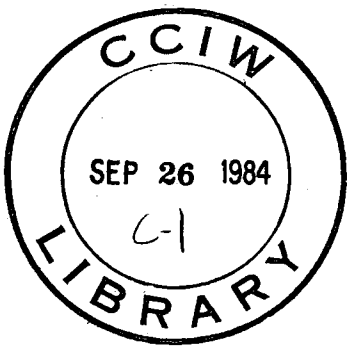
HYDRAULICS DIVISION
TECHNICAL NOTE



DATE: September 1984 **REPORT NO:** 84-26

TITLE: Particle Size Data Report - Suspended Sediment

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REASON FOR REPORT: This report responds to a request for particle size data from Scott Painter, Aquatic Ecology Division

CORRESPONDENCE FILE NO: Study 84-330

1.0 INTRODUCTION

This report provides the results of particle size analysis on a suspended sample submitted to the laboratory for grain-size analysis.

The samples arrived in four 20 l containers. The sediment was allowed to settle, the clear water was siphoned off and checked for remaining particles. The remainder of the sample was centrifuged to a working sample, freeze-dried, and analyzed using the Sieve-Sedigraph Procedure (Duncan and LaHaie, 1979).

2.0 PROCEDURE

(1) The Sieve and Sedigraph Method which provides sand, silt and clay percentages was used to analyse the samples.
Briefly the procedure consists of:

1. Splitting the sample to 2g.
2. Removing particles large enough to block Sedigraph Suction Tube (0.088 mm).
3. Dispersing sample in a Calgon suspension.
4. Automatic analysis with the Sedigraph.
5. Processing the results with SIZDIST: a FORTRAN IV computer program (Sandilands and Duncan, 1980).

3.0 RESULTS

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

1. A histogram of the frequency distribution.
2. The percentage and cumulative percentages of the material occurring within each 1/2 PHI unit.
3. Moment measure statistics (Krumbein & 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 Classifications.

PHI CONVERSION

The results of samples analyzed in the Sedimentology Lab are presented using the PHI scale (Krumbein, 1934). The conversion from this PHI equation, $\phi = -\log_2 \xi$ (where ξ is the diameter in millimeters) to the Wentworth scale is listed below.

PHI (ϕ)	Millimeters	Microns	Wentworth Size Class
-5.0	32		
-4.5	24		
-4.0	16		Pebble (-2 to -6ϕ)
-3.5	12		
-3.0	8		
-2.5	6		
-2.0	4		
-1.5	2.83		Granule
-1.0	2.00		
-0.5	1.41		Very coarse sand
0.0	1.00		
0.5	0.71		Coarse sand
1.0	0.51	500	
1.5	0.35	350	Medium sand
2.0	0.25	250	
2.5	0.177	177	Fine sand
3.0	0.125	125	
3.5	0.088	88	Very fine sand
4.0	0.0625	62.5	
8.0	0.0039	3.9	Silt† Clay†

4.0 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. 1974. 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 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

23777

PAINTER

SEDIGRAPH ANALYSIS

09/13/84

PHI	PCT.	CUMPCT.	
3.50			
	0.00		
4.00		0.00	
	0.00		
4.50		0.00	
	0.00		
5.00		0.00	
	.63		*
5.50		.63	*
	.63		*
6.00		1.25	***
	2.81		
6.50		4.06	*****
	4.69		
7.00		8.75	*****
	5.00		
7.50		13.75	******
	6.25		
8.00		20.00	*******
	7.50		
8.50		27.50	******
	5.63		
9.00		33.13	*******
	7.50		
9.50		40.63	*******
	7.50		
10.00		48.13	********
	8.13		
10.50		56.25	*******
	7.50		
11.00		63.75	******
	6.25		
11.50		70.00	********
	8.13		
12.00		78.13	**********************
*****	21.88	100.00	

MEAN	ST.DEV.	SKEWNESS	KURTOSIS	
9.27	1.67	-.12	-.94	KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 12.0 PHI

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

PERCENTILES MEDIAN 10.12 5TH 6.60 16TH 7.68 25TH 8.33 75TH 11.81 84TH****** 95TH******

PCT. GRAVEL .00 SAND 0.00 SILT (PIPETTE) 0.00 CLAY (PIPETTE) 0.00

(SEDIGRAPH) 20.00 (SEDIGRAPH) 80.00

GRAVEL+SAND .00 SILT/(SILT+CLAY) 20.0 0PCT.GRAV+SAND/SILT+CLAY .00

LABELS SHEPARD -CLAY FOLK(GMS)-MUD (SCS)-CLAY