Materials Testing & Consulting, Inc.
Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project:	LDW ENR/AC Pilot Study	**Date Received:**	July 28, 2020
Project #:	19S135	**Sampled By:**	Others
Client :	Wood	**Date Reported:**	September 3, 2020
Source:	Multiple	**Tested By:**	B. Goble
MTC Sample#:	Multiple		

CASE NARRATIVE

1. Six samples were submitted for grain size analysis according to Puget Sound Estuary Protocol (PSEP) methodology.
2. The samples were run in a single batch and one sample from this job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The data is provided in summary tables and plots.
4. There were no noted anomalies during this testing.

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Project: LDW ENR/AC Pilot Study
Project #: 19S135
Date Received: July 28, 2020
Date Tested: August 24, 2020

Client: Wood
Sampled by: Others
Tested by: B. Goble

Apparent Grain Size Distribution Summary

Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4 (4750)	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (63)	31.0	15.6	7.8	3.9	2.0	1.0
LDW-Y3-SU-ENR+AC-CC-CORE	100.0	100.0	81.7	69.4	53.9	37.2	29.6	25.9	22.0	16.1	11.1	7.1	5.7	3.2
	100.0	100.0	85.4	72.4	56.7	39.7	31.9	28.1	22.5	16.8	11.2	7.3	5.8	3.3
	100.0	99.0	82.0	70.7	55.9	39.5	32.2	28.5	22.0	16.6	10.9	7.2	5.7	3.3
LDW-Y3-SU-ENR-CA-CORE	100.0	97.9	81.2	66.9	49.7	33.3	27.1	22.7	17.9	13.0	8.2	5.3	3.8	2.4
LDW-Y3-SU-ENR-CB-CORE	100.0	95.6	77.6	59.9	41.2	24.4	18.5	16.2	14.0	5.4	3.3	2.6	2.1	1.4
LDW-Y3-SU-ENR-CC-CORE	100.0	96.9	76.8	57.6	38.0	21.7	16.4	13.5	9.0	6.4	3.9	2.5	1.9	1.3
LDW-Y3-SU-ENR+AC-CA-CORE	100.0	100.0	92.7	86.6	76.8	65.8	60.5	54.8	45.7	34.4	20.8	14.5	11.0	6.7
LDW-Y3-SU-ENR+AC-CB-CORE	100.0	99.3	88.5	77.8	65.1	51.6	45.5	40.8	32.2	24.0	14.8	10.1	7.5	4.5

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Tested by: B. Goble

Apparent Grain Size Distribution Summary

Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay			Total Fines
Phi Size	< -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	> 10	> 4
Sieve Size (microns)	> #10 (2000)	10-18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0	<230 (<62)
LDW-Y3-SU-ENR+AC-CC-CORE	18.3	12.3	15.5	16.8	7.6	3.7	3.9	5.9	5.0	3.9	1.5	2.4	3.2	25.9
	14.6	13.0	15.7	17.0	7.8	3.8	5.5	5.8	5.6	4.0	1.5	2.5	3.3	28.1
	18.0	11.3	14.8	16.4	7.3	3.7	6.4	5.4	5.7	3.6	1.6	2.3	3.3	28.5
LDW-Y3-SU-ENR-CA-CORE	18.8	14.3	17.2	16.4	6.2	4.4	4.8	4.8	4.8	2.9	1.5	1.4	2.4	22.7
LDW-Y3-SU-ENR-CB-CORE	22.4	17.7	18.7	16.8	5.9	2.3	2.1	8.7	2.1	0.7	0.5	0.7	1.4	16.2
LDW-Y3-SU-ENR-CC-CORE	23.2	19.2	19.6	16.4	5.2	3.0	4.4	2.6	2.5	1.4	0.6	0.7	1.3	13.5
LDW-Y3-SU-ENR+AC-CA-CORE	7.3	6.1	9.8	11.0	5.3	5.7	9.2	11.2	13.6	6.4	3.5	4.3	6.7	54.8
LDW-Y3-SU-ENR+AC-CB-CORE	11.5	10.6	12.8	13.5	6.1	4.7	8.6	8.2	9.2	4.7	2.6	3.0	4.5	40.8

