGRAPH) 18.82

GRAVEL+SAND 18.44 SILT/(SILT+CLAY) 76.92 PCT. GRAV+SAND/SILT+CLAY .23
LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-SANDY MUD (SCS)-SANDY SILT

06/25/32

PHI	PCT. CUM PCT.	
-0.50	0.00	
0.00	0.00	0.00
.50	0.00	0.00
1.00	0.00	0.00
1.50	.03	.03
2.00	.28	.31
2.50	.92	1.22
3.00	4.59	5.81
3.50	5.20	11.02
4.00	4.90	15.91
4.50	1.79	17.70
5.00	4.03	21.73
5.50	6.71	28.44
6.00	9.54	38.28
6.50	10.73	49.01
7.00	10.73	59.75
7.50	11.63	71.37
8.00	7.16	78.53
8.50	6.24	84.79
9.00	4.47	89.27
9.50	10.73	100.00

MEAN ST. DEV. SKEWNESS KURTOSIS

6.04 1.71 -.24 -.62

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED. OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.55	5TH	2.91	16TH	4.02	25TH	5.24
			75TH	7.75	84TH	8.44	95TH	9.50
PCT. GRAVEL	0.00	SAND	15.91	SILT (PIPETTE)	61.72	CLAY (PIPETTE)	22.37	
				(SEDIGRAPH)	62.62	(SEDIGRAPH)	21.47	

GRAVEL+SAND 15.91 SILT/(SILT+CLAY) 74.47 PCT. GRAV+SAND/SILT+CLAY .19
 LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-SANDY MUD (SCS)-SANDY SILT

COMMENTS -
 HBL 23 0-3 VERY ORGANIC WOOD CHIPS ETC.

HBL 23 3-18 160682

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH

SAMPLE WT. = 21.3465

06/25/82

PHI PCT. CUMFCT.

-0.50			
0.00	0.00	0.00	
.50	0.00	0.00	
1.00	.01	.01	
1.50	.04	.05	
2.00	.16	.21	
2.50	.42	.63	**
3.00	2.19	2.73	****
3.50	4.00	6.73	*****
4.00	5.54	12.37	*
4.50	.55	12.92	*****
5.00	7.67	20.59	*****
5.50	12.05	32.63	*****
6.00	13.69	46.33	*****
6.50	11.50	57.83	*****
7.00	6.57	64.40	*****
7.50	6.76	73.16	*****
8.00	5.48	78.64	****
8.50	3.63	82.47	****
9.00	5.48	87.95	*****
*****	12.05	100.00	*****

MEAN ST.DEV. SKEWNESS KUPTOSIS

5.95 1.54 -.07 -.20

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.16	5TH	3.28	16TH	4.70	25TH	5.13
			75TH	7.57	84TH	8.64	95TH	*****
PCT. GRAVEL	0.00	SAND	12.37	SILT (PIPETTE)	65.62	CLAY (PIPETTE)	22.01	
				(SEDIGRAPH)	66.27	(SEDIGRAPH)	21.36	
GRAVEL+SAND	12.37	SILT/(SILT+CLAY)	75.62	PCT.GRAV+SAND/SILT+CLAY	.14			
LABELS SHEPARD	-CLAYEY SILT	FOLK (GMS)-SANDY MUD				(SCS)-SANDY SILT		

HL 24 0-4 160562

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 17.5300

06/25/82

PHI	PCT. CUMFCT.	
3.50		
4.00	6.05	6.05
4.50	.16	6.20
5.00	6.89	13.09
5.50	9.40	22.49
6.00	13.31	35.80
6.50	10.18	45.98
7.00	10.18	56.16
7.50	9.40	65.56
8.00	5.48	71.03
8.50	5.48	76.51
9.00	4.31	80.82
*****	19.18	100.00

MEAN ST.DEV. SKEWNESS KURTOSIS

6.28 1.31 -.01 -.61

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.70	5TH	3.91	16TH	5.15	25TH	5.59
			75TH	8.36	84TH	*****	95TH	*****
PCT. GRAVEL	0.00	SAND	6.05	SILT (PIPETTE)	65.75	CLAY (PIPETTE)	26.20	
			(SEDIGRAPH)	64.98	(SEDIGRAPH)	28.97		
GRAVEL+SAND	6.05	SILT/(SILT+CLAY)	69.17	PCT.GRAV+SAND/SILT+CLAY	.06			

LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-MUJ (SCS)-SILT

COMMENTS - HBL 24 0-4 VERY ORGANIC WOOD CHIPS ETC.

06/25/82

PHI PCT. CUMFCT.

-0.50			
0.00	0.00	0.00	
.50	0.00	0.00	
1.00	.00	.00	
1.50	.05	.05	
2.00	.05	.10	
2.50	.05	.14	
3.00	.14	.29	
3.50	1.44	1.73	+
4.00	3.97	4.80	***
4.50	1.41	6.21	*
5.00	7.07	13.28	*****
5.50	12.73	26.01	*****
6.00	13.67	39.67	*****
6.50	12.73	52.40	*****
7.00	9.43	61.82	*****
7.50	9.43	71.25	*****
8.00	6.13	77.38	*****
8.50	3.77	81.15	****
9.00	3.77	84.92	****
9.50	2.83	87.75	***
10.00	2.36	90.10	**
10.50	2.36	92.46	**
****	7.54	100.00	*****

MEAN ST. DEV. SKEWNESS KURTOSIS

6.47 1.56 .20 -.05

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 10.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.41	5TH	4.07	16TH	5.11	25TH	5.46
			75TH	7.31	84TH	8.83	95TH	*****
PCT. GRAVEL	0.00	SAND	4.80	SILT (PIPETTE)	71.48	CLAY (PIPETTE)	23.72	
				(SEDIGRAPH)	72.58	(SEDIGRAPH)	22.62	
GRAVEL+SAND	4.90	SILT/(SILT+CLAY)	76.2	PCT. GRAV+SAND/SILT+CLAY			.05	
LABELS SHEPARD	-CLAYEY	SILT FOLK (GMS)-MUD				(SCS)-SILT		

06/25/82

PHI PCT. CUMFCT.

-1.50			
-1.00	.15	.15	
-.50	.17	.32	
0.00	.02	.34	
.50	.02	.37	
1.00	.07	.44	
1.50	.06	.49	
2.00	.17	.66	
2.50	.34	1.00	
3.00	2.04	3.04	**
3.50	4.07	7.11	****
4.00	7.07	14.18	*****
4.50	1.90	16.08	**
5.00	12.80	28.88	*****
5.50	13.75	42.63	*****
6.00	12.33	54.96	*****
6.50	6.53	63.49	*****
7.00	6.64	70.13	*****
7.50	6.16	76.29	*****
8.00	5.69	81.98	*****
8.50	1.90	83.88	**
9.00	2.55	86.72	***
9.50	3.32	90.04	***
10.00	.47	90.52	*****
*****	9.48	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

5.76 1.66 .01 .46 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE -1.0 TO 10.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	5.90	5TH	3.24	16TH	4.48	25TH	4.85
			75TH	7.40	84TH	8.52	95TH	*****
PCT. GRAVEL	.15	SAND	14.03	SILT (PIPETTE)	65.52	CLAY (PIPETTE)	20.30	
				(SEDIGRAPH)	67.90	(SEDIGRAPH)	18.02	
GRAVEL+SAND	14.18	SILT/(SILT+CLAY)	79.01	PCT.GRAV+SAND/SILT+CLAY	.17			
LABELS SHEPARD	-CLAYEY SILT	FOLK (GMS)	-SANDY MUD			(SCS)	-SANDY SILT	

MBL 25 3-33 160662

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH

SAMPLE WT. = 19.7522

06/25/82

PHI PCT. CUMPCT.

-0.50

0.00 0.00 0.00

.50 3.00 0.00

1.00 .00 .00

1.50 .02 .03

2.00 .58 .40

2.50 4.58 4.98

3.00 13.33 18.32

3.50 10.77 29.09

4.00 7.54 36.63

4.50 2.01 38.65

5.00 8.05 46.69

5.50 9.56 56.25

6.00 7.55 64.80

6.50 6.54 71.33

7.00 4.53 75.86

7.50 6.03 81.90

8.00 3.52 85.42

8.50 3.52 88.94

9.00 3.02 91.95

9.50 3.02 94.97

***** 5.03 100.00

MEAN ST. DEV. SKEWNESS KURTOSIS

5.08 1.98 .16 -.91

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES MEDIAN 5.17 5TH 2.50 16TH 2.91 25TH 3.31 75TH 6.90 84TH 7.50 95TH 78.59