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Reviewed by: E Gabe Goble

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Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW-Y3-SU-ENR+AC-CC-CORE	100.0	100.0	81.7	69.4	53.9	37.2	29.6	25.9	22.0	16.1	11.1	7.1	5.7	3.2
	100.0	100.0	85.4	72.4	56.7	39.7	31.9	28.1	22.5	16.8	11.2	7.3	5.8	3.3
	100.0	99.0	82.0	70.7	55.9	39.5	32.2	28.5	22.0	16.6	10.9	7.2	5.7	3.3
AVE	100.0	99.7	83.0	70.8	55.5	38.8	31.2	27.5	22.2	16.5	11.1	7.2	5.7	3.3
STDEV	0.0	0.5	1.7	1.2	1.2	1.1	1.2	1.1	0.3	0.3	0.1	0.1	0.1	0.1
%RSD	0.0	0.5	2.0	1.7	2.1	2.9	3.7	4.2	1.2	1.8	1.3	0.7	1.0	1.6

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW-Y3-SU-ENR+AC-CC-CORE	7/24/2020	8/24/2020	8/28/2020	100.8		10.0
	7/24/2020	8/24/2020	8/28/2020	102.2		11.0
	7/24/2020	8/24/2020	8/28/2020	103.8		11.7
LDW-Y3-SU-ENR-CA-CORE	7/24/2020	8/24/2020	8/28/2020	101.4		13.9
LDW-Y3-SU-ENR-CB-CORE	7/24/2020	8/24/2020	8/28/2020	100.4		19.6
LDW-Y3-SU-ENR-CC-CORE	7/24/2020	8/24/2020	8/28/2020	102.4		16.8
LDW-Y3-SU-ENR+AC-CA-CORE	7/24/2020	8/24/2020	8/28/2020	101.6		11.9
LDW-Y3-SU-ENR+AC-CB-CORE	7/24/2020	8/24/2020	8/28/2020	104.2		12.2

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Reviewed by: Elizabeth Goble

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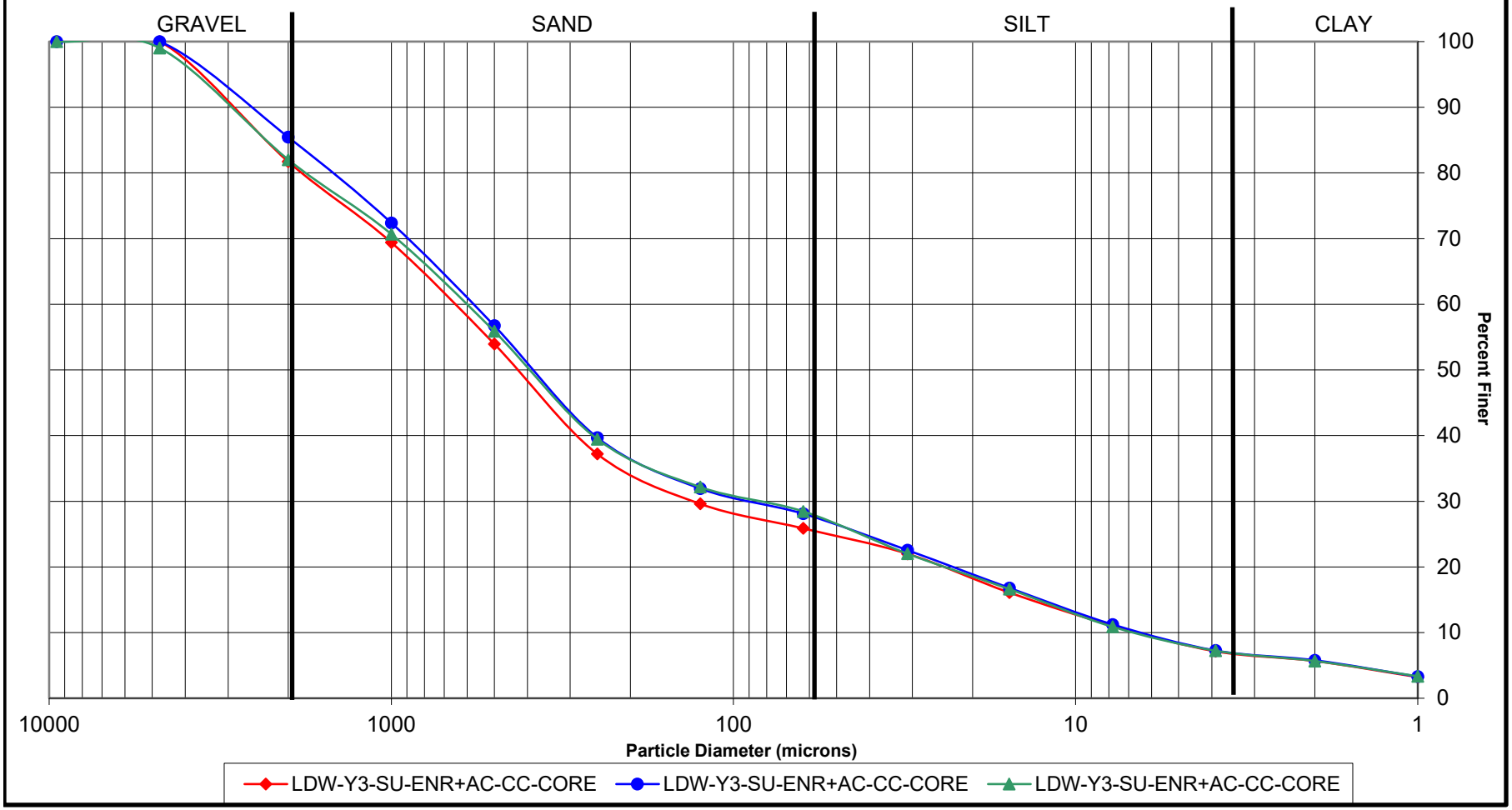
PSEP Grain Size Distribution