PCT. GRAVEL 0.00 SAND 36.63 SILT (PIPETTE) 48.18 CLAY (PIPETTE) 15.19 (SEDIGRAPH) 48.78 (SEDIGRAPH) 14.53

GRAVEL+SAND 36.63 SILT/(SILT+CLAY) 76.98 PCT. GRAV+SAND/SILT+CLAY .58

LABELS SHEPARD -SANDY SILT FOLK(GMS)-SANDY MUD (SCS)-SANDY SILT

HBL 25 33-38 160682

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH

SAMPLE WT. = 19.0248

06/25/82

PHI PCT. CUMPCT.

-0.50			
0.00	0.00	0.00	
.50	0.00	0.00	
1.00	0.00	0.00	
1.50	.07	.07	
2.00	2.05	2.12	**
2.50	20.10	22.21	*****
3.00	33.14	55.36	*****
3.50	13.05	63.40	*****
4.00	4.94	73.34	*****
4.50	.53	73.87	*
5.00	2.13	76.01	**
5.50	2.67	78.67	***
6.00	1.60	80.27	**
6.50	3.73	84.00	****
7.00	3.20	87.20	***
7.50	3.73	90.94	****
8.00	3.73	94.67	****
8.50	2.13	96.80	**
9.00	1.60	98.40	**
****	1.60	100.00	**

MEAN ST.DEV. SKEWNESS KURTOSIS

3.75 1.87 .65 .30

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.0 PHI

3.92 1.95 .72 1.11

FOLK GRAPHIC STATISTICAL PARAMETERS FOLK AND WARC, 1957

PERCENTILES	MEDIAN	2.92	5TH	2.07	16TH	2.35	25TH	2.54
			75TH	4.76	84TH	6.50	95TH	6.06

PCT. GRAVEL	0.00	SAND	73.34	SILT (PIPETTE)	19.28	CLAY (PIPETTE)	7.38
				(SEDIGRAPH)	21.33	(SEDIGRAPH)	5.33

GRAVEL+SAND 73.34 SILT/(SILT+CLAY) 80.00 PCT.GRAV+SAND/SILT+CLAY 2.75

LABELS SHEPARD -SILTY SAND FOLK(GMS)-MUDDY SAND (SCS)-SILTY SAND

HL 26 0-9 160682

SIEVE, SH. PIP., SEDIGRAPH SAMPLE WT.= 13.7550

06/25/82

PHI	PCT. CUMECT.		
3.50			
4.00	1.52	1.52	**
4.50	.62	2.14	*
5.00	3.72	5.86	****
5.50	9.91	15.77	*****
6.00	16.72	32.49	*****
6.50	14.25	46.73	*****
7.00	11.77	58.50	*****
7.50	9.91	68.41	*****
8.00	7.43	75.84	*****
8.50	4.95	80.80	****
9.00	4.34	85.14	****
9.50	14.86	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.-7 1.12 .08 -.40 KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.64	3TH	4.98	16TH	5.51	25TH	5.75
			75TH	7.34	84TH	8.87	95TH	*****
FCT. GRAVEL	0.00	SAND	1.52	SILT (PIPETTE)	76.02	CLAY (PIPETTE)	22.46	
				(SEDIGRAPH)	74.32	(SEDIGRAPH)	24.16	
GRAVEL+SAND	1.52	SILT/(SILT+CLAY)	75.47	PCT.GRAV+SAND/SILT+CLAY	.02			
LABELS SHEPARD	-CLAYEY SILT	FOLK (GMS)-MUD		(SCS)-SILT				
COMMENTS -								
HL 26 0-9	VERY ORGANIC WOOD CHIPS ETC.							

HBL 26 9-25 160682

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH SAMPLE WT. = 21.0784

06/25/82

PHI PCT. CUMPCT.

-2.00			
-1.50	.21	.21	*
-1.00	.53	.74	*
-.50	1.33	2.07	*
0.00	.05	2.12	
.50	1.17	3.30	*
1.00	1.22	4.52	*
1.50	2.45	6.97	**
2.00	5.38	12.35	*****
2.50	9.54	21.89	*****
3.00	11.74	33.63	*****
3.50	9.29	42.92	*****
4.00	5.87	48.79	*****
4.50	1.50	50.29	*****
5.00	1.02	51.31	*****
5.50	1.03	52.34	*****
6.00	1.53	53.87	*****
6.50	1.82	55.69	*****
7.00	3.51	59.20	*****
7.50	5.52	64.72	*****
8.00	3.01	67.73	*****
8.50	3.51	71.24	*****
9.00	3.01	74.25	*****
*****	6.02	77.26	*****
*****		100.00	

MEAN ST. DEV. SKEWNESS KURTOSIS

4.32 2.30 .05 -.71

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE -1.5 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	4.52	5TH	1.10	16TH	2.19	25TH	2.63
			75TH	6.47	84TH	7.45	95TH	*****
PCT. GRAVEL	.74	SAND	48.05	SILT (PIPETTE)	39.82	CLAY (PIPETTE)	11.39	
				(SEDIGRAPH)	36.66	(SEDIGRAPH)	12.55	
GRAVEL+SAND	48.79	SILT/(SILT+CLAY)	75.49	PCT. GRAV+SAND/SILT+CLAY			.95	
LABELS SHEPARD	-SILTY SAND	FOLK (GMS)	-SANDY MUD			(SCS)	-SANDY SILT	

06/25/82

PHI PCT. CUMFCT.

-0.50			
0.00	0.00	0.00	
.50	.05	.05	
1.00	.08	.13	
1.50	.13	.26	
2.00	1.42	1.67	*
2.50	2.70	4.36	***
3.00	3.35	7.73	***
3.50	4.64	12.36	*****
4.00	6.95	19.32	*****
4.50	1.34	20.66	*
5.00	8.07	28.73	*****
5.50	12.55	41.28	*****
6.00	13.00	54.28	*****
6.50	10.76	65.04	*****
7.00	7.17	72.21	*****
7.50	6.28	78.48	*****
8.00	4.93	83.42	***
8.50	2.69	86.10	***
9.00	3.14	89.24	*****
*****	10.76	100.00	

MEAN ST.DEV. SKEWNESS KURTOSIS

5.52 1.66 -.13 -.37

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	5.84	5TH	2.59	16TH	3.75	25TH	4.77
			75TH	7.22	84TH	8.11	95TH	*****
PCT. GRAVEL	0.00	SAND	19.32	SILT (PIPETTE)	64.98	CLAY (PIPETTE)	15.70	
				(SEDIGRAPH)	64.10	(SEDIGRAPH)	16.59	
GRAVEL+SAND	19.32	SILT/(SILT+CLAY)	79.44	PCT.GRAV+SAND/SILT+CLAY	.24			
LABELS SHEPARD	-SANDY SILT	FOLK(GMS)	-SANDY MUD		(SCS)	-SANDY SILT		

HBL 28 0-6 160682

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH

SAMPLE WT. = 19.9635

06/25/82

PHI PCT. CUMECT.

-0.50

0.00 0.00 0.00

.50 .02 .02

1.00 .02 .05

1.50 .13 .18

2.00 .53 .71

2.50 1.53 2.24

3.00 2.48 4.72

3.50 4.60 9.32

4.00 6.25 15.58

4.50 2.33 17.91

5.00 7.93 25.64

5.50 12.59 38.43

6.00 6.53 44.96

6.50 14.46 59.42

7.00 8.40 67.82

7.50 6.53 74.35

8.00 3.73 78.08

8.50 3.73 81.51

9.00 3.73 85.54

9.50 1.87 87.41

12.59 100.00

MEAN ST. DEV. SKEWNESS KURTOSIS

5.78 1.67 -.05 -.39

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES MEDIAN 6.17 5TH 3.03 16TH 4.09 25TH 4.95 75TH 7.59 84TH 8.79 95TH*****

PCT. GRAVEL 0.00 SAND 15.55 SILT (PIPETTE) 63.96 CLAY (PIPETTE) 20.47 (SEDIGRAPH) 62.50 (SEDIGRAPH) 21.92

GRAVEL+SAND 15.58 SILT/(SILT+CLAY) 74.03 PCT. GRAV+SAND/SILT+CLAY .18

LABELS SHEPARD -CLAYEY SILT FOLK(GMS)-SANDY MUD (SCS)-SANDY SILT

06/25/82

PHI FCT. CUMFCT.