Triplicate Sample Plot



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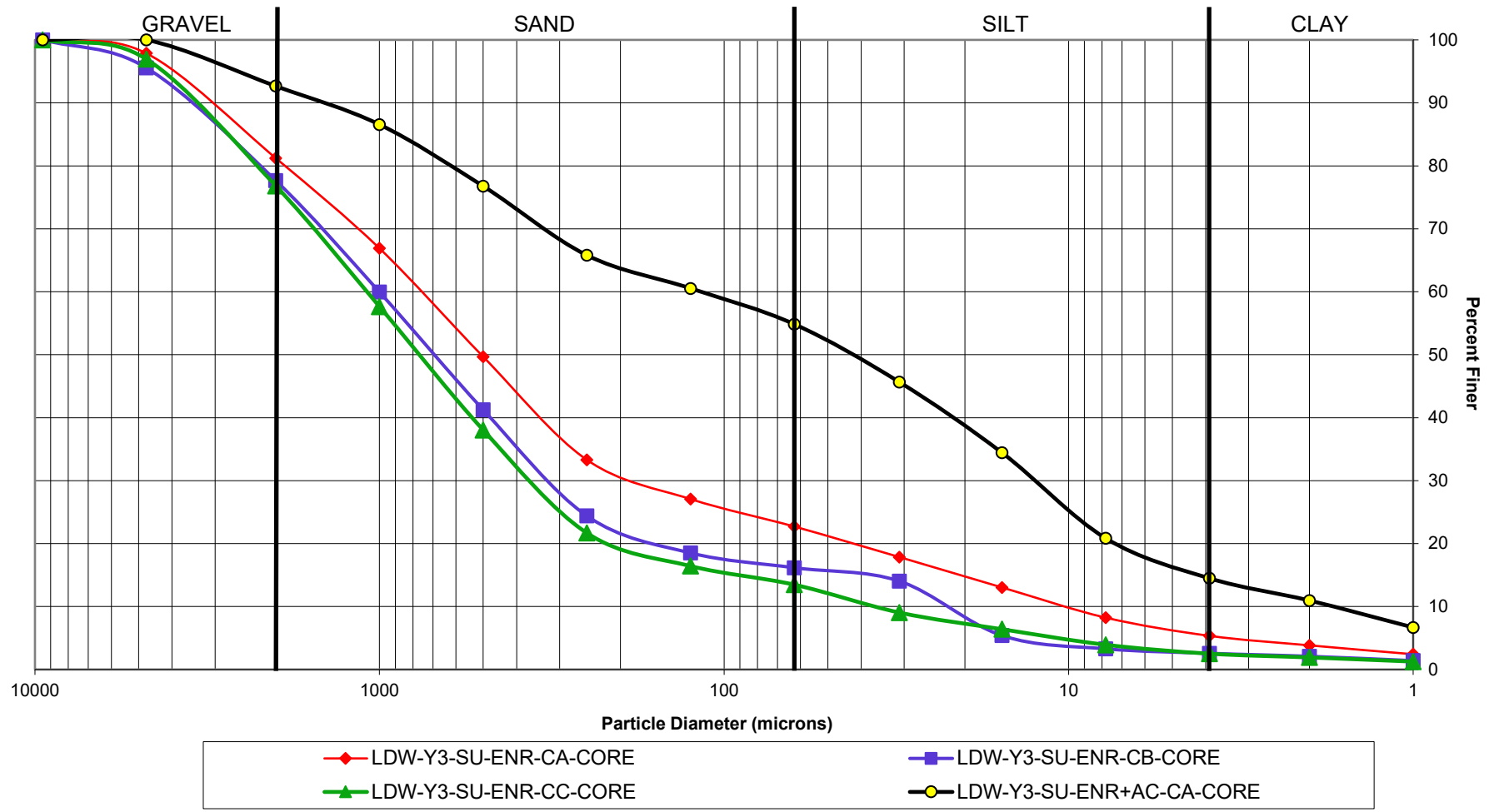
PSEP Grain Size Distribution



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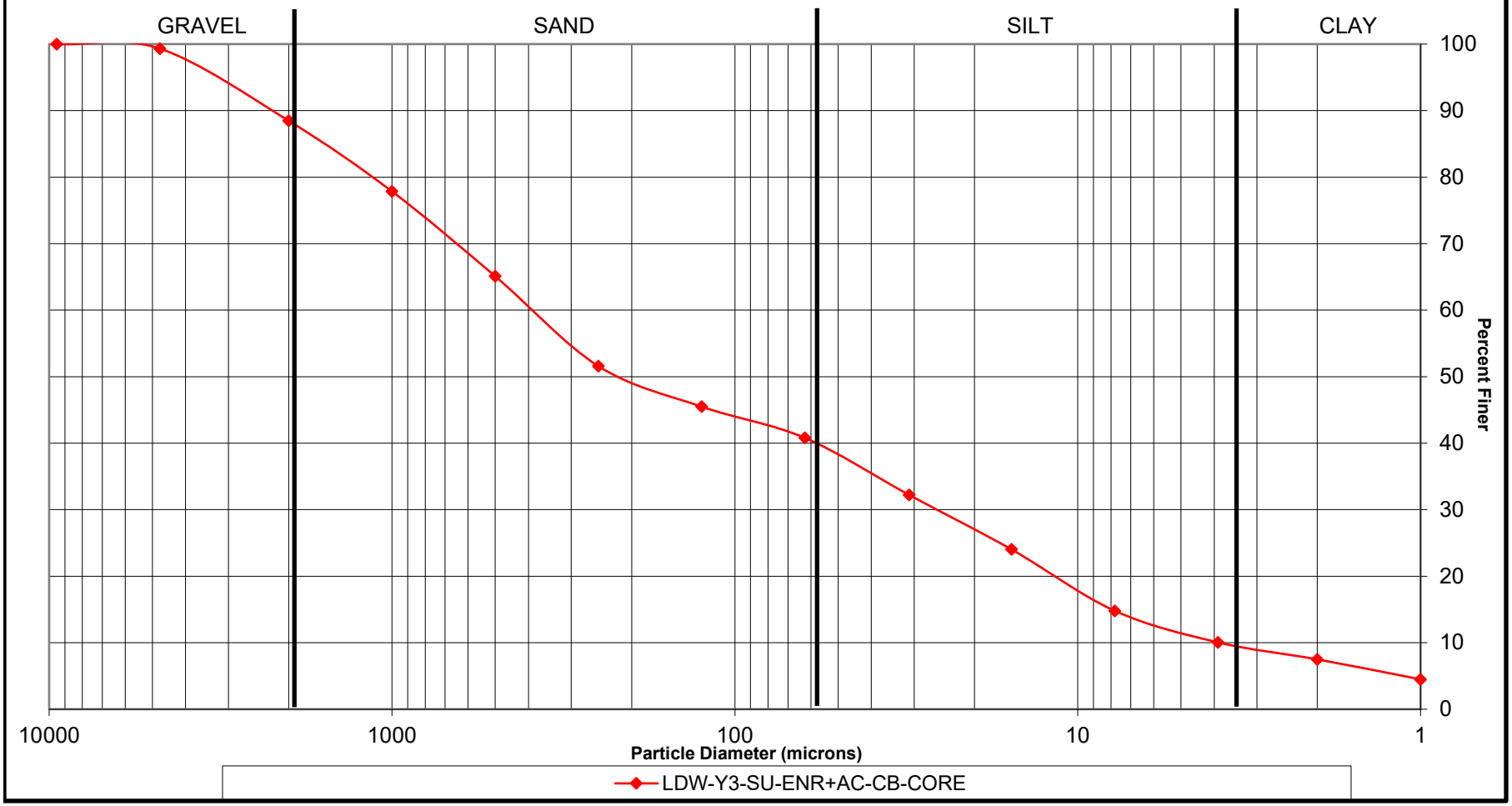
PSEP Grain Size Distribution