-0.50			
0.00	0.00	0.00	
.50	0.00	0.00	
1.00	.03	.03	
1.50	.03	.06	
2.00	.22	.28	**
2.50	1.68	1.96	*****
3.00	5.03	6.99	*****
3.50	8.95	15.94	*****
4.00	9.23	25.17	*****
4.50	3.56	28.73	*****
5.00	11.14	39.87	*****
5.50	14.25	54.12	*****
6.00	11.14	65.26	*****
6.50	7.57	72.83	*****
7.00	4.90	77.73	*****
7.50	4.91	81.74	*****
8.00	3.56	85.30	*****
8.50	2.90	88.20	**
9.00	2.00	90.20	**
9.50	1.78	91.98	**
*****	0.02	100.00	*****

MEAN ST. DEV. SKEWNESS KURTOSIS

5.26 1.66 .17 -.39

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.5 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	5.36	5TH	2.90	16TH	3.50	25TH	3.99
			75TH	6.72	84TH	7.82	95TH	*****

FCT. GRAVEL 0.00 SAND 25.17 SILT (PIPETTE) 60.37 CLAY (PIPETTE) 14.47
 (SEDIGRAPH) 60.13 (SEDIGRAPH) 14.70

GRAVEL+SAND 25.17 SILT/(SILT+CLAY) 80.36 PCT. GRAV+SAND/SILT+CLAY .34

LABELS SHEPARD -SANDY SILT FOLK (GMS) -SANDY MUD (SCS) -SANDY SILT

HBL 29 0-1 160652

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH. SAMPLE WT. = 19.3461

06/25/82

PHI PCT. CUM PCT.

-0.50			
0.00	0.00	0.00	
.50	0.00	0.00	
1.00	0.00	0.00	
1.50	.03	.03	
2.00	.17	.20	
2.50	.34	.54	*
3.00	1.34	1.88	****
3.50	4.02	5.90	*****
4.00	6.30	12.20	*****
4.50	.60	13.00	*
5.00	10.44	23.44	*****
5.50	10.71	34.15	*****
6.00	14.99	49.14	*****
6.50	11.78	60.92	*****
7.00	8.57	69.49	*****
7.50	6.96	76.44	*****
8.00	4.52	81.26	*****
8.50	3.75	85.01	***
9.00	3.21	88.22	***
****	11.79	100.00	*****

MEAN ST. LEV. SKEWNESS KURTOSIS

5.84 1.44 -.04 -.32

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES
FOR SIZE RANGE 0.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.04	5TH	3.39	16TH	4.64	25TH	5.07
			75TH	7.40	84TH	8.37	95TH	*****
PCT. GRAVEL	0.00	SAND	12.20	SILT (PIPETTE)	70.61	CLAY (PIPETTE)	17.19	
				(SEDIGRAPH)	69.06	(SEDIGRAPH)	16.74	
GRAVEL+SAND	12.20	SILT/(SILT+CLAY)	78.66	PCT. GRAV+SAND/SILT+CLAY	.14			
LABELS SHEPARD	-CLAYEY SILT	FOLK (GMS)	-SANDY MUD			(SCS)	-SANDY SILT	

HBL 29 9-56 160682

SIEVE, SETT. TUBE, PIPET, SEDIGRAPH

SAMPLE WT. = 19.6715

06/25/82

PHI	FCT. CUMPCT.	
-0.50		
0.00	0.00	0.00
.50	0.00	0.00
1.00	0.00	0.00
1.50	0.00	0.00
2.00	.31	.31
2.50	1.84	2.15
3.00	7.99	10.15
3.50	11.07	21.21
4.00	9.22	30.44
4.50	.53	30.96
5.00	9.49	40.45
5.50	11.07	51.52
6.00	10.34	62.06
6.50	8.43	70.49
7.00	4.22	74.70
7.50	6.32	81.03
8.00	3.16	84.19
8.50	3.69	87.88
9.00	3.16	91.04
*****	8.96	100.00

MEAN ST. DEV. SKEWNESS KURTOSIS

5.19 1.74 .10 -.87

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 9.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN 5.43	5TH 2.68	16TH 3.26	25TH 3.71
		75TH 7.02	84TH 7.97	95TH*****
PCT. GRAVEL	0.00	SAND 30.44	SILT (PIPETTE) 53.80	CLAY (PIPETTE) 15.76
		(SEDIGRAPH) 53.75	(SEDIGRAPH) 15.81	
GRAVEL+SAND	30.44	SILT/(SILT+CLAY)	77.27	PCT. GRAV+SAND/SILT+CLAY .44
LABELS SHEPARD	-SANDY SILT	FOLK(GMS)-SANDY MUD		(SCS)-SANDY SILT

06/25/82

PHI PCT. CUMFCT.

-0.50			
0.00	0.00	0.00	
.50	0.00	0.00	
1.00	0.00	0.00	
1.50	.01	.01	
2.00	.11	.12	*
2.50	.87	1.00	**
3.00	1.57	2.87	***
3.50	3.12	6.00	***
4.00	3.25	9.25	***
4.50	2.19	11.43	**
5.00	10.39	21.82	*****
5.50	12.57	34.40	*****
6.00	13.12	47.52	*****
6.50	10.93	58.45	*****
7.00	6.56	65.01	*****
7.50	5.75	73.76	*****
8.00	5.17	79.23	*****
8.50	3.28	82.51	***
9.00	3.28	85.79	***
9.50	2.73	88.52	***
10.00	3.28	91.80	***
10.50	1.64	93.44	**
11.00	1.64	95.08	**
*****	1.92	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.26	1.82	.18	-.10	KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 11.0 PHI
6.52	2.16	.29	1.26	FOLK GRAPHIC STATISTICAL PARAMETERS FOLK AND WARD, 1957

PERCENTILES	MEDIAN	6.11	5TH	3.34	16TH	4.72	25TH	5.13
			75TH	7.61	84TH	8.73	95TH	10.98
PCT. GRAVEL	0.00	SAND	9.25	SILT (PIPETTE)	71.94	CLAY (PIPETTE)	16.81	
				(SEDIGRAPH)	69.98	(SEDIGRAPH)	20.77	
GRAVEL+SAND	9.25	SILT/(SILT+CLAY)	77.11	PCT.GRAV+SAND/SILT+CLAY				.10
LABELS SHEPARD	-CLAYEY SILT	FCLK(GMS)-MUD				(SCS)-SILT		

23720

MBL 30 26-33 + 160692 SIEVE, SETT. TUBE, PIPET, SEDIGRAPH SAMPLE WT. = 21.4291

06/25/82

PHI	PCT.	CUM.PCT.	
- .50			
0.00	0.00	0.00	
.50	0.00	0.00	
1.00	0.00	0.00	
1.50	0.00	0.00	
2.00	.02	.02	
2.50	.09	.12	
3.00	.12	.23	
3.50	1.62	1.85	**
4.00	4.39	6.24	****
4.50	.94	7.18	*
5.00	1.58	9.05	**
5.50	8.44	17.49	*****
6.00	15.00	32.49	*****
6.50	17.35	49.84	*****
7.00	12.66	62.50	*****
7.50	12.66	75.15	*****
8.00	6.56	81.72	*****
8.50	3.75	85.47	****
9.00	2.81	88.28	***
9.50	2.34	90.62	**
10.00	1.41	92.03	*
10.50	1.41	93.44	*
11.00	.47	93.91	
*****	6.09	100.00	*****

MEAN ST.DEV. SKEWNESS KURTOSIS

6.52 1.43 .10 .58

KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 0.0 TO 11.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	6.51	5TH	3.35	16TH	5.41	25TH	5.75
			75TH	7.49	84TH	8.30	95TH	*****
PCT. GRAVEL	0.00	SAND	6.24	SILT (PIPETTE)	72.06	CLAY (PIPETTE)	21.70	
				(SEDIGRAPH)	75.48	(SEDIGRAPH)	18.28	
GRAVEL+SAND	6.24	SILT/(SILT+CLAY)	80.50	PCT. GRAV+SAND/SILT+CLAY	.07			
LABELS SHEPARD	-SILT	FOLK(GMS)-MUD		(SCS)-SILT